THE UNIVERSITY OF THE SOUTH PACIFIC
LIBRARY
Author Statement of Accessibility

Name of Candidate: Eric Scott Siegel
Degree: Master of Development Studies
Department/School: School of Government, Development and International Affairs
Institution/University: University of the South Pacific
Thesis Title: Barriers and Facilitating Factors to Hygiene Practice: A Case Study on Fijian Primary Schools
Date of completion of requirements for award: 9 June 2016

1. This thesis may be consulted in the Library without the author's permission. [ ] Yes [ ] No
2. This thesis may be cited without the author's permission providing it is suitably acknowledged. [ ] Yes [ ] No
3. This thesis may be photocopied in whole without the author's written permission. [ ] Yes [ ] No
4. This thesis may be photocopied in proportion without the author's written permission. 
   Part that may be copied.
   Under 10% 40-60% 
   10-20% 60-80% 
   20-40% Over 80% 
5. I authorise the University to produce a microfilm or microfiche copy for retention and use in the Library according to rules 1-4 above (for security and preservation purposes mainly). [ ] Yes [ ] No
6. I authorise the Library to retain a copy of this thesis in e-format for archival and preservation purposes. [ ] Yes [ ] No
7. After a period of 5 years from the date of publication, the USP Library may issue the thesis in whole or in part, in photostat or microfilm or e-format or other copying medium, without first seeking the author's written permission. [ ] Yes [ ] No
8. I authorise the University to make this thesis available on the Internet for access by authorised users. [ ] Yes [ ] No

Signed: Eric Scott Siegel
Date: 1 July 2016

Contact Address
27 Amy Street
Ellerslie
Auckland, New Zealand 1051

Permanent Address
27 Amy Street
Ellerslie
Auckland, New Zealand 1051

Feb 2005
BARRIERS AND FACILITATING FACTORS TO HYGIENE PRACTICE: A CASE STUDY ON FIJIAN PRIMARY SCHOOLS

By

Eric Siegel

A thesis submitted in fulfillment of the requirements for the degree of Master of Arts

Copyright © 2016 by Eric Siegel

School of Government, Development and International Affairs Faculty of Business and Economics
The University of the South Pacific

August, 2016
DECLARATION OF ORIGINALITY

Statement by Author

I, Eric Scott Siegel, declare that this thesis is my own work and that, to the best of my knowledge, it contains no material previously published, or substantially overlapping with material submitted for the award of any other degree at any institution, except where due acknowledgement is made in the text.

Signature: Eric Siegel  Date: 9 June 2016
Name: Eric Siegel  Student ID No: S11098948

Statement by Supervisor

The research in this thesis was performed under my supervision and to my knowledge is the sole work of Mr. Eric Scott Siegel

Signature: Dr. Haruo Nakagawa  Date: 9 June 2016
Name: Dr. Haruo Nakagawa

Designation: Fellow, Governance Programme, School of Government, Development & International Affairs, Faculty of Business & Economics, the University of the South Pacific
THESIS DEDICATIONS

This thesis is dedicated to Jeff Fisher, and the evolution of Fishstrong.

To my brother Danny. You’re the best.

To my Mother and Father. Thank you for your patience, wisdom, and infinite encouragement to take advantage of opportunities.

To Grandpa Jeri & Grandma Mili, Grandma Renee & Poppy, Aunt Marilyn & Uncle Morty, Uncle Jay & Aunt Robin & Gang, Aunt Ellen & Uncle Jon & Geoff, Aunt Sheryl and Aunt Ida, Brendan, Cam, Fisher, Hobbs, Jake, Lauren, Seb, Tyler, and the 87 Coastal Crew,

Professor Ollie Debure, Meghan, Colin, Danny Sig, Zev & the Nu Crew, Street Pete, Pete & Ernie,

Tricia,

También a la familia catracho en Lepaera y los amigos de Cuerpo de Paz Colombia,


Vinaka vakalevu
ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to:

Dr. Harou Nakagawa for his selfless commitment while supervising this thesis, and his incredible insight along the way,

The University of the South Pacific School of Government, Development and International Affairs for challenging me to think differently,

The Head Teachers and students from the Nausori Schools, and the FHIS stakeholders that participated in this research,

Waqa, the Fijian Teachers Association, Marc, Brooke and the UNICEF Pacific Team,

The Swansboro Rotary and District 7730 Rotary for their continued support,

Ravikash, Monifa, Pritika, and Etika at Rotary Pacific Water for Life Foundation,

The Rotary Club of Suva East
ABSTRACT

Fiji is an archipelago nation comprised of more than 332 islands located in the South Pacific Ocean. According to the Fiji Ministry of Education (FMOE 2015e), there are 731 primary schools in Fiji (ibid). Fijian primary education is designed to positively influence the emotional, cultural, intellectual, physical, and health needs of all Fijian students (FMOE 2007, p. 8). In Fijian primary schools, hygiene-related diseases and illnesses such as typhoid, trachoma, scabies, and diarrhea have negatively affected student health (FMOH 2010a; FMOH 2011). Globally, studies have revealed that children are less likely to become ill from hygiene-related diseases if their school has an effective hygiene program (Jasper et al. 2012, p. 2772). Fiji Hygiene in Schools (FHIS) programming addresses hygiene-related diseases in schools through engaging FHIS stakeholders in targeted interventions. This study examines possible impediments (bottlenecks) in the effectiveness of FHIS using three methods:

1. Key informant consultations with FHIS stakeholders;
2. Archival research of relevant FHIS related laws, regulations, guidelines and other published documents; and
3. Structured, face-to-face surveys with Head Teachers and students from a selection of “remote” and “urban” Nausori District schools.

The Tanahashi Health Service Coverage Model (THSC) (1978) underpins the design and implementation of the methodology for this study. The THSC is an organizational framework that has been used for evaluating and planning Water Sanitation and Hygiene (WASH) programming in schools. For this study, the THSC was adapted for a Fijian context.

The findings and analyses of this study provide an opportunity for FHIS stakeholders to use empirical information to redirect existing resources in order to improve FHIS effectiveness. The conclusions and recommendations provided may be used to improve FHIS programming within the primary schools researched, and may serve FHIS stakeholders working in schools throughout Fiji. Additionally, the results and analyses contribute case study information to the research field focused on measuring the effectiveness of water sanitation and hygiene programming in schools.
# LIST OF ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CSO</td>
<td>Civil Society Organization</td>
</tr>
<tr>
<td>DALYs</td>
<td>Daily adjusted life years</td>
</tr>
<tr>
<td>DGMWR</td>
<td>Department of Geology, Mines and Water Resources</td>
</tr>
<tr>
<td>FEMIS</td>
<td>Fiji Education Management Information Systems</td>
</tr>
<tr>
<td>FHIS</td>
<td>Fiji Hygiene in Schools</td>
</tr>
<tr>
<td>FMOE</td>
<td>Fiji Ministry of Health</td>
</tr>
<tr>
<td>FMOH</td>
<td>Fiji Ministry of Education</td>
</tr>
<tr>
<td>FSM</td>
<td>Federated States of Micronesia</td>
</tr>
<tr>
<td>FTA</td>
<td>Fijian Teachers Association</td>
</tr>
<tr>
<td>HBM</td>
<td>Health Belief Model</td>
</tr>
<tr>
<td>MBB</td>
<td>Marginal Budgeting for Bottlenecks tool</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operations and Maintenance</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
</tr>
<tr>
<td>PNG</td>
<td>Papua New Guinea</td>
</tr>
<tr>
<td>PTA</td>
<td>Parent-Teacher Association</td>
</tr>
<tr>
<td>RMI</td>
<td>Republic of Marshall Islands</td>
</tr>
<tr>
<td>SOC</td>
<td>Stages of Change</td>
</tr>
<tr>
<td>THSC</td>
<td>Tanahashi Health Service Coverage Model</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children’s Emergency Fund</td>
</tr>
<tr>
<td>USP</td>
<td>University of the South Pacific</td>
</tr>
<tr>
<td>UTM</td>
<td>Universal Transverse Mercator</td>
</tr>
<tr>
<td>WASH</td>
<td>Water Sanitation and Hygiene</td>
</tr>
<tr>
<td>WinS</td>
<td>Water Sanitation and Hygiene in Schools</td>
</tr>
<tr>
<td>WSP</td>
<td>Water and Sanitation Program</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS

Acknowledgement
Abstract
List of abbreviations and acronyms
List of tables
List of figures

1.0 Chapter 1 - Introduction

1.1 Background
1.2 Purpose of this study
1.3 Approach
1.4 Organization of thesis

2.0 Chapter 2 - Literature Review

2.1 Introduction
2.2 The “Developing World”
2.3 Hygiene challenges in the developing world
2.4 Hygiene in schools, in the developing world
2.5 Hygiene in Fiji
2.6 Theories and models of public health improvement
   2.6.1 Behavioral improvement
   2.6.2 Environmental health strengthening
2.7 Literature review conclusion

3.0 Chapter 3 - Methodology

3.1 Introduction
3.2 Background on the study framework
   3.2.1 Modifying the Tanahashi Method
   3.2.2 Fiji Hygiene in Schools Tanahashi Health Service Coverage Model
3.3 Study methods
   3.3.1 Key informant consultations
   3.3.2 Archival research

vii
3.3.3 Structured, face-to-face surveys

3.4 Limitations

4.0 Chapter 4 - Results

4.1 Introduction

4.2 Research process review

4.3 Study Results

4.3.1 Enabling environment effectiveness

4.3.2 Supply effectiveness

4.3.3 Demand effectiveness

4.3.4 Quality effectiveness

4.4 Identified bottlenecks

5.0 Chapter 5 - Discussion

5.1 Introduction

5.2 Research process overview

5.3 FHIS bottleneck discussion

5.3.1 Enabling environment

5.3.2 Supply

5.3.3 Demand

5.3.4 Quality

5.4 Comparison: remote schools and urban schools

5.4.1 Enabling Environment

5.4.2 Supply

5.4.3 Demand

5.4.4 Quality

5.4.5 Comparative analysis: remote and urban schools

5.5 Conclusions

5.6 Recommendations

5.6.1 Fiji hygiene in school stakeholders

5.6.2 Further research
<table>
<thead>
<tr>
<th>Appendices</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A -</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td>Appendix B -</td>
<td>Student Survey</td>
</tr>
<tr>
<td>Appendix C -</td>
<td>Interview with FMOH WASH Official</td>
</tr>
<tr>
<td>Appendix D -</td>
<td>Interview with Parent of Fijian Primary School Student</td>
</tr>
<tr>
<td>Appendix E -</td>
<td>Interview with Fijian Student attending a Nausori</td>
</tr>
<tr>
<td>Appendix F -</td>
<td>Interview with Fijian Student attending a Nausori</td>
</tr>
<tr>
<td>Appendix G -</td>
<td>Interview with Fijian Student attending a Nausori</td>
</tr>
<tr>
<td>Appendix H -</td>
<td>Interview with Fijian Student attending a Nausori</td>
</tr>
<tr>
<td>Appendix I -</td>
<td>Interview with FTA WASH Project Officer</td>
</tr>
<tr>
<td>Appendix J -</td>
<td>Interview with School Teacher from Nausori</td>
</tr>
<tr>
<td>Appendix K -</td>
<td>Interview with School Teacher from Nausori</td>
</tr>
<tr>
<td>Appendix L -</td>
<td>Interview with FTA Senior WASH Unit Officer</td>
</tr>
<tr>
<td>Appendix M -</td>
<td>Interview with FMOE Asset Monitoring Unit Officer</td>
</tr>
</tbody>
</table>

References
## LIST OF TABLES

1.1 Example THSC Model 6  
2.1 FEMIS “Locality Description” definitions 23  
2.2 Health Belief Model Constructs 26  
2.3 Bandura’s Efficacy Expectations 27  
2.4 Stages of Change Model 29  
2.5 Substance of Change Elements 31  
3.1 Angola WinS Bottleneck Analysis 44  
3.2 Nigeria WinS Bottleneck Analysis 45  
3.3 FHIS Stages, Determinants, and Indicators 47  
3.4 FHIS Stakeholder Key Informant Consultation Participants 51  
3.5 FHIS Stakeholder Key Informant Location and Dates 54  
3.6 Case Study Schools 56  
3.7 Ages of students within Fiji Primary school grade levels 57  
3.8 FHIS Akvo Data Gathering and Management Software Training 62  
3.9 FHIS THSC Indicator Assessment Categorizations 64  
4.1 Enabling Environment Results 73  
4.2 Supply Results 91  
4.3 Demand Results 99  
4.4 Quality Results 109  
4.5 Identified Bottlenecks 115  
5.1 Study Results 121  
5.2 Enabling Environment Impediment Indicators 128  
5.3 Supply Impediment Indicators 144  
5.4 Demand Impediment Indicators 151  
5.5 Quality Impeding Indicators 156  
5.6 Remote vs Urban Schools Bottleneck Analysis 161
LIST OF FIGURES

1.1 Map of Fiji
2.1 The Dynamics of Organizational Change
2.2 Components of Analysis: Content and Process
3.1 Gaps Between THSC Coverage Stages
3.2 MBB Modified Tanahashi Model
3.3 Vanuatu Example Akvo Map
4.1 Bottleneck: Social Norms Practice of daily, supervised face washing
4.2 Bottleneck: Legislation and Policy FHIS related Policy from national to school level
4.3 Bottleneck: Monitoring
4.4 Bottleneck: Social and Cultural Practices and Beliefs Toilet paper availability vs toilet paper accessibility
4.5 Bottleneck: Condition of hygiene program Condition of hygiene facilities
5.1 Remote vs Urban: Proportion of schools participating in daily, supervised hand washing
5.2 Remote vs Urban: Proportion of schools participating in daily, supervised face washing
5.3 Remote vs Urban: Proportion of schools with at least one schoolteacher responsible for hygiene promotion
5.4 Remote vs Urban: Proportion of schools always providing toilet paper
5.5 Remote vs Urban: Proportion of children reporting direct accessibility to toilet paper at toilet area
5.6 Remote vs Urban: Proportion of schools always providing soap
5.7 Remote vs Urban: Proportion of children acknowledging the importance of hygienic behavior in their definition of hygiene
5.8 Remote vs Urban: Proportion of students reporting a sufficient level of comfort using the toilet at school
5.9 Remote vs Urban: Soap and water access correlation with hand and face washing

5.10 FHIS Demand: urban and rural school comparison

5.11 Remote vs Urban: toilet and surrounding area in good condition

5.12 Remote vs Urban: comfort using the toilet at school

5.13 Remote vs Urban: presence of a schoolteacher responsible for hygiene promotion
1.0 CHAPTER 1 - INTRODUCTION

The introduction to this thesis is comprised of four parts. First, the background of this research is briefly explained. Second, the purpose of this study is justified. Third, the approach used to conduct this study is described. Lastly, the structure of this thesis is set forth.

1.1 Background

The Fiji islands are an archipelago nation scattered over 650,000 square kilometers of the South Pacific Ocean. In accordance with the Universal Transverse Mercator (UTM) coordinate system, the islands of Fiji are found between 15 and 22 degrees south of the equator, and 177 degrees west and 175 east of the prime meridian. A map of Fiji is exhibited below in Figure 1.1.

Fiji is comprised of more than 332 islands; 110 of which are inhabited. According to the country’s most recent national census (FBS 2007), the total population of Fiji is made up of 837,271 people. 87% of the population lives on the two largest Fijian islands: Viti Levu and Vanua Levu (ibid).

According to the Fiji Ministry of Education (FMOE 2015e), there are 933 schools in Fiji. Of the 933 schools, 731 are primary schools (ibid). The core objectives of Fijian primary education are to cultivate basic skills, knowledge and attitudes of Fijian children so they may positively contribute to society (FMOE 2007, p. 8). Fijian primary education curricula aim to address emotional, cultural, intellectual, physical, and health needs of all students (ibid).

The Fiji Ministry of Health (FMOH) guides the national health system in Fiji. The FMOH uses geographical locations to categorize four FMOH Health Divisions (FMOH 2011). These divisions are: Central, Eastern, Northern, and Western, as illustrated in Figure 1.1. The Fiji health system is designed to deliver Fijian citizens primary, secondary and specialist services (Roberts et al. 2011, p. 20) through 3 principle divisional hospitals, 18 sub-divisional hospitals, over 80 health centers and 99 Nursing Stations (FMOH 2011).
In Fiji, primary school students are affected by hygiene-related diseases and illnesses such as typhoid, trachoma, scabies, and diarrhea (FMOH 2010a; FMOH 2011). At the same time, Fiji Hygiene in Schools (FHIS) programming and policy aims to address hygiene-related diseases through engaging FHIS stakeholders in targeted interventions. FHIS stakeholders include all persons and organizations contributing to the improvement of FHIS, including: government agencies, civil-society organizations (CSOs), donor agencies, academics, district and local school administration, school teachers, school children, and the parents of school children.
The effectiveness of FHIS programming is dependent on a multitude of factors comprised of the daily interactions between school populations and the school hygiene environment. Existing FHIS policy documents establish guidelines and standards intended to positively influence these interactions, yet hygiene-related diseases still affect primary school children. As such, evident gaps exist between hygiene-related policy and the implementation of FHIS programs.

To date, no empirical study has been carried out to examine where these gaps in FHIS programming exist. Furthermore, no information is available concerning the extent to which FHIS policy documents emphasize attention to the gaps. This thesis is designed to examine these gaps.

1.2 Purpose of this study

One research question guides this thesis:

What are possible impediments (bottlenecks) in the effectiveness of Fiji Hygiene in Schools (FHIS) programming?

The purpose of this study is to provide an opportunity for FHIS stakeholders to use empirical information to redirect resources in order to improve FHIS programming within the primary schools researched, and possibly for FHIS stakeholders working in schools throughout Fiji. Additionally, the results and analyses contribute case study information to the research field focused on identifying and monitoring barriers and facilitating factors to the effectiveness of water sanitation and hygiene programming.

1.3 Approach

The Tanahashi Health Service Coverage Model (THSC) (1978) is an organizational framework that has been used for evaluating and planning Water Sanitation and Hygiene (WASH) programming in schools. The THSC uses four programming stages (outlined below in Table 1.1) that are comprised of site-specific determinants and indicators.
Table 1.1: Example THSC Model

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enabling Environment</strong></td>
<td>Policy, legislation and finance</td>
<td>Existence of policy regarding hygiene in schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existence of “operations and management” plan for “hygiene in schools”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existence of school budget for hygiene programming</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>Human and physical resources in schools, including facilities and training for teachers</td>
<td>Existence of functioning hand washing facilities at schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting that their school provides toilet paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting to have a schoolteacher responsible for hygiene promotion</td>
</tr>
<tr>
<td><strong>Demand</strong></td>
<td>Demonstrated motivation of the school community to finance and manage WASH in Schools resources</td>
<td>Existence of standards regarding soap and toilet paper provision in schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting that their school provides toilet paper</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Effectiveness of the inputs for changing hygiene behavior</td>
<td>Proportion of children washing their hands with soap after use of sanitation facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of children washing their hands with soap before eating</td>
</tr>
</tbody>
</table>

Through monitoring the determinants and indicators over time, programming strengths and weaknesses may be highlighted, which in turn may empower schools to decide where resources should be utilized in order to eliminate and prevent the spread of disease.

For this study, the researcher created FHIS determinants and indicators representative of the FHIS setting during the first (of three) research methods: key informant consultations. Key informant consultation participants included representatives from the following FHIS stakeholders: Fiji Ministry of Health (FMOH), Fiji Ministry of Education (FMOE), Fijian Teachers Association (FTA), Fijian primary
school teachers, District Education Officers, civil-society organizations (CSOs), Pacific Regional Organizations, parents of Fijian primary school students, and Fijian primary school students. The researcher recruited participants for key informant consultations through solicitation to Fijian member organizations of the Pacific WASH Coalition. The Pacific WASH Coalition is an open assembly of organizations working to address challenges of access to safe water supply, adequate sanitation and improved hygiene practices in the Pacific region (SPC 2009). The researcher organized nine key informant consultation meetings on dates between August 2014 and January 2015 at various locations. The following activities were carried out during the key informant consultations:

1. FHIS policy and programming issues were discussed with FHIS stakeholders
2. Determinants and indicators representative of the FHIS environment were discussed in order for the researcher to create the FHIS THSC model for this study
3. Eleven FHIS stakeholders were engaged in ethnographic, open-ended interviews
4. Schools and sample populations were selected for this research

The second method used in this study was archival research of FHIS related laws, regulations, guidelines and other published documents. The following publications were examined during the archival research:

1. Fiji Education Act (Cap 262)
2. Fiji Public Health Act (Cap 111)
3. Fiji Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d)
4. Fiji Education Information Management System (FEMIS)
5. Minimum Standards for WASH in Schools Infrastructure (FMOE 2012)
6. Instructional Memo written by the Permanent Secretary for Education (FMOE 2013)

The third method used for this research was structured, face-to-face surveys. Through the use of surveys, data was gathered regarding FHIS stages from the perspectives of eleven Head Teachers and forty-eight students. Head Teachers surveys
were administered on January 28, 2015. Student surveys were administered on April 22 and 23, 2015.

1.4 Organization of thesis

This thesis is organized into six sections. First, the introduction explains the foundation of this study. Second, a review of existing literature regarding the following topics is presented: the developing world, hygiene challenges in the developing world, hygiene in schools in the developing world, hygiene in Fiji, and theoretical explanations for behavioral change and environmental public health improvement. Third, the methodology for this study is outlined. Fourth, study results are presented. Fifth, a discussion is presented regarding the FHIS bottlenecks with respect to each THSC stage, study conclusions are drawn, and recommendations are set forth. The last two sections are for references and appendices.
2.0 CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

This literature review is composed of six parts. First, the meaning of “development” within the “developing world” is contextualized. Second, hygiene challenges within the developing world are investigated. Third, hygiene in schools within the developing world is analyzed. Fourth, hygiene in Fiji is reviewed, and gaps in existing literature are identified. Fifth, behavioral and environmental theories and models of public health improvement are considered. Lastly, the literature review is concluded, and the research question underpinning this thesis is presented.

2.2 The “Developing World”

Development is a dynamic concept, both as it exists, and how it may be defined and discussed (Thomas 2004, p. 2). When examining the development of a state, development encompasses many factors, such as: economics, culture, infrastructure, and globalization. Theories of development aim to account for the condition of societies and states, and suggest pathways for how societies and states may achieve positive development.

Development theorists have offered contending perspectives on the processes for development. For example, modernization theorists such as Webster (1990) and Rostow (1999) advocate ideals that economically poorer countries striving to be economically rich should emulate developmental frameworks of European/Western countries. In contrast, theorists such as Esteva (2010) and Wiarda (1983) argue the innate implications of development proposed by modernization theorists are hegemonic.

Wiarda (1983) explains that the underlying rationale for any development endeavor is ethnocentric and deterministic (p. 434). Esteva (2010) proclaims that during development processes within a country, the concept of “underdevelopment” is unavoidably created (p. 10). Namely, if one area is being “developed,” then areas lacking development are simultaneously deemed “underdeveloped.” Usually, “underdeveloped” is a euphemism for areas where industrialization and technology are not prioritized and utilized (Esteva 2010, p. 7).
In this view of development, human society’s “underdeveloped” states are often grouped together and referred to as the “developing world,” “developing countries,” the “Third World”, or the “Global South” (Todaro 1994, p. 27). Despite obvious problems with these hegemonic and deterministic views taken by modernization theorists, the classification propagated by them is widely used by many institutions including the UN agencies and international civil society organizations providing aid and assistance. This study follows this practice for convenience but it should be noted that the “developing world” or the “Global South” includes many different non-homogenous countries.

According to the UNDP (2005), more than 2.7 billion people live in developing countries. A ubiquitous characteristic of economically poor countries is the prevalence of hygiene-related sicknesses and disease (Prüss-Üstün et al. 2008, p. 10). Moreover, in poor countries, children suffer a disproportionate share of the hygiene-related burden. In fact, more than 20% of deaths and years lived with illness amongst all children under fourteen are related to unsafe water, inadequate sanitation, or insufficient hygiene (ibid).

2.3 Hygiene challenges in the developing world

A large proportion of the disease burden in developing countries could be prevented by improvements to challenges related to hygienic behaviors and hygienic conditions (Prüss et al. 2002, p.537). The Centers for Disease Control and Prevention (CDC) (2015) defines safe hygiene practices as behavior that results in cleanliness and good health, such as consistent hand washing, face washing, and body washing with soap and clean water. As explained by the WHO (2011), there is no universally applicable definition of “clean” water. The nature and form of clean water standards vary amongst countries and regions (p. 2). Minimum standards for clean water are usually defined by local health authorities and address the following aspects of water: microbial, chemical, radiological, disinfection, and acceptability (taste, odor, and appearance) (p. 4). Additionally, Aiello et al. (2008) explain the term “hygienic” as a sanitary condition, or behavioral practices made with an effort to ensure one’s body and surroundings remain clean (p. S152). Some examples of prevalent diseases and sicknesses in the developing world that occur as a consequence of failing to practice hygienic behaviors and ensure hygienic conditions include: trachoma, typhoid, diarrheal diseases, and scabies (Prüss et al. 2002, p.537).
One preventable hygiene-related disease, trachoma, is caused by the bacterium *Chlamydia trachomatis*. Trachoma is the world’s greatest cause of preventable blindness. The disease is contagious through contact with an infected person, or by flies that have come in contact with the nose or eyes of an infected person (Resnikoff et al. 2004, p. 849). Trachoma is widespread within economically poor communities in the developing world, especially in situations where communities lack consistent access to water for personal hygiene and have inadequate waste disposal (Mecaskey et al. 2003, p. 730).

Effective preventative practices for trachoma include ensuring hygienic environmental conditions and practicing hygienic behavior such as routine facial cleaning (ibid). If trachoma is not treated, repeated infections may cause intense scarring on the inside of the eyelid, causing the eyelashes to turn inward (trichiasis), and scratching the cornea. In addition to causing pain, trichiasis may permanently damage the cornea, and can lead to irreversible blindness (Wright et al. 2007, p. 422).

Typhoid fever is another preventable hygiene-related disease (Thompson et al. 2014, p. 1284). Typhoid infections are caused by Salmonella typhi (S. typhi) and Paratyphi, which are only found in humans (ibid). Typhoid fever is contracted by means of ingesting contaminated food or water (Parry et al. 2002, p. 1770). Once contracted, an infected person carries the bacteria in their bloodstream and intestinal tract. If an individual infected with typhoid does not wash their hands before touching another person or handling food, they may pass typhoid to another individual or group of people (ibid).

Bacteremia (presence of bacteria in the blood) usually presents after 1-2 weeks, which causes persistent fever and nausea. These symptoms may result in prolonged illness that can continue for several weeks. If left untreated, the illnesses may lead to hypertensive shock and intestinal perforation, which can be lethal (ibid).

Typhoid is endemic in the developing world (ibid). Many instances of typhoid outbreaks in individual homes and communities are associated with poor sanitation and hygiene habits (Mangum and Mangum 2014, p. 5). As such, effective methods to thwart the spread of typhoid include practicing hygienic behavior such as washing raw fruits and vegetables before consumption, and washing hands with soap before preparing food,
after visiting the toilet, after coming in contact with feces, and before consuming foods (ibid, p. 14).

According to Bartram and Cairncross (2010), diarrhea kills more young children than HIV/AIDS, tuberculosis, and malaria combined (p. 3). Furthermore, experiencing diarrhea in early childhood contributes to more DALYs (daily adjusted life years) than any other disease (ibid). One study showed that 2.5 million child deaths occur annually due to diarrhea caused by various illnesses, most of which can be prevented by hygienic behaviors (Kosek et al. 2003, p. 197). Another estimation of annual global illness caused by diarrhea resulting in death is 2.1 million (Parashar et al. 2003).

The burden of diarrhea in the developing world may be correlated to the failure to practice hygienic behavior such as using a hygienic toilet or latrine, and hand washing with soap (Bos et al. 2008, p. 7). Furthermore, access and availability to hygienic infrastructure (such as sinks and toilets), and local customs regarding interactions with hygienic infrastructure affects the burden of diarrhea (Adams et al. 2009, p. 5). The two primary etiologies of diarrhea are: ingesting pathogens that are especially present in unsafe drinking water, and through consuming food contaminated by unclean hands (ibid). Interventions focused on improving hygiene practices and improving hygienic conditions have demonstrated success in reducing rates of diarrhea (Luby et al. 2005). For example, results from an assessment of the effects of a “hand washing with soap” program in 300 households in Pakistan showed a 53% lower rate of diarrhea among children under 15 years old from households that had hand washing soap available (ibid).

Scabies is a contagious parasitic infection resulting from infestation with the *Sarcoptes scabiei* mite (Chosidow 2006, p. 1718). Global prevalence of scabies has been estimated to affect approximately 300 million people each year (ibid). Symptoms of scabies may include itching and raised red spots (rash) (Heukelback and Feldmeier 2006, p. 1767). Furthermore, Secondary bacterial infections with *Streptococci* and *Staphylococci* are frequent and may lead to serious and potentially fatal complications such as invasive bacterial infections, renal failure, and chronic rheumatic heart disease (Parks et al. 2012, p. 145).
Scabies is a major public health issue in limited resource environments (Heukelback and Feldmeier 2006, p. 1767). Scabies is strongly linked to poverty and overcrowded spaces (ibid). The disease is mostly transmitted from skin to skin contact and therefore, preventative measures should include ensuring a hygienic environment, and washing hands with soap and water (Chosidow 2006, p. 1718).

As explained above, practicing safe hygiene behavior would prevent a large amount of disease and illnesses that plague the developing world, such as trachoma, diarrhea, typhoid, and scabies. Hence, an environment conducive to learning and practicing these behaviors from a young age is necessary. In this context, Bartram and Cairncross (2010) point out that schools are an effective entry-point to affect hygienic behaviors (p. 3).

Systematically encouraging children to practice healthy hygiene behaviors in schools may inspire the most effective impacts that schools can have on health (Bolt et al. 2004, p. 3). Because children spend a large amount of their day at school, if healthy hygiene habits are routinely taught and practiced each day, children are less likely to get sick from hygiene-related diseases such as typhoid, trachoma, and diarrhea (ibid, p. 4). When effective hygiene education programs are customary within schools in developing countries, and include daily, routine hand washing with soap, children have a better chance of attending school (Hutton and Haller 2004).

2.4 Hygiene in schools, in the developing world

According to a study of health and educational outcomes of WASH programming in schools, a child’s formal or informal learning environment has important health and social influence on a child’s life style (Freeman et al. 2011, p. 2773). Effective WASH programming aimed at positively influencing behavior and infrastructure maintenance in schools improves overall sanitation, hygiene and daily water intake in both educational and non-educational environments (ibid). Furthermore, according to Bolt and Cairncross (2004), schools may significantly impact a child’s health by promoting hygiene education and by making hand washing with soap a daily routine (p. 50).
Hygiene educational programs and access to hygiene-related infrastructure are a major challenge for policymakers and school administrators in the developing world (UNICEF 2011, p. 21). In fact, almost half of all schools in low-income countries remain without access to water and sanitation facilities (ibid). According to the Water and Sanitation Program (WSP) (2009), hygiene education is not always provided in most schools (p. 41). Moreover, when programs do exist, they are often limited in their ability to affect positive behavioral change (ibid).

Recent studies disclose a reduction in absenteeism as a direct result of implementing hand washing programs in schools. For example, a 20% reduction in absenteeism in twenty-five Colombian schools was reported amongst children who began a daily hand washing routine (Lopez-Quintero et al. 2009, p. 94). Moreover, results from an expanded hand washing program in Chinese primary schools induced a 42% reduction in absenteeism (Bowen et al. 2007, p 1169). Furthermore, a 40% reduction in absenteeism within thirty schools in Egypt resulted from a hand washing programming that required students to wash hands twice a day (Talaat et al. 2011, p. 619).

A major hygiene-related issue in schools is soap supply. For example, study results on the impacts of hygiene interventions within 300 primary schools in India revealed those interventional schools to demonstrate a higher percentage of children washing their hands; however, less than 2% of them used soap. As such, children lose most of the health advantages of hand washing (Mathew et al. 2009, p. 275). Additionally, an assessment of school sanitation and hygiene education programs in Burkina Faso, Colombia, Nepal, Nicaragua, Viet Nam and Zambia disclosed the availability of soap as a prevalent issue in schools (IRC and UNICEF 2015, p. 13).

In some developing countries, hygiene programs have experienced success by including parents in decisions and activities. For example, a hygiene program in Honduras is organized by Parent Teacher Associations (PTAs) (Duey 2009, p. 1). Through the PTAs, trainings are conducted on how to manage programs, contract skilled labor, procure materials and facilitate construction projects (ibid). Construction projects include building sanitation and hand washing facilities (ibid). Additionally, a study in
Kenya on hygiene programming concluded that project implementation was more effective when parents of schoolchildren participated (Saboori et al. 2011, p. 298).

Challenges in implementing hygiene in schools programs are prevalent throughout the developing world. According to a UNICEF sub-regional analysis of hygiene in the Pacific (2013), the Pacific region’s improvements in sanitation and hygiene coverage is the lowest on the globe. The Pacific sub-region of UNICEF includes the following countries: Cook Islands, Fiji, Kiribati, Republic of Marshall Islands (RMI), Federated States of Micronesia (FSM), Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu (UNICEF 2013, p. 1).

Hygiene-related diseases and sicknesses are widespread throughout the Pacific (WHO 2005, p. 31). Mangum and Mangum (2014) explain that infectious, hygiene-related diseases pose a threat to the health security of Pacific Island nations (p. 4). A WHO study (2005) states that Pacific Island countries have the highest rates of children with scabies in the world (p. 31). Additionally, trachoma has caused blindness in many Pacific Island nations since the 1980s (IAPB 2013, p. 2). Furthermore, according to Thompson et al. (2014), many South Pacific Islands have experienced high typhoid fever incident rates and outbreaks (p. 1285). For example, a population based case study conducted in PNG found an incidence of culture-positive typhoid fever as 817 in 100,000 people (Talme et al. 1994; Passey 1995 as cited in Thompson et al. 2014, p. 1285). Additionally, reports from the Pacific disclose typhoid outbreaks in Nauru and Samoa after cyclones in 1990 and 1993 (SDOH 1993; Olsen et al. 2001 as cited in Thompson et al. 2014, p. 1285).

According to studies on disease transmission in the Pacific region, the consumption of contaminated fish from water exposed to sewage is a main source of disease contraction (Thompson et al. 2014, p. 1287). Mangum and Mangum (2014) explain that infectious hygiene-related diseases are omnipresent, morbid, and lethal in the tropical regions such as the South Pacific (p. 4). One reason that hygiene-related diseases continue to spread rapidly is the gap between hygiene and sanitation education and actual practice (ibid). According to UNICEF (2013), in the Pacific, safe disposal of
stools is less common than in any other region in the world. Rural open defecation rates in Kiribati register at 49%, the Solomon Islands at 66%, and PNG at 12% (p. 6).

2.5 Hygiene in Fiji

Fiji is a tropical archipelago country located in the South Pacific. Fiji consists of more than 332 islands (110 of which are inhabited), with a total land area of 18,000km² (FMOH 2011, p. 7). According to the Fiji Ministry of Health (FMOH) (2011), Fiji is faced with a significant burden of non-communicable and communicable diseases as the country makes an economic progression (p. 9). Because access to outer islands involves complex transportation logistics, providing adequate and comprehensive health and educational services to all of Fiji’s 870,000 inhabitants remains a complicated challenge (ibid).

According to Fiji’s latest population demographic statistics (2007), the total population of Fiji is 836,271. The majority of the population is comprised of two ethnic groups: iTaukei (475,739) and Indian (313,798) (FBS 2016). “Other” constitutes the remaining 47,734 (ibid). As explained by Aiden (2011), social norms are social constructs that are practiced regularly, and may be perceived as obligatory behavior (p. 2). Naturally, social norms in relation to hygiene behavior may vary amongst different cultures. Furthermore, social norms in the school context are intrinsically connected to cultural social norms practiced within communities, outside of schools. In a Fijian context, cultural social norms regarding hygienic behavior may differ within each community, and especially in communities with a larger majority of iTaukei or Indian populations. To date, there is a gap in academic studies regarding hygiene behavior specific to iTaukei or Fijian Indian populations. However, it must be noted that each cultural context is different, and the term “Fijian” includes all distinct cultures and subcultures that live in Fiji.

According to the ministry, there has been a rapid rise in reported cases of sanitation and hygiene-related diseases, such as typhoid, trachoma, scabies, and diarrhea (FMOH 2010a; FMOH 2011). Although reducing the incidence of typhoid and controlling outbreaks is seen as a priority for the Fiji Ministry of Health (FMOH 2011), typhoid fever is endemic in Fiji. Reported cases have shown a steady increase recently.
(ibid) despite the fact that Tuiketei et al. (2005) claimed after a series of recent typhoid outbreaks, more effective surveillance by Fijian medical workers has been established (Tuiketei et al. 2005 p. 1).

According to the FBS (2007), 412,425 people are reported to live in the “rural sector” of Fiji; and 424,846 are reported to live in the “urban sector” of Fiji (the percentage of “urban sector” inhabitants would be higher now because of the consistent rural to urban migration observed in recent years) (p. 4). Within Fiji, typhoid incidents are generally more significant in rural areas than in urban areas, although distribution of reported typhoid cases varies drastically amongst geographical locations (FMOH 2010a). Although private medical practitioners are required to report suspected typhoid cases to the FMOH, actual compliance may be limited (Thompson et al. 2014, p. 1286) and therefore actual incidence of typhoid cases can be greater than that of the reported cases in the FMOH reports. According to Thompson et al. (2014), available clinical and laboratory-confirmed surveillance indicates that the risk of contracting and spreading typhoid is higher during the rain season (November to April) (p. 1285).

Many Fijian public health professionals hypothesize that the spread of Salmonella typhimurium (S Typhii) within a Fijian context happens largely through the consumption of a traditional drink called kava or yaqona (Sarris et al. 2013, 1724). According to Sarris et al. (2013), kava is prepared by grinding the root of the plant Piper methysticum. After the root is ground into powder, the powder is mixed into water, by hand (ibid). Sarris et al. (2013) explain that kava has mild anesthetic and anxiolytic properties, and is customarily consumed by a shared bowl between participants (p. 1725). Therefore, if the water used for mixing kava or one of the participants of a kava session is contaminated, the entire group of people participating in the kava session can be affected.

In cities, most homes are connected to municipal water systems with running water, flushing toilets, and showers (except for some of the increasingly sprawling squatter settlements). However, Mangum and Mangum (2014) emphasize that the presence of sanitation facilities within establishments does not necessarily result in sanitary conditions, nor does it lead to behavior such as washing hands and food before eating (p. 7). Additionally, traditional homes outside of the urban area do not have
consistent access to piped water. Instead, they rely on water from rivers and other sources, which may become contaminated (ibid).

In 2009, Fiji showed a high prevalence of active trachoma in children aged 1-9, and a prevalence of scarring from trachoma in the population less than 40 years of age (Mathew et al. 2009, p. 866). A 2012 study on the reasons for the spread of trachoma in Fiji concluded that accessibility to clean water was a major issue (Kitione and Cama 2012, p. 24). Furthermore, a recent survey designed to undertake a preliminary assessment of risk factors for transmission concluded that accessibility to water, and the proximity of solid waste disposal within a community were key to addressing the prevalence of trachoma in Fiji (Kama et al. 2013, p. 11).

According to Haar et al. (2013), in a Fiji population-based study, 24% of participants reported to have had scabies, especially young children (Romani n.d. as cited in Haar et al. 2013, p. 739). Moreover, a study on Fijian school children ages five to fifteen, from twenty-one schools, concluded that 18% of children are affected by scabies (Steer et al. 2009, p. 467). Reducing the prevalence of scabies is declared within Objective 4.4 of the FMOH Strategic Plan 2011-2015 (FMOH 2011, p. 17).

Resultant diarrhea from a lack of practicing healthy hygiene-related behavior affects Fijian primary school students (FMOE 2012, p. 12). As such, diarrheal diseases are a major cause for absenteeism from school in Fiji (ibid). In the years 2006 and 2007, 592 children under the age of five were reported to visit the hospital in Suva, Fiji because of severe diarrhea (Jenney et al. 2009, p. 108).

In 2012, the official *Minimum Standards on Water Sanitation and Hygiene (WASH) in Schools Infrastructure* was established in Fiji by the Fiji Ministry of Education in close collaboration with the Fiji Teachers Association, UNICEF, and other stakeholders in the national education system (FMOE 2012). According to the FMOE (2012), the document “serves as standards to all private and public schools in the Fiji Islands (p. 7)” As outlined in the document, the main objectives of the standards are to:


- “Comply with the existing policies and legislation,
- Assess current situation of schools, plan and/or carry out required improvement
- Ensure that the construction of new schools is of acceptable quality
- Be used while preparing and implementing comprehensive and realistic action plans so that acceptable conditions are maintained”

(FMOE 2012, p. 7).

Additionally, the Fiji Public Health Act of 1996 (Cap 111) and the Fiji Education Act of 1978 (Cap 262) explain legislative requirements related to hygiene issues (FMOE 2012, p. 9). Furthermore, the FMOE Curriculum Development Unit (CDU) requires Fijian schools to teach hygiene education through the use of the Healthy Living Syllabi (HLS) (FMOE 2015b; FMOE 2015c; FMOE 2015d). The HLS covers hygiene-related topics such as: personal hygiene and sanitation, people and food, disease prevention, and personal and community health (ibid). Lastly, the FMOE collects individual school data annually through the Fiji Education Management Information System (FEMIS) (FMOE 2015a). FEMIS categorizes each school based on a respective “Locality Description” as presented below in Table 2.1 However, presently, FEMIS harnesses very little data related to hygiene in schools. For example, only two measures related to hygiene are gathered through the system: source of water supply and number of toilets (ibid).

<table>
<thead>
<tr>
<th>Table 2.1: FEMIS “Locality Description” definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Remote</strong></td>
</tr>
<tr>
<td><strong>Remote</strong></td>
</tr>
<tr>
<td><strong>Rural</strong></td>
</tr>
<tr>
<td><strong>Urban</strong></td>
</tr>
</tbody>
</table>

(FMOE 2015a)
Hence, national policy, legislation, and curriculum regarding hygiene in schools exist in Fiji. However, hygiene-related diseases such as typhoid, trachoma, scabies, and diarrhea still affect substantial numbers of Fijian schoolchildren (FMOH 2010a; FMOH 2011). Therefore, gaps may exist between hygiene-related policy and actual FHIS programming implementation. Furthermore, no baseline survey has been administered to schools in order to measure the effectiveness of hygiene education implementation and actual compliance with national policy at schools. This scenario creates the research question for this study:

What are possible impediments (bottlenecks) in the effectiveness of FHIS programming?

In the next section, applicable theories and models of public health improvement are examined.

2.6 Theories and models of public health improvement

The underpinning theory of a health program must be well established in order to realize positive outcomes from the program (Stokols 1996, p. 282). Two distinct theoretical perspectives that aim to improve health practices are: behavior improvement, and environmental strengthening. Considering the prevalence of hygiene-related diseases in Fiji and the opportunity to educate and prevent the disease transmission in schools through effective FHIS programming, models pertaining to these theories are applicable for this study. In the following subsections, the foundational concepts of these two perspectives will be examined, and examples of each theory will be presented. Additionally, the limitations of models are critiqued.

2.6.1 Behavioral improvement

Positive health behavioral change theories propose ideas and actions that aim to prevent the occurrence and spread of disease (Stokols 1996, p. 283). Additionally, theories outline healthy choices that may inspire an adaptation of healthy behaviors for a population of people (ibid). For example, in relation to hygiene in schools, behavior change may target the following practices: face washing, hand washing at critical times, use of toilet paper, use of soap, and the proper location of excretion. There are several
distinct theoretical perspectives regarding behavior change that aim to guide the modification of individuals’ unhealthy behaviors and lifestyles (Stokols 1996, p. 283).

Three examples of theoretical perspectives associated with behavioral change theories are the: 1) Health Belief Model (Hochbaum 1958), 2) Self-Efficiency Theory (Bandura 1997), and 3) Stages of Change theory (Prochaska 1994). Each perspective considers a multitude of factors that may influence a group and individual’s beliefs, opinions, and habitual behaviors within their surroundings. Additionally, each perspective proposes effective methods for interventions.

One conceptual framework used to understand health behaviors is the Health Belief Model (HBM). The HBM framework consists of seven determinants that explain health behavior: perceived susceptibility, perceived benefits, perceived barriers, perceived seriousness, modifying variables, cues to action, and self-efficacy. Definitions of each HBM determinant are presented in Table 2.2, below:

<table>
<thead>
<tr>
<th>Construct</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Perceived susceptibility</td>
<td>An individual’s assessment of his or her chances of getting the disease</td>
</tr>
<tr>
<td>2) Perceived benefits</td>
<td>An individual’s conclusion regarding the advantages of adopting the new behavior</td>
</tr>
<tr>
<td>3) Perceived barriers</td>
<td>An individual’s opinion as to what will stop him or her from adopting the new behavior</td>
</tr>
<tr>
<td>4) Perceived seriousness</td>
<td>An individual’s judgment as to the severity of the disease</td>
</tr>
<tr>
<td>5) Modifying variables</td>
<td>An individual’s personal factors that affect whether the new behavior is adopted</td>
</tr>
<tr>
<td>6) Cues to action</td>
<td>Those factors that will start a person on the way to changing behavior</td>
</tr>
<tr>
<td>7) Self-efficacy</td>
<td>Personal belief in one’s own ability to do something</td>
</tr>
</tbody>
</table>

(Source: Hayden 2009, p. 31)

Influential factors on a group or individual’s perceived susceptibility, benefits, barriers, and seriousness of a health risk may include: cultural norms, education level,
previous experience, skill, and motivation (Hayden 2009, p. 31). Additionally, exterior factors such as media, availability of health professionals, and incentives provided, may modify health behaviors (Turner et al. 2004). Rationale for non-compliance may point to one, or many, determinants included in the HBM.

The HBM has been used in order to design and deliver health promotion programs aimed at effectively changing behavior. Criticism of the HBM includes the subjectivity of determinant definitions, and a lack of cohesive rules for implementing an intervention (Armitage and Conner 2000). Additionally, as explained by Taylor et al. (2007), although the HBM may be utilized to obtain information that may stimulate interventions designed to modify health beliefs and practices, employing the model itself may not accurately inform decision-making regarding how to structure the specifics of interventions (p. 5). However, considering there is no established structure being used to analyze Fiji Hygiene in Schools (FHIS) programming, this framework offers one structure to contextualize programming challenges from the perspective of individuals and groups. The constructs provided by the model offer an organized approach to examining the relationships between health behaviors, practices, health motivations and the utilization of existing health services.

The Self-Efficiency Theory is an additional theoretical perspective regarding behavioral change (Bandura 1977). Bandura explains that behavior change is influenced by the following four modalities: performance enactment, vicarious learning, verbal persuasion, and emotional arousal. These modalities and their modes of application are presented in Table 2, below:
Table 2.3: Bandura’s Efficacy Expectations

<table>
<thead>
<tr>
<th>Source</th>
<th>Mode of Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance accomplishments</td>
<td>Participant modeling</td>
</tr>
<tr>
<td></td>
<td>Performance desensitization</td>
</tr>
<tr>
<td></td>
<td>Performance exposure</td>
</tr>
<tr>
<td></td>
<td>Self-instructed performance</td>
</tr>
<tr>
<td>Vicarious experience</td>
<td>Live modeling</td>
</tr>
<tr>
<td></td>
<td>Symbolic modeling</td>
</tr>
<tr>
<td>Verbal persuasion</td>
<td>Suggestion</td>
</tr>
<tr>
<td></td>
<td>Exhortation</td>
</tr>
<tr>
<td></td>
<td>Self-instruction</td>
</tr>
<tr>
<td></td>
<td>Interpretive treatments</td>
</tr>
<tr>
<td>Emotional arousal</td>
<td>Attribution</td>
</tr>
<tr>
<td></td>
<td>Relaxation, Biofeedback</td>
</tr>
<tr>
<td></td>
<td>Symbolic desensitization</td>
</tr>
<tr>
<td></td>
<td>Symbolic exposure</td>
</tr>
</tbody>
</table>

(Bandura 1977, p. 195)

As described above in the Self-Efficacy Theory, the first modality, *performance accomplishments*, applies to effectively enacting all or part of a targeted behavior. This serves to modify beliefs about personal capability to perform a desired behavior. The second modality, *vicarious experience*, modifies one’s self-efficacy through observations of demonstrations. The third modality, *verbal persuasion*, influences self-efficacy through communication from respected sources. The fourth modality, *emotional arousal*, influences change by ways of emotion. According to Bandura, the level of self-efficacy achieved is dependent on the individual’s experiential source (Bandura 1977, p. 211).

The self-efficacy theory has been effectively utilized by psychologists and social scientists in order to analyze and influence a range of behaviors (Lee 1989, p. 115). Similar to any model that endeavors to compartmentalize human behavior, its capacity to explain human behavior in detail is limited. As explained by Lee (1989), the model portrays human behavior as a result of complex interactions between abstract variables, which are inexact in their definition, and therefore cannot be analyzed. For instance, the procedure by which efficacy expectations derive from multiple references of information, and the cooperation of self-efficacy with measures of skill and incentive, are argued to be important, but there is no model to explain how these processes occur (Lee 1989, p. 114). However, in the case of FHIS programming, utilizing the self-
efficacy theory is ideal given its ability to augment the capabilities of the HBM in order to investigate possible effective stimulus for behavior change.

Prochaska et al. (1994)’s Stages of Change (SOC) theory proposes that behavior change occurs through a stepwise procedure of six stages as follows: *precontemplation, contemplation, preparation, action, maintenance,* and *termination.* These six SOC stages are displayed below in Table 2.4 below:

<table>
<thead>
<tr>
<th>Table 2.4: Stages of Change Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage</strong></td>
</tr>
<tr>
<td>Precontemplation</td>
</tr>
<tr>
<td>Contemplation</td>
</tr>
<tr>
<td>Preparation</td>
</tr>
<tr>
<td>Action</td>
</tr>
<tr>
<td>Maintenance</td>
</tr>
<tr>
<td>Termination</td>
</tr>
</tbody>
</table>

(Prochaska et al. 2008)

Through the six SOC stages, participants become aware of the need to change, contemplate and prepare for change, consciously make the change, and then maintain the change. Prochaska et al. (2008) explain how participants and educators may utilize the SOC framework in order to identify which “stage of change” participants are in, and then set goals to advance to other stages through changing behavior (p. 98).

A substantial amount of literature regarding the critique of the SOC exists. According to Clarke and Eves (1997), the stages of progression outlined by the SOC may be inaccurate in conceptualizing how actual behavior change occurs (p. 197). For instance, the stage system and behavioral outcomes are repetitive in their definitions (ibid). Furthermore, the intricate nature of stage assignment, analyses, and intervention
planning makes the specific framework and isolation of independent and dependent variables questionable. As such, it may be challenging to isolate the generalized aftermath of an intervention from the specific effects of SOC. However, considering the SOC Model’s particular focus on the psychology of the group moving towards change, the SOC is an appropriate model to analyze FHIS programming. In the next sub section, theoretical perspectives relating to environmental health strengthening will be examined.

2.6.2 Environmental health strengthening

Theories that support environmental health strengthening suggest that in order to empower a population to adapt healthier behaviors, a target population’s entire environment (including social, cultural, and physical components) must promote the desired health behavior change (Stokols 1996, p. 284). As such, environmental health change models consider a more comprehensive understanding of many circumstantial factors that may contribute to peoples’ motivation to develop their health behaviors (ibid). Two examples of theoretical perspectives associated with environmental health strengthening are the Determinants of Organizational Change (Dawson 1994), and Components of Analysis: Context and Processes (Pettigrew 1985).

The Determinants of Organizational Change (Dawson 1994) proposes that environmental change within an organization is influenced by three interlinked elements: politics, context, and substance (p. 385). The initial awareness of a need to change may be in response to external or internal pressures, or through a belief in the need for change to meet future demands (ibid). Once a decision to change has been made, the politics, context, and substance of a desired change dictate the direction and effectiveness of the change. They are constantly overlapping and affecting each other (Dawson 1994, p. 391).

First, the politics of change refers to the political activity involved with improving a health environment. This incorporates: discussion, deliberation, conflict, and resistance, which will occur at various levels within and outside an organization during the process of influencing change (Dawson 1994, p. 393). For example, within a school hygiene program, politics of change would include the existence of teachers’ unions, parent-teacher associations, student associations, management and coordination systems, strategic planning boards, decisions regarding budget and expenditure
allocations including the allocation for health and hygiene, and monitoring systems. Additionally, examples of exterior political activity related to school hygiene would include national and local governmental support, or community involvement.

Secondly, the context of change dynamic is key (Dawson 1994, p. 393). Like the politics of change, the contexts of change include internal and external elements. Examples of external contextual factors relating to hygiene programs in schools may include: national legislation, and cultural and social norms. Furthermore, examples of internal contextual factors related to hygiene programming in schools may include: human resources (such as the presence of a teacher responsible for teaching hygiene education, and adequate staff to supervise hygiene-related activities), administrative systems (to enforce healthy hygiene behavior of students), availability of essential commodities (such as hygiene-related infrastructure, soap, water, and toilet paper), and social and cultural practices and beliefs (such as where the hygiene commodities are provided).

Third, the substance of change is the final determinant within the interconnected layers of change. Dawson (1994, p. 394) explains the substance of change to be comprised of four determinants, which are displayed in Table 2.5, below:

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale and scope of change</td>
<td>May range from small-scale change to large-scale transformational change; distinction may also be made between levels within organization</td>
</tr>
<tr>
<td>Defining characteristics of the change program</td>
<td>Refers to both the classifications attached to change projects and the actual content of change in question</td>
</tr>
<tr>
<td>Timeframe of change</td>
<td>Period over which change occurs, from its conception until routine operation</td>
</tr>
<tr>
<td>Perceived centrality of the change</td>
<td>Whether or not change is viewed as vital to the survival of the organization</td>
</tr>
</tbody>
</table>

In the FHIS context, the enabling environment for environmental strengthening consists of the determinants described within politics of change, context of change, and the substance of change of Dawson’s (1994) *Determinants of Organizational Change*. 

(Dawson 1994, p. 394)
Accordingly, the model is a pertinent framework for examining the FHIS environment. Dawson (1994) explains that the substance of change is constantly being modified while simultaneously modifying the contextual and political elements (p. 394). For example, in relation to school hygiene programming, the introduction of new program management techniques and terminology may result in definitional confusion amongst the target population of the intervention. Furthermore, knowledge of the substance of change may become a political process because of the impact of external contextual opinions. As such, during the process of change within an organization, there is a perpetual exchange between the three dynamics. These dynamics are illustrated below in Figure 2.1.

![Figure 2.1: The Dynamics of Organizational Change](source: Adapted from Dawson (1994))

This processual approach outlined by Dawson (1994) recognizes the nature of change is complex and may be disorganized. Further, the context, substance, and politics of change incorporate unplanned and unexpected aspects that happen consequentially (ibid). As such, the Dynamics of Organizational Change model (based on the
Determinants of Organizational Change) may be flawed in its capacity to include every contributing variable. However, the model remains ideal for analyzing FHIS programming because of its structure and ability to evolve as more information is gathered.

Additionally, Pettigrew (1985) presents the *Components of Analysis: Context and Processes*, another theoretical perspective applicable to environmental health strengthening. Pettigrew categories two contributing influences on change: the *outer context*, and the *inner context* (p. 37). Similar to Dawson’s *Determinants of Organizational Change*, Pettigrew delineates the *outer context* to include: politics, social and cultural norms, and national policy; and the *inner context* to include: organizational strategy, systems management, and organizational processes (ibid). Unlike Dawson, however, Pettigrew focuses on the outer and inner contexts’ dependency on three dimensions of time: history, present and the future (Pettigrew 1985, p. 27). These relationships are depicted below in Figure 2.2.

![Figure 2.2: Components of Analysis: Context and Process](source)

Source: As explained by Pettigrew (1985)
According to Pettigrew (1985), time dictates the perspective for possible changes, and how those changes may be understood and explained (p. 1). Accordingly, present day challenges are dependent on their origins, and should consider the past and future in their continuity. As such, progression, process, and structure, are inseparable (ibid). Criticisms of theoretical perspectives involving time argue that perspectives focusing on time inevitably concentrate less on organizational variables regarding individual differences or societal variables (ibid). However, considering individual differences and societal variables are addressed within the behavioral modification theories and models introduced above, the addition of the *Components of Analysis: Context and Process* contributes the critical element of time when analyzing FHIS programming.

### 2.7 Literature review conclusion

In this literature review, theories and dynamics of “development” within the “developing world” were explored. The existence of hygiene as a pervasive challenge within developing countries was investigated. Additionally, the existence of hygiene in schools in the developing world was analyzed. Furthermore, hygiene in Fiji was reviewed, and a gap between policy and practice regarding hygiene in schools was identified. This gap inspired the research question underpinning this study. Lastly, behavior change and environmental health strengthening theoretical theories and models were reviewed, critiqued, and selected for this study.

In Chapter 3, the methodology used for this study is presented.
3.0 CHAPTER 3 - METHODOLOGY

3.1 Introduction

In Chapter 3, the methodology is presented in three sections. First, the background of the study framework is explained. Second, the study methods are presented. Third, possible limitations to the study are acknowledged.

3.2 Background on the Study Framework

The Tanahashi Health Service Coverage Model (THSC) (1978) is a framework used to assess the effectiveness coverage of a particular health service in delivering its desired effects to the people for whom it is intended (target population) (p. 297). As described by Tanahashi (1978), the effectiveness coverage of a health service is measured by the following five stepwise stages: availability, accessibility, acceptability, contact, and effectiveness (ibid). These five stages reflect the process of effective service provision, and provide space for assessing the potential capacity of a health service to deliver effective coverage. The text below highlights aspects of each of these stages:

1. **Availability coverage**: First, resources related to a health service (such as human labor, infrastructural facilities, and medicine) are necessary (Tanahashi 1978, p. 296). The availability of these resources limits the maximum capacity of the service, which concurrently dictates the amount of service that may be made available to a target population (ibid).

2. **Accessibility coverage**: Second, after the resources for a health service are available, the service capacity of the particular health service is limited by the amount of people who can reach and utilize it (Tanahashi 1978, p. 297). The accessibility coverage may be influenced by factors such as: the geographic location of the health service (distance and time needed for travel); average waiting time to receive examination by a health professional; and affordability of health care (ibid).

3. **Acceptability coverage**: Third, once the health service is made accessible, the service must be acceptable by the target population (ibid). The acceptability coverage refers to whether or not people will seek to use the health service, or
choose to search for alternative care (ibid). *Acceptability coverage* may be influenced by many factors such as: the religion of the service user, the costs of the service, and social norms surrounding the service.

4. *Contact coverage*: Fourth, after a health service is widely accepted by a target population, contact between the service provider and the user must be effective. *Contact coverage* may be represented by the ratio of people who have contacted a service compared to the target population (ibid). In the case that health interventions are one-time actions, contact coverage may be similar to the next stage, *effective coverage*.

5. *Effective coverage*: Fifth, the final stage of coverage measures the amount of the population who effectively received the health service compared to the proportion in need of the health service (ibid). For health service interventions that require ongoing treatment, effectiveness may be dependent on consistent technical capabilities, provider and patient commitment to use evidence-based treatment, and continuity of prescribed treatment and therapy (Blas and Kurup 2010, p. 42).

According to Tanahashi (1978), gaps will naturally exist between the intended effects of a health program and the target population’s understanding and utilization of the program. These gaps are illustrated through the slope of the red-dotted line in Figure 3.1 (below). The slope of the red-dotted line between each coverage stage depicts the relative magnitude of coverage loss between each stage. A more horizontal curve (as displayed between *acceptability coverage* and *contact coverage*) indicates a larger loss of effectiveness. As such, more horizontal curves draw attention to losses of efficiency in service provision, which identifies areas to be prioritized. Tanahashi (1978) refers to these areas as ‘bottlenecks’ within the health system. The blue horizontal arrow demonstrates the proportion of the target population that does not receive effective care.
A benefit to using the THSC is the ability to produce analyses and interventions focused on equity (O'Connell and Sharkey 2013, p. 20). Depending on where bottlenecks are identified, available finances, labor, and resources may be focused to address strategic areas (ibid).

### 3.2.1 Modifying the Tanahashi Method

The original THSC framework has been modified to evaluate and guide interventions for a diverse spectrum of healthcare programs. For example, the World Bank, WHO, and UNICEF modified the THSC model in order to carry out health program impact studies in collaboration with developing country governments (Knippenberg et al. 2003, p. 5). Through the development of the Marginal Budgeting for Bottlenecks (MBB) tool (2002), the THSC was modified by dividing *availability coverage* into two separate coverage stages: *availability of commodities* and *availability of human resources*. This modification was made in order to reflect a more diverse
spectrum of available data regarding health program outcomes of the economically poor in developing countries (Soucat et al. 2004). As such, an additional stage of coverage allowed an evaluation of six stages of coverage in health service provision rather than five. This modified Tanahashi model is displayed in Figure 3.2

A particular strength of the Tanahashi framework is that it may be adapted to evaluate the effectiveness of a wide range of processes (O'Connell and Sharkey 2013, p. 11). Accordingly, the domains, determinants, and indicators of the THSC have also been adapted for the evaluation of Water Sanitation and Hygiene in Schools (WinS) programs (UNICEF 2012, p. 2). Versions of the THSC framework adapted to evaluate WinS effectiveness characteristically use four subsequent stages to address behavior change. These four stages are the: Enabling Environment, Supply, Demand, and Quality, with
determinants and indicators unique to each locale. The text below highlights aspects of each of these stages:

1. **Enabling Environment:** First, the WinS *Enabling Environment* must be conducive to promoting the practice of positive hygiene behaviors (UNICEF 2013, p. 24). In studies that have utilized the THSC for WinS (Bonucci et al. 2012; Agberemi et al. 2012), the *Enabling Environment* has considered the following aspects as possible contributors to the WinS effectiveness: *social norms, legislation and policy, budget and expenditures, management and coordination,* and *monitoring.* Example measures of *social norms* may include the percentages of children practicing specific hygiene behaviors such as hand washing and face washing. Additionally, example measures of WinS *legislation and policy* may include: 1) the existence of national policy and standards concerning WinS, 2) the existence of school strategic plans that include WinS, and 3) the existence of school plans that include operation and maintenance plans for “hygiene in schools.” Furthermore, example measures regarding *budget and expenditures* may include the existence of a national budget available for WinS, and whether or not schools report a budget for hygiene programming. In addition, *management and coordination* can be gauged by the existence of a School Board or Parent-Teacher Association. Regarding *monitoring,* an example measure may be whether or not schools report to track progress concerning WinS.

2. **Supply:** Second, the WinS *Supply* stage is measured by determinants relating to the human and physical resources (UNICEF 2013, p. 24). WinS *Supply* considers the following dimensions that contribute to the effectiveness of WinS: *availability of essential commodities, and access to adequately staffed services, facilities and information.* Example measures of *availability of essential commodities* may include: 1) school access to functioning toilets, 2) school access to water, and 3) school access to hand washing facilities with soap. Additionally, example measures of *access to adequately staffed services, facilities and information* may include: 1) the existence of a school teacher
responsible for hygiene promotion, and 2) whether or not the school demonstrates hygiene in their curriculum.

3. **Demand**: Third, the Demand stage is designed to measure the demonstrated motivation of a particular school to prioritize and finance WinS program resources (UNICEF 2013, p. 24). WinS Demand may measure the following elements that contribute to the effectiveness of WinS: social and cultural practices and beliefs, and timing and continuity of use. Example measures of WinS social and cultural practices and beliefs may include 1) the consistency of access to toilet paper at school, 2) the consistency of soap provision at school, 3) the direct access to toilet paper at the toilet area at school, 4) whether or not children acknowledge the importance of hygienic behavior in their personal definition of hygiene, and 5) the whether or not schools separate toilet facilities for girls and boys.

4. **Quality**: Fourth, the Quality of a WinS program directly measures the effectiveness of the inputs for affecting hygiene behavior (UNICEF 2013, p. 24). WinS Quality may measure the Condition of hygiene program with WinS program. Example measures of WinS Condition of hygiene program may include 1) the condition of school toilets, 2) the adequacy level of toilet privacy, and 3) the level of comfort students concerning the use of toilets at school.
Versions of this WinS THSC model were used to evaluate WinS programming in Angola and Nigeria. Tables 3.1 and 3.2 below demonstrate how site-specific determinants and indicators were established in each unique setting.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enabling environment</strong></td>
<td>Social Norms</td>
<td>Percentage of schoolchildren who practice key hygiene behaviors</td>
</tr>
<tr>
<td></td>
<td>Legislation and Policy framework</td>
<td>Ministry of Education includes WinS standards and monitoring system in the child-friendly schools framework</td>
</tr>
<tr>
<td></td>
<td>Budget/Expenditures</td>
<td>Available budget for WinS</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>Availability of Essential Commodities</td>
<td>Percentage of schools with sanitation facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentage of schools with access to water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentage of hand-washing facilities with soap available in schools</td>
</tr>
<tr>
<td></td>
<td>Availability of human resources</td>
<td>Percentage of schoolteachers who received hygiene promotion training and staff trained on operation and maintenance</td>
</tr>
<tr>
<td></td>
<td>Adequate geographical coverage</td>
<td>Discrepancies in student-to-toilet ratios in schools across the country</td>
</tr>
<tr>
<td><strong>Demand</strong></td>
<td>Financial barriers</td>
<td>Percentage of schools with operation and maintenance budget</td>
</tr>
<tr>
<td></td>
<td>Sociocultural barriers</td>
<td>Percentage of schools with separate toilets for boys and girls</td>
</tr>
<tr>
<td></td>
<td>Utilization</td>
<td>Percentage of schools with cleaned/maintained toilets</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Target population’s satisfaction</td>
<td>Percentage of schools keeping operational the WASH facilities</td>
</tr>
</tbody>
</table>

Source: Bonucci et al. 2012
<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enabling environment</strong></td>
<td>Social Norms</td>
<td>Percentage of pupils who practice hand washing in schools</td>
</tr>
<tr>
<td></td>
<td>Legal framework</td>
<td>Existence of national legislation and enforcement of Water Sanitation and Hygiene (WASH) in Schools standards, including appropriate mechanism for monitoring and reporting</td>
</tr>
<tr>
<td></td>
<td>Policy framework</td>
<td>Existence and compliance with dedicated WASH in Schools policy</td>
</tr>
<tr>
<td></td>
<td>Budget</td>
<td>Sector ministries, states and/or local governments have a dedicated budget for WASH in Schools activities</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>Availability of Commodities</td>
<td>Percentage of schools with access to improved water supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentage of schools with improved sanitation facilities</td>
</tr>
<tr>
<td></td>
<td>Availability of human resources</td>
<td>Percentage of schools with trained health teachers</td>
</tr>
<tr>
<td></td>
<td>Availability of soap for hand washing</td>
<td>Percentage of schools with soap for hand washing</td>
</tr>
<tr>
<td><strong>Demand</strong></td>
<td>Availability of parent-teacher associations</td>
<td>Percentage of schools with functioning PTAs</td>
</tr>
<tr>
<td></td>
<td>Gender-segregated sanitation facilities</td>
<td>Percentage of schools with separate toilets for boys and girls</td>
</tr>
<tr>
<td></td>
<td>Functional sanitation facilities</td>
<td>Percentage of schools with functional toilets</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Hygiene practices</td>
<td>Percentage of pupils who practice hand washing in schools</td>
</tr>
</tbody>
</table>

*Source: Agberemi et al. 2012*
3.2.2 Fiji Hygiene in Schools Tanahashi Health Service Coverage Model

The domains of the modified WinS THSC model (demonstrated above in Tables 3.2 and 3.3) were used to evaluate FHIS effectiveness for this study. The researcher developed FHIS-specific determinants and indicators during the process of the first method: key informant consultations. These FHIS THSC stages, determinants, and indicators are displayed below in Table 3.3. These paradigms underpin the presentation of the findings, analyses, and discussion of this study.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling environment</td>
<td>Social Norms</td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised face washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised face washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised face washing</td>
</tr>
<tr>
<td>Legislation/Policy</td>
<td>Existence of national policy and standards regarding hygiene in schools</td>
<td>Proportion of schools with “hygiene in schools” reflected in strategic plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with a management or “operations and management” plan for “hygiene in schools”</td>
</tr>
<tr>
<td>Budget/Expenditures</td>
<td>Existence of national budget allocation available for school hygiene programming</td>
<td>Proportion of schools reporting a budget for hygiene programming</td>
</tr>
<tr>
<td>Management and Coordination</td>
<td>Existence of national standards regarding School Boards or Parent-Teacher Associations</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>Proportion of schools with functioning School Boards or Parent-Teacher Associations</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding monitoring hygiene facilities and practices in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Degree to which hygiene facilities and services are monitored</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools reporting to update FEMIS annually</td>
<td></td>
</tr>
<tr>
<td>Supply</td>
<td>Availability of Essential Commodities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness of national standards regarding hygiene facilities in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with functioning hygiene facilities on daily basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with access to water on daily basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with hand washing facilities with soap available on daily basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to Adequately Staffed Services, Facilities and Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding schools having a teacher responsible for hygiene promotion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools reporting to have a schoolteacher responsible for hygiene promotion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting to have a schoolteacher responsible for hygiene promotion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding hygiene lessons in the school curriculum</td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>Social and Cultural Practices and Beliefs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding soap and toilet paper provision in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools always providing toilet paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting that their school provides toilet paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness of national standards regarding toilet paper location in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting direct accessibility to toilet paper at the toilet area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools always providing soap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting that their school provides soap</td>
<td></td>
</tr>
<tr>
<td>Proportion of students acknowledging the importance of hygienic behavior in their definition of hygiene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existence of national standards regarding the separation of girls and boys toilets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with separate facilities for girls and boys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timing and Continuity of Use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existence of national standards regarding when students should wash their hands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of students &quot;always&quot; washing hands before meals and after using toilets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition of hygiene program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existence of national policy and standards regarding the condition of school toilets and hygiene facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with toilet and surrounding area in &quot;good condition&quot; during the visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of schools offering adequate privacy of toilets during visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of students reporting they are comfortable using the toilet at school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3 Study Methods

Three research methods were used for this research:

1. Key informant consultations with FHIS stakeholders;
2. Archival research of relevant FHIS related laws, regulations, guidelines and other published documents; and
3. Structured, face-to-face interviews with Head Teachers and students from a selection of “remote” and “urban” Nausori District schools.

These methods were carried out in three phases, and are discussed in the forthcoming subsections.

3.3.1 Key informant consultations

For the first method, a qualitative component of this research included nine key informant consultations with a sample of twenty-four FHIS stakeholders. The sampling of FHIS stakeholders was designed to include representatives from the following FHIS stakeholders: Fiji Ministry of Health (FMOH), Fiji Ministry of Education (FMOE),
Fijian Teachers Association (FTA), Fijian primary school teachers, District Education Officers, civil-society organizations (CSOs), Pacific Regional Organizations, parents of Fijian primary school students, and Fijian primary school students. A total of twenty-four persons participated in these key informant consultations. Their titles and organizations are listed below in Table 3.4.

The following activities were carried out during the focus group consultations:

1. FHIS policy and programming issues were discussed with FHIS stakeholders
2. Determinants and indicators representative of the FHIS environment were discussed in order for the researcher to create the FHIS THSC model for this study
3. Eleven FHIS stakeholders were engaged in ethnographic, open-ended interviews
4. Schools and sample populations were selected for this research

During the key informant consultations, the researcher gathered qualitative information regarding topics such as: policies, procedures, student behavior, cultural considerations, and other pertinent information the informants believed might impact FHIS effectiveness. On eleven occasions during key informant consultations, the researcher facilitated one-on-one, open-ended, ethnographic interviews. These interviews are transcribed and included in Appendices C through M.
<table>
<thead>
<tr>
<th>Title</th>
<th>Organization</th>
<th>Open ended, ethnographic interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMOH WASH Official</td>
<td>Fiji Ministry of Health</td>
<td>Yes</td>
</tr>
<tr>
<td>High-level manager</td>
<td>Fiji Ministry of Health</td>
<td></td>
</tr>
<tr>
<td>FMOE Asset Monitoring Unit Officer</td>
<td>Fiji Ministry of Education</td>
<td>Yes</td>
</tr>
<tr>
<td>FTA Senior WASH Unit Officer</td>
<td>Fijian Teachers Association</td>
<td>Yes</td>
</tr>
<tr>
<td>FTA WASH Project Officer</td>
<td>Fijian Teachers Association</td>
<td>Yes</td>
</tr>
<tr>
<td>School Teacher from a Nausori District Urban Primary School</td>
<td>Fijian Primary School</td>
<td></td>
</tr>
<tr>
<td>School Teacher from a Nausori District Rural Primary School</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
<tr>
<td>School Teacher from a Nausori District Urban Primary School</td>
<td>Fijian Primary School</td>
<td></td>
</tr>
<tr>
<td>School Teacher from a Nausori District Rural Primary School</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
<tr>
<td>Nausori District Senior Education Officer</td>
<td>Education Office, Nausori District</td>
<td></td>
</tr>
<tr>
<td>Projects Coordinator</td>
<td>Live and Learn Fiji (CSO)</td>
<td></td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>Live and Learn Fiji (CSO)</td>
<td></td>
</tr>
<tr>
<td>School Infrastructure Specialist</td>
<td>Access to Quality Education, Fiji (Australian Aid Program)</td>
<td></td>
</tr>
<tr>
<td>Engineer Facilitator</td>
<td>Access to Quality Education, Fiji (Australian Aid Program)</td>
<td></td>
</tr>
<tr>
<td>WASH Officer</td>
<td>Applied Geoscience and Technology Division of Secretariat of the Pacific Community (Regional Organization)</td>
<td></td>
</tr>
<tr>
<td>WASH in Emergencies consultant in UNICEF Pacific</td>
<td>UNICEF Pacific</td>
<td></td>
</tr>
<tr>
<td>Senior WASH Officer</td>
<td>UNICEF Pacific</td>
<td></td>
</tr>
<tr>
<td>WASH Specialist</td>
<td>UNICEF Pacific</td>
<td></td>
</tr>
<tr>
<td>Parent of a Fijian Primary School Student</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Fijian Student attending a Nausori District Rural Primary School 1</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
<tr>
<td>Fijian Student attending a Nausori District Rural Primary School 2</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
<tr>
<td>Fijian Student attending a Nausori District Urban Primary School 1</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
<tr>
<td>Fijian Student attending a Nausori District Urban Primary School 2</td>
<td>Fijian Primary School</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Key informant consultations occurred at various locations and dates between August 2014 and January 2015. The dates and locations of the key informant consultations are displayed below in Table 3.5.

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fijian Teachers Association Headquarters</td>
<td>August 13, 2014</td>
</tr>
<tr>
<td>UNICEF Pacific Office</td>
<td>August 20, 2014</td>
</tr>
<tr>
<td>FMOE Quality House</td>
<td>September 3, 2014</td>
</tr>
<tr>
<td>UNICEF Pacific</td>
<td>September 25, 2014</td>
</tr>
<tr>
<td>Fijian Teachers Association Headquarters</td>
<td>October 5, 2014</td>
</tr>
<tr>
<td>Fijian Teachers Association Headquarters</td>
<td>November 13, 2014</td>
</tr>
<tr>
<td>Fijian Teachers Association Headquarters</td>
<td>November 14, 2014</td>
</tr>
<tr>
<td>Australian Access to Quality Education Office</td>
<td>December 15, 2014</td>
</tr>
<tr>
<td>FMOH Office</td>
<td>January 6, 2015</td>
</tr>
</tbody>
</table>

Based on findings from the key informant consultations and the archival research (see 3.3.2), the researcher developed FHIS THSC determinants and indicators for this research. These FHIS THSC stages, determinants, and indicators are outlined above in Table 3.3. Additionally, eleven schools in the FMOE Nausori Education District were selected for Head Teacher surveys, and four schools were chosen from the eleven schools for student surveys. The justification for selecting the eleven schools for Head Teacher surveys was based on their close proximity to Suva, and the limited time available for the research. The justification for selecting two remote and two urban schools was to establish a foundation of data to allow further research into possible inequities in FMOE locality categorizations. These schools are listed below in Table 3.6.

Informants for the Head Teacher survey included the Head Teachers of each participating school. Student informants were selected using a quota sampling method. In total, twelve students from each school were selected to participate in the survey. Teachers selected one male and one female from classes 1-3, 4-6, and 7-8. Table 3.7 demonstrates student class levels and the corresponding age of students.
### Table 3.6: Case Study Schools

<table>
<thead>
<tr>
<th>School Name</th>
<th>Participated in Head Teacher survey</th>
<th>Participated in Student survey</th>
<th>Locality Description (Based on FEMIS Data 2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Naqia SDA Primary School</td>
<td>Yes</td>
<td></td>
<td>Remote</td>
</tr>
<tr>
<td>2 Nasautoka District School</td>
<td>Yes</td>
<td>Yes</td>
<td>Remote</td>
</tr>
<tr>
<td>3 Davuilevu Methodist school</td>
<td>Yes</td>
<td>Yes</td>
<td>Urban (Town)</td>
</tr>
<tr>
<td>4 Narere Primary School</td>
<td>Yes</td>
<td></td>
<td>Urban (Peri-urban)</td>
</tr>
<tr>
<td>5 Dakuivuna Village School</td>
<td>Yes</td>
<td>Yes</td>
<td>Remote</td>
</tr>
<tr>
<td>6 Naivicula district school</td>
<td>Yes</td>
<td></td>
<td>Remote</td>
</tr>
<tr>
<td>7 Ratu Sauvoli Memorial Primary School</td>
<td>Yes</td>
<td></td>
<td>Remote</td>
</tr>
<tr>
<td>8 Nakelo District School</td>
<td>Yes</td>
<td></td>
<td>Urban (City Suburban)</td>
</tr>
<tr>
<td>9 Nausori Primary School</td>
<td>Yes</td>
<td>Yes</td>
<td>Urban (Town)</td>
</tr>
<tr>
<td>10 Vugalei district school</td>
<td>Yes</td>
<td></td>
<td>Very Remote</td>
</tr>
<tr>
<td>11 Nailagotabua primary school</td>
<td>Yes</td>
<td></td>
<td>Remote</td>
</tr>
</tbody>
</table>

### Table 3.7: Ages of students within Fiji Primary School grade levels

<table>
<thead>
<tr>
<th>Primary School Class</th>
<th>Age of Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>6 years old</td>
</tr>
<tr>
<td>Class 2</td>
<td>7 years old</td>
</tr>
<tr>
<td>Class 3</td>
<td>8 years old</td>
</tr>
<tr>
<td>Class 4</td>
<td>9 years old</td>
</tr>
<tr>
<td>Class 5</td>
<td>10 years old</td>
</tr>
<tr>
<td>Class 6</td>
<td>11 years old</td>
</tr>
<tr>
<td>Class 7</td>
<td>12 years old</td>
</tr>
<tr>
<td>Class 8</td>
<td>13 years old</td>
</tr>
</tbody>
</table>
3.3.2 Archival research

The second method utilized in this research was archival research of FHIS related laws, regulations, guidelines and other published documents in order to identify text within the publications addressing FHIS THSC determinants. The search strategy used to identify relevant FHIS publications included the following procedures:

1. A policy document search on the FMOE and FMOH websites
2. Contacting the FMOE, FMOH and the FTA to request access to published primary school curriculum, published government memos and the national education database: the Fiji Education Information Management System (FEMIS)

The Fiji Education Act (Cap 262) and Fiji Public Health Act (Cap 111) were both found online via the FMOE and FMOH websites. The FMOE Asset Management Unit (AMU) provided the researcher a hard copy of the Fiji Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d) and granted the researcher access to Fiji Education Information Management System (FEMIS). The FTA provided a digital version of the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012) and an Instructional Memo written by the Permanent Secretary for Education (FMOE 2013).

3.3.3 Structured, face-to-face surveys

The third method used for this research was structured, face-to-face surveys. The objective of this method was to collect qualitative and quantitative data regarding FHIS in schools from the perspectives of Head Teachers and students. The surveys were carried out in four steps:

1. The creation of two surveys designed to investigate FHIS THSC stages: one for Head Teachers, and one for students.
2. Training of ten FHIS stakeholders on the use of Akvo digital data gathering and management software
3. Survey administration of Head Teacher survey and Student surveys
4. Data organization
The Head Teacher and Student surveys were created using Akvo digital data gathering and management software. Akvo is a software application that allows data to be gathered, analyzed, and shared. In order to use Akvo software, the following resources are necessary:

1) A computer with internet access
2) A phone with the ability to operate the following functions:
   a) Mobile phone software applications
   b) The internet
   c) Global Positioning System (GPS) services
   d) A camera
   e) Touchscreen interface

The process of using Akvo consists of six steps. First, a digital survey is created on the Akvo website (dashboard). Second, the survey may be sent to, and be accessed from, smart phones with the Akvo mobile phone application. The mobile phone application allows data enumerators to use mobile phones for inputting responses to survey questions by using the touchscreen. Third, survey responses are immediately sent to the online dashboard via GPS signal. Fourth, data is available to be viewed according to organizational categories delineated during survey design. Fifth, data is downloaded to a computer and analyzed. Sixth, the data may be uploaded and shared via the Akvo website.

Governments and international development agencies have started to use Akvo in order to monitor, evaluate, and report on hygiene programs in schools. For example, in Vanuatu, the Department of Geology, Mines and Water Resources (DGMWR) is using Akvo software to track progress on national water sanitation and hygiene (WASH) indicators (Acharya 2014, p. 1). Figure 3.3 below demonstrates an Akvo map created from indicators regarding “type of water point,” “functionality of public water points,” and “water point ownership” in a Vanuatu case (Spierings 2015).
The motivation to use Akvo in order to examine FHIS programming was its ability to record baseline data regarding the effectiveness of FHIS determinants and indicators in a sample of schools. This would allow FHIS stakeholders to continue using the technology in order to monitor and evaluate FHIS development in the schools over time, and possibly expand the technology to monitor and evaluate FHIS in more schools in the FMOE Nausori District, and throughout Fiji. Through monitoring and evaluating FHIS progress, depending on where bottlenecks occur, available finances, labor, and resources may be focused to address strategic areas.

For the second step in this method, during the week of January 26 through January 30, 2015, the researcher trained a team of ten FHIS stakeholder representatives from organizations such as the FMOE, FMOH, FTA, and civil society organizations.
(CSOs) on how to gather data by using Akvo on a smart phone. The titles of FHIS stakeholders that participated in the data gathering are listed below in Table 3.8, along with their respective organizations. Prior to visiting schools for survey administration, the researcher facilitated a research ethics discussion with the FHIS stakeholders at the Suva Business Center on January 28, 2015.

<table>
<thead>
<tr>
<th>Title</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASH officer</td>
<td>Fiji Ministry of Health</td>
</tr>
<tr>
<td>High-level manager</td>
<td>Fiji Ministry of Health</td>
</tr>
<tr>
<td>Asset Monitoring Unit Officer</td>
<td>Fiji Ministry of Education</td>
</tr>
<tr>
<td>Senior WASH Unit Officer</td>
<td>Fijian Teachers Association</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Live and Learn Environmental Education (CSO)</td>
</tr>
<tr>
<td>Project engineer</td>
<td>Rotary Pacific Water for Life (CSO)</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Adventist Disaster Relief Agency (CSO)</td>
</tr>
<tr>
<td>Program Manager</td>
<td>Project Heaven (CSO)</td>
</tr>
<tr>
<td>Project Engineer</td>
<td>Habitat for Humanity (CSO)</td>
</tr>
<tr>
<td>Disaster Management Officer</td>
<td>Fiji Red Cross (CSO)</td>
</tr>
</tbody>
</table>

In the third stage of this method, qualitative and quantitative data regarding the FHSC THSC stages were gathered through the structured, face-to-face surveys with Head Teachers and students from a selection of “remote” and “urban” Nausori District schools. Head Teacher surveys were administered on January 28, 2015. All Head Teachers gave written consent to participate in the survey and to be anonymously recorded. Refer to Appendix A for a copy of the Head Teacher survey questions.

Student surveys were administered on April 22, and 23, 2015. During survey administration with children in grades 1-3 (6-8 years of age), an FMOH translator fluent in both Hindi and the indigenous Fijian language (iTaukei) asked survey questions in the
first languages of the students (Hindi or iTaukei). All Head Teachers gave written consent for students to participate in the survey and to be anonymously recorded.

In the fourth stage of this method, once surveys were completed, the researcher retrieved the data from the Akvo online platform, transferred the data to Microsoft Excel, and organized the data into nine spreadsheets: Head Teacher Surveys, Student Surveys, Head Teacher (HT) Bottleneck Analysis, Bottleneck Figures, Student Survey Remote Schools, Student Survey Urban Schools, Bottleneck Analysis for Remote versus Urban Schools, Urban versus Remote Figures, and Comparative Analysis.

In the Head Teacher Bottleneck analysis and Bottleneck Analysis for Remote versus Urban Schools spreadsheets, percentage assessments for FHIS indicators were calculated by measuring either the proportion of the informant population’s responses to a particular question or by the data enumerator’s documented observations. Thereafter, assessments of FHIS indicators were coded in correspondence with the FHIS THSC Indicator Assessment Categorizations, as outlined below in Table 3.9. This would ultimately lead to the decisions of which determinants were bottlenecks. There is no specific justification for the Indicator Assessment Categorizations; rather, the researcher created them for the purpose of providing guidelines and enhancing operational ease of the evaluations. Similar color-coding categorizations systems were used in THSC applications in WinS program evaluations in Angola (Bonucci et al. 2012) and Nigeria (Agberemi et al. 2012). The and symbols serve to indicate the existence of policy or legislation regarding a particular indicator, as explained below in Table 3.9.
Table 3.9: FHIS THSC Indicator Assessment Categorizations

<table>
<thead>
<tr>
<th>Code Categorization</th>
<th>Assessment</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>76-100%</td>
<td>Indicator is presently satisfactory; however, hygiene-related interventions may still affect school populations positively.</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-75%</td>
<td>Interventions should be prioritized to target this indicator. Although the indicator may not be as critical as an indicator highlighted in red, a yellow indicator may be a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
<tr>
<td>Red</td>
<td>0-50%</td>
<td>Immediate interventions should be prioritized to target this indicator. This indicator is most likely a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy/legislation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Policy/legislation exists</td>
</tr>
<tr>
<td>No</td>
<td>Policy/legislation does not exist</td>
</tr>
</tbody>
</table>

3.4 Limitations

As explained above, the schools surveyed were not randomly chosen, and they were selected from only one education district of Fiji. Therefore, it is difficult to generalize the applicability of the findings of this study for the primary schools in the FMOE Nausori education district and for the entire primary schools of Fiji. However, the author’s consultations with FMOE and FMOH Officials and other FHIS stakeholders indicate that the study manages to address typical Water Sanitation and Hygiene issues prevalent in many primary schools in Fiji.

Another limitation of this study was the lack of complete randomization during the selection process of students. Researcher observations recorded that in some cases, teachers purposely selected students wearing “Prefect” badge. It is assumed the teachers selected these students because they were the best students to answer questions effectively and also would give answers that reflected positively of school hygiene programming. This may have introduced some bias to the survey.
4.0 CHAPTER 4 - RESULTS

4.1 Introduction

In Chapter 4, the results of this investigation are presented in three sections. First, the research design and the study methods are recounted. Secondly, the study results are presented in accordance with the Fiji Hygiene in Schools (FHIS) Tanahashi Health Service Coverage Model (THSC). Third, identified bottlenecks are outlined.

4.2 Research process review

As stated in Chapter 2, this research was designed to identify possible impediments (bottlenecks) in Fiji Hygiene in Schools (FHIS) effectiveness. A modified a WASH in Schools (WinS) Tanahashi Service Health Service Coverage Model (THSC) was adapted for the FHIS setting and serves as the framework for this study. The FHIS THSC uses the following four stages consisting of FHIS-specific determinants and indicators in order to evaluate and address behavior change: Enabling Environment, Supply, Demand, and Quality.

Three methods were used to conduct this study:

1. Key informant consultations with FHIS stakeholders;
2. Archival research of relevant FHIS related laws, regulations, guidelines and other published documents; and
3. Structured, face-to face surveys with Head Teachers and students from a selection of “remote” and “urban” Nausori District schools

These methods were carried out in three phases. In phase one, the researcher arranged nine key informant consultations with a sample of twenty-four FHIS stakeholders in order to discuss the FHIS policy and programming issues in the FHIS environment, engage FHIS stakeholders in open-ended, ethnographic interviews, establish FHIS determinants and indicators in order to create the FHIS THSC model for this study, and select schools and sample populations for this study. The sampling of FHIS stakeholders was designed to include representatives from the Fiji Ministry of Health (FMOH), Fiji Ministry of Education (FMOE), Fijian Teachers Association (FTA), primary school teachers, District Education Officers, civil-society organizations
(CSOs), Pacific Regional Organizations, parents of Fijian primary school students, and Fijian primary school students.

During the key informant consultations, the researcher gathered qualitative information regarding topics such as: policies, procedures, student behavior, cultural considerations, and other pertinent information the informants believed might impact FHIS effectiveness. On eleven occasions during key informant consultations, the researcher facilitated open-ended, ethnographic interviews with FHIS stakeholders. These interviews are transcribed and included in Appendices C through M. Additionally, eleven schools in the FMOE Nausori Education District were selected for Head Teacher surveys, and four schools were chosen from the eleven schools for student surveys. The justification for selecting the eleven schools for Head Teacher surveys was based on their close proximity to Suva, and the limited time available for the research. The rationale for selecting two remote and two urban schools was to establish a foundation of data to allow further research into the possible inequities in FMOE locality categorizations. Informants for the Head Teacher surveys included the Head Teachers of each participating school. A quota sampling method was used in order to select student informants for surveys. In total, twelve students from each school were selected by teachers to participate in the survey by using the following criteria: one male and one female from classes 1-3, 4-6, and 7-8.

The researcher used the information gathered from the key informant consultations to develop determinants and indicators distinctly for the FHIS THSC domains: **Enabling Environment, Supply, Demand, and Quality**. Thereafter, the researcher created two separate surveys designed to gather information regarding FHIS determinants and indicators: one survey for Head Teachers, and one survey for students. These surveys were used in phase three (explained below).

In phase two, the researcher employed an archival review in order to examine how FHIS related laws, regulations, guidelines, and other published documents address FHIS THSC determinants. FHIS related laws, regulations, guidelines, and other published documents were identified using the following procedures:
1. A policy document search on the FMOE and FMOH websites

2. Contacting the FMOE, FMOH and the FTA to request access to the published primary school curriculum, published government memos, and the national education database: the Fiji Education Information Management System (FEMIS)

Copies of the *Fiji Education Act (Cap 262)* and *Fiji Public Health Act (Cap 111)* were accessed via the FMOE and FMOH websites, respectively. The FMOE Asset Management Unit (AMU) provided the researcher a hard copy of the Fiji *Healthy Living Syllabi* (FMOE 2015b; FMOE 2015c; FMOE 2015d) and granted the researcher access to Fiji Education Information Management System (FEMIS). The FTA provided the researcher a digital version of the *Minimum Standards for WASH in Schools Infrastructure* (FMOE 2012) and an Instructional Memo written by the Permanent Secretary for Education (FMOE 2013).

In phase three, structured, face-to-face interviews were carried out in four steps. First, the researcher designed two separate surveys in order to investigate FHIS THSC stages from two different perspectives: one survey for Head Teachers, and one survey for students. Second, the researcher trained ten FHIS stakeholders on how to utilize Akvo digital data management software in order to administer surveys via a mobile phone (see Subsection 3.3.2 for details of the system and software). Third, Head Teacher surveys were administered on January 28, 2015, and student surveys were administered on April 22, and 23, 2015. Fourth, after all surveys were completed, the researcher retrieved the data from the Akvo online platform and organized the data within nine Microsoft Excel spreadsheets: *Head Teacher Surveys, Student Surveys, Head Teacher (HT) Bottleneck Analysis, Bottleneck Figures, Student Survey Remote Schools, Student Survey Urban Schools, Bottleneck Analysis for Remote versus Urban Schools, Urban versus Remote Figures, and Comparative Analysis*.

In the *Head Teacher Bottleneck analysis* and *Bottleneck Analysis for Remote versus Urban Schools* spreadsheets, percentage assessments for FHIS indicators were calculated by either measuring the proportion of the informant population’s responses to a particular question or by the enumerator’s documented observations. Thereafter, assessments of FHIS indicators were coded in correspondence with the FHIS THSC
Indicator Assessment Categorizations (refer to Table 3.9), which would ultimately lead to the decisions of which determinants were bottlenecks.

4.3 Study results

Study results were determined by:

1. Key informant consultations with FHIS stakeholders designed to discuss FHIS policy and programming issues through group discussions and open-ended, ethnographic interviews;
2. A comprehensive examination of relevant FHIS related laws, regulations, guidelines and other published documents in order to identify text addressing FHIS determinants; and
3. Percentage assessments of FHIS indicators calculated by measuring either the responses from Head Teachers and students or by enumerator observations documented during school visits.

In the following subsections, study results are presented in accordance with the structural framework of the Fiji Hygiene in Schools (FHIS) Tanahashi Health Service Coverage Model (THSC): Enabling Environment, Supply, Demand, and then Quality. For each FHIS stage, the presentation of results is introduced with a review of the FHIS determinants used to investigate the effectiveness of each stage. Subsequently, a table is presented displaying the determinants for each FHIS stage, the chosen indicators used to gauge the effectiveness of each determinant, the sources from which the data was retrieved, and an assessment of each investigated measure based on the FHIS THSC Indicator Assessment Categorizations as explained in Table 3.9 (reproduced below to explain the code assignments). Thereafter, narratives regarding the data gathered are presented in accordance with the sequence of methods: key informant consultations, the archival research, and structured, face-to-face surveys. Lastly, bottlenecks are identified.
Table 3.9: FHIS THSC Indicator Assessment Categorizations

<table>
<thead>
<tr>
<th>Code Categorization</th>
<th>Assessment</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>76-100%</td>
<td>Indicator is presently satisfactory; however, hygiene-related interventions may still affect school populations positively.</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-75%</td>
<td>Interventions should be prioritized to target this indicator. Although the indicator may not be as critical as an indicator highlighted in red, a yellow indicator may be a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
<tr>
<td>Red</td>
<td>0-50%</td>
<td>Immediate interventions should be prioritized to target this indicator. This indicator is most likely a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Policy/legislation exists</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Policy/legislation does not exist</td>
</tr>
</tbody>
</table>

4.3.1 Enabling environment effectiveness

In order to determine the degree to which the Enabling Environment of a particular school hygiene program achieves its objectives, FHIS programming was investigated along five areas of focus (i.e. determinants): Social Norms, Legislation and Policy, Budget and Expenditures, Management and Coordination, and Monitoring. Table 4.1 below displays the FHIS Enabling Environment determinants, FHIS Enabling Environment indicators used to gauge the effectiveness of each determinant, the sources from which the data was retrieved, and an assessment of each investigated measure. The assessments are coded according to the FHIS THSC Indicator Assessment Categorizations (refer to table 3.9), which is the system used in this research to classify substandard determinants as bottlenecks.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>FHIS Indicators</th>
<th>Source</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling environment</td>
<td>Social Norms</td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised hand washing</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised hand washing</td>
<td>Head Teacher Survey</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised hand washing</td>
<td>Student Survey</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised face washing</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised face washing</td>
<td>Head Teacher Survey</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised face washing</td>
<td>Student Survey</td>
<td>48%</td>
</tr>
<tr>
<td>Legislation/Policy</td>
<td>Existence of national policy and standards regarding hygiene in schools</td>
<td></td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with “hygiene in schools” reflected in strategic plans</td>
<td>Head Teacher Survey</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with a management or “operations and management” plan</td>
<td>Head Teacher Survey</td>
<td>27%</td>
</tr>
</tbody>
</table>
In order to assess *Social Norms*, the following six indicators were used:

1. Awareness of national policy and standards regarding schools practicing daily supervised hand washing
2. Proportion of schools participating in daily, supervised hand washing
3. Proportion of students participating in daily supervised hand washing
4. Awareness of national policy and standards regarding schools practicing daily supervised face washing

<table>
<thead>
<tr>
<th>Component</th>
<th>Indicators</th>
<th>Source</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Budget/Expenditures</strong></td>
<td>Existence of national budget allocation available for school hygiene programming</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools reporting a budget for hygiene programming</td>
<td>Head Teacher Survey</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Management and Coordination</strong></td>
<td>Existence of national standards regarding School Boards or Parent-Teacher Associations</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with functioning School Boards or Parent-Teacher Associations</td>
<td>Head Teacher Survey</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding monitoring hygiene facilities and practices in schools</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Degree to which hygiene facilities and services are monitored</td>
<td>Head Teacher Survey</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools reporting to update FEMIS annually</td>
<td>Head Teacher Survey</td>
<td>91%</td>
</tr>
</tbody>
</table>
5. Proportion of schools participating in daily supervised face washing
6. Proportion of students participating in daily supervised face washing

Qualitative data regarding these indicators were gathered using the key informant consultations and archival research methods. Additionally, quantitative data were collected via the Head Teacher and Student surveys.

Key informant consultations provided insight into the practice of daily, supervised hand and face washing at schools. Various perspectives were shared by FHIS stakeholders, including: the Senior WASH Officer of the Fijian Teachers Association, one school teacher from a Nausori District remote school, one school teacher from a Nausori District urban school, two Fijian students attending a Nausori District remote primary school, and two Fijian students attending a Nausori District urban primary school.

During an interview with the FTA Senior WASH Unit Officer, he explained,

“All schools should be practicing daily, supervised hand washing. Each teacher should take time every day to ensure children are washing their hands with soap before and after meals, and after using the toilet. In terms of face washing...some schools are practicing this, but not all of them. Schools should incorporate face washing to reduce trachoma (FTA Senior WASH Unit Officer 2014).”

Specifically in regard to face washing, an interview with a school teacher from a Nausori District remote school spoke about significant changes after the introduction of supervised face washing into the school’s daily routine,

“Project Heaven [a non-governmental organization] worked with our school and the community through a face washing program in 2013. Since then, we have been washing our faces at school at least one time per day. Now [in 2015], we have very little cases of trachoma in our school (School Teacher from a Nausori District Remote Primary School 2015).”
However, an interview with a school teacher from an urban school in the Nausori District revealed that face washing was not common practice during school days,

“No...there’s not time for face washing at school...teachers are too busy with everything else” (School Teacher from a Nausori District Urban Primary School 2015).

From the perspective of the students interviewed, experiences regarding the practice of daily, supervised face washing echoed those of the teachers at remote and urban schools, respectively. For example, students attending remote primary schools in the Nausori District responded to a question regarding how many times children wash their face per day as follows,

“Twice each day...we wash our face after washing our hands...before lunch. And, after brushing our teeth...after lunch” (Fijian Student attending a Nausori District Remote Primary School 2 2014).

Another student attending a Nausori District Remote school concurred,

“We wash our face and hands at the same time. Before lunch and after [lunch]” (Fijian Student attending a Nausori District Remote Primary School 1 2014).

In contrast, the students interviewed attending an urban school in the Nausori District replied, “We do not” when asked whether or not they practiced daily, supervised face washing (Fijian Student attending a Nausori District Urban Primary School 1 2014; Fijian Student attending a Nausori District Urban Primary School 2 2014).

Regarding hand washing, the same school teachers and students whom were interviewed answered “Yes” when asked if students practiced daily, supervised hand washing at their schools (School Teacher from a Nausori District Urban Primary School 2015; School Teacher from a Nausori District Remote Primary School 2015; Fijian
Student attending a Nausori District Urban Primary School 1 2014; Fijian Student attending a Nausori District Urban Primary School 2 2014; Fijian Student attending a Nausori District Remote Primary School 2 2014; Fijian Student attending a Nausori District Remote Primary School 1 2014). Furthermore, the school teachers and students explained that hand washing was practiced every day before and after lunch (ibid). For example, one student attending an urban school in the Nausori District explained,

“We go to lunch. We wash our hands with soaps before. After, we wash our hands too (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

A school teacher from a Nausori District remote primary school described the daily routine for washing hands before and after lunch,

“...My students form a line before going to lunch. Before entering the dining hall, my students wash their hands with soaps at the sink...however, sometimes soaps are not provided so we only use water (School Teacher from a Nausori District Remote Primary School 2015).”

The archival research method provided further information regarding the practice of daily, supervised hand and face washing. In the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012), section 3.2.1 states schools are required to offer adequate access to water for hand washing, body washing, cleaning of schools, and compounds (p. 15). Additionally, in the Health Living Syllabi (HLS), section 3.4.1 Personal hygiene and sanitation emphasizes the importance of hand washing,

“Wash hands after visiting the toilet (FMOE 2015b, p. 12).”

Structured, face-to-face surveys administered to eleven Head Teachers and forty-eight students also provided quantitative data regarding the practice of daily, supervised hand and face washing. 82% of Head Teachers reported that hand washing is
a supervised activity at school. 94% of students surveyed answered “yes” to the question regarding whether or not they washed their hands with soap at school every day under supervision.

Regarding face washing, the proportion of schools participating in daily, supervised face washing exhibited low percentages. About half of the Head Teachers surveyed (55%) reported that face washing was a school-wide supervised activity. Furthermore, less than half of the students surveyed (48%) indicated that face washing was a daily, supervised activity. These percentages are displayed below in Figure 4.1.

As explained by the FHIS Indicator Assessment Categorizations chart (refer to Table 3.9), 55% and 48% assessment scores is evidence that the particular indicator may be a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at school. Specifically regarding face washing, a 55% percentage assessment mark may be correlated to the presence of trachoma within surveyed school’s populations. As such, *Social Norms* is identified as a bottleneck.
In order to evaluate *Legislation and Policy*, the following three indicators were used:

1. Existence of national policy and standards regarding hygiene in schools
2. Proportion of schools with "hygiene in schools" reflected in strategic plans
3. Proportion of schools with a management or “operations and management” plan for “hygiene in schools”

Qualitative data concerning these indicators were gathered using the key informant consultations and archival research methods. In addition, quantitative data were accumulated by the Head Teacher and Student surveys.

During key informant consultations, the following FHIS stakeholders were communicative to acknowledge or deny the inclusion of “hygiene in schools” in school strategic, management, and/or operational plans: two school teachers, a parent of a Fijian primary school, and an FMOH WASH Official.

One school teacher from an urban primary school in the Nausori District gave the following response when asked if “hygiene in schools” was included in the school strategic plan,

“No. We follow the strategic plan goals set by the Ministry of Health [FMOH]. A Ministry of Health Team came to the school to inform us...We want to reduce the rate of scabies in schools (School Teacher from a Nausori District Urban Primary School 2015).”

At the same time, one school teacher from a remote school in the Nausori District answered “No” to the same question.

A parent of a Fijian primary school student expressed her doubt when asked if her child’s school had a hygiene management or operations and maintenance plan for hygiene in schools,

“I doubt it. If so, the washrooms would be clean. They’d be inspected on a daily basis. My daughter says the state of the toilet at school is dirty,
and she does not feel comfortable using the toilet at all. Toilets are supposed to be cleaned regularly, but they are not. This is a major issue for us parents. I have raised the concern with the school committee, but my daughter has not reported any change (Parent of Fijian Primary School Student 2015).”

An FMOH WASH Official explained the incorporation of strategic, management, and/or operational plans as follows:

“Strategic plans are designed by school administration to outline school goals, focus efforts and resources, and streamline operations...One of the issues is prioritization of hygiene in schools within management plans. Schools should refer to the Minimum Standards for WASH in Schools when designing their strategic plans. At the same time, the FMOH and FMOE should increase the capacity of the committees and management of schools so they may prioritize hygiene. Schools are becoming more aware of the prioritization of health and health education by the FMOH and FMOE, but the change will take time (FMOH WASH Official 2015).”

The archival research uncovered information within the following three documents: the Fiji Public Health Act (Cap 111), the Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d), and the Minimum Standards for Water Sanitation and Hygiene (WASH) in Schools Infrastructure (FMOE 2012).

In the Fiji Public Health Act, the responsibility of the Permanent Secretary to appoint persons to the Board of Health is explained (Act 3-16), which demonstrates potential to more effectively include “hygiene in schools” in strategic, management, and operational plans. For instance, the text describes the appointed Board of Health has the power to oversee medical officers and direct specific functions and duties (Act 3-16). These functions and duties could be related to hygiene.
Section 4.3.1 of the Healthy Living Syllabi states schools should “Develop strategies of preventing and controlling non-communicable diseases (FMOE 2015c, p. 6).” As such, it would be logical for schools to develop strategic, management, and operational plans.

The Minimum Standards for Water Sanitation and Hygiene (WASH) in Schools Infrastructure (FMOE 2012) revealed one finding: In the “Assessment Checklist” the following question regarding a management and operational plan is asks,

“Is there a cleaning and maintenance plan? (p. 9)"

Structured, face-to-face surveys administered to eleven Head Teachers and forty-eight students provided quantitative data regarding the inclusion of “hygiene in schools” in school strategic, management, and/or operational plans. 55% of the Head Teachers surveyed reported to include the topic of hygiene within key documents for school such as their strategic plan, which suggests room for improvement. Furthermore, a smaller percentage (27%) of the Head Teachers surveyed indicated their school has policy guidelines relating to hygienic concerns. As such, Legislation and Policy is identified as bottleneck. Figure 4.2 below demonstrates the lack of FHIS service provision efficiency regarding Legislation and Policy.
The levels of significance for each of these percentage assessments suggest this determinant is in serious need of intervention (refer to Table 3.9). Although the archival research confirmed there is an existence of national policy and standards regarding hygiene in schools, a 55% assessment score regarding proportion of schools with “hygiene in schools” reflected in their strategic plans shows a lack of prioritization for FHIS in schools, which most likely contributes to the existence of hygiene-related diseases. Furthermore, a 27% assessment concerning proportion of schools with a management or operations and maintenance plan indicates very low prioritization of operations and maintenance for hygiene in schools, which also most likely contributes to the existence of hygiene-related diseases.

In order to gauge the effectiveness of Budget and Expenditures, the following two indicators were used:

1. Existence of national budget allocation available for school hygiene programming
2. Proportion of schools reporting a budget for hygiene programming

Qualitative data regarding these two indicators were collected using the key informant consultations and archival research methods. Additionally, quantitative data were gathered via the Head Teacher and Student surveys.

Throughout key informant consultations, a lack of prioritization for hygiene-related infrastructure, activities, and consumables within school budgets was evident during ethnographic, open-ended interviews with five FHIS stakeholders. Perspectives were shared by an FMOH WASH Official, a school teacher from a remote primary school in the Nausori District, a school teacher from an urban primary school in the Nausori District, and a parent of a Fijian primary school student.

During an interview with an FMOH WASH Official, he explained how the FMOH allocates funds to schools for hygiene, education and facilities and maintenance,

“Money allocated for hygiene education and facilities and maintenance is included in National Public Health funding. There is no specific allocation for hygiene education and facilities and maintenance. Currently, for example, for Water Sanitation and Hygiene funding falls
under National Public Health funding. From the Public Health Funding, the money is further separated under different departmental funding categories like oral health, environmental health, physical health, and nursing. Therefore, in order to align our funding with our prioritizations, we should include water sanitation and hygiene in our departmental funding (FMOH WASH Official 2015).”

The FMOH WASH Official also proposed a solution for cases where schools are not emphasizing hygiene within school budgets,

“...Regarding the school grant money given to every school annually, the twenty percent outlined for “building and compound maintenance” may be used on expenditures such hygiene-related infrastructure including toilets, sinks, and hygienic cleaning materials (FMOH WASH Official 2015).”

When two school teachers from the Nausori District were asked whether or not a budget line for hygiene is included within their school budget, one school teacher replied, “I don’t know (School Teacher from a Nausori District Remote Primary School 2015).” The other teacher replied “No (School Teacher from a Nausori District Urban Primary School 2015.).”

One parent of a Fijian primary school explained she was uninformed about a specific budget for hygiene in schools. However, she offered an opinion on the topic,

“Hygiene may not be specifically mentioned, but there could be more spent on it. They [the school] do provide toilet paper, but no hand washing soap (Parent of Fijian Primary School Student 2015).”

The archival research provided useful information regarding the available national budget for school hygiene programming. According to an Instructional Memo (FMOE 2013) sent by the Permanent Secretary for Education addressed to Fijian School
Managers, Head Teachers and Principals, every school in Fiji was apportioned 250 FJD per child in 2014, and should receive the same amount per child annually (p. 2). Of the 250 FJD, twenty percent of the funding should be used for “building and compound maintenance” (FMOE 2013, p. 3), which, as explained by an FMOH WASH Official during key informant consultations, could be used on hygiene-related infrastructure and consumables such as soap and detergent.

The structured, face-to-face surveys administered to eleven Head Teachers provided quantitative data regarding the inclusion of hygiene within school budgets. Only one of the eleven schools surveyed (9%) reported to include hygiene in their budget. In accordance with the FHIS Indicator Assessment Categorizations chart (refer to Table 3.9), a 9% percentage assessment score signifies a large impediment factor to the effectiveness of the FHIS program, and should immediately be prioritized for an intervention. As such, the Budget and Expenditures determinant is highlighted as a bottleneck.

A probable reason hygiene is not included in school budgets is because school teachers may be unaware of the opportunity to include budgeting for hygienic materials and maintenance within the “building and compound” expenditures, as explained by the FMOH WASH Official (2015). The schools surveyed might have spent a portion of allocated funds for FHIS, but there is a lack of clear guidelines requiring schools to record and report this fact.

In order to examine the effectiveness of Management and Coordination, the following indicators were used:

1. Existence of national policy and standards regarding School Boards or Parent-Teacher Associations
2. Proportion of schools with functioning School Boards or Parent-Teacher Associations

Qualitative data were sought using two methods: key informant consultations and archival research. In addition, quantitative data were collected by the Head Teacher and Student surveys.

During key informant consultations, the following FHIS stakeholders offered their perspectives regarding School Boards or Parent-Teacher Associations through
ethnographic, open-ended interviews: an FTA WASH Project Officer, two school teachers, and one Parent of a Fijian primary school student.

According to an FTA WASH Project Officer, the hygiene behaviors practiced by students may be affected by the involvement of Parent-Teacher Associations at schools,

“Washing hands and faces are behaviors that must be practiced at home in order for children to practice them at school every day. Hygienic behaviors need to be taught by children’s parents as much as they need to be taught by teachers at school. We [The FTA] encourage schools to engage parents through Parent-Teacher Associations, Mothers Clubs, or school hygiene or health committees to focus on WASH (water sanitation and hygiene) when planning. The more parents can work with the schools on influencing their children’s hygienic behaviors, the better (FTA WASH Project Officer 2014).”

Two school teachers shared their experiences with School Boards or Parent Teacher Associations at schools. One School Teacher from a remote school in the Nausori District explained,

“We have a Mother’s Club at our school. They prepare lunch for students...help in fundraising...help plan social events and cater as well. They help in preparation for school sport events. [They are] also an avenue for teachers and mothers to meet and talk about students and school things (School Teacher from a Nausori District Remote Primary School 2015).”
Additionally, a school teacher from an urban school in the Nausori District provided more information,

“Parents and teachers work together through the PTA...the parents can sell food and raise money for the school ...(School Teacher from a Nausori District Urban Primary School 2015).”

One parent from of a primary school student explained,

“The PTA meets once every month. The parents and teachers discuss fund raising mostly (Parent of Fijian Primary School Student 2015).”

The archival research was unsuccessful in gathering qualitative data for this indicator. However, structured, face-to-face surveys provided quantitative data. When eleven Head Teachers were asked if their schools had a functioning School Board or a Parent-Teacher Association, six (55%) said yes. In accordance with the in the FHIS Indicator Assessment Categorizations chart (refer to Table 3.9), a 55% percentage assessment score indicates that an intervention should be prioritized because the particular indicator may be a significant contributing factor to the prevalence of all hygiene-related diseases and sicknesses within populations present at schools. As such, Management and Coordination is another Enabling Environment determinant identified as a bottleneck.

In order to assess Monitoring, the following indicators were used:

1. Existence of national policy and standards regarding monitoring hygiene facilities and practices in schools
2. Degree to which hygiene facilities and services are monitored
3. Proportion of schools reporting to update Fiji Education Management Information Services (FEMIS) annually.

Qualitative data were gathered using the following methods: key informant consultations and archival research. In addition, quantitative data were collected by the Head Teacher and Student surveys.
Key informants provided their perspectives regarding the monitoring processes for hygiene facilities and services at schools. Two school teachers, an FMOE Asset Monitoring Unit Officer, and an FMOH WASH Official were asked the extent to which hygiene facilities and services are monitored in schools. The two school teachers replied that hygiene facilities and services at schools are not monitored (School Teacher from a Nausori District Remote Primary School 2015; School Teacher from a Nausori District Urban Primary School 2015).

The FMOE Asset Monitoring Unit Officer explained,

“Yes, but it needs to be improved...this way schools would think more about how WASH should be prioritized. Schools update FEMIS every year. Within FEMIS is an opportunity to ask more questions about hygiene, and we could monitor it this way” (FMOE Asset Monitoring Unit Officer 2014).

Furthermore, an FMOH WASH Official explained,

“Right now, the FMOH and FMOE are both involved with the monitoring of hygiene in schools, but much needs to be improved upon. First, the FMOE is more involved with the implementation of hygiene education, and the FMOH has the responsibility of checking the health status of students and ensuring the proper hygiene-related infrastructure is available and accessible...Currently, there is a large gap in the documentation of the progress we are making. Usually, schoolteachers write school reporting information down in a journal, but the journals are rarely visible to anyone outside of the school. We need to do a better job of making the monitoring of hygiene in schools available for evaluation, and carried out on a consistent basis.” (FMOH WASH Official 2015)”
The archival research yielded findings from the *Minimum Standards for WASH in Schools Infrastructure* (FMOE 2012), and the Fiji Education Management Information Software (FEMIS) system. In the *Minimum Standards for WASH in Schools Infrastructure*, Standard 14 explains,

“*School should monitor hygiene behaviour of teachers and students as well as maintenance of school’s classrooms, toilets and compounds (p. 23).”*

After a comprehensive review of the categories of data collected through FEMIS annually, only two measures were found to be related to hygiene: the school’s source of water, and the number of toilets at schools.

Quantitative data concerning the monitoring of hygiene facilities and services was gathered through surveys administered to eleven Head Teachers. Head Teachers were asked about the existence of a system within the school to track the status of hygiene facilities and services, and the consistency of their updates to FEMIS. 64% of Head Teachers reported the presence of a school system that ensures all hygiene programs are documented and recorded. Additionally, 91% of Head Teachers stated they submit information regarding their school onto the FEMIS platform annually.

Figure 4.3 below demonstrates the percentages recorded from the Head Teacher survey. Although a 91% assessment was recorded regarding the extent to which Head Teachers reported to update the FEMIS annually, *Monitoring* is identified as a bottleneck because:

1. Current FEMIS reporting requirements capture little data regarding FHIS
2. 64% of schools reported to have a system to monitor hygiene facilities
3. Monitoring is an area sited with a need to be improved upon by FHIS stakeholders

This bottleneck demonstrates large potential for improvement considering the high percentage of schools reporting to update FEMIS annually.
4.3.2 Supply effectiveness

In order to determine the degree to which the Supply of a particular school hygiene program achieves its objectives, FHIS programming was investigated along two areas of focus (i.e. determinants): Availability of Essential Commodities, and Access to Adequately Staffed Services, Facilities and Information. Table 4.2 below displays the FHIS Supply determinants, the FHIS Supply indicators used to gauge the effectiveness of each determinant, the sources from which the data was retrieved, and an assessment of each investigated measure. The assessments are coded according to the FHIS THSC Indicator Assessment Categorizations (refer to table 3.9), which would ultimately lead to the decisions of which determinants were bottlenecks.
## Table 4.2: Supply Results

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>FHIS Indicators</th>
<th>Source</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>Availability of Essential Commodities</td>
<td>Awareness of national standards regarding hygiene facilities in schools</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with functioning hygiene facilities on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Observations at 4 Schools in April 2015</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with access to water on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Observations at 4 Schools in April 2015</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with hand washing facilities with soap available on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Observations at 4 Schools in April 2015</td>
<td>75%</td>
</tr>
<tr>
<td>Access to Adequately Staffed Services, Facilities and Information</td>
<td>Existence of national standards regarding schools having a teacher responsible for hygiene promotion</td>
<td>Archival Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools reporting to have a school teacher responsible for hygiene promotion</td>
<td>Head Teacher Survey</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting to have a school teacher responsible for hygiene promotion</td>
<td>Student Survey</td>
<td>81%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existence of national standards regarding hygiene lessons in the school curriculum</td>
<td>Archival Research</td>
<td></td>
</tr>
</tbody>
</table>
In order to evaluate *Availability of Essential Commodities*, the following four indicators were used:

1. Awareness of national standards regarding hygiene facilities in schools
2. Proportion of schools with functioning hygiene facilities on daily basis
3. Proportion of schools with access to water on daily basis
4. Proportion of schools with hand washing facilities with soap available on daily basis

Qualitative data regarding these indicators were gathered via key informant consultations and archival research methods. Additionally, quantitative data were gathered on two occasions during survey administration with Head Teachers and students.

Key informant consultations provided a significant amount of qualitative data. The following FHIS stakeholders shared their perspectives: two school teachers and four primary school students.

During an interview with a school teacher from an urban school in the Nausori District, she described the consistency of running water at her school,

“*We always have running water. If water is not available one day, we have reserves. When there is no water, we do not have school...kids are sent home. This only happens sometimes...maybe twice a year* (School Teacher from a Nausori District Urban Primary School 2015).”

However, she explained sometimes the school experiences issues with toilet functionality,

“*Even though we have water, sometimes the water doesn’t come to the toilets...If there is no water for the toilets, the toilet quickly becomes smelly and children will not use them...sometimes it takes days for the toilets to be fixed* (ibid).”
Furthermore, a school teacher from a remote school in the Nausori District explained that maintaining hygienic facilities is a priority,

“...If a toilet is not working, it is reported to the school committee. The school committee will organize someone to come fix it. [Regarding running water] We are connected to the Water Authority of Fiji (WAF) system. We also have rainwater collector tanks. [Regarding soap]...We always have soaps next to the sink (School Teacher from a Nausori District Remote Primary School 2015).”

Four students attending primary school also shared their personal experiences at school regarding the functionality of hygiene facilities at their schools,

“Toilets and sinks at school always work fine (Fijian Student attending a Nausori District Remote Primary School 1 2014).”

*We always have water at the water points...the sinks...and the flush toilets...when there is not water, there is no school* (Fijian Student attending a Nausori District Urban Primary School 2 2014).”

[Regarding issues with running water] Sometimes...then we don’t have school if there’s no water (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

[Regarding soap for daily, supervised hand washing] Yes...but not all of the time. Some days it is; some days it isn’t (Fijian Student attending a Nausori District Remote Primary School 2 2014).”

The archival research provided further qualitative information regarding these indicators. In the *Minimum Standards for WASH in Schools Infrastructure* (FMOE 2012), the national requirements for hygiene facilities are explained in *Standard 9*,

73
“c. All sanitation facilities must have adequate (natural or artificial) light.
d. All sanitation facilities must have adequate ventilation.
e. Each school must have the following sanitary materials to ensure an environmentally friendly school:
  - General cleaning equipment such as brooms, scrappers, etc...
  - General cleaning products, soap, detergents, etc...
  - Hand washing soaps,
  - Girls sanitary towels, toilet papers and
  - Girls sanitary bin in each cubicle (p. 19).”

Regarding requirements for access to water at schools, *Standard 5* explains,

- “In addition to the main water supply system, each school should have a reservoir water tank with a capacity of 5,000 liters;

- Schools designated as evacuation centers in case of emergency, in addition to the main water supply system, need at least 2 reservoir water tanks of 5,000 liters capacity

- In geographical areas where there are no water source available, each school should at least have a water reservoir tank of 5,000 liters each (FMOE 2012, p. 16).”

Structured, face-to-face surveys provided quantitative data. According to observations made on the day of the Head Teacher survey (January 28, 2015), 100% of schools had access to water. However, less than half of the schools (45%) had functioning hygiene facilities (toilets and sinks). Furthermore, only 18% of schools displayed hand washing facilities with soap available.
Observations made during student surveys (April 22, and 23, 2015) recorded 100% of hygiene facilities functioned properly. Furthermore, 100% of schools had access to water. Lastly, 75% of schools had adequate hand washing facilities with soap available.

Considering the low proportion of schools reporting to demonstrate functioning hygiene facilities on the day of the Head Teacher visit (45%), the low proportion of schools reporting to demonstrate hand washing facilities with soap available on day of the Head Teacher visit (18%), and some of the negative responses provided by key informants, *Availability of Essential Commodities* is identified as a bottleneck.

In order to gauge the effectiveness of *Access to Adequately Staffed Services, Facilities and Information*, the following four indicators were used:

1. Existence of national standards regarding schools having a teacher responsible for hygiene promotion
2. Proportion of schools reporting to have a school teacher responsible for hygiene promotion
3. Proportion of students reporting to have a school teacher responsible for hygiene promotion
4. Existence of national standards regarding hygiene being taught in the school curriculum

Qualitative data concerning these indicators were gathered using key informant consultations and the archival research methods. In addition, quantitative data were accumulated by the Head Teacher and Student surveys.

Key informant consultations provided qualitative data regarding these indicators from the perspectives of two school teachers and an FMOH WASH Official.

When two school teachers were asked whether or not their schools had a teacher responsible for hygiene promotion, they gave responses highlighting the realities at their respective schools,

"Hygiene is taught by all teachers. Children have one teacher for the full year, and the teacher gives lessons on hygiene through the Health
“Teaching hygiene is the responsibility of all teachers...teachers facilitate group tooth-brushing and also teach WASH lessons as required by the Ministry of Health (FMOE) (School Teacher from a Nausori District Urban Primary School 2015).”

The FMOH WASH Official explained how the FMOH views teaching responsibilities for hygiene education in schools,

“There is not one particular teacher with the responsibility of teaching hygiene. Each teacher follows the curriculum, and teaches their own class about hygiene. There is no actual designated teacher...it is not part of the system to have a designated teacher (FMOH WASH Official 2015).”

The archival research method uncovered further information apropos Access to Adequately Staffed Services indicators within the following two documents: the Healthy Living Syllabi (HLS) (FMOE 2015b; FMOE 2015c; FMOE 2015d) and the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012).

The 2015 HLS (FMOE 2015b; FMOE 2015c; FMOE 2015d) provides a curriculum of content and lesson plans regarding hygiene education and hygiene activities for primary schools in Fiji. The HLS was developed by the FMOE Curriculum Development Unit (CDU) to provide teachers with content to equip students with the necessary health knowledge and skills in order to live a healthy life, and contribute to society (FMOE 2015b, p. 3).

The investigation of the Minimum Standards for Water Sanitation and Hygiene (WASH) in Schools Infrastructure uncovered more qualitative data concerning these indicators. Standard 14 describes how teachers have the ability to influence student behavior,
Children are heavily influenced by the example set by school staff, their teachers in particular, who should provide positive role models by consistently demonstrating appropriate hygiene behaviours (FMOE 2012, p. 23).

Additionally, in Standard 13, the text highlights that hygiene education should be included in school curriculum,

“Hygiene education should be provided for school children as part of the school curriculum (ibid).”

Quantitative data regarding Access to Adequately Staffed Services, Facilities and Information indicators were gathered via Head Teacher and Student surveys. Head Teacher responses indicate that 64% of the surveyed schools have at least one teacher responsible for hygiene promotion. From the surveyed students’ perspective, 81% reported to have a teacher responsible for hygiene promotion.

According to the FHIS Indicator Assessment Categorizations chart (refer to Table 3.9), a 64% assessment for an indicator signifies that the particular indicator may be a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school. Furthermore, interventions should be prioritized to target the particular indicator. As such, Access to Adequately Staffed Services, Facilities and Information is highlighted as a bottleneck.

4.3.3 Demand effectiveness

In order to determine the degree to which the Demand of a particular school hygiene program achieves its objectives, FHIS programming was examined along two areas of focus (i.e. determinants): Social and Cultural Practices and Beliefs, and Timing and Continuity of Use. Table 4.3 below displays the FHIS Demand determinants, the FHIS Demand indicators used to measure the effectiveness of each determinant, the sources from which the data was retrieved, and an assessment of each investigated measure. The assessments are coded according to the FHIS THSC Indicator Assessment Categorizations (refer to table 3.9), which is the system used in this research to classify substandard determinants as bottlenecks.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>FHIS Indicators</th>
<th>Source</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>Social and Cultural Practices and Beliefs</td>
<td>Existence of national standards regarding soap and toilet paper provision in schools</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools always providing toilet paper</td>
<td>Head Teacher Survey</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting that their school provides toilet paper</td>
<td>Student Survey</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness of national standards regarding toilet paper location in schools</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting direct accessibility to toilet paper at the toilet area</td>
<td>Student Survey</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools always providing soap</td>
<td>Head Teacher Survey</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting their school provides soap</td>
<td>Student Survey</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students acknowledging the importance of hygienic behavior in their definition of hygiene</td>
<td>Student Survey</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existence of national standards regarding the separation of girls and boys toilets</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with separate toilet facilities for girls and boys</td>
<td>Head Teacher Survey</td>
<td>100%</td>
</tr>
<tr>
<td>Timing and Continuity of Use</td>
<td>Existence of national standards regarding when students should wash their hands</td>
<td>Archival research</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students &quot;always&quot; washing hands before meals and after using toilets</td>
<td>Head Teacher Survey</td>
<td>61-100%</td>
</tr>
</tbody>
</table>
In order to examine the effectiveness of *Social and Cultural Practices and Beliefs*, the following ten indicators were used:

1. Existence of national standards regarding soap and toilet paper provision in schools
2. Proportion of schools always providing toilet paper
3. Proportion of students reporting that their school provides toilet paper
4. Awareness of national standards regarding toilet paper location in schools
5. Proportion of students reporting direct accessibility to toilet paper in the toilet area
6. Proportion of schools always providing soap
7. Proportion of students reporting that their school provides soap
8. Proportion of students acknowledging the importance of hygienic behavior in their definition of hygiene
9. Existence of national standards regarding the separation of girls and boys toilets
10. Proportion of schools with separate facilities for girls and boys

Qualitative data were sought using two methods: key informant consultations and archival research. In addition, quantitative data were collected by the Head Teacher and Student surveys.

Key informant consultations focused attention on the social and cultural practices and beliefs regarding the provision of soap and toilet paper, and where soap and toilet paper are stored during the school day. Perspectives were shared by two school teachers and four students.

When asked where toilet paper and soap are kept within their respective schools, one teacher from an urban primary school replied,

“Soap for hand washing is kept next to the hand washing sink...this way, children can wash their hands before lunch and after using the toilet...but, sometimes the soap is missing so children only use water...I keep the toilet paper at my desk. I have to do this or else the toilet paper...
will go missing (School Teacher from a Nausori District Urban Primary School 2015).”

Additionally, a teacher from a remote primary school commented on the same question,

“At our school, soap is kept at the hand washing station...located outside of the toilets. Toilet paper is kept in my cabinet and students can take it, but sometimes students bring their own toilet paper (School Teacher from a Nausori District Remote Primary School 2015).”

When students were asked where soap and toilet paper are kept within their schools, the following four responses were given,

“Soaps are by the sink...toilet paper is with the teacher (Fijian Student attending a Nausori District Remote Primary School 1 2014).”

“Teachers have the soap...toilet paper is in the staff room (Fijian Student attending a Nausori District Remote Primary School 2 2014).”

“Soap for hand washing is in the sink...toilet paper is with the teacher...we can ask for it. My mom gives me toilet paper to pack for school (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

“Sometimes soap is by the sink...the teacher also keeps soap with her...the teacher has the toilet paper...sometimes I do not go to the toilet because I do not want to ask for the paper (Fijian Student attending a Nausori District Urban Primary School 2 2014).”

The archival research identified text within the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012) to address Social and Cultural Practices and Beliefs indicators. In the Minimum Standards for WASH in Schools Infrastructure (ibid),
Standard 13 outlines principle curricular topics for hygiene education, which include the provision of toilet paper and soap,

*Hygiene education should include:*

- Cleaning practice after toilet use;
- Hand washing practice before eating;
- Provision and use of hygienic items such as soaps, toilets papers;
- Correct use of toilets;
- Cleaning school compound, classrooms, toilets, etc..
- Waste disposal (FMOE 2012, p. 23).

Additionally, Standard 9 explains the requirement for schools to provide soap,

“e. Each school must have the following sanitary materials to ensure an environmental friendly school:

Standard 4 explains the importance of children knowing why hygienic behavior is important,

“Students should be educated on the purpose of non potable water (washing hands and body, cleaning, etc...) and sensitized on not drinking it because of the water related diseases which may arise from it (FMOE 2012, p. 15).”

Section 3.3 expounds on how hygiene education is sustained,

“Correct use and maintenance of water and sanitation facilities is ensured through sustained hygiene promotion. Water and sanitation facilities are used as resources for hygiene education (FMOE 2012, p. 23).”
Regarding the separation of facilities for boys and girls, *Standard 6* provides the following guidelines for schools to follow,

\[b. \text{Girls and Boys sanitation facilities must be separate with their own wash basins and taps. The separation must have adequate visual, noise and odor separation...}\]

\[d. \text{Staff toilets must have separate women and men cubicle with adequate privacy (FMOE 2012, p. 17-18)}\]

Furthermore, a table consisting of the appropriate quantities of sanitation facilities and toilets is provided,

<table>
<thead>
<tr>
<th>Sanitary facility ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate quantity of sanitation facilities/or toilets must be provided according to the ratios in the table below: Sanitary facility ratio</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
</tr>
<tr>
<td>One closet for every 20 girls or part of 20 up to 200 girls, and an additional closet for every 25 girls or part of 25 girls over that number up to 300 girls, and one additional closet for every 33 girls or part of 33 girls over 300 girls.</td>
</tr>
<tr>
<td>1 hand wash point with tap and soap per 50 girls.</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
</tr>
<tr>
<td>One closet for every 33 boys or part of 33 boys up to 200 boys, and an additional closet for every 50 boys or part of 50 boys over the number of 200 boys.</td>
</tr>
<tr>
<td>1 urinal per 50 boys.</td>
</tr>
<tr>
<td>1 hand wash point with tap and soap per 50 boys.</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
</tr>
<tr>
<td>Separate closets for each sex. One closet for every 20 persons or part of 20 persons of either sex.</td>
</tr>
<tr>
<td>1 hand wash point with tap and soap per 20 staffs</td>
</tr>
<tr>
<td>Children with special needs (in Wheelchairs)</td>
</tr>
<tr>
<td>For newly constructed toilet facilities, 1 closet for children with special needs (in wheelchairs)</td>
</tr>
</tbody>
</table>

(FMOE 2012, p. 17)

Structured, face-to-face surveys with eleven Head Teachers and forty-eight students provided quantitative data regarding the *Social and Cultural Practices and Beliefs* indicators. Regarding toilet paper provision in schools, only 64% of Head Teachers reported to “always” supply students with toilet paper. Additionally, an 83% assessment was recorded from the student perspective. However, although these
assessments are relatively high, only 6% of students reported that toilet paper was directly accessible in the toilet area. Figure 4.4 below demonstrates the large loss in service provision effectiveness.

According to the students surveyed, 94% of students stated that toilet paper was either stored in the staff room, office, classroom, or kept with a teacher. However, some students stated they did not feel comfortable asking their teacher to access toilet paper. Instead, students reported to either carry a private source of toilet paper, find a way to ask the teacher discreetly, or refrained from urinating or defecating during the day.

With respect to access to soap in schools, the survey data gathered supported key informant interviewees statements. For instance, only one school among eleven (9%) reported to “always” supply soap in hand washing areas. According to the students surveyed in four schools, only 71% stated soap was “always” available for hand and face washing.

Concerning students’ understanding of the meaning of hygiene, when students were asked a question regarding their definition of hygiene, 50% of students either made reference to hygienic practice knowledge, and/or provided rational for practicing healthy hygiene behavior. Lastly, informant observations during the Head Teacher survey administration revealed that 100% of the surveyed schools separated boys and girls toilets. Considering the indicator assessments, Social and Cultural Practices and Beliefs is identified as a bottleneck.
In order to evaluate the effectiveness of *Timing and Continuity of Use*, the following two indicators were used:

1. Existence of national standards regarding when students should wash their hands
2. Proportion of students “always” washing hands before meals and after using toilets

Qualitative data were sought using two methods: key informant consultations and archival research. In addition, quantitative data were collected by the Head Teacher and Student surveys.

Key informant consultations provided insight from the perspectives of two school teachers and four students. During interviews, two school teachers were asked whether or not students in their classes washed their hands before meals and after using the toilet. One teacher from an urban primary school in the Nausori District stated,
“Yes...children wash their hands before and after meals. They should every day, with soap and water. They learn this from an early age...Students also wash their hands after using the toilet (School Teacher from a Nausori District Urban Primary School 2015).”

Furthermore, one teacher from a remote primary school in the Nausori District explained,

“Yes...students wash hands before and after meals. They also go to wash their hands after using the toilet (School Teacher from a Nausori District Remote Primary School 2015).”

In four individual interviews, four students were asked when they wash their hands at school, and how they wash their hands. The four students gave responses confirming they wash their hands before eating and after using the toilet:

“Before lunch...after the toilet. With soap and water  (Fijian Student attending a Nausori District Remote Primary School 1 2014).”

“We wash before going to the dining hall to eat, and after...and we wash after the toilet. We use soap and water  (Fijian Student attending a Nausori District Remote Primary School 2 2014).”

“With soap and water. After going to the toilet, and before eating we wash our hands. (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

“We should wash our hands before and after eating...also, after visiting the toilet. We follow the eight steps of hand washing with soap and water  (Fijian Student attending a Nausori District Urban Primary School 2 2014).”
The archival research findings included text from the *Minimum Standards for WASH in Schools Infrastructure* (FMOE 2012) and the FMOE Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d).

In the *Minimum Standards for WASH in Schools Infrastructure* (FMOE 2012), Standard 13 clearly states that hygiene education should include “Hand washing practice before eating (p. 23).”

In the HLS (FMOE 2015b), *Section 3.4.1* states that curriculum content should cover washing hands after visiting the toilet (p. 12).

Structured, face-to-face surveys provided quantitative data. When Head Teachers were asked to estimate the percentage of students who practice hand washing at school before meals and also after visiting the toilet, 82% of teachers responded to say that 61-100% of students wash their hands at school during meals and after visiting the toilet.

Considering the qualitative and quantitative data gathered, *Timing and Continuity of Use* is not identified as a bottleneck.

**4.3.4 Quality effectiveness**

In order to determine the degree to which the *Quality* of a particular school hygiene program achieves its objectives, four FHIS indicators were measured regarding one area of focus (i.e. determinant): *Condition of hygiene program*. Table 4.4 below displays the FHIS *Quality* determinant, the FHIS *Quality* indicators used to gauge the effectiveness of each determinant, the sources from which the data was retrieved, and an assessment of each investigated measure. The assessments are coded according to the FHIS THSC Indicator Assessment Categorizations (refer to table 3.9), which would ultimately lead to the decisions of which determinants were bottlenecks.
Table 4.4: Quality Results

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>FHIS Indicators</th>
<th>Source</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Condition of hygiene program</td>
<td>Existence of national policy and standards regarding the condition of school toilets and hygiene facilities</td>
<td>Archival research</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with toilet and surrounding area in &quot;good condition&quot; on day of visit</td>
<td>Observations at 11 Schools in January 2015</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Observations at 4 Schools in April 2015</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools offering adequate privacy of toilets during the visit</td>
<td>Observations at 11 Schools in January 2015</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting they are comfortable using the toilet at school</td>
<td>Student Survey</td>
<td>92%</td>
</tr>
</tbody>
</table>

In order to gauge the effectiveness of *Condition of hygiene program*, the following four indicators were used:

1. Existence of national policy and standards regarding the condition of school toilets and hygiene facilities
2. Proportion of schools with toilet and surrounding area in “good condition” on day of visit
3. Proportion of schools offering adequate privacy of toilets during the visit
4. Proportion of students reporting they are comfortable using the toilet at school

Qualitative data were gathered using the following methods: key informant consultations and archival research. In addition, quantitative data was collected by the Head Teacher and Student surveys.
Throughout key informant consultations, interviewees spoke about the following topics: maintenance routines for hygiene facilities at their respective schools, the privacy of school toilets, and their level of comfort using the toilet at school. Key informants included two school teachers and four primary school students.

When two school teachers were asked about how the conditions of hygiene facilities are maintained, they responded as follows:

“Children share duties for cleaning the toilets. Everyone in class contributes to the cleanliness of the facilities...it is the responsibility of everyone to keep it clean. Also, the school management will properly clean the toilets once or twice per week (School Teacher from a Nausori District Urban Primary School 2015).”

“The teachers and students have the responsibility to keep the toilet area tidy and clean. In my class, we keep a duty roster on the wall...Students should clean after themselves, and teachers ensure the area remains tidy throughout the week (School Teacher from a Nausori District Remote Primary School 2015).”

Responses from students to a question regarding toilet maintenance duties provided insight from their perspective,

“Everyone contributes to cleaning of toilets. The teacher keeps a roster with our duties (Fijian Student attending a Nausori District Remote Primary School 1 2014).”

“All students clean the toilets...we follow a roster...it tells us who has to do different things (Fijian Student attending a Nausori District Remote Primary School 2 2014).”
“The teachers clean the toilets...we clean them too...everyone takes turns...we follow the roster” (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

“Students clean toilets. We follow the duty roster (Fijian Student attending a Nausori District Urban Primary School 2 2014).”

Two school teachers spoke about the privacy of toilets at schools.

“We have doors on the toilets, and girls and boys toilets are separated by a wall (School Teacher from a Nausori District Remote Primary School 2014).”

“Privacy is not an issue...boys and girls use separate toilets (School Teacher from a Nausori District Urban Primary School 2014).”

When four students asked if they feel comfortable using the toilet at school, two students from remote primary schools in the Nausori District responded, “Yes. (Fijian Student attending a Nausori District Remote Primary School 1, 2014; Fijian Student attending a Nausori District Remote Primary School 2, 2014).” However, two students from urban schools in the Nausori District explained they did not feel comfortable using the toilets at their respective schools,

“No...I don’t feel comfortable using the toilet at school. The toilet is not clean (Fijian Student attending a Nausori District Urban Primary School 1 2014).”

“No...the toilet is messy and sometimes smells bad. I prefer the toilet at home (Fijian Student attending a Nausori District Urban Primary School 2 2014).”
Archival research findings uncovered policy concerning the condition of toilets at school, and national requirements for toilet privacy in schools within the following documents: Fiji Public Health Act of 1996 (Cap 111), and the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012).

In the Fiji Public Health Act, requirements in order to build new infrastructure (including hygiene-related) are explained (Act 30-39). Furthermore, the authorities of local government to inspect and regulate hygiene-related facilities in schools are outlined (Act 120-127).

In the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012), the importance of the condition of hygiene facilities is emphasized in an explanation for disease prevention,

“Schools with poor water, sanitation and hygiene conditions and intense levels of person-to person contact, are high-risk environment for children and staffs, and exacerbate children’s particular susceptibility to environmental health hazards (p. 12).”

The text also mentions how the conditions of hygiene facilities at school affect the wider community,

“Children who have adequate water, sanitation and hygiene conditions at school are more able to integrate hygiene education into their daily lives, and can be effective agents for change in their families and wider community (FMOE 2012, p. 12).”

Section 3.2.1 addresses the requirements for the privacy of toilets in schools,

“(The) following are minimum requirement to be met in addition of sanitation facilities:
a. Girls and boys must have equal access to adequate sanitation facilities in schools, which ensure privacy for all...

d. Staff toilets must have separate women and men cubicle with adequate privacy (FMOE 2012, p. 18).

Furthermore, Standard 10 addresses the privacy of toilets,

“A wall should be situated in front of each toilet entrance to foster privacy (FMOE 2012, p. 20).”

Standard 14 addresses the necessity for students to feel comfortable when practicing hygienic behavior,

“Staff and children should not be expected to adopt behaviors that are inconvenient, uncomfortable, or impartial (FMOE 2012, p. 23).”

Structured, face-to-face surveys provided quantitative data concerning Condition of hygiene program determinants. On the day of the Head Teacher survey, 27% of the eleven participating schools exhibited a “toilet and surrounding area clean and rubbish-free.” Later, on the day of the student survey, 50% of the four participating schools demonstrated a “toilet and surrounding area clean and rubbish-free.” These assessments are presented below in Figure 4.5.

On the day of the Head Teacher surveys, 64% of participating schools exhibited adequate privacy of toilets, meaning a door and a functioning lock were accessible for children’s use. Lastly, 92% of the students surveyed reported they are comfortable using the toilet at school. Considering the qualitative and quantitative data gathered, Condition of hygiene program is identified as a bottleneck to the effectiveness of FHIS programming.
4.4 Identified Bottlenecks

Through the use of three methods, this research identified the following nine determinants as bottlenecks in the effectiveness of Fiji Hygiene in Schools (FHis) programming: Social Norms, Legislation and Policy, Budget and Expenditures, Management and Coordination, Monitoring, Availability of Essential Commodities, Access to Adequately Staffed Services, Facilities and Information, Social and Cultural Practices and Beliefs, and Condition of hygiene program. Table 4.5 (below) displays these bottlenecks.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant Identified as Bottleneck in FHis Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling environment</td>
<td>1. Social Norms</td>
</tr>
<tr>
<td></td>
<td>2. Legislation and Policy</td>
</tr>
<tr>
<td></td>
<td>3. Budget and Expenditures</td>
</tr>
<tr>
<td></td>
<td>4. Management and Coordination</td>
</tr>
<tr>
<td></td>
<td>5. Monitoring</td>
</tr>
<tr>
<td>Supply</td>
<td>6. Availability of Essential Commodities</td>
</tr>
<tr>
<td></td>
<td>7. Access to Adequately Staffed Services, Facilities and Information</td>
</tr>
<tr>
<td>Demand</td>
<td>8. Social and Cultural Practices and Beliefs</td>
</tr>
<tr>
<td>Quality</td>
<td>9. Condition of hygiene program</td>
</tr>
</tbody>
</table>

Table 4.5: Identified Bottlenecks
In the subsequent chapter (Chapter 5: Discussion), an analysis of these bottlenecks is extended beyond a technical assessment. An examination regarding the inter-linkages between the bottlenecks as well as applicable behavioral improvement and environmental health strengthening theories is conducted in order to propose possibly effective interventions.
5.0 CHAPTER 5 - DISCUSSION

5.1 Introduction

In Chapter 5, the discussion of this thesis is presented in five sections. First, an overview of the research process used for this study is explained. Second, identified bottlenecks within each Tanahashi Health Service Coverage (THSC) stage (Enabling Environment, Supply, Demand, and Quality) are analyzed. Third, a comparison of the data gathered during student surveys from the two remote and two urban schools is presented. Fourth, conclusions are drawn. Lastly, recommendations for FHIS stakeholders are outlined, and avenues for further research are proposed.

5.2 Research process overview

This study sought to identify possible impediments (bottlenecks) in Fiji Hygiene in Schools (FHIS) effectiveness. A modified WASH in Schools (WinS) Tanahashi Service Health Service Coverage Model (THSC) was adapted for the FHIS environment and serves as the framework of this study. The FHIS THSC uses four stages consisting of FHIS-specific determinants and indicators in order to evaluate and address behavior change. These stages are the: Enabling Environment, Supply, Demand, and Quality.

Three methods were employed in order to carry out the objectives of this study:

1. Key informant consultations with FHIS stakeholders;
2. Archival research of relevant FHIS related laws, regulations, guidelines and other published documents; and
3. Structured, face-to-face surveys with Head Teachers and students from a selection of “remote” and “urban” Nausori District schools.”

These methods were conducted in three phases. In phase one, the researcher arranged nine key informant consultations with a sample of twenty-four FHIS stakeholders in order to discuss FHIS policy and programming issues in the FHIS environment, engage FHIS stakeholders in open-ended, ethnographic interviews, identify metrics (determinants and indicators) to be used to gauge where FHIS programming implementation gaps may exist, establish FHIS determinants and indicators in order to create the FHIS THSC model for this study, and select schools and sample populations for this study. The sampling of FHIS stakeholders was designed to
include representation from the Fiji Ministry of Health (FMOH), Fiji Ministry of Education (FMOE), Fijian Teachers Association (FTA), primary school teachers, District Education Officers, civil-society organizations (CSOs), Regional Organizations, parents of Fijian primary school students, and Fijian primary school students.

During the key informant consultations, the researcher gathered qualitative information regarding topics such as: policies, procedures, student behavior, cultural considerations, and other pertinent information the informants believed might impact FHIS effectiveness. On eleven occasions during key informant consultations, the researcher facilitated open-ended, ethnographic interviews with FHIS stakeholders. These interviews are transcribed and included in Appendices C through M. Additionally, eleven schools in the FMOE Nausori Education District were selected for Head Teacher surveys, and four schools were chosen from the eleven schools for student surveys. The rationale for selecting the eleven schools for Head Teacher surveys was based on their close proximity to Suva, and the limited time available for the research. The rationale for selecting two remote and two urban schools was to establish a foundation of data to allow further research into the possible inequities in FMOE locality categorizations. Informants for the Head Teacher surveys included the Head Teachers of each participating school. A quota sampling method was used in order to select student informants for surveys. In total, twelve students from each school were selected by teachers to participate in the survey by using the following criteria: one male and one female from classes 1-3, 4-6, and 7-8.

The researcher used the information gathered from the key informant consultations in order to develop determinants and indicators distinctly for the FHIS THSC domains: Enabling Environment, Supply, Demand, and Quality. Thereafter, the researcher created two separate surveys designed to gather information regarding FHIS determinants and indicators: one survey for Head Teachers, and one survey for students. These surveys were used in phase three (explained below).

In phase two, the researcher employed an archival research method in order to identify text within FHIS related laws, regulations, guidelines, and other published documents addressing FHIS THSC determinants. FHIS related laws, regulations,
guidelines, and other published documents were identified using the following procedures:

1. A policy document search on the FMOE and FMOH websites
2. Contacting the FMOE, FMOH and the FTA to request access to the published primary school curriculum, published government memos, and the national education database: the Fiji Education Information Management System (FEMIS)

Copies of the Fiji Education Act (Cap 262) and Fiji Public Health Act (Cap 111) were accessed via the FMOE and FMOH websites, respectively. The FMOE Asset Management Unit (AMU) provided the researcher a hard copy of the Fiji Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d) and granted the researcher access to Fiji Education Information Management System (FEMIS). The FTA provided the researcher a digital version of the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012) and an Instructional Memo (FMOE 2013) written by the Permanent Secretary for Education regarding school education grant allocations and expenditures.

In phase three, structured, face-to-face surveys were carried out in four steps. First, the researcher designed two separate surveys in order to investigate FHIS THSC stages from two different perspectives: one survey for Head Teachers, and one survey for students. Second, the researcher trained ten FHIS stakeholders on how to utilize Akvo digital data management software in order to administer surveys via a mobile phone (see Subsection 3.3.3 for details of the system and software). Third, Head Teacher surveys were administered on January 28, 2015, and student surveys were administered on April 22, and 23, 2015. Fourth, after all surveys were completed, the researcher retrieved the data from the Akvo online platform and organized the data within nine Microsoft Excel spreadsheets: Head Teacher Surveys, Student Surveys, Head Teacher (HT) Bottleneck Analysis, Bottleneck Figures, Student Survey Remote Schools, Student Survey Urban Schools, Bottleneck Analysis for Remote versus Urban Schools, Urban versus Remote Figures, and Comparative Analysis.

In the Head Teacher Bottleneck analysis and Bottleneck Analysis for Remote versus Urban Schools spreadsheets, percentage assessments for FHIS indicators were
calculated by either measuring the proportion of the informant population’s responses to a particular question or by the enumerator’s documented observations. Thereafter, assessments of FHIS indicators were coded in correspondence with the FHIS THSC Indicator Assessment Categorizations (refer to Table 3.9 reproduced below), which ultimately lead to the decisions regarding which determinants were bottlenecks.

The study results are shown below in Table 5.1. Tables 4.1, 4.2, 4.3 and 4.4 from Chapter 4 are merged to produce this table.

<table>
<thead>
<tr>
<th>Code Categorization</th>
<th>Assessment</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>76-100%</td>
<td>Indicator is presently satisfactory; however, hygiene-related interventions may still affect school populations positively.</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-75%</td>
<td>Interventions should be prioritized to target this indicator. Although the indicator may not be as critical as an indicator highlighted in red, a yellow indicator may be a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
<tr>
<td>Red</td>
<td>0-50%</td>
<td>Immediate interventions should be prioritized to target this indicator. This indicator is most likely a large contributing factor to the prevalence of hygiene-related diseases and/or sicknesses within populations present at the school.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Policy/legislation exists</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Policy/legislation does not exist</td>
</tr>
<tr>
<td>Stage</td>
<td>Determinant</td>
<td>FHIS Indicators</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Enabling environment</strong></td>
<td>Social Norms</td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised hand washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness of national policy and standards regarding schools practicing daily supervised face washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised face washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students participating in daily supervised face washing</td>
</tr>
<tr>
<td>Legislation/Policy</td>
<td>Existence of national policy and standards regarding hygiene in schools</td>
<td>Archival Research</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Source</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with &quot;hygiene in schools&quot; reflected in strategic plans</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with a management or “operations and management” plan for &quot;hygiene in schools&quot;</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td>Budget/Expenditures</td>
<td>Existence of national budget allocation available for school hygiene programming</td>
<td>Archival Research</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools reporting a budget for hygiene programming</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td>Management and Coordination</td>
<td>Existence of national standards regarding School Boards or Parent-Teacher Associations</td>
<td>Archival Research</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with functioning School Boards or Parent-Teacher Associations</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Existence of national policy and standards regarding monitoring hygiene facilities and practices in schools</td>
<td>Archival Research</td>
</tr>
<tr>
<td></td>
<td>Degree to which hygiene facilities and services are monitored</td>
<td>Head Teacher Survey</td>
</tr>
<tr>
<td>Supply</td>
<td>Availability of Essential Commodities</td>
<td>Awareness of national standards regarding hygiene facilities in schools</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Proportion of schools reporting to update FEMIS annually</td>
<td>Head Teacher Survey</td>
<td>91%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supply</th>
<th>Availability of Essential Commodities</th>
<th>Awareness of national standards regarding hygiene facilities in schools</th>
<th>Archival Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of schools with functioning hygiene facilities on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with functioning hygiene facilities on daily basis</td>
<td>Observations at 4 Schools in April 2015</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with access to water on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with access to water on daily basis</td>
<td>Observations at 4 Schools in April 2015</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with hand washing facilities with soap available on daily basis</td>
<td>Observations at 11 Schools in January 2015</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Proportion of schools with hand washing facilities with soap available on daily basis</td>
<td>Observations at 4 Schools in April 2015</td>
<td>75%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access to Adequately Staffed Services, Facilities and Information</th>
<th>Existence of national standards regarding schools having a teacher responsible for hygiene promotion</th>
<th>Archival Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of schools reporting to have a school teacher responsible for hygiene promotion</td>
<td>Head Teacher Survey</td>
<td>64%</td>
</tr>
<tr>
<td>Proportion of students reporting to have a school teacher responsible for hygiene promotion</td>
<td>Student Survey</td>
<td>81%</td>
</tr>
<tr>
<td>Demand</td>
<td>Social and Cultural Practices and Beliefs</td>
<td>Existence of national standards regarding hygiene lessons in the school curriculum</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existence of national standards regarding soap and toilet paper provision in schools</td>
</tr>
<tr>
<td>Proportion of schools always providing toilet paper</td>
<td>Head Teacher Survey</td>
<td>64%</td>
</tr>
<tr>
<td>Proportion of students reporting that their school provides toilet paper</td>
<td>Student Survey</td>
<td>83%</td>
</tr>
<tr>
<td>Awareness of national standards regarding toilet paper location in schools</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td>Proportion of students reporting direct accessibility to toilet paper at the toilet area</td>
<td>Student Survey</td>
<td>6%</td>
</tr>
<tr>
<td>Proportion of schools always providing soap</td>
<td>Head Teacher Survey</td>
<td>9%</td>
</tr>
<tr>
<td>Proportion of students reporting that their school provides soap</td>
<td>Student Survey</td>
<td>71%</td>
</tr>
<tr>
<td>Proportion of students acknowledging the importance of hygienic behavior in their definition</td>
<td>Student Survey</td>
<td>50%</td>
</tr>
</tbody>
</table>

101
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
<th>Method</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existence of national standards</strong></td>
<td>regarding the separation of girls and boys toilets</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of schools with separate toilet facilities for girls and boys</strong></td>
<td></td>
<td>Head Teacher Survey</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Timing and Continuity of Use</strong></td>
<td>Existence of national standards regarding when students should wash their hands</td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of students &quot;always&quot; washing hands before meals and after using toilets</strong></td>
<td></td>
<td>Head Teacher Survey</td>
<td>61-100%</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td><strong>Condition of hygiene program</strong></td>
<td>Archival Research</td>
<td></td>
</tr>
<tr>
<td><strong>Existence of national policy and standards regarding the condition of school toilets and hygiene facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of schools with toilet and surrounding area in &quot;good condition&quot; on day of visit</strong></td>
<td>Observations at 11 Schools in January 2015</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of schools offering adequate privacy of toilets during the visit</strong></td>
<td>Observations at 11 Schools in January 2015</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of students reporting they are comfortable using the toilet at school</strong></td>
<td>Student Survey</td>
<td>92%</td>
<td></td>
</tr>
</tbody>
</table>
In total, nine determinants were identified as bottlenecks in FHIS programming within the primary schools surveyed in this study: Social Norms, Legislation and Policy, Budget and Expenditures, Management and Coordination, Monitoring, Availability of Essential Commodities, Access to Adequately Staffed Services, Facilities and Information, Social and Cultural Practices and Beliefs, and Condition of hygiene program. Table 4.5 (referenced below) displays these bottlenecks.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant Identified as Bottleneck in FHIS Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling environment</td>
<td>1. Social Norms</td>
</tr>
<tr>
<td></td>
<td>2. Legislation and Policy</td>
</tr>
<tr>
<td></td>
<td>3. Budget and Expenditures</td>
</tr>
<tr>
<td></td>
<td>4. Management and Coordination</td>
</tr>
<tr>
<td></td>
<td>5. Monitoring</td>
</tr>
<tr>
<td>Supply</td>
<td>6. Availability of Essential Commodities</td>
</tr>
<tr>
<td></td>
<td>7. Access to Adequately Staffed Services, Facilities and Information</td>
</tr>
<tr>
<td>Demand</td>
<td>8. Social and Cultural Practices and Beliefs</td>
</tr>
<tr>
<td>Quality</td>
<td>9. Condition of hygiene program</td>
</tr>
</tbody>
</table>

In the next section, relationships are explored between the identified bottlenecks with existing literature as well as theoretical explanations for behavioral improvement and environmental health strengthening. The information and analyses provided by this research will contribute to the evolving understanding of FHIS programming, and the understanding of hygiene-related development in the developing world. At the conclusion of this research, FHIS interventions may be directed to address the bottlenecks identified as needing attention.

5.3 FHIS bottleneck discussion

The results of this study revealed nine FHIS determinants as programming bottlenecks within the primary schools surveyed in this study. Table 4.5 is referenced above to display these bottlenecks. In the upcoming subsections, the details of the identified bottlenecks are analyzed by considering behavioral improvement and environmental health strengthening, as well as the literature reviewed in Chapter 2.
5.3.1 Enabling environment

Five FHIS Enabling Environment determinants were exposed as bottlenecks in the effectiveness of FHIS. These determinants are: Social Norms, Legislation and Policy, Budget and Expenditures, Management and Coordination, and Monitoring. The identification of determinants as bottlenecks was based on data gathered through three methods: key informant consultations, archival research, and surveys with Head Teachers and students. Table 5.2 below displays the Enabling Environment determinants and the indicators responsible for their identification as bottlenecks.

<table>
<thead>
<tr>
<th>Determinant</th>
<th>FHIS Indicator</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Norms</td>
<td>Proportion of schools participating in daily supervised face washing</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Proportion of students participating in daily, supervised face washing</td>
<td>48%</td>
</tr>
<tr>
<td>Legislation and Policy</td>
<td>Proportion of schools with &quot;hygiene in schools&quot; reflected in strategic plans</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with a management or “operations and management” plan for “hygiene in schools”</td>
<td>27%</td>
</tr>
<tr>
<td>Budget and Expenditures</td>
<td>Proportion of schools reporting a budget for hygiene programming</td>
<td>9%</td>
</tr>
<tr>
<td>Management and Coordination</td>
<td>Proportion of schools with functioning School Boards or Parent-Teacher Associations</td>
<td>55%</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Degree to which hygiene facilities and services are monitored</td>
<td>64%</td>
</tr>
</tbody>
</table>

Regarding Social Norms, the data gathered from this research demonstrates that the practice of daily, supervised face washing is an area in need of more attention within FHIS programming.

During key informant consultations, interviews with FHIS stakeholders regarding daily, supervised face washing revealed:

1. One reason why face washing is not practiced in one school
2. One successful experience as a result of starting the practice of face washing in schools
3. A recommendation for schools from an FTA Senior WASH Unit Officer.

For instance, one school teacher explained why her school does not practice daily, supervised face washing,

“...There’s not time for face washing at school...teachers are too busy with everything else (School Teacher from a Nausori District Urban Primary School 2015).”

Additionally, one school teacher explained the positive change her school experienced since incorporating the practice of face washing,

“...Since then, we have been washing our faces at school at least one time per day. Now [in 2015], we have very little cases of trachoma in our school (School Teacher from a Nausori District Remote Primary School 2015).”

According to the FTA Senior WASH Unit Officer, the inclusion of face washing in daily school routines is a hygiene-related behavior that would benefit Fijian school children. He explains,

“In terms of face washing...some schools are practicing this, but not all of them. Schools should incorporate face washing to reduce trachoma (FTA Senior WASH Unit Officer 2014).”

Findings from the archival research method revealed an insubstantial amount of content within FHIS related laws, regulations, guidelines and other published documents regarding the practice of daily, supervised face washing in schools. In fact, the only text that could be applicable to face washing was discovered in the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012). Section 3.2.1 states schools are required to offer adequate access to water for hand washing, body washing, cleaning of schools, and compounds (FMOE 2012, p. 15). Face washing could be included within “body
washing”; however, this is not clearly stated. Furthermore, no instruction is provided regarding

1. How teachers should facilitate face washing,
2. How teachers should incorporate face washing into daily routines,
3. How students should practice daily, supervised face washing

During structured, face-to-face surveys administered to eleven Head Teachers and forty-eight students, percentages within the yellow and red code categorizations (refer to Table 3.9) were reported regarding face washing practices at schools (55% reported by the Head Teacher survey; 48% reported by the student survey). As such, an intervention targeted to promote the practice of face washing behavior is indicated.

As stated in Chapter 2, regular face washing is a highly effective behavioral practice for the prevention and spread of trachoma (Mecaskey et al. 2003, p. 730), which is the leading cause for preventable blindness in the world (Resnikoff et al. 2004, p. 849). Considering the practice of regular face washing necessitates changes in behavior, behavior change theories and models are applicable. Prochaska et al. (1994)’s Stages of Change (SOC) theory suggests that behavior change occurs following a six-step procedure: precontemplation, contemplation, preparation, action, maintenance, and termination. Table 2.4 is referenced below to provide definitions for each stage.

<table>
<thead>
<tr>
<th>Table 2.4: Stages of Change Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage</strong></td>
</tr>
<tr>
<td>Precontemplation</td>
</tr>
<tr>
<td>Contemplation</td>
</tr>
<tr>
<td>Preparation</td>
</tr>
<tr>
<td>Action</td>
</tr>
<tr>
<td>Maintenance</td>
</tr>
<tr>
<td>Termination</td>
</tr>
</tbody>
</table>

(Prochaska et al. 2008)
The consistently poor results regarding regular face washing in schools derived from all three research methods suggest that the examined populations may be categorized within the Precontemplation stage of the Stages of Change model (Prochaska et al. 2008). As described by the Stages of Change theory, Precontemplation is the first of six steps that participants and educators could take towards making a health behavior routine practice. In the Precontemplation stage, participants are unaware of the need to change. In order for a person or population to progress to the subsequent stage, contemplation (refer to Table 4.2 above), participants must first acknowledge the need for change before making a plan to change.

A reason the schools and FHIS stakeholders interviewed may not have acknowledged the need to partake in daily, supervised face washing may be the lack of reference to face washing within FHIS related laws, regulations, guidelines and other published documents. Face washing was not specifically mentioned in the Fiji Education Act, The Fiji Public Health Act, the Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d), or the Minimum Standards for Wash in Schools Infrastructure (FMOE 2012). As mentioned above, the only content that could possibly be related to the practice of daily, supervised face washing in schools was in the Minimum Standards for Wash in Schools Infrastructure,

“A school must offer adequate access to water for non drinking purposes; these include hand washing, body washing, cleaning of schools, compounds, etc…(FMOE 2012, p. 15).”

A plausible solution would be to focus an intervention on the inclusion of daily, supervised face washing requirements within key FHIS related laws, regulations, and guidelines used by teachers at school each day. Results from this research support conclusions drawn from a study carried out by Kama et al. (2013) stating that the Fijian government and key stakeholders must work to address issues of trachoma transmission (p. 17).

With regard to legislation and policy, it is evident from the data gathered during this research that FHIS programming should focus more attention on the inclusion of “hygiene in schools” within school strategic, management, and operational plans.
Perspectives shared by FHIS stakeholders were in agreement that “hygiene in schools” should be prioritized within school plans; the archival research method discovered avenues for more effective inclusion of hygiene within the FHIS related laws, regulations, guidelines and other published documents examined; and the surveys administered to eleven Head Teachers recorded low percentages of schools including “hygiene” within school plans (55% in strategic plans; 27% in management, or operations and maintenance plans).

As explained by an FMOH WASH Official, school strategic plans are

“...designed by school administration to outline school goals, focus efforts and resources, and streamline operations (FMOH WASH Official 2015).”

Additionally, school management and operations and maintenance plans may be defined as,

“School plans involving administration, where budget decisions are made especially involving school infrastructure (ibid).”

As stated in Chapter 2, according to Adams et al. (2009), in order to ensure hygiene in schools is prioritized, supportive policies at the national, district, local, and school levels are necessary (p. 7). Moreover, an effective policy environment should encourage district and school level stakeholders to institute effective governance and management coordination in order to plan, fund, implement, and manage improvements (ibid).

Although the existence of national policy and standards regarding hygiene in schools is evident in FHIS related laws, regulations, and guidelines such as the Fiji Public Health Act (Cap 111), the Healthy Living Syllabi (FMOE 2015b; FMOE 2015c; FMOE 2015d), and the Minimum Standards for Water Sanitation and Hygiene (WASH) in Schools Infrastructure (FMOE 2012), the inclusion of “hygiene in schools” within school management or operations and maintenance plans has potential to have a stronger
presence in school procedures. For example, potential exists within the Fiji Public Health Act to promote the inclusion of hygiene in school strategic and management plans. The powers held by members of the Board of Health are outlined in the following sections of the Act,

“3. For the purposes of this Act, there is hereby constituted an authority to be called the "Central Board of Health."

4. (1) The Board shall consist of a Chairman, who shall be the Permanent Secretary, and six other members appointed by the Minister of whom at least four shall not be public officers on the date of their appointment to the Board.”

“14. The Board may cause to be made such inquiries as it thinks fit in relation to any matters concerning the public health or in relation to any matters with respect to which it sanction, approval or consent is required by this Act and for that purpose any person authorized in writing by the Board may at any reasonable time enter any premises.”

This authority provides an opportunity for members of the Central Board of Health to motion for the requirement of the inclusion of hygiene into school strategic and management plans for all schools in Fiji. According to an FMOH WASH Official,

“The Central Board of Health may require the inclusion of hygiene into school strategy and management plans only if it is included in the Public Health Act and the Education Act. The Central Board of Health can advise the FMOE on this and ask for inclusion, but it is ultimately decided on by the FMOE (FMOH WASH Official 2015).”

As such, because hygiene in schools is of interest to the FMOE, it would be logical for the Central Board of Health to collaborate with the FMOE in designing an intervention targeted at more effectively including hygiene in school plans. If the
incorporation of hygiene into school strategic and management plans were required, then representatives of the Board of Health could enforce these regulations, as explained in Act 15,

“15. The Board may, in addition to the powers and authorities conferred on it by this Act exercise all the powers and authorities vested in a local authority by this Act within the district of that local authority.”

Considering that the data gathered in this research suggests there is need for a stronger emphasis regarding hygienic needs within school strategic, management, and operational plans, utilizing environmental health strengthening theories and models for designing interventions would be prudent. When the topic of “hygiene” is communicated in school plans, school populations are more likely to understand the importance of hygienic behavior as well as maintaining a hygienic environment (Bolt et al. 2004, p. 11).

Environmental health strengthening theories and models encourage a holistic approach for changing the health behaviors of a population (Stokols 1996, p. 284). For example, as stated in Chapter 2, the Determinants of Organizational Change (Dawson 1994) suggests the improvement of a health environment is dependent on three interconnected elements: the politics of change, context of change, and substance of change (p. 385).

The adaptation of hygiene into strategic, management, operations, and maintenance plans would require an influence within the politics of change. The politics of change refers to the governing activities needed in order to improve a health environment (ibid). With regard to more effectively incorporating hygiene into the content of Fijian primary school planning, the politics of change would most likely involve collaborative decisions made by the school administration and other representative parties in the respective school. As such, possible solutions are multiplex. According to this research, the existence of School Boards and Parent-Teacher Associations (PTAs) are another area identified to need strengthening (within the Management and Coordination FHIS stage). Therefore, an intervention designed to 1) ensure schools are establishing a functioning School Board or PTA, and then 2) require
the School Board or PTA to consider how hygienic issues should be planned would most likely benefit FHIS programming. Naturally, the *politics of change* of each school is different. In order to establish School Boards or PTAs, interventions regarding how hygienic issues should be approached will be unique depending on the resources and culture of each school.

Furthermore, exterior politics related to school hygiene includes national and local government support, and community involvement (Dawson 1994, p. 385). According to the key informant consultations carried out in this research, the national and local governments are working to encourage school administrators to include hygiene in all school plans.

The *politics of change* and the *context of change* are simultaneously affected (ibid). As stated in Chapter 2, the *context of change* refers to contextual factors related to hygiene programs in schools such as human resources (the presence of a teacher responsible for teaching hygiene education, and adequate staff to supervise hygiene-related activities), administrative systems (to enforce healthy hygiene behavior of students), availability of essential commodities (such as hygiene-related infrastructure, soap, water, and toilet paper), and social and cultural practices and beliefs (such as where the hygiene commodities are provided). These elements were investigated within FHIS stages *Supply* and *Demand*, and were also areas identified to need strengthening. Accordingly, logic dictates that an effective intervention would need to include elements addressing these contextual factors.

Lastly, the *substance of change* is the third determinant attributed to change. The *substance of change* consists of four elements. Table 2.5 is referenced below to provide definitions for the four elements: the *scale and scope of change*, the *defining characteristics of the change program*, the *timeframe of change*, and the *perceived centrality of the change*.
Table 2.5: Substance of Change Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale and scope of change</td>
<td>May range from small-scale change to large-scale transformational change; distinction may also be made between levels within organization</td>
</tr>
<tr>
<td>Defining characteristics of the change program</td>
<td>Refers to both the classifications attached to change projects and the actual content of change in question</td>
</tr>
<tr>
<td>Timeframe of change</td>
<td>Period over which change occurs, from its conception until routine operation</td>
</tr>
<tr>
<td>Perceived centrality of the change</td>
<td>Whether or not change is viewed as vital to the survival of the organization</td>
</tr>
</tbody>
</table>

(Dawson 1994, p. 394)

Concerning the incorporation of hygiene in school planning, the interplay between the *substance, context* and *politics* of change is multidimensional. Regarding the proposed solution above, if the Central Board of Health collaborates with the FMOE to design an intervention targeted at more effectively including hygiene in school plans, the four elements of the *substance of change* would affect how the politics and context work together to make the change.

*Budget and expenditures* also represents a program effectiveness bottleneck within the FHIS *Enabling Environment* determinant. Although the archival research confirms the designation of a national budget for “hygiene in schools,” key informant consultations revealed that school budgets do not highly prioritize hygiene, and surveys with Head Teachers revealed only 9% of schools include hygiene in their budgets.

Findings from the archival research revealed that funding for hygiene in schools is available within the government education grant. As stated in Chapter 4, according to an Instructional Memo (FMOE 2013) written by the Permanent Secretary for Education, every school in Fiji was apportioned 250 FJD per child in 2014, and should receive the same amount per child annually (p. 2). According to an FMOH WASH Official, of the 250 FJD, twenty percent of the funding should be used for “building and compound maintenance” (FMOE 2013, p. 3). His words were,
“The twenty percent outlined for “building and compound maintenance” may be used on expenditures such hygiene-related infrastructure including toilets, sinks, and hygienic cleaning materials (FMOH WASH Official 2015).”

Two reasons to account for schools not using the twenty percent available for hygiene in their budget may be:

1. The relatively short amount of time that has passed for the knowledge to disseminate to school Head Teachers
2. It is not clear that “building and maintenance” extends to include hygiene expenditures

According to Pettigrew (1985), the process of environmental health strengthening is largely dependent on time (p. 27). The history, present, and the future dictate how change develops. Considering the reasons listed above as contributing factors resulting in schools not using the twenty percent available for hygiene in their budget, the present is an opportune moment for an intervention.

The same government grants allotted in 2014 should be consistent every year (FMOE 2013, p. 2). As such, an additional Instructional Memo from the Permanent Secretary should be sent to School Managers, Head Teachers and Principals to clarify the twenty percent designated for “building and compound maintenance” includes hygiene-related expenditures such as toilets, sinks, and hygienic cleaning materials.

With respect to Management and Coordination, during open-ended, ethnographic interviews, FHIS stakeholders stressed the importance of having a functioning School Board and Parent-Teacher Associations (PTAs) at schools. However, during archival research, no data were discovered regarding the existence of national standards concerning School Boards or PTAs. Furthermore, results from the Head Teacher surveys showed only 55% of the surveyed primary schools reported to have an active School Board or Parent-Teacher Association.
An FMOH WASH Official provided the following definitions for School Board and a PTA,

“The School Board constitutes the people making decisions at the school. This Board usually consists of the Head Teacher, community members, and the school manager…PTAs are associations that engage parents and teachers with decisions at school (FMOH WASH Official 2015).”

Furthermore, the FMOH WASH official elaborated to explain School Boards and PTAs provide a space for schools to address hygiene issues in schools,

“They [School Boards and PTAs] are organizations that would make decisions regarding hygiene issues. If there is a concern raised by the School Board or PTA, they can take it up with the Ministry (ibid).”

Although this explanation explains how School Boards and PTAs should theoretically function and two school teachers were recorded explaining existing systems in their schools that encourage interactions between parents and teachers, no content regarding School Boards and PTAs was found within FHIS related laws, regulations, and guidelines. As such, this highlights an area for potential improvement: Because the School Board consists of the decision-makers at the school (Head Teachers, community members, and school managers), and they remain in open communication with parents of students and teachers, amending the Minimum Standards for WASH in Schools to recommend School Boards discuss local solutions to hygiene-related issues in schools would propagate awareness locally.

In accordance with environmental strengthening theories and models that suggest comprehensive solutions in order to influence a population to modify their health behavior, the inclusion of a requirement for schools to have a system in place for parents and teachers to exchange ideas could create an effective space for hygienic issues to be discussed. As stated in Chapter 2, incorporating parents through PTAs has been successful in influencing positive hygiene behavior change in other developing nations.
(Duey 2009). In a Fijian context, working together, harmony, and unification are prioritized (Nabobo-Baba 2006, p. 43). Therefore, including parents and communities in decisions made to affect positive hygiene behavior change through utilizing School Boards and PTAs may be appropriate and highly effective in Fiji.

FHIS Monitoring is an area identified to be lacking. However, results from this study demonstrate a desire from FHIS stakeholders to improve FHIS monitoring and highlight possible avenues to make the improvements. As stated by an FMOE Asset Monitoring Unit Officer,

“Within FEMIS [Fiji Education Management Information System] is an opportunity to ask more questions about hygiene, and we could monitor it this way (FMOE Asset Monitoring Unit Officer 2014).“

As such, using FEMIS has been offered as one such avenue to improve the current FHIS monitoring system. However, findings from the archival research revealed the current Fiji Education Management Information System (FEMIS) harnesses little data related to FHIS. In fact, only two measures of data are gathered: the source of water used by schools, and the number of toilets at schools. At the same time, findings from the surveys indicate a high percentage of schools (94%) reporting to update FEMIS. Therefore, expanding FEMIS to solicit more hygiene-related data would most likely provide more data regarding FHIS.

An FMOH WASH Official explained another limiting factor to the monitoring process,

“Usually, schoolteachers write school reporting information down in a journal, but the journals are rarely visible to anyone outside of the school. We need to do a better job of making the monitoring of hygiene in schools available for evaluation, and carried out on a consistent basis (FMOH WASH Official 2015).”
As such, the accessibility of the data is an additional logistical constraint to FHIS monitoring. Considering that two crucial elements for improving FHIS monitoring are the content and the accessibility of data, then feasible interventions to improve the effectiveness of FHIS monitoring could be to:

1. Add the FHIS stages, determinants, and indicators created by the researcher for this study to FEMIS
2. Continue monitoring the FHIS stages, determinants, and indicators in the schools researched this study, and expand the monitoring to more schools throughout Fiji
3. Continue using the Akvo digital data gathering software to effectively organize, share, and monitor the data gathered

Taking into consideration the high percentage of schools (94%) reporting to update FEMIS, if the FHIS stages, determinants, and indicators established for this study were added to FEMIS and monitored methodically, the FHIS knowledge base would be increased exponentially. As an effect, the progress or digression regarding the identified bottlenecks from this research could be tracked, and interventions could be designed to target specific areas. Accordingly, the improvement of FHIS monitoring would most likely affect the entire FHIS spectrum positively, as the affects of allocated interventions, money and resources could be tracked and compared.

Additionally, the use of Akvo digital data gathering software in this study has created a foundation for the use of an improved and dynamic platform for monitoring FHIS activities. During the methodology for this research, the researcher trained ten FHIS stakeholders on how to use Akvo. The training included:

1. Applied stepwise tutorials on how create surveys on a computer and send them to a mobile phone
2. Practice administering surveys via mobile phones
3. Practice organizing and analyzing data gathered from the field

According to an FMOH WASH Official (2015), FHIS stakeholders have access to the services provided by Akvo. Table 3.8 is referenced below to provide a list of the organizations with access to Akvo.
Table 3.8
FHIS Akvo Data Gathering and Management Software Training

<table>
<thead>
<tr>
<th>Title</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASH officer</td>
<td>Fiji Ministry of Health</td>
</tr>
<tr>
<td>High-level manager</td>
<td>Fiji Ministry of Health</td>
</tr>
<tr>
<td>Asset Monitoring Unit Officer</td>
<td>Fiji Ministry of Education</td>
</tr>
<tr>
<td>Senior WASH Unit Officer</td>
<td>Fijian Teachers Association</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Live and Learn Environmental Education (CSO)</td>
</tr>
<tr>
<td>Project engineer</td>
<td>Rotary Pacific Water for Life (CSO)</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Adventist Disaster Relief Agency (CSO)</td>
</tr>
<tr>
<td>Program Manager</td>
<td>Project Heaven (CSO)</td>
</tr>
<tr>
<td>Project Engineer</td>
<td>Habitat for Humanity (CSO)</td>
</tr>
<tr>
<td>Disaster Management Officer</td>
<td>Fiji Red Cross (CSO)</td>
</tr>
</tbody>
</table>

As such, an opportunity exists for FHIS stakeholders to work together using Akvo as a common interface to monitor and evaluate FHIS progress, while deciding on applicable interventions. Possibly, in addition to using FEMIS for FHIS monitoring, FHIS stakeholders could call upon School Boards, PTAs, or a designated teacher responsible for hygiene promotion in schools to continually update Akvo indicators.

A recurring theme during key informant consultations was the necessity to design different interventions for schools categorized under different FMOE locality descriptions. As stated by the FTA Senior WASH Project Officer,

“Schools in remote areas need different solutions for different problems, compared to those in urban areas. The same goes for rural schools and very remote schools (FTA WASH Project Officer 2014).”

Through the use of Akvo, data would become more readily available, and determinants and indicators could be compared between locality descriptions. As a
result, interventions could be designed to target needs unique to different localities. For example, according to the data gathered during the student survey, the proportion of remote schools demonstrating hand washing facilities with soap is higher than urban schools (100% in remote schools; 50% in urban schools). Therefore, an intervention aimed at affecting the availability of soap at hand washing stations would be prudent for urban schools while an intervention for remote schools could be aimed at affecting a different indicator demonstrating a need for attention.

Regarding FHIS Monitoring, the existence of FEMIS implies FHIS stakeholders are in the Maintenance stage of the Stages of Change model (Prochaska 1994). As explained by the Prochaska (1994), the presence of a monitoring system indicates a commitment to a desired change and an awareness of the possibility for regression. Before entering the Maintenance stage, FHIS stakeholders have already progressed through the Precontemplation, Contemplation, Preparation, and Action stages. For instance, FHIS stakeholders are already aware of the need to change, have acknowledged change is necessary, have established plans to change, and taken action. Strengthening FHIS monitoring through continuing the use of FHIS determinants and indicators as well as using Akvo would allow FHIS stakeholders to be more aware of progress they are making towards practicing hygienic behavior and maintaining a hygienic environment at school.

In a broader context, information on the monitoring of hygiene in schools information is poorly documented internationally (DFID 2013, p. 77). Thus, an added value to improving FHIS monitoring and evaluation would be its contributions to the understanding of a poorly researched area globally.
5.3.2 Supply

Two FHIS Supply determinants were exposed as bottlenecks in the effectiveness of FHIS. These determinants are: Availability of Essential Commodities and Access to Adequately Staffed Services, Facilities and Information. The identification of these determinants as bottlenecks was based on data gathered through three methods: key informant consultations, archival research, and surveys with Head Teachers and students. Table 5.3 below displays the Supply determinants and the impeding indicators responsible for the identification of determinants as a bottleneck.

<table>
<thead>
<tr>
<th>Determinant</th>
<th>FHIS Indicator</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Essential Commodities</td>
<td>Proportion of schools with functioning hygiene facilities on daily basis</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools with hand washing facilities with soap available on daily basis</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75%</td>
</tr>
<tr>
<td>Access to Adequately Staffed Services, Facilities and Information</td>
<td>Proportion of schools reporting to have a schoolteacher responsible for hygiene promotion</td>
<td>64%</td>
</tr>
</tbody>
</table>

Availability of Essential Commodities is identified as a bottleneck due to a noticeable implementation gap between policy and programming. The archival research method revealed a substantial amount of content within FHIS related laws, regulations and guidelines regarding standards for the functionality of hygiene facilities and soap availability. For example, the Minimum Standards for WASH in Schools provides guidelines regarding the water supply (which is necessary for the functionality of some hygienic facilities at school such as flush toilets and sinks), and availability of soap at schools. Standard 5 explains that water should be available at schools,
• “In addition to the main water supply system, each school should have a reservoir water tank with a capacity of 5,000 liters;

• In geographical areas where there are no water source available, each school should at least have a water reservoir tank of 5,000 liters each (FMOE 2012, p. 16).”

However, no clarification is specifically provided regarding toilet functionality. This lack of clarification may be correlated to the low percentage of toilet functionality recorded during the Head Teacher surveys (45%). One school teacher from an urban school in the Nausori District explained,

“Even though we have water, sometimes the water doesn’t come to the toilets...If there is no water for the toilets, the toilet quickly becomes smelly and children will not use them...sometimes it takes days for the toilets to be fixed (School Teacher from Nausori District Urban Primary School 2015).”

FHIS stakeholders were communicative about the consequences of non-functioning hygiene facilities. Teachers and students explained if water is not available on a particular day, school is cancelled. Both teachers that were interviewed mentioned rainwater tanks are used as reserve sources when water is not available from their normal source (Interview with School Teacher from Nausori District Urban Primary School, 2015; Interview with School Teacher from Nausori District Remote Primary School). As such, FHIS monitoring could investigate what types of reserve water sources are available at schools, and whether or not a plan is in place to use them when needed.

Studies suggest functioning hygiene facilities are an essential component of an effective school hygiene program (Onyango-Ouma 2005, p. 1711). When toilets do not function properly, bacteria, viruses, and parasites from excreta are more likely to be contagious (Bolt et. al 2004, p. 21). Furthermore, the existence of properly functioning
toilets allows opportunity for safe disposal of stools, which may help prevent the occurrence of hygiene-related diseases (Humphrey 2009, p. 1034).

The operation of a toilet is a circumstantial factor that contributes to the motivation to develop a health behavior. As explained by Hochbaum (1958), health behavior is dependent on personal beliefs or perceptions concerning a particular disease, and the strategies available to decrease its occurrence (p. 3). According to the Health Behavior Model (HBM), health behavior is influenced by seven constructs: perceived susceptibility, perceived benefits, perceived barriers, perceived seriousness, modifying variables, cues to action, and self-efficacy (Hayden 2009, p. 31). Table 2.2 is referenced below to provide definitions of each of these constructs.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Perceived susceptibility</td>
<td>An individual’s assessment of his or her chances of getting the disease</td>
</tr>
<tr>
<td>2) Perceived benefits</td>
<td>An individual’s conclusion regarding the advantages of adopting the new behavior</td>
</tr>
<tr>
<td>3) Perceived barriers</td>
<td>An individual’s opinion as to what will stop him or her from adopting the new behavior</td>
</tr>
<tr>
<td>4) Perceived seriousness</td>
<td>An individual’s judgment as to the severity of the disease</td>
</tr>
<tr>
<td>5) Modifying variables</td>
<td>An individual’s personal factors that affect whether the new behavior is adopted</td>
</tr>
<tr>
<td>6) Cues to action</td>
<td>Those factors that will start a person on the way to changing behavior</td>
</tr>
<tr>
<td>7) Self-efficacy</td>
<td>Personal belief in one’s own ability to do something</td>
</tr>
</tbody>
</table>

(Source: Hayden 2009, p. 31)

Accordingly, the existence of functioning toilets within a school would affect each of the seven constructs within the HBM. First, the first four perceptions of the HBM (perceived susceptibility, perceived benefits, perceived barriers, and perceived
seriousness) are directly affected if an operational toilet is present within the school simply because using a toilet becomes an option. As such, a functioning toilet is also a vital modifying variable. When this particular variable is modified, cues to action may be established to facilitate behavioral changes for using the toilet. Ultimately, it is hoped that individual perceptions and beliefs concerning personal ability will develop, and the behavior will become routine.

Additionally, “Hand washing soaps” are listed under the required sanitary materials for schools in Standard 9 (FMOE 2012, p. 19). Although hand washing soap is required to be in schools, only 18% of the surveyed schools demonstrated hand washing soap during Head Teacher surveys and 75% of schools displayed soap during student surveys.

Similarly to the functionality of toilets, soap availability is an environmental factor that may directly affect the health beliefs of an individual. As stated by Lindheim and Syme (1983), environmental elements (such as soap) require interplay with people who occupy the environment in order for a health promotion program to become effective (p. 358). As such, the Health Belief Model (HBM) perceived seriousness (Hochbaum, 1958) may offer an explanation for the mismatch between the Head Teachers and students reporting high percentages of hand washing at school everyday (82% recorded by Head Teacher survey; 94% recorded by student survey), and the low percentages recorded by researcher observations regarding soap availability during survey administration (18% recorded by Head Teacher survey; 75% recorded by student survey).

In accordance with the HBM, a high level of perceived seriousness may be implied from the data reporting high percentages of students and teachers engaging in daily, supervised hand washing. However, because soap was not available at hand washing locations at most schools on the day of visit, it may be assumed the question was 1) misunderstood by informants; or b) the significance of “using soap” is unclear. As mentioned in Chapter 2, evidence suggests hand washing with soap in schools is correlated with the reduction of diarrhea and hygiene-related diseases (Bowen et al. 2007, p. 1169). Furthermore, hand washing with soap in schools is shown to reduce school absenteeism (Talaat et al. 2011, p. 619). Hence, considering 100% of schools
surveyed reported access to water, and a high percentage of schools report daily, supervised hand washing, addressing the soap availability bottleneck and encouraging the incorporation of soap into daily hand washing routines has potential to yield positive results.

*Access to Adequately Staffed Services, Facilities and Information* was identified as a bottleneck due to qualitative and quantitative data gathered regarding the *proportion of schools reporting to have a schoolteacher responsible for hygiene promotion*. According to interviews with two teachers and an FMOH WASH Official, teaching hygiene-related topics at school is a responsibility shared by every teacher in the particular school (Interview with School Teacher from Nausori District Urban Primary School 2015; Interview with School Teacher from Nausori District Remote Primary School 2015; Interview with FMOH WASH Official 2015). Therefore, although hygiene is a subject taught at school, the structure of lessons may differ depending on the particular teacher’s methods and the teacher’s personal knowledge of effective hygiene behaviors. As such, further research aimed at investigating how teachers implement hygiene education would offer relevant data in order to make decisions regarding addressing identified gaps.

Furthermore, an archival research method was used to examine the extent to which hygiene is addressed within FHIS related laws, regulations, guidelines and other published documents.

The *Minimum Standards for WASH in Schools Infrastructure* provides standards concerning hygiene education for teachers to use for reference. Standards explain teacher responsibilities, but they do not include specific lessons plans,

> “Children are heavily influenced by the example set by school staff, their teachers in particular, who should provide positive role models by consistently demonstrating appropriate hygiene behaviours (FMOE 2012, p. 23).”

Furthermore, in *Standard 13*, the text highlights that hygiene education should be included in school curriculum,
"Hygiene education should be provided for school children as part of the school curriculum (ibid).”

Additionally, the Minimum Standards for WASH in Schools Infrastructure encourages teachers to provide feedback to students regarding hygiene behavior in order to foster improvement (FMOE 2012, p. 24).

The Fiji Health Living Syllabi (HLS) provides curriculum for hygiene to some extent at each grade level. The HLS includes sections on: Personal hygiene and sanitation; People and Food; Disease prevention; and Personal and community health (FMOE 2015b; FMOE 2015c; FMOE 2015d). Additionally, guidelines are provided for facilitating the following management and coordination topics: time table guide; making learning engaging, real and meaningful; creating a safe and happy learning environment; clarity about outcomes and activities; Teaching strategies; and different learning styles (ibid).

During structured, face-to-face surveys, 64% of Head Teachers reported to have at least one teacher responsible for hygiene promotion at their respective school. From the perspective of the students’ surveyed, 81% reported to have a teacher responsible for hygiene promotion. Although 81% alone would not be considered a bottleneck, 64% indicates a need for an intervention. According to Freeman et al. (2011), the presence of a designated hygiene teacher is a key factor for children in developing their hygiene behavior capacities (p. 88).

As discussed in Chapter 2, a study conducted in Kenya compared the effects of interventions designed to train two teachers on hygiene promotion skills within 45 public-primary schools (O'Reilly et al., 2007). Teachers were trained on proper hand washing techniques, methods to form school water sanitation and hygiene clubs, teach hygiene to students, and promote the sharing of hygiene knowledge within student homes (ibid). Results from the study showed improvement in student hand washing behavior, while school absenteeism decreased in nine intervention schools by 35% (ibid, p. 80).

The decision to designate a specific teacher for hygiene promotion draws on behavioral change theoretical frameworks such as the Stages of Change theory proposed
by Prochaska et al. (1994). As explained by Prochaska, the preparation stage involves making plans to change, and the action stage necessitates the modification of the current environment in order to encourage new behaviors. As such, the schools recorded to have designated a teacher to teach hygiene have prepared and taken action. However, the schools that have not designated a teacher to teach hygiene could mobilize resources in order to ensure that at least one teacher is qualified to teach and enforce positive FHIS behaviors. The designated teacher should also be responsible for ensuring FHIS infrastructure is properly maintained. Accordingly, the establishment of a teacher to perform these duties could be tracked by FHIS monitoring, along with the effectiveness of the teacher’s programs.

A possible intervention for the FMOH and FMOE would be to organize trainings for teachers regarding effective ways to teach FHIS and maintain FHIS related infrastructure. During the training (or series of trainings), FHIS stakeholders could share strategies for influencing positive behavior change at schools. Furthermore, the training may be an ideal environment to increase the competency of school representatives in using the Akvo application to report statuses of FHIS determinants and indicators, thus creating a space for teachers to strengthen the maintenance stage of the Stages of Change model. As described by Prochaska (1994), in the maintenance stage, a monitoring system is established in order to track the commitment to particular changes.
5.3.3 Demand

One FHIS Demand determinant was revealed as a bottleneck in the effectiveness of FHIS. This determinant is: Social and Cultural Practices and Beliefs. The identification of Social and Cultural Practices and Beliefs as a bottleneck was based on the data gathered through three methods: key informant consultations, archival research, and surveys with Head Teachers and students. Table 5.4 below displays the Social and Cultural Practices and Beliefs determinant, the indicators responsible for the identification of the determinant as a bottleneck, and their respective assessments.

<table>
<thead>
<tr>
<th>Determinant</th>
<th>FHIS Indicator</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social and Cultural Practices and Beliefs</td>
<td>Proportion of schools always providing toilet paper</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Existence of national standards regarding toilet paper location in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting direct accessibility to toilet paper at the toilet area</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Proportion of schools always providing soap</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Proportion of students reporting that their school provides soap</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Proportion of students acknowledging the importance of hygienic behavior in their definition of hygiene</td>
<td>50%</td>
</tr>
</tbody>
</table>

The Social and Cultural Practices and Beliefs determinant was identified as a bottleneck in the effectiveness of FHIS programming due to three factors:

1. Toilet paper location
2. Access to soap in schools
3. The student interpretation of the meaning of hygiene.
First, toilet paper location is a major issue. During key informant consultations, two school teachers and four students explained norms regarding toilet paper at school. All persons interviewed explained the location of toilet paper is a decision made by school teachers (Interview with Fijian Student attending a Nausori District Remote Primary School 1 2014; Interview with Fijian Student attending a Nausori District Remote Primary School 2 2014; Interview with Fijian Student attending a Nausori District Urban Primary School 1 2014; Interview with Fijian Student attending a Nausori District Urban Primary School 2 2014; Interview with School Teacher from Nausori District Remote Primary School 2015; Interview with School Teacher from Nausori District Urban Primary School 2015).

Archival research of FHIS laws, regulations, and guidelines, revealed more information regarding toilet paper location. Some text was identified within the Minimum Standards for WASH in Schools Infrastructure to address toilet paper provision at schools. For example, Standard 13 includes the provision of toilet paper and soap in an explanation of hygiene education requirements,

“Hygiene education should include:

- Cleaning practice after toilet use;
- Provision and use of hygienic items such as soaps, toilets papers;
- Correct use of toilets;
- Waste disposal (FMOE 2012, p. 23).”

However, there is no specific instruction or standard regarding the exact location of toilet paper.

During structured, face-to-face surveys with students, students were asked where the toilet paper is kept during the day. Only 6% responded that toilet paper was directly accessible next to the toilet area. This statistic is particularly interesting because 83% of students reported their schools always provided toilet paper, and 94% of students surveyed stated that toilet paper was either stored in the staff room, office, classroom, or kept with a teacher. Therefore, during normal schools days, when a student needs to use the toilet, the majority of the students surveyed must contemplate whether they will:
a) Request permission from an authority figure to access the toilet paper,
b) Purchase and carry a personal supply of toilet paper to use at school
c) Refrain from urinating and defecating during school hours.

As explained by Adams et al. (2009), poor environmental conditions, such as a lacking access to toilet paper, may result in difficulties to teach and learn (p. 2). Furthermore, according to WHO/UNICEF (2014), if hygienic services were increased at schools, student achievement would be improved (p.40). Considering student access to toilet paper is a critical issue, theoretical frameworks regarding environmental strengthening such as the *Components of Analysis: Context and Process* (Pettigrew 1985) offer insight into why the lack of attention to toilet paper access may occur and how to possibly influence positive change.

Pettigrew (1985) explains the product of change is dependent on two contexts: the *outer context*, and the *inner context* (p. 37). The *outer context* may be delineated to include: politics, social and cultural norms, and national policy; and the *inner context* may include: organizational strategy, systems management, and organizational processes (ibid). Naturally, both contexts are simultaneously affected. For instance, regarding the toilet paper location at school, according to this research, the *inner context* (organizational strategy, systems management, and organizational processes) demonstrates an ineffective system where toilet paper is available yet student access to it is restricted due to an *outer context* factor (teachers safeguard the toilet paper because this is the accepted social and cultural norm). As such, designing an intervention should focus on affecting the inner and outer contexts.

Because policy already exists regarding toilet paper provision in schools, and toilet paper was found to be in schools, the policy should be amended to specify exactly where toilet paper should be kept at schools. Furthermore, the justification provided by teachers for safeguarding toilet paper “so the toilet paper does not go missing” suggests the hygiene curriculum should be more specific. It would be logical to include lessons regarding the reasons why toilet paper should be placed next to the toilet area, and why taking the toilet paper away from the toilet area creates problems for classmates who actually need to use it.
The second major issue identified regarding Social and Cultural Practices and Beliefs is access to soap in schools. During key informant consultations, two school teachers and four students explained norms regarding soap location at school. According to the two school teachers, soap is located next to hand washing areas (Interview with School Teacher from Nausori District Remote Primary School 2015; Interview with School Teacher from Nausori District Urban Primary School 2015). Three of the students expressed that soap was either next to the hand washing areas or sometimes next to the hand washing areas (Interview with Fijian Student attending a Nausori District Remote Primary School 1 2014; Interview with Fijian Student attending a Nausori District Urban Primary School 1 2014; Interview with Fijian Student attending a Nausori District Urban Primary School 2 2014) however, one student explained that soap was kept with teachers (Interview with Fijian Student attending a Nausori District Remote Primary School 2 2014).

During archival research of FHIS laws, regulations, and guidelines, information was revealed within the Minimum Standards for WASH in Schools Infrastructure specifically regarding access to soap in schools. For instance, Standard 9 provides a requirement for schools to provide soap (FMOE 2012, p. 19). However, during structured, face-to-face surveys, low percentages of the eleven Head Teachers (9%) and forty-eight students (71%) reported their schools to provide soap.

The third critical issue identified within the Social and Cultural Practices and Beliefs determinant is the student interpretation of the meaning of hygiene. During the student survey, when students were asked to explain their personal definition of hygiene, only 50% of students made reference to hygienic practices, and/or gave reasons why practicing healthy hygiene behavior was necessary. However, during an examination of FHIS laws, regulations, and guidelines, some information was uncovered within the Minimum Standards for WASH in Schools Infrastructure regarding the importance of students knowing the significance of hygiene. Standard 4 explains the significance of students knowing why hygienic behavior is important (FMOE 2012, p. 15); and Section 3.3 explains how hygiene education is sustained (FMOE 2012, p. 23).
According to the Self-Efficacy Theory (Bandura 1977), affecting behavior change is influenced by the following four modalities: *performance enactment*, *vicarious learning*, *verbal persuasion*, and *emotional arousal*. Table 2.3 is referenced below to provide explanations for the different modes of transmission for each modality.

<table>
<thead>
<tr>
<th>Source</th>
<th>Mode of Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance accomplishments</td>
<td>Participant modeling</td>
</tr>
<tr>
<td></td>
<td>Performance desensitization</td>
</tr>
<tr>
<td></td>
<td>Performance exposure</td>
</tr>
<tr>
<td></td>
<td>Self-instructed performance</td>
</tr>
<tr>
<td>Vicarious experience</td>
<td>Live modeling</td>
</tr>
<tr>
<td></td>
<td>Symbolic modeling</td>
</tr>
<tr>
<td>Verbal persuasion</td>
<td>Suggestion</td>
</tr>
<tr>
<td></td>
<td>Exhortation</td>
</tr>
<tr>
<td></td>
<td>Self-instruction</td>
</tr>
<tr>
<td></td>
<td>Interpretive treatments</td>
</tr>
<tr>
<td>Emotional arousal</td>
<td>Attribution</td>
</tr>
<tr>
<td></td>
<td>Relaxation, Biofeedback</td>
</tr>
<tr>
<td></td>
<td>Symbolic desensitization</td>
</tr>
<tr>
<td></td>
<td>Symbolic exposure</td>
</tr>
</tbody>
</table>

(Bandura 1977, p. 195)

Considering only 50% of students made reference to hygienic practices, and/or gave reasons why practicing healthy hygiene behavior was necessary, further research regarding which of the four modalities are being used to transmit hygiene messages and which are most effective would be advantageous for the future of FHIS education.

### 5.3.4 Quality

One FHIS *Quality* determinant was revealed as a bottleneck in the effectiveness of FHIS. This determinant is: *Condition of hygiene program*. The identification of *Condition of hygiene program* as a bottleneck was based on the data gathered through three methods: key informant consultations, archival research, and surveys with Head Teachers and students. Table 5.5 below displays the *Condition of hygiene program* determinant, the indicators responsible for the identification of the determinant as a bottleneck, and their respective assessments.
The *Condition of hygiene program* determinant was identified as a bottleneck for three main reasons:

1. The low percentages of schools reporting to demonstrate toilets and surrounding areas in "good condition" during Head Teacher and student surveys,
2. Qualitative data gathered from two students expressing their discomfort in using toilets at school, and
3. The low proportion of schools reporting to offer adequate privacy during the Head Teacher surveys.

The first area of concern was the low percentages of schools reporting to demonstrate toilets and surrounding areas in "good condition". The justification for determining whether or not school hygiene facilities were in “good condition” was dependent on the toilet and surrounding area exhibiting a clean condition, which was clear of rubbish. During the Head Teacher survey visit, only 27% of eleven schools exhibited “good conditions.” During the student survey, only 50% of four schools displayed “good conditions.”

Additionally, the second area of concern derives from two students expressing their discomfort in using toilets at schools due to the unsanitary conditions,

“I don’t feel comfortable using the toilet at school. The toilet is not clean (Fijian Student attending a Nausori District Urban Primary School 1 2014).”
“The toilet is messy and sometimes smells bad. I prefer the toilet at home”
(Fijian Student attending a Nausori District Urban Primary School 2 2014).”

Theses low percentages regarding hygienic conditions at school and recorded student experiences regarding hygiene conditions at school are critical because poor hygiene conditions are a principal cause of diarrhea (Bartram and Cairncross 2010, p. 3). As explained in Chapter 2, diarrhea alone is responsible for more deaths than AIDS and malaria combined (ibid). Conditions of school hygiene facilities are a widespread concern throughout the developing world (WHO/UNICEF 2014, p. 46). At the same time, when interventions are designed to improve hygiene facilities in schools, positive affects on the health behaviors of students have been a result (Onyango-Ouma et al. 2005, p. 1712). For instance, evidence suggests when hygiene conditions become a priority in schools, children may adopt healthy hygiene behaviors (such as hand washing, face washing, and choosing to urinate and defecate in a toilet) and serve as agents of hygiene behavior change in their communities (ibid). Furthermore, in 2007, a study carried out in eleven schools in Malawi aimed to monitor an intervention designed to improve hygiene conditions reported that students learned proper hygiene behaviors at school and proceeded to demonstrate those behaviors to people in their homes (PSI 2009, p. 1). As a result, the community health center reported at 35% reduction in diarrheal disease (ibid).

Theoretical perspectives on environmental health strengthening emphasize how various contextual elements jointly affect the health of an environment (Stokols 1992, p. 10). The existence of hygiene facilities is an integral part of the physical environment of the school; and personal interactions with the hygiene facilities determine their condition. As described by Dawson (1994), the contexts of change include how personal or interpersonal interactions vary within different locations (p. 393). Concerning the school hygiene facility environment, personal and interpersonal contextual interactions may include: how facilities are perceived, how they are used, and how they are maintained. Naturally, these dimensions will vary considerably across individual and
group perspectives. As such, the Health Belief Model (HBM) (Hochbaum 1958) is once again applicable.

The low percentages of schools exhibiting “good” hygiene facility conditions infer low levels of HBM perceptions (susceptibility, severity, benefits, and barriers) regarding consequential health risks. At the same time, FHIS policy emphasizes the importance of the hygiene facility conditions to some extent. For instance, in the Fiji Public Health Act, the authorities of local government to inspect and regulate hygiene-related facilities in schools are outlined (Act 120-127); and in the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012), the importance of the condition of hygiene facilities is emphasized (p. 12). Therefore, in order to change perceptions of the population using the hygiene facilities, attention should be focused on transmitting the knowledge available in FHIS policy to school administration level.

The second area of concern regarding Condition of hygiene program is the privacy of toilets at schools. 64% of schools surveyed were recorded to exhibit toilets with adequate privacy. In order for toilet privacy to be considered adequate during the survey, the toilet area must have displayed: 1) a functioning door, and 2) a lock accessible for a student to use. Key informant consultations offered further insight into the reality of these issues.

While this bottleneck is critical, findings during archival research of FHIS laws, regulations, and guidelines uncovered some potential avenues to address it. For instance, there are standards within the Minimum Standards for WASH in Schools Infrastructure (FMOE 2012) regarding privacy of toilets, to which every school in Fiji should abide. Standard 6 explains, “Schools must ensure boys and girls have equal access to adequate sanitation facilities in schools, which ensure privacy for all (p. 17).” Furthermore, staff toilets must have adequate privacy (p. 17). Standard 10 mentions the importance of a door at toilet entrances for privacy (p. 20); and the checklist provided at the end of the document suggests the privacy of toilets is monitored (p. 26).

The Components of Analysis: Context and Process (Pettigrew, 1985) is an environmental health strengthening theoretical model applicable to improving the condition of toilet privacy in schools. As explained by Pettigrew (1985), health improvement is dependent on contextual factors over time (p. 27). As such, it would be
beneficial to investigate reasons why toilet privacy is exhibited in 64% of the schools and not exhibited in 36% of the schools. Understanding the historical process that 64% of schools followed to ensure toilet privacy presently would help design future interventions to target the 36% of schools without toilet privacy.

5.4 Comparison: urban schools and remote schools

Throughout the findings of this study, there were notable differences in the data gathered from the student surveys administered at remote schools compared to the data gathered from student surveys at urban schools. Table 2.1 is reproduced below to provide FMOE definitions for remote and urban schools.

| Table 2.1: FEMIS “Locality Description” definitions |
|-----------------|---------------------------------------------------|
| Remote          | Accessible by motor road but lies more than 20 km from a city or town boundary |
| Urban           | Includes City (within the metropolitan center/suburbs of a city); Peri-Urban (within 10 km of a city suburban boundary); and Town (within 5 km of a town boundary). |

Although a comparison of the data collected during student surveys does not represent a statistically significant sample, a comparison of the data may be useful for establishing a foundation for further research regarding the inequities within different FMOE locality categorizations. The comparison in this section only considers the data gathered from the student survey method.

A total of forty-eight children were surveyed during the student survey. Table 5.6 below exhibits percentage assessment comparisons between the two remote and two urban schools based on the data gathered during student surveys. Each percentage assessment is coded following the FHIS Indicator Assessment Categorizations chart (refer to Table 3.9).
### Table 5.6: Remote Vs Urban Schools Bottleneck Analysis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Determinant</th>
<th>FHIS Indicators</th>
<th>Remote Schools</th>
<th>Urban Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling environment</td>
<td>Social Norms</td>
<td>Proportion of schools participating in daily supervised hand washing</td>
<td>100%</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools participating in daily supervised face washing</td>
<td>58%</td>
<td>38%</td>
</tr>
<tr>
<td>Supply</td>
<td>Availability of Essential Commodities</td>
<td>Proportion of schools with functioning hygiene facilities on the day of visit</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools with access to water on the day of visit</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of school hand washing facilities with soap available on day of visit</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Access to Adequately Staffed Services, Facilities and Information</td>
<td>Proportion of schools with at least one schoolteacher responsible hygiene promotion</td>
<td>83%</td>
<td>79%</td>
</tr>
<tr>
<td>Demand</td>
<td>Social and Cultural Practices and Beliefs</td>
<td>Proportion of schools always providing toilet paper</td>
<td>92%</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting direct accessibility to toilet paper at the toilet area</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of schools always providing soap</td>
<td>29%</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proportion of students acknowledging the importance of hygienic behavior in</td>
<td>54%</td>
<td>46%</td>
</tr>
</tbody>
</table>
In the forthcoming sub sections, the differences and similarities in each FHIS THSC stage (*Enabling Environment*, *Supply*, *Demand*, and *Quality*) are presented, followed by a comparative analysis between the urban and rural schools.

### 5.4.1 Enabling Environment

Regarding the *Enabling Environment*, the FHIS determinant *Social Norms* exhibited minor variations between the remote and urban schools surveyed. 100% of students from remote schools reported to participate in daily, supervised hand washing; whereas 88% of students from the urban schools said they wash their hands with soap every day. Figure 5.1 below displays this data.

**Figure 5.1**

Remote vs Urban: Proportion of schools participating in daily supervised hand washing

<table>
<thead>
<tr>
<th>Quality</th>
<th>Condition of hygiene program</th>
<th>Proportion of schools with toilet and surrounding area in &quot;good condition&quot;</th>
<th>100%</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Proportion of students reporting a sufficient level of comfort using the toilet at school</td>
<td>96%</td>
<td>88%</td>
</tr>
</tbody>
</table>
Both remote and urban school students reported low numbers regarding the practice of daily, supervised face washing. 58% of students attending remote schools stated they take part in daily, supervised face washing; and only 38% of students attending urban schools proclaimed to practice supervised face washing during the school day. This information is represented in Figure 5.2 below:

![Figure 5.2](image)

### 5.4.2 Supply

With regard to the Supply stage, researcher observations revealed two discrepancies between remote and urban schools within the *Availability of Essential Commodities* FHIS determinant. On the day of survey administration, researcher observations recorded both remote schools to exhibit functioning hygiene facilities (100%); however, only one of two urban schools exhibited functioning hygiene facilities (50%). Furthermore, both remote schools (100%) had functioning hand washing facilities with soap available. In contrast, only one out of the two urban schools demonstrated accessible hand washing facilities with soap available (50%).

Regarding the *Access to Adequately Staffed Services, Facilities and Information* determinant, both remote and urban schools demonstrated high percentages of students reporting to have at least one schoolteacher responsible for hygiene promotion at their
school. 83% of students enrolled in remote schools acknowledged a teacher in charge of hygiene promotion; and 79% of surveyed students attending the two urban schools reported to have a teacher accountable for hygiene promotion. Figure 5.3 below displays these percentages.

![Figure 5.3](image)

**Figure 5.3**
Remote vs Urban: Proportion of schools with at least one schoolteacher responsible for hygiene promotion

83%  
Remote Schools  
79%  
Urban Schools

### 5.4.3 Demand

Within the FHIS Demand stage, the Social and Cultural Practices and Beliefs determinant demonstrates discrepancies between remote and urban schools indicators. First, 92% of surveyed students attending the remote schools state their school “always” provides toilet paper. Comparatively, only 75% of the students surveyed at urban schools reported that their schools consistently provided toilet paper. These statistics are presented below in Figure 5.4.
Interestingly, although nearly all of the students surveyed attending remote schools reported to always have toilet paper at the school, none of the students (0%) reported toilet paper was directly accessible at the toilet area. Similarly, only 13% of the students surveyed from urban schools reported access to toilet paper at the toilet area. Figure 5.5 below displays these numbers. As discussed in section 5.3, this bottleneck is critical for both locality categorizations.
Despite large percentages of students reporting to participate in daily, supervised hand washing at school, students from both remote and urban schools reported low percentages of their schools providing soap for use. Only 29% of students from remote schools communicated soap was always available; and 42% of students from urban schools disclosed soap was regularly available at school. These amounts are shown in Figure 5.6.

![Figure 5.6](image)

A low percentage of students from both remote and urban schools acknowledged the importance of hygienic behavior when asked their definition of hygiene. Specifically, 54% of students either made reference to hygienic practice knowledge, and/or provided rationale for practicing healthy hygiene behavior in remote schools, and 46% of students either made reference to hygienic practice knowledge, and/or provided rationale for practicing healthy hygiene behavior in urban schools. Figure 5.7 demonstrates these percentages.
5.4.4 Quality

The largest discrepancy between remote and urban schools occurred in the Quality stage, with regard to the condition of the schools’ toilets and surrounding areas. Both remote schools (100%) were recorded to exhibit “toilet and surrounding area in good condition.” However, urban schools were documented to have demonstrated “moderately clean toilet and surrounding area with room for improvement,” or “toilet and area are dirty with rubbish on the ground.”

Both remote and urban school students reported a sufficient level of comfort in using the toilet at school. 96% of remote school students said they were comfortable using the toilet at school, and 88% of urban school students commented that they felt content using the toilet facilities available at the school. These numbers are displayed in Figure 5.8.
5.4.5 Comparative analysis: urban schools and remote schools

A comparative analysis between the data gathered from student surveys in two urban and two remote schools may be beneficial as a foundation for further research into the inequities that may exist between different FMOE locality categorizations. Accordingly, if data continues to be monitored over time, FHIS stakeholders could allocate money and resources equitably to schools within certain FMOE locality categorizations depending where identified bottlenecks are shown to be prevalent.

This analysis of student surveys administered to two urban and two remote schools discusses the following topics:

1. An association between some FHIS determinants
2. Some discrepancies in FHIS bottlenecks between two remote and two urban schools
3. Similarities between two remote and two urban schools.

First, the data gathered from the student surveys reveals an association between FHIS determinants. The association occurs between higher percentages of soap access and higher percentages of daily, supervised hand and face washing. For example, 100% of remote schools displayed hand washing facilities with soap. Accordingly, higher percentages were recorded for indicators dependent on soap access such as: 100% of remote schools reported to participate in daily, supervised hand washing; and 58% of
remote students reporting to practice daily, supervised face washing. In comparison, 50% of urban schools displayed hand washing facilities with soap. Correspondingly, lower percentages were recorded for indicators dependent on soap access such as: 88% of urban schools reported to participate in daily, supervised hand washing; and 38% of urban students reported to practice daily, supervised face washing. Figure 5.9 below illustrates this association between higher percentages of soap access and higher percentages of daily, supervised hand and face washing.

Secondly, discrepancies within identified FHIS bottlenecks are evident between the two remote and two urban schools. For instance, regarding the FHIS Enabling Environment, two minor variances are evident. First, 100% of remote school students reported to practice daily, supervised hand washing compared to the 88% of urban school students. Second, 58% of remote school students reporting to practice daily, supervised face washing compared to the 38% percent of urban school students.

With respect to FHIS Supply, a major discrepancy occurs between the remote and urban schools demonstrating functioning hand washing facilities with soap. 50% of urban schools demonstrated hand washing facilities with soap compared to 100% of remote schools. Figure 5.9 below shows these FHIS Enabling Environment and FHIS Supply discrepancies between remote and urban schools regarding daily hand and face washing practices.

![Figure 5.9](image-url)

**Figure 5.9**

Remote vs Urban:
Soap and water access association with hand and face washing

- Proportion of schools with access to water on the day of visit
- Proportion of schools participating in daily supervised hand washing
- Proportion of school hand washing facilities with soap available on day of visit
- Proportion of schools participating in daily supervised face washing
In the FHIS Demand stage, with respect to the Social and Cultural Practices and beliefs, minor discrepancies between remote and urban schools were demonstrated within each FHIS indicator. Figure 5.10 displays these minor discrepancies between: 1) the proportion of students stating whether or not their school provided toilet paper (92% remote; 75% urban), 2) the proportion of students reporting direct accessibility to toilet paper at the toilet area (0% remote; 13% urban), 3) students reporting whether or not schools provide soap (29% remote; 42% urban), and 4) the proportion of children acknowledging the importance of hygienic behavior in their definition of hygiene (54% remote; 46% urban).

Additionally, two discrepancies between remote and urban schools are found in the FHIS Quality stage. With regard to the Condition of hygiene program determinant, a major discrepancy exists in the proportion of schools with toilets and surrounding area in “good” condition. For instance, 100% of remote schools were recorded to exhibit good conditions. However, 0% of urban schools were documented to demonstrate “good” conditions. This discrepancy is demonstrated below in Figure 5.11.
Furthermore, the proportion of students reporting an adequate level of comfort using the toilet at school showed a minor difference. 96% of students attending remote schools reported a sufficient level of comfort regarding the use of toilets at school compared to 88% of urban school students reporting a satisfactory level of comfort using the toilet at school. This minor discrepancy is illustrated in Figure 5.12.
The proportion of students reporting the existence of a schoolteacher responsible for hygiene promotion was the only similarity reported. Specifically, 83% of students attending remote schools stated at least one schoolteacher is responsible for hygiene promotion, whereas 79% of urban school students declared that their school had a schoolteacher in charge of hygiene education. These numbers are presented below, in Figure 5.13.

In general, remote schools performed better than urban schools during this study. The data gathered during this survey may continue to be monitored by FHIS stakeholders with the use of Akvo digital data software. The findings and recommendations of this study may serve as a foundation for further research into the inequities that may exist between different FMOE locality categorizations.
5.5 Conclusions

Overall, a strong foundation for FHIS exists in the Enabling Environment. Additionally, the Enabling Environment exhibits areas identified as needing improvement. More effective FHIS programming outcomes would be achieved by incorporating the practice of daily, supervised face washing into school routines, including hygiene-related topics into school strategic plans, encouraging the topic of hygiene to be discussed during School Boards or Parent-Teacher Associations, and by strengthening FHIS monitoring through the inclusion of FHIS determinants and indicators within FEMIS reporting.

The FHIS Supply stage demonstrates strengths, as well as avenues for improvement. In order to strengthen FHIS Supply, resources should target improving the consistency of the hygiene infrastructure functionality, guaranteeing a supply of soap at hand washing facilities, and designating a teacher trained specifically to teach hygiene-related topics.

FHIS Demand is largely dependent on social and cultural practices and beliefs. Engaging parents, families, and the wider community outside of school through FHIS programming could change priorities within the school environment regarding toilet paper location, soap location, and the student interpretation of the word “hygiene”. Furthermore, amending policy to specify where toilet paper and soap should be located at school may strengthen the FHIS environment. Emphasizing a holistic environmental approach to FHIS programming should raise the surrounding community’s prioritization of hygiene services in schools, and ultimately influence FHIS Demand over time.

The FHIS Quality stage would be improved through interventions in schools designed to eliminate rubbish around the toilet and surrounding areas, and to ensure the toilet area has a functioning door and lock accessible for student use.

In general, schools have the capability to improve hygiene facility conditions and behaviors through targeted interventions. Potential exists within FHIS related laws, regulations, guidelines and other published documents to systemically influence the prioritization of hygiene in schools. Involving the Permanent Secretary through the Education Board and the Central Board of Health to enforce requirements may change the perceived importance of hygiene conditions in schools.
The findings of this study may be applicable to similar schools in the Nausori Education District as well as most non-extremely remote primary schools in Fiji. In this study, remote schools demonstrated a greater tendency to practice better hygiene behaviors, and follow FHIS policy and legislation to a greater degree. With the FHIS THSC stages created for this study, FHIS stakeholders have the capability to continue monitoring and evaluating FHIS development. Ultimately, interventions may be designed to target such areas identified as bottlenecks.

5.6 Recommendations

The nine identified bottlenecks within Fiji Hygiene in School (FHIS) programming provide an opportunity for FHIS stakeholders to shift priorities and redirect resources in order to be more effective. The following recommendations are directed towards the eleven schools that participated in this research. Additionally, they may be useful for similar schools in the Nausori Education District, most non-extremely remote primary schools in Fiji, and all FHIS stakeholders working in schools. In the following sub-sections, recommended actions for FHIS stakeholders are proposed, and possibilities for supplementary research are outlined.

5.6.1 Fiji hygiene in school stakeholders

1) An FHIS stakeholder should be appointed to the Education Forum as an ex-officio member. In this role, the FHIS representative could 1) elevate understanding and influence the prioritization of the nine identified bottlenecks, and 2) stimulate proactive discussion on how to effectively redirect existing resources and monitor FHIS indicators. As a function of the Education Forum, the Permanent Secretary holds the power to change existing curricula to incorporate the identified bottlenecks, to mobilize education officers to methodically inspect school hygiene facilities, and to adopt a classification system that rewards schools that excel in meeting hygiene standards.

2) An FHIS stakeholder forum should be established to meet regularly and set common goals for FHIS. In this forum, FHIS stakeholders could harmonize intervention strategies to address, monitor and evaluate identified bottlenecks.

3) A follow-up Instructional Memo regarding the use of government grants should be sent from the Permanent Secretary to School Managers, Head Teachers and
Principals to clarify that the twenty percent designated for “building and compound maintenance” may include hygiene-related expenditures such as toilets, sinks, and hygienic cleaning materials.

4) The FMOE should modify the Fiji Education Management and Information System (FEMIS) to include the FHIS stages, determinants and indicators used and analyzed during this study.

5) FHIS related laws, regulations, guidelines and other published documents should be amended to specify exactly where toilet paper should be kept at schools, and to require schools to practice daily, supervised face washing.

6) FHIS stakeholders should use the data gathered through this thesis as a baseline to continue monitoring and evaluating FHIS development in the eleven researched schools. Furthermore, FHIS stakeholders should use the FHIS stages, determinants, and indicators designed for this thesis to create more FHIS related surveys, and monitor and evaluate FHIS development nationally.

7) FHIS stakeholders should continue the use of Akvo in order to gather FHIS data from all schools in Fiji. The FMOE and FMOH have made Akvo software and data gathering tools accessible to FHIS stakeholders. Using Akvo would offer a simple method to gather FHIS data, and provide a centralized platform for FHIS stakeholders to access information. Ultimately, the software has the capability to empower FHIS stakeholders to design evidence-based interventions for areas identified to impede FHIS effectiveness.

8) FHIS stakeholders should organize FHIS trainings through the FMOE and FMOH aimed to train a designated schoolteacher responsible for hygiene-promotion from each school. Training topics should include strategies to address the nine identified bottlenecks from this study. Additionally, the trainings should be used to build the capacity of school representatives on how to use Akvo to report statuses of FHIS determinants and indicators.

5.6.2 Further research

The introduction of the Tanahashi Health Service Model (THSC) to categorize stages of Fiji Hygiene in Schools (FHIS) programming provides a blueprint for further
research. Possible directions for further research may expand the initial examinations undertaken in this study to:

1. Investigate more fully into the identified bottlenecks. Specifically, the *Condition of Hygiene Program* may be expanded in order to monitor and evaluate:
   - Habitual change of children
   - Their impact on family and community
   - Decrease of infectious diseases.
   - Sustainability of the program
   - Cases of trachoma

2. Investigate possible inequities regarding bottlenecks within different FMOE locality categorizations

3. Investigate methods of FHIS implementation utilized by different populations.

4. Investigate cultural (including religious) social norms within different populations in Fiji, and consider their influence on hygiene behavior in schools.

   Considering the limitations of this research, studies involving a larger sample of remote and urban schools, engaging a bigger and more randomized sample of students, and monitoring determinants and indicators over a longer period of time would provide opportunity for more extensive analyses. Furthermore, studies aimed to include rural and very remote localities in FHIS programming effectiveness examinations would contribute to the understanding of FHIS. Lastly, researching FHIS using an alternative method from the THSC model would offer an additional perspective on how FHIS effectiveness analyzed and presented.
REFERENCES


FMOE, (1978). *Fiji Education Act (Cap 262)*. Suva. FMOE.


Fijian Student attending a Nausori District Remote Primary School 1, (2014). *Interview with Fijian Student attending a Nausori District Rural Primary School 1*. November 14, 2014.


Fijian Student attending a Nausori District Urban Primary School 1, (2014). *Interview with Fijian Student attending a Nausori District Rural Primary School 1*. November 14, 2014.

Fijian Student attending a Nausori District Urban Primary School 2, (2014). *Interview with Fijian Student attending a Nausori District Rural Primary School 1*. November 14, 2014.

Fijian Teachers Association (FTA) Senior WASH Unit Officer, (2014). *Interview with FTA Senior WASH Unit Officer*. November 14, 2014.


HEAD TEACHER SURVEY
January 28, 2015
Eric Siegel

School Information

1. Name of the school
2. Picture of the school
3. Please check the school's geolocation
4. School registration number
5. Name of the province
   Tailevu______
6. Name of the the Tikina
7. School level
   Primary______
   Secondary (I-X or VI-X)______
8. Is the school day or boarding?
   Day______
   Boarding______
9. Type of school
   Co-education______
   Girls______
   Boys______
10. School ownership
    Government______
    Private______
Church______

Only answer if you responded Co-education|Girls to Q9

11. Number of girls enrolled _________________________

Only answer if you responded Co-education|Boys to Q9

12. Number of boys enrolled _________________________

Only answer if you responded Co-education|Girls to Q9

_________________________

15. Number of established posts for teachers _________________________

16. Total number of established posts filled _________________________

17. Number of female teachers _________________________

18. Staff type working at school

    Volunteer______
    Part-time______
    Permanent______

19. Number of male teachers _________________________

Only answer if you responded Volunteer to Q18

20. Number of volunteers _________________________

Only answer if you responded Part-time to Q18

21. Number of part-time employees _________________________

Only answer if you responded Permanent to Q18

22. Number of permanent employees _________________________

23. Is the school designated as an evacuation centre by NDMO?

    Yes______
Supervised hygiene behaviours (complete with the assistance of a school administrator/school teacher (staff) together)

24. Are the following activities completed?

   Face washing
       
   Handwashing
       
Only answer if you responded Face washing to Q24

26. Face washing - Is it supervised?

   Yes
   No

Only answer if you responded Face washing to Q24

28. Face washing - Verification source

   Teacher lesson plans
   Students exercise log books
   Other

Only answer if you responded Handwashing to Q24

29. Handwashing - Is it supervised?

   Yes
   No

Only answer if you responded Handwashing to Q24

30. Handwashing - Verification source

   Teacher lesson plans
   Students exercise log books
   Other
Only answer if you responded Toilet duties to Q24

31. Toilet duties - Is it supervised? _________________________

32. Estimate the percentage of students who practice handwashing during school before meals and also after visiting the toilet

0-30%_____
31-60%_____
61-100%_____

Only answer if you responded Compound duties to Q24

33. Compound duties - Verified? (Source) _________________________

Only answer if you responded Other to Q33

34. Compound duties - Source - Please specify other
_________________________

School policies and Plans

35. Are WASH programs included in any key documents for the school such as strategic/annual plans?

Yes_____  
No_____

36. Does the school have a have operations and maintenancer guidelines for hygiene in place?

Yes_____  
No_____

37. Is there a hygiene Maintenance Plan for the school?

"Yes, implemented _____" 
Yes but not implemented ______
No _____
"38. Are hygiene education (messaging, promotion activities) included in the workplan of teachers?"

Yes______
No______

"39. Are hygiene education (messaging, promotion activities) included in the school timetable/roster?"

Yes______
No______

40. Does the school have a system to ensure that all hygiene programs are documented and recorded?

Yes______
No______

41. Does your school update the National Education Management Information system report annually?

Yes______
No______

42. Does the school have a contingency plan available to cater for its hygiene programs during water shortages?

Yes______
No______

School Budget and Expenditures

43. Does your school set a budget for its hygiene programs?

Yes______
No______

44. What percentage of the hygiene budget has been utilized? (at the time of this survey)

0-30%______
Hygiene Facilities (to be carried out with a school administrator/handyman or school groundsman)

45. Are there any separate toilet facilities for boys and girls?
   Yes______
   No______
Only answer if you responded No to Q45

46. What is the total number of toilets for all students?
   _______________________
Only answer if you responded No to Q45

47. What is the total number of water points (taps) for all students?
   _______________________
Only answer if you responded Yes to Q45

48. What is the number of toilets for boys? _______________________
Only answer if you responded Yes to Q45

49. What is the number of water points (taps) for boys?
   _______________________
Only answer if you responded Yes to Q45

50. What is the number of toilets for girls? _______________________
Only answer if you responded Yes to Q45

51. What is the number of water points (taps) for girls?
   _______________________

52. Are there separate toilet facilities for staff?
   Yes______
   No______
Only answer if you responded Yes to Q52

53. Are there separate toilet staff for male staff and female staff?
   Yes______
   No______

Only answer if you responded No to Q53

54. What is the total number of wash basins toilets for staff?
   ______________________

Only answer if you responded No to Q53

55. What is the total number of water points (taps) for staff?
   ______________________

Only answer if you responded Yes to Q53

56. What is the total number of wash basins toilets for female staff?
   ______________________

Only answer if you responded Yes to Q53

57. What is the total number of water points (taps) for female staff?
   ______________________

Only answer if you responded Yes to Q53

58. What is the total number of wash basins toilets for male staff?
   ______________________

Only answer if you responded Yes to Q53

59. What is the total number of water points (taps) for male staff?
   ______________________

60. Are facilities available for group handwashing available? (>10 children at a time)
   Yes______
   No______

61. Are the wash basins in bathrooms functioning?
62. Are the wash basins accessible to the youngest students in the school?

"Yes, all______"

Some not functioning______

None functioning______

63. Are the taps in bathrooms functioning?

"Yes, all______"

Some______

"No, none______"

64. Are the taps accessible to the youngest students in the school?

"Yes, all______"

Some______

"No, none______"

65. Do the toilet cubicles have doors?

"Yes, all______"

Some missing______

All missing______

66. Do the toilet cubicles have hooks/hangers?

"Yes, all______"

some missing______

all missing______

67. Are there locks on the toilet doors?
"Yes, all______"

some missing______

all missing______

"Only answer if you responded Yes, all|some missing to Q67"

68. Are the locks accessible to the youngest students in the school?

"Yes, all______"

some missing______

all missing______

69. Is there a bin available in each bathroom?

"Yes, rubbish bin______"

"Yes, alternative like box or bag only______"

No______

70. Is there adequate light available in all bathrooms?

Yes______

Some______

No______

71. Is there adequate ventilation available in all bathrooms?

Yes______

Some______

No______

72. Are the toilets in the bathrooms functioning?

"Yes, all______"

Some______

"No, none______"
73. How clean are the toilets on the day of the visit? (use personal observations)
   - Toilet and surrounding area clean and rubbish-free ______
   - Toilet is moderately clean but can be improved______
   - Toilet and area are dirty with rubbish on the ground.______

74. Photo of the toilet _________________________

75. Which of the following wash basins (toilets) are available in the school?
   - Pit toilet______
   - Composting toilet______

76. Is there a private space available for girls to wash their bodies?
   - Yes______
   - No______

77. Are toilets accessible for students with disabilities (is it possible to get a wheelchair into the toilets)?
   - "Yes, accessible independently______"
   - "Yes, with assistance______"
   - "No, not accessible______"

Only answer if you responded Yes to Q76

"78. If yes, which of the following is available in this private space"
   - Water available (tap or bucket)______
   - Soap available______
   - Drain______

79. Identify the primary water source for drinking
   - Rainwater______
   - Protected Well______
Protected spring_____
River ______
Piped water supply_____

80. Estimated amount of clean drinking water available per student per day

Less than 1 litre/day_____
1 litre/day_____
2 litres/day_____
More than 2 litres/day_____

81. Is the drinking water treated before consumption?

Yes_____
No_____

Only answer if you responded Yes to Q81

"82. If yes, how is the water treated?"

Chlorinated_____
boiled_____
slow sand or ceramic filter_____
solar disinfection_____

83. Estimated amount of water for washing and other purposes (does not have to be clean)

Less than 5 litres/day_____
5 litres/day_____
10 litres/day_____
more than 20 litres/day_____

84. How many water taps are in the school compound?

_________________________
85. Does the school have water conservation messages or projects?
   Yes______
   No______

86. What is the total water storage capacity of the school (in litres)?
   __________________________

87. How frequently are the toilets cleaned?
   Every day______
   Twice per week______
   Once per week______

88. Who cleans the toilets?
   Students______
   Teachers______
   Staff______
   Cleaner______

89. Is the cleaning of the toilets supervised?
   Yes______
   No______

Only answer if you responded Yes to Q89

"90. If yes, is the cleaning documented (e.g. roster exists and is followed)?"
   Yes______
   No______

91. How frequently is the school compound cleaned?
   Every day______
Twice per week
Once per week

92. Who cleans the compound?
Students
Teachers
Staff
Cleaner

93. Is the cleaning of the compound supervised?
Yes
No

Only answer if you responded Yes to Q93

"94. If yes, is the cleaning documented (e.g. roster exists and is followed)?"
Yes
No

Human Resources (should be observed or carried out with a school administrator/staff member)

95. Is there a teacher responsible for health responsible for health promotion programs in the school?
Yes
No

96. Does the school have community programs in health which are done with both students and community?
Yes
No

Only answer if you responded Yes to Q96
"97. If yes to question 2, which community groups?"

School WASH or Health committee ______
Youth club ______
Church club______
PTA ______
Mothers Club______
Village committee______

Only answer if you responded Yes to Q96

98. How often does the community support group meet?
   Once every school term______
   Annually______
   Never______

99. Does your school supply soap for handwashing and this is available in handwashing areas?
   Never______
   Sometimes______
   Most of the time______
   Always______

100. Does your school supply toilet paper readily to students?
    Never______
    Sometimes______
    Most of the time______
    Always______
101. Does your school provide sanitary bins available in the girl’s toilet?

   Never____

   Sometimes____

   Most of the time____

   Always____

"102. Does your school provide cleaning equipment such as detergent, mops, buckets, gloves?"

   Never____

   Sometimes____

   Most of the time____

   Always____

103. Which of the following are available on the day of the visit? (check all that apply)

   Water ______

   Handwashing soap ______

   Sanitary pads for girls ______

   Cleaning detergent ______

   Mops / brooms/ brushes ______

   Buckets ______

   None of the above______

Hygiene practices (should be observed or carried out with a school administrator/staff member)

104. Are visible posters related to WASH in classrooms readily available on the day of the visit?

   Yes____

   No____
105. Does the school have community programs in health which are done with both students and community?

   Yes______

   No______
APPENDIX B

STUDENT SURVEY
April 22, and 23, 2015
Eric Siegel

Stipulative definition for Hygiene: *Conditions and practices conducive for sustaining health and thwarting the spread of disease, particularly through cleanliness* (Stevenson and Lindberg, 2010).

Survey Sections:
Section 1: School/Student Information
Section 2: Hygiene and hand washing
Section 3: Face washing
Section 4: Operations and Maintenance
Section 5: Hygiene program and community involvement
Section 6: Researcher Observations

Section 1: School/Student Information

1. Name of school:
2. School registration number:
3. Name of province where school is located:
4. Student sex:
   - Male
   - Female

Section 2: Hygiene and hand washing

5. What does hygiene mean to you?
6. Do you believe that it is important to wash your hands?
   - Yes
   - No
7. (If no) Why don’t you believe it is important to wash your hands?
8. (If yes) do you believe that it is important to wash your hands with soap?
9. (If yes) why?
10. How do you wash your hands?
11. (If yes) When is it important to wash your hands?
12. (If yes) Where did you learn about the importance of washing your hands?

13. What have you learned about hand washing at school?

14. Have you learned why it is important to follow hygiene rules at school?
   - Yes
   - No

15. Do you wash your hands with soap at school every day?
   - Yes
   - No

16. (If yes) When do you wash your hands at school (Choose all that apply)?
   - Before meals
   - After meals
   - After visiting the toilet
   - After cleaning

17. (If no) Why not?
   - Water is not available all of the time
   - Soap is not provided
   - Facility is dirty
   - Facility is unsafe (next to street)
   - Teachers do not allocate time to conduct activity

18. Is hand washing supervised by a teacher?
   - Yes
   - No

19. Is there anyone else that comes into the school to supervise?

20. What have you learned about hand washing at home?

21. Do the people that live in your home wash their hands?
   - Yes
   - No

22. How do people in your home wash their hands?

23. What type of hand washing facility is used at home?
   - Sink
   - Tap
   - Bucket
     - Yes
     - No
     - If yes, is it shared?
24. Do the people that live in your home wash raw vegetable and fruit before eating it?
   - Yes
   - No

Section 3: Face Washing

25. Do you believe that it is important to wash your face with soap?
26. (If yes) Why?
27. (If no) Why not?
28. Do you wash your face every day at school?
   - Yes
   - No
29. (If no) Why not?
   - Water is not available all of the time
   - Teachers do not allocate time to conduct activity
30. (If yes) is the face washing supervised?
   - Yes
   - No
31. Is there anyone else that comes into the school to supervise?

Section 4: Operations and Maintenance

32. Who is responsible for cleaning the toilets in the school?
   - Students
   - Teachers
   - Staff
   - Cleaner
   - Other (Specify)
33. How frequently are the toilets cleaned?
   - Every day
   - Twice per week
   - Once per week
   - Less than once a week
34. If something is broken in the toilet, who comes to repair it?
35. Do you feel comfortable using the toilet at school?
   - Yes
   - No

36. (If no) For what reasons?
   - Toilets are dirty
   - Toilets smell bad
   - There is no bin to dispose of sanitary items
   - Water is not available all of the time
   - No privacy
   - No lock
   - No door
   - Location
   - Queuing time
   - No toilet seat

37. If you are not comfortable using the toilet, where do you go?

38. What type of toilet is used at home?

39. Of the toilets at school and at home, which one do you prefer and why?

40. How frequently is rubbish collected from around the school compound?
   - Every day
   - Twice per week
   - Once per week

41. Who collects the rubbish around the compound?
   - Students
   - Teachers
   - Staff
   - Cleaner

42. Is the rubbish collection supervised by teachers?
   - Yes
   - No

Section 5: Hygiene Program and community involvement

43. Is there a teacher in your school responsible for hygiene promotion programs?
   - Yes
   - No
44. Does the school have hygiene community programs, in which both students and the community are involved?
   - Yes
   - No

45. If yes, which type of community groups?
   - School hygiene or Health committee
   - Youth club
   - Church club
   - PTA
   - Mothers Club
   - Village committee

46. How often does the community group meet?
   - Once a week
   - Once a month
   - Once every school term
   - Once a year
   - Never

47. Does your school supply soap for hand washing and face washing?
   - Never
   - Sometimes
   - Most of the time
   - Always

48. (If yes), is it available in hand washing areas?
   - Never
   - Sometimes
   - Most of the time
   - Always

49. (If no), why?

50. Does your school supply toilet paper to students?
   - Never
   - Sometimes
   - Most of the time
   - Always

51. (If yes), where is the toilet paper placed?

52. If your teacher has the paper, do you feel comfortable asking for it?

53. If no, what do you use?
54. Does your school provide sanitary bins in the girl’s toilet? (Only for females over 10 years of age)
   - Never
   - Sometimes
   - Most of the time
   - Always

Section 6: Researcher Observations:

55. Does the school have access to water on the day of the visit?
   - Yes
   - No

56. Does the school have hygiene facilities available on the day of the visit?
   - Yes
   - No

57. Does the school have hand washing facilities with soap available on the day of the visit?
   - Yes
   - No

58. Does the school have a hygiene curriculum present?
   - Yes
   - No

59. How clean are the toilets on the day of the visit? (Use personal observations)
   - Toilet and surrounding area clean and rubbish-free
   - Toilet is moderately clean but can be improved
   - Toilet and area are dirty with rubbish on the ground

60. Picture of school

61. School’s geo-location

62. Cross check with the teacher the student’s absentee rate and academic performance
1) Who is responsible for hygiene in schools at the national and provincial levels?

Right now, the FMOH and FMOE are both involved with the monitoring of hygiene in schools, but much needs to be improved upon. First, the FMOE is more involved with the implementation of hygiene education, and the FMOH has the responsibility of checking the health status of students and ensuring the proper hygiene-related infrastructure is available and accessible.

Currently, there is a large gap in the documentation of the progress we are making. Usually, schoolteachers write school reporting information down in a journal, but the journals are rarely visible to anyone outside of the school. We need to do a better job of making the monitoring of hygiene in schools available for evaluation, and carried out on a consistent basis.

2) How does the FMOH allocate funds to schools for hygiene, and hygiene facilities maintenance?

Money allocated for hygiene education and facilities and maintenance is included in National Public Health funding. There is no specific allocation for hygiene education and facilities and maintenance. Currently, for example, for Water Sanitation and Hygiene funding falls under National Public Health funding. From the Public Health Funding, the money is further separated under different departmental funding categories like oral health, environmental health, physical health, and nursing. Therefore, in order to align our funding with our prioritizations, we should include water sanitation and hygiene in our departmental funding.

Also, regarding the school grant money given to every school annually, the twenty percent outlined for “building and compound maintenance” may be used on expenditures such hygiene-related infrastructure including toilets, sinks, and hygienic cleaning materials.

3) What guidance does FMOH give schools on hygiene facilities?

The Public Health Act gives guidance on hygiene facilities. The document explains requirements for infrastructure, student ratio to toilets, washbasins, solid/liquid waste disposal. This information is also included in the Minimum Standards for WASH in Schools Infrastructure. However, the Public Health Act doesn’t capture specific requirements like size of toilet, height of sink etc. I believe that information is in the building code and town plan act for construction and renovation of schools.
4) Where is hygiene in the school curriculum?

There is the Health Science curriculum, and the Healthy Living Syllabi

5) Is any training given to schools, by FMOE or another source, on operations and maintenance of hygiene-related facilities?

It is the FMOE’s job. They’re supposed to train their staff. Usually, it’s the job of the committee. For government schools, it’s usually the head teacher liaising with the FMOE.

6) What can school management and communities do to improve hygiene in schools?

One of the issues is prioritization of hygiene in schools within management plans. Schools should refer to the Minimum Standards for WASH in Schools when designing their strategic plans. At the same time, the FMOH and FMOE should increase the capacity of the committees and management of schools so they may prioritize hygiene. Schools are becoming more aware of the prioritization of health and health education by the FMOH and FMOE, but the change will take time.

As far as communities, parents can discuss with their children how they should not take soaps and toilet paper from school. A major issue with providing consumables necessary to practice safe-hygiene behaviors at schools is that children take them. For example, usually, if toilet paper or soaps are kept in an area that is unsupervised, they will disappear shortly after.

7) What are school strategic plans? What are management and operations and maintenance plans?

Strategic plans are designed by school administration to outline school goals, focus efforts and resources, and streamline operations. Regarding operations and maintenance plans…some schools have them. They would be school plans involving administration, where budget decisions are made especially involving school infrastructure.

8) How can donors and NGOs contribute to improving hygiene in schools?

Instead of liaising directly with schools, they should come through the proper channels, which I think they do in FMOE, but it needs to be strengthened. Messages being promoted should be similar to what’s being taught and being promoted by FMOE and FMOH.

9) How does the FMOH view teaching responsibilities for hygiene education in schools?

There is not one particular teacher with the responsibility of teaching hygiene. Each teacher follows the curriculum, and teaches their own class about hygiene. There is no actual designated teacher…it is not part of the system to have a designated teacher.
10) Could the Central Board of Health require the inclusion of hygiene into school strategic and management plans of all schools in Fiji?

The Central Board of Health may require the inclusion of hygiene into school strategy and management plans only if it is included in the Public Health Act and the Education Act. The Central Board of Health can advise the FMOE on this and ask for inclusion, but it is ultimately decided on by the FMOE.

11) What are “School Boards” and “Parent-Teacher Associations,” and how do they function? Do they engage with hygiene issues in schools?

The School Board constitutes the people making decisions at the school. This Board usually consists of the Head Teacher, community members, and the school manager… PTAs are associations that engage parents and teachers with decisions at school… They are organizations that would make decisions regarding hygiene issues. If there is a concern raised by the School Board or PTA, they can take it up with the Ministry.

12) Are the upkeep of school hygiene infrastructure and behavioral practices monitored and evaluated?

The Ministries have given access to Akvo to our partners after the training in order to do so.
APPENDIX D

INTERVIEW: PARENT OF FIJIAN PRIMARY SCHOOL STUDENT
January 6, 2015
Eric Siegel

1) Does your child know the importance of hand washing?

Yes. What we have done is: beginning when she was a child, we have brought up our children to practice washing their hands after going to the toilet. At home, we inspect the children’s hands by smelling them to ensure they are washed. Otherwise, they will say they have washed their hands, but they have not. Supervision is necessary. At our home, hand washing is mandatory after going to the toilet, and before eating meals. At school, I know that sometimes hand washing is not supervised; therefore children do not wash their hands all the time. I am on the committee at one of my children’s primary schools, and we make sure there are stools available so that smaller children can use them to use sinks to wash their hands.

2) If yes, where did your child learn the importance of hand washing?

Home. My children were at home for the first 5 years, and we always practiced hand washing. I believe the molding of your child is the first 5 years. If you do not discipline them then, you will have trouble instilling values at a later age. Especially for hygiene habits.

3) Does your child participate in daily, supervised hand washing at school?

I doubt it. Who has the time to do that? We practice so much at home though, I hope my children wash their hands before eating and after the toilet at school. But, my daughter has said that there was no soap to wash her hands sometimes. They just wash without soap.

4) Does your child participate in daily, supervised face washing at school?

My children do not at school, but they do at home. I bought specific face wash for them.

5) Are you aware of the hygiene policy documents such as the Minimum Standards for WASH in schools?

No. This is the first time I have heard about it. At the Annual General Meeting (AGM), I brought up the need for a system in schools for children to wash hands before they eat. I have suggested that there should be a bell. Make a line, teacher stands at tap.

6) Is hygiene reflected into the strategic plan of your child’s school?

I don’t think so. We always have issues about cleanliness of the wash room. It always comes up in the AGM. Unfortunately, all schools are run by a board of volunteers,
therefore, they’re not very empathetic. What happens is, the parents keep raising hygiene issues, but it comes down to funding.

7) Does your child’s school have a hygiene management or operations and maintenance plan?

I doubt it. If so, the washrooms would be clean. They’d be inspected on a daily basis. My daughter says the state of the toilet at school is dirty, and she does not feel comfortable using the toilet at all. Toilets are supposed to be cleaned regularly, but they are not. This is a major issue for us parents. I have raised the concern with the school committee, but my daughter has not reported any change.

8) Does your child’s school have a budget for hygiene programing?

I don’t know. Hygiene may not be specifically mentioned, but there could be more spent on it. They do provide toilet paper, but no hand washing soap.

9) Does your child’s school have hygiene facilities?

Yes, they’re just not clean

10) Does your child’s school have access to water?

Yes. If there’s no water, there’s no school. We also have tanks. School isn’t often cancelled though.

11) Does your child’s school monitor and evaluate the quality of hygiene facilities?

No

12) Does your child’s school have a teacher responsible for hygiene promotion?

No.

13) Does your child’s school have hygiene taught in the curriculum?

Yes. In health science.

14) Does your child’s school provide toilet paper?

Yes, but my child brings her own toilet paper to school because, like many of the other students, she is a shy girl and does not feel comfortable asking her teacher in front of the class for toilet paper. Actually, sometimes I will send her to school with toilet paper in her bag, and she will come home without it on that same day because her friends ask her to borrow the toilet paper.
15) Does your child’s school have separate toilets for boys and girls?

Yes. It’s mandatory in all schools now.

16) Does your child’s school have a Parent Teacher Association, Mother’s Club, School Board, or any type of association that allows parents to discuss school issues with teachers and school administration?

Yes. The PTA meets once every month. The parents and teachers discuss fund raising mostly.
APPENDIX E

INTERVIEW: FIJIAN STUDENT ATTENDING A NAUSORI DISTRICT REMOTE PRIMARY SCHOOL 1
November 14, 2014
Eric Siegel

1) At your school, do students practice daily, supervised hand washing? Yes

2) If yes, how many times do students wash their hands with soap and water each day? Twice...before and after lunch

3) If yes, when do students wash their hands, and how? Before lunch...after the toilet. With soap and water

4) Is soap provided for the daily, supervised hand washing? Yes

5) Where is soap and toilet paper stored in your school? Soaps are by the sink...toilet paper is with the teacher

6) At your school, do students practice daily, supervised face washing? Yes

7) How many times do students wash their face each day? We wash our face and hands at the same time. Before lunch and after

8) At school, how often do hygiene facilities (sinks and toilets) need repair? Toilets and sinks at school always work fine

9) Does your school ever experience issues with running water? Not really...the taps have water, and we have rainwater tanks too

10) At your school, how are the conditions of the hygiene facilities maintained? Everyone contributes to cleaning of toilets. The teacher keeps a roster with our duties

11) Do you feel comfortable using the toilet at your school? Yes
APPENDIX F

INTERVIEW: FIJIAN STUDENT ATTENDING A NAUSORI DISTRICT REMOTE PRIMARY SCHOOL 2
November 14, 2014
Eric Siegel

1) At your school, do students practice daily, supervised hand washing?
Yes

2) If yes, how many times do students wash their hands with soap and water each day?

3) If yes, when do students wash their hands, and how?
We wash before going to the dining hall to eat, and after...and we wash after the toilet. We use soap and water

4) Is soap provided for the daily, supervised hand washing?
Yes...but not all of the time. Some days it is; some days it isn’t

5) Where is soap and toilet paper stored in your school?
Teachers have the soap...toilet paper is in the staff room

6) At your school, do students practice daily, supervised face washing?
Yes

7) If yes, how many times do students wash their face each day?
Twice each day...we wash our face after washing our hands, before lunch. And, after brushing our teeth...after lunch

8) At school, how often do hygiene facilities (sinks and toilets) need repair?
I don’t know

9) Does your school ever experience issues with running water?
I don’t know

10) At your school, how are the conditions of the hygiene facilities maintained?
All students clean the toilets...we follow a roster...it tells us who has to do different things

10) Do you feel comfortable using the toilet at your school?
Yes
APPENDIX G

INTERVIEW: FIJIAN STUDENT ATTENDING A NAUSORI DISTRICT URBAN PRIMARY SCHOOL 1
November 14, 2014
Eric Siegel

1) At your school, do students practice daily, supervised hand washing?
Yes

2) If yes, how many times do students wash their hands with soap and water each day?
We go to lunch. We wash our hands with soaps before. After, we wash our hands too

3) If yes, when do students wash their hands, and how?
With soap and water. After going to the toilet, and before eating, we wash our hands.

3) Is soap provided for the daily, supervised hand washing?
Yes

4) Where is soap and toilet paper stored in your school?
Soap for hand washing is in the sink...toilet paper is with the teacher...we can ask for it.
My mom gives me toilet paper to pack for school

5) At your school, do students practice daily, supervised face washing?
We do not

6) If yes, how many times do students wash their face each day?

7) At school, how often do hygiene facilities (sinks and toilets) need repair?
I don’t know

8) Does your school ever experience issues with running water?
Sometimes...then we don’t have school if there’s no water

9) At your school, how are the conditions of the hygiene facilities maintained?
The teachers clean the toilets...we clean them too...everyone takes turns...we follow the roster

10) Do you feel comfortable using the toilet at your school?
No...I don’t feel comfortable using the toilet at school. The toilet is not clean
APPENDIX H

INTERVIEW: FIJIAN STUDENT ATTENDING A NAUSORI DISTRICT URBAN PRIMARY SCHOOL 2
November 14, 2014
Eric Siegel

1) At your school, do students practice daily, supervised hand washing?
Yes

2) If yes, how many times do students wash their hands with soap and water each day?
Plenty of times...before lunch and after the toilet

3) If yes, when do students wash their hands, and how?
We should wash our hands before and after eating...also, after visiting the toilet. We follow the eight steps of hand washing with soap and water

3) Is soap provided for the daily, supervised hand washing?
Yes

4) Where is soap and toilet paper stored in your school?
Sometimes soap is by the sink...the teacher also keeps soap with her...the teacher has the toilet paper...sometimes I do not go to the toilet because I do not want to ask for the paper

5) At your school, do students practice daily, supervised face washing?
We do not

6) If yes, how many times do students wash their face each day?

7) At school, how often do hygiene facilities (sinks and toilets) need repair?
Sometimes

8) Does your school ever experience issues with running water?
We always have water at the water points...the sinks...and the flush toilets...when there is not water, there is no school

9) At your school, how are the conditions of the hygiene facilities maintained?
Students clean toilets. We follow the duty roster

10) Do you feel comfortable using the toilet at your school?
No...the toilet is messy and sometimes smells bad. I prefer the toilet at home
How does the FTA encourage schools to teach hygiene behaviors?

Washing hands and faces are behaviors that must be practiced at home in order for children to practice them at school every day. Hygienic behaviors need to be taught by children’s parents as much as they need to be taught by teachers at school. We encourage schools to engage parents through Parent-Teacher Associations, Mothers Clubs, or school hygiene or health committees to focus on WASH when planning. The more parents can work with the schools on influencing their children’s hygienic behaviors, the better.

Do schools practice daily, supervised hand and face washing?
Yes, they should. Before meals and after using toilet.

Are hygiene-related interventions in schools designed according to their FMOE locality description (i.e. remote, very remote, rural, and urban)?

Schools in remote areas need different solutions for different problems, compared to those in urban areas. The same goes for rural schools and very remote schools.
APPENDIX J

INTERVIEW: SCHOOL TEACHER FROM REMOTE PRIMARY SCHOOL IN NAUSORI DISTRICT
January 6, 2015
Eric Siegel

Does your school practice daily, supervised hand washing?

Yes…My students form a line before going to lunch. Before entering the dining hall, my students wash their hands with soaps at the sink…however, sometimes soaps are not provided so we only use water

Is soap provided for the daily, supervised hand washing?
Yes, we always have soaps next to the sink

Where is soap and toilet paper stored in your school?
At our school, soap is kept at the hand washing station…located outside of the toilets. Toilet paper is kept in my cabinet and students can take it, but sometimes students bring their own toilet paper

Do students in your class wash their hands before meals and after using the toilet?
Yes…students wash hands before and after meals. They also go to wash their hands after using the toilet.

Does your school practice daily, supervised face washing?

Project Heaven worked with our school and the community through a face washing program in 2013. Since then, we have been washing our faces at school at least one time per day. Now, we have very little cases of trachoma in our school.

Is “hygiene” included in the school strategic plan?
No

Is a budget line for hygiene included within the school budget?
I don’t know

Does your school have an active School Board, Mother’s Club, or Parent Teacher Association?

We have a Mother’s Club at our school. They prepare lunch for students…help in fundraising…help plan social events and cater as well. They help in preparation for school sport events…also an avenue for teachers and mothers to meet and talk about students and school things
To what extent are hygiene behaviors, facilities and services monitored at schools? 
*They are not monitored*

At school, how often do hygiene facilities (sinks and toilets) need repair? 
*Toilets need repair work often...if a toilet is not working, it is reported to the school committee. The school committee will organize someone to come fix it.*

Does your school ever experience issues with running water? 
*We are connected to the Water Authority of Fiji (WAF) system. We also have rainwater collector tanks.*

At your school, is there a teacher responsible for hygiene promotion? 
*Hygiene is taught by all teachers. Children have one teacher for the full year, and the teacher gives lessons on hygiene through the Health Science Curriculum*

At your school, how are the conditions of the hygiene facilities maintained? 
*The teachers and students have the responsibility to keep the toilet area tidy and clean. In my class, we keep a duty roster on the wall...Students should clean after themselves, and teachers ensure the area remains tidy throughout the week*

At your school, how is privacy ensured for students when they visit the toilet? 
*We have doors on the toilets, and girls and boys toilets are separated by a wall*
APPENDIX K

INTERVIEW: SCHOOL TEACHER FROM URBAN PRIMARY SCHOOL IN NAUSORI DISTRICT
January 6, 2015
Eric Siegel

Does your school practice daily, supervised hand washing?
Yes...students and teacher wash their hands before eating, after eating, and after going to the toilet

Is soap provided for the daily, supervised hand washing?
Yes

Where is soap and toilet paper stored in your school?
Soap for hand washing is kept next to the hand washing sink...this way, children can wash their hands before lunch and after using the toilet...but, sometimes the soap is missing so children only use water...I keep the toilet paper at my desk. I have to do this or else the toilet paper will go missing

Do students in your class wash their hands before meals and after using the toilet?
Yes...children wash their hands before and after meals. They should every day, with soap and water. They learn this from an early age...Students also wash their hands after using the toilet.

Does your school practice daily, supervised face washing?
No...there’s not time for face washing at school...teachers are too busy with everything else.

Is “hygiene” included in the school strategic plan?
Yes. We follow the strategic plan goals set by the Ministry of Health. A Ministry of Health Team came to the school to inform us...We want to reduce the rate of scabies in schools

Is a budget line for hygiene included within the school budget?
No

Does your school have an active School Board, Mother’s Club, or Parent Teacher Association?
Parents and teachers work together through the PTA...like, the parents can sell food and raise money for the school

To what extent are hygiene behaviors, facilities and services monitored at schools?
We do not monitor

At school, how often do hygiene facilities (sinks and toilets) need repair?
Even though we have water, sometimes the water doesn’t come to the toilets...If there is no water for the toilets, the toilet quickly becomes smelly and children will not use them...sometimes it takes days for the toilets to be fixed.

**Does your school ever experience issues with running water?**

*We always have running water. If water is not available one day, we have reserves. When there is no water, we do not have school...kids are sent home. This only happens sometimes...maybe twice a year*

**At your school, is there a teacher responsible for hygiene promotion?**

*Teaching hygiene is the responsibility of all teachers...teachers facilitate group tooth-brushing and also teach WASH lessons as required by the Ministry of Health*

**At your school, how are the conditions of the hygiene facilities maintained?**

*Children share duties for cleaning the toilets. Everyone in class contributes to the cleanliness of the facilities...it is the responsibility of everyone to keep it clean. Also, the school management will properly clean the toilets once or twice per week*

**At your school, how is privacy ensured for students when they visit the toilet?**

*Privacy is not an issue...boys and girls use separate toilets*
APPENDIX L

INTERVIEW: FTA SENIOR WASH UNIT OFFICER
November 14, 2014
Eric Siegel

How does the FTA encourage schools to teach hygiene behaviors?

Schools use the Health Science curriculum

Do schools practice daily, supervised hand and face washing?

All schools should be practicing daily, supervised hand washing. Each teacher should take time every day to ensure children are washing their hands with soap before and after meals, and after using the toilet. In terms of face washing...some schools are practicing this, but not all of them. Schools should incorporate face washing to reduce trachoma

Are hygiene-related interventions in schools designed according to their FMOE locality description (i.e. remote, very remote, rural, and urban)?

No they are not.
APPENDIX M

INTERVIEW: FMOE ASSESSMENT MONITORING UNIT OFFICER
November 14, 2014
Eric Siegel

Are hygiene behaviors, facilities and services monitored at schools?

Yes, but it needs to be improved…this way schools would think more about how WASH be prioritized. Schools update FEMIS every year. Within FEMIS is an opportunity to ask more questions about hygiene, and we could monitor it this way.