School Sanitation and Hygiene Education

SITUATION ANALYSIS

Republic of Maldives

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Maldives Water and Sanitation Authority
in consultation with the Ministry of Education and UNICEF
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Table of Contents

Executive Summary ....................................................................................................................... 7

Section 1 - Overview ...................................................................................................................... 9

1.1 Introduction to School Sanitation and Hygiene Education................................................. 9
1.2 Conducting the Situation Analysis...................................................................................... 10

Section 2 - At the National Level ................................................................................................. 12

2.1 Overview of the Educational Sector .................................................................................. 12
2.2 School Health Program ..................................................................................................... 14
2.3 Existing Curriculum and Teaching Methods ..................................................................... 15
2.4 External Hygiene Education .............................................................................................. 16

Section 3 - At the School and Community Level ......................................................................... 17

3.1 Hardware ............................................................................................................................. 17

3.1.1 Potable Drinking Water Supplies ................................................................. 17
3.1.2 Sanitation ............................................................................................................. 24
3.1.3 Hand Washing Facilities and Provision of Soap .............................................. 27
3.1.4 Maintenance ......................................................................................................... 28

3.2 Software ............................................................................................................................. 30

3.2.1 Existing Hygiene Education ............................................................................... 30
3.2.2 Indicator Monitoring ............................................................................................ 32
3.2.3 Linking Software to Hardware ........................................................................... 33

Section 4 - Discussion - Identified Health Concerns in School Environments ......................... 35

4.1 Absence of Improved Hand Washing .............................................................................. 35
4.2 Inadequate Potable Water Supplies .................................................................................. 36

4.2.1 Quality of Water ................................................................................................. 36
4.2.2 Quantity of Water ............................................................................................... 36

4.3 Facilities do not encourage Hygienic Behaviors .............................................................. 37

Section 5 - Incorporating Hygiene Education and Prioritizing Interventions .............................. 38

5.1 Incorporating Hygiene Education .................................................................................... 38
5.2 Prioritizing Interventions in School Sanitation and Hygiene Education ......................... 39

Section 6 – Recommendations .................................................................................................. 41

References ..................................................................................................................................... 43

Appendix A – F ............................................................................................................................. 45
List of Tables

1. Existing and required rainwater storage capacity of selected schools in North Region ..... 18
2. Number of days island schools can provide rainwater without rainfall............................... 19
3. Drinking Water Supplies - Summary of Questionnaire Responses ..................................... 21
4. Use of Ground Water - Summary of Questionnaire Responses ........................................ 24
5. Ratio of toilets/students/sessions of 86 Schools ................................................................. 25
6. Sanitation and Hand washing - Summary of Questionnaire Responses ............................. 26
7. Maintenance - Summary of Questionnaire Responses ................................................... 29
8. Health Education - Summary of Questionnaire Responses from Family Health Workers 31
9. Existing Hygiene Behaviors - Summary of Questionnaire Responses .............................. 32

List of Charts

1. Student Enrollment by Schools 2001................................................................................... 12
2. Status of Rainwater Supplies – Island Schools................................................................. 18
3. Average Rainfall per Month over 5 Year Period .............................................................. 19
4. Alternate Drinking Water Supplies used by Schools ........................................................ 20
5. Comparison of Ratio of Toilets to Students in Male/ Lhaviyani ......................................... 25
6. Hand Washing Facilities in Schools .................................................................................. 27

List of Appendix

A. Schools Included in Field Observations ........................................................................... 47
B. Sample Checklist used for Water and Sanitation Facilities .............................................. 48
C. Sample Focus Group Discussion – Male’ Health Assistants............................................ 49
D. School Identified Needs – Shaviyani Atoll Workshop ..................................................... 50
E. Summary of Sample Questionnaire ................................................................................ 51
F. Regional Results from Questionnaires............................................................................. 53

List of Abbreviations

AEC Atoll Education Center
APC Atoll Primary Center
HDPE Tank High Density Poly Ethylene Tank (Plastic)
MOE Ministry of Education
MOH Ministry of Health
MWSA Maldives Water and Sanitation Authority
SSHE School Sanitation and Hygiene Education
EXECUTIVE SUMMARY

Throughout the Maldives, the prevalence of water and sanitation related diseases continues to be a major concern with children being the most at risk. Improved hygiene practices with access to appropriate sanitation facilities are essential if transmission routes of water and sanitation related diseases and prevalent helminth infestations in children are to be overcome. Schools play an important role in children’s health providing an environment that can either develop useful life skills on health and hygiene or present a risky place where diseases can be transmitted. School sanitation and hygiene is an important issue and one that needed to be assessed in the Maldives. It is hoped this assessment will enable policies and programs to be developed at both national and community level to ensure children are attending schools with acceptable facilities where they are able to learn and practice the hygiene behaviors that they will use throughout their lives.

The scope of this report comprises school sanitation and hygiene education at the national and community level in both the capital and Atolls of the Maldives. School sanitation and hygiene incorporates both the hardware, which is the sanitary conditions and facilities in the schools and the software being the activities aimed at promoting conditions and practices to prevent water and sanitation related diseases. This report also considers factors such as government policy, the commitment to the provision of facilities, the curriculum and teacher training. This situation analysis incorporates field observations from 46 of the 314 schools and questionnaire responses from 30% of schools and associated health workers distributed in each of the countries five regions. It was conducted by the Maldives Water and Sanitation Authority (MWSA) with the assistance of the Ministry of Education and with financial assistance from UNICEF.

At a national level a School Health program is well established within the Ministry of Education with the involvement of the Ministry of Health. School sanitation and hygiene education could be strengthened through this program with the utilization of the trained focal health points or health assistants in each school. Hygiene education encompassing water and sanitation objectives is addressed only by limited components in the curriculum under Environmental Studies. Teacher training, support and school supervision are areas that are addressed under the Educational Master Plan but which are limited by a shortage in human and financial resources, and by restricted transport and communication in the atolls.

A wide variation in facilities exists at a community and school level as the schools evolve from the traditional system to the current government funded system. Commonly the newer government built schools have been designed with adequate facilities whilst the island’s community, private and Pre Schools are still in the process of providing facilities or require renovation of their existing facilities. Insufficient emphasis has been placed on the provision of hand washing facilities and soap in schools. This is the most effective means by
which the spread of water and sanitation related diseases could be prevented. The inadequate rainwater storage capacity significantly restricts the ability of island schools to sustain a potable water supply during the dry season. Whilst the provision of adequate drinking water is a registration requirement it is apparent a significant number of schools do not comply with this. Additionally, the alternate supplies relied upon by schools in the islands are either inadequate or should be considered unsafe for drinking purposes.

Hygiene education occurs only on an informal basis in a few communities, commonly only if there is a strong relationship between the school and family health workers or if the school management has taken an active interest. The emphasis is on personal hygiene of students and is message based rather than practical. It is not orientated to stimulate behavioral change and in many cases is not supported by the existing facilities. There is no training for staff or evaluation of the effectiveness of the school health program or family health worker’s activities.

The following main points can be ascertained from this report

• Need for strong commitment at the national development level to ensure students attend schools that are able to provide adequate safe drinking water and appropriate sanitation and hand washing facilities. Only 36% of island-based schools are able to currently provide rainwater for drinking purposes all year and only 39% have appropriate hand washing facilities.

• Promotion of hand washing in schools is the key area to be addressed to reduce the transmission of water and sanitation related diseases and helminth infestations in children. Soap was found to be used in only one of the 46 schools observed.

• Hygiene education needs to be formalised for effective delivery both at the national level through the curriculum and at the schools and community level via the School Health programme and family health workers.
OVERVIEW

1.1 School Sanitation and Hygiene Education


In the Maldives the prevalence of water and sanitation related diseases is evident in both the rural islands and in Male’. Diarrhea incidence rates remained constant since 2000 at 30 per 1000 of the population and rates of infection by intestinal parasites continue to be a major concern (*Ministry of Health*, 2001). Intestinal parasites and diarrhea may be contributing causes to the high level of malnutrition in children found in the country. Mosquito control also remains an issue while dengue fever is endemic in the country and filarial cases are still reported. Improved hygiene practices with access to appropriate water and sanitation facilities are essential if transmission routes of water and sanitation related diseases are to be reduced.

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Helminths infest an estimated 50-75% of students. 
Diarrhea morbidity is a persistent problem in the country.  

The infestations and water and sanitation related diseases are spread in schools with improper facilities and poor hygiene behaviors.  

The diseases cause poor health and lead to, or reinforce, malnutrition.  

Poor health and malnutrition are important underlying factors for low school enrollment, high absenteeism, and poor classroom performance  
(Statistics from Maldives Health Report, Ministry of Health, 2001)

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Schools play an important role in children's health and well being. They can be a place to develop useful life skills on health and hygiene. It is important that schools have proper facilities. If school sanitation and hygiene facilities are absent or are badly maintained and used, schools can become risky places where diseases are transmitted. The mere provision of facilities does not make them sustainable or ensure the desired impact. It is the use of the facilities – the related behaviors of all people that provide health benefits. The focus should therefore be on both effective education and effective facilities. Children are future parents and the hygiene behaviors learnt and practiced at a young age are likely to be applied in the rest of their lives (UNICEF, 1998).
School sanitation and hygiene deals with both the hardware and software aspects needed to bring about changes in the hygiene behavior of students, and through these students, in the community at large. The **hardware** is the total package of sanitary conditions and facilities available in and around the school compound. The **software** is the activities that are to promote conditions at school and practices amongst school staff and children that help to prevent water and sanitation related diseases. The provision of safe water and sanitation facilities is a first step towards a healthy physical learning environment.

It requires support at both national and school and community level. At a national level there needs to be a commitment to the provision of water supply and sanitation facilities in line with a standard for their construction. There also needs to be teacher training, inclusion of hygiene education in the national curriculum, monitoring and regulating, interagency cooperation and hygiene promotion to ensure that facilities are used properly.

The assistance of schools and community also plays an important role. Often limited financial and human resources inhibit the ability to which a national government can take responsibility for a healthy school environment. Therefore students, teachers, parents and communities need to take responsibility and improve the environmental situations at their schools. There are many things schools can instigate with little help from external sources that will go a long way to improving school sanitation and hygiene (UNICEF & IRC, 1998).

### 1.2 Conducting the Situation Analysis

There is a wide variation between the facilities and conditions of schools in the atolls and in Male’. Schools vary from newly built facilities to ones that have evolved from traditional schools to facilities that were never designed to be schools. They may have newly built hygienic environments, adequate and appropriately designed, or they may have **no** sanitary facilities or safe water for drinking purposes at all.

School sanitation and hygiene education has not previously been assessed in the Maldives. In order to address the issue and develop a School Sanitation and Hygiene Education program it was necessary to conduct a situation analysis. The situation analysis was designed and implemented by Maldives Water and Sanitation Authority (MWSA), under the Ministry of Health and with the assistance of the Ministry of Education and UNICEF. The situation analysis was conducted from April to August 2002.

The objectives of the situation analysis were to:

1. Assess the current hygiene and sanitation standards of schools in Male’ and atolls.
2. Identify areas in which effective hygiene education would be most needed.

**Methodology Used**
The situation analysis was conducted through the formation of a working committee with representatives from MWSA, Ministry of Education (School Health), Ministry of Health and UNICEF. The analysis was conducted using the following methods of data collection.

1. Field Observations, interviews, discussion groups and indicator monitoring in schools and communities of one atoll in each of the five regions of the country representing 15% of all schools, conducted jointly by MWSA and the Ministry of Education.

2. Random representative data collection from 30% of all schools and associated family health workers using a self-completing questionnaire.

3. Assessment at a national level by documentation review and meetings.

**Participation in the situation analysis**

Contributions were made at the community level by school staff, management, teachers, students, family health workers, Public Health Units, island offices and parents. A range of methods including group participatory discussions, workshops, structured interviews and class activities were used.

In total 46 of the Maldives 314 schools on 22 islands were visited and more than 100 interviews or group discussions with schools staff, students, island chiefs and family health workers were conducted. At a national level, meetings were held with the relevant Ministry of Education sections - Construction, Curriculum Development, Atoll School Administration and School Health.

The situation analysis report was reviewed by the committee and distributed and commented on over a 6 month period by MWSA, the Ministry of Health, the Ministry of Education, the Ministry of Planning and UNICEF.

**Limitations of method used in this Situation Analysis**

Self-completing questionnaires were used to give a larger sample size and a broader view of the situation in the atolls. These were pre-tested before use. It was not possible for an independent team to visit all of the selected schools. The information given by the schools is not as objective as if an independent team had collected the data. During field observations discrepancies between the actual situation and that indicated by the school were noted particularly in relation to the maintenance and cleanliness of facilities. Hence emphasis is given to the field observation results throughout this report.

During field observations the schools had been notified of an impending visit by the Ministry of Education. In a small number of schools it was apparent that facilities had been very recently prepared. Many of the discussions were held with the need for translation. It was not always possible to obtain detailed information of the existing situation using this method. Observations of child behavior practices were limited to those noted during the field observations. More detailed study would require longer time periods with the students.
Schools in the Maldives have evolved from a traditional education system to a unified national system of education. The policy focus is on the creation of a unified curriculum for Grades 1-7, improve teacher training and upgrading and establishing new schools in the atolls. The schools are differentiated as Government, Community and Private. Whilst the Community and Private schools were established, and in some instances community members or private individuals financed the schools construction, they are now almost fully dependant on government support (Community) or government support and fees (Private). The Ministry of Education meets all the recurrent and capital costs of the Government Schools and provides subsidies to community and private schools. The government is currently attempting to upgrade both facilities and teachers in island community schools. Substantial differences exist between the programs and facilities.

The following chart (1) shows the breakdown of school enrollments between types, the Atolls and Male'.

![Chart 1 - Student Enrollment by Schools (2001)](chart1.png)

Male’ has only 21 of the 314 schools but 27% of school enrolments. The schools in the atolls represent a diverse population of 293 sites, spread over more than 200 islands with 27% having less than 100 students’ enrolled (Ministry of Education, 2001). The challenges faced in transportation and communication with these atoll schools poses a serious barrier to monitoring, support and supervision.
Management and supervision in the schools

The larger schools in Male’, the Atoll Education Centers (AEC’s) and Atoll Primary Schools (APS’s) in each atoll have a school head who is responsible for management and supervision. Principals and assistant Principals exist in most secondary institutions. In the community schools this role is often not formalized among the teaching staff and the Island Chief acts as a “Principal” of the school and administers the budget. They vary greatly in their interest in education and their ability to provide leadership for educational objectives. The supervisors in these schools may not be trained for the roles and may not have a salary incentive to warrant the extra responsibility involved and the turnover rate is generally high.

No formal inspectorate or instructional support system existed in the atolls until recently. Supervisors of the Ministry of Education now extend their responsibility beyond Male’ but this is limited by the inadequacy of travel funds and staffing numbers. The AEC’s also play a role using the cluster system of schools. The head of the atoll school will play a supervisory role to the community schools within the atoll. This also is limited by inadequacy of travel funds and time while the head retains all of his or her existing duties.

Existing Facilities in Schools

A detailed inventory of school facilities and equipment does not exist. To date the Ministry of Education has not compiled data on the number and location of schools below an acceptable standard. Government schools in Male’ have the most modern, complete and appropriate facilities, next come the government AEC’s and APS’s in the atolls. The non-government island schools - Pre Schools, Community and Private, have the lowest average quality but also the highest variation. Some are in true school buildings whilst others operate from poor quality facilities that have been adapted to for use as a school. Equality of facilities is a less important short-term goal for extended basic education than assurance that all students attend programs in “acceptable” facilities.

The Easy Pre School in Lh.Hinnavaru is an example of an existing building adapted for use as a school.

Source MWSA 2002
School Staff Training and Support

In order to become effective promoters of school sanitation and hygiene, teachers require a certain level of hygiene awareness and commitment. There is a heavy reliance on expatriate teachers and untrained teachers due to skills shortage in the Maldives. In the islands 35% of teachers are untrained (Ministry of Education, 2001). There is also the high turnover rate of supervisors in community schools discussed. There is no Hygiene Education or Water and Sanitation training given to teachers, health assistants, supervisors, toilet attendants, maintenance staff or Island Chiefs, where appointed heads of schools.

Least-Served Schools (Twenty Schools Project)

The Ministry of Education’s “Least Served Schools Project” in 2000 was aimed at improving the standard of the community schools with the least facilities and trained staff. Water and sanitation was included in the criteria. Of the final 24 schools identified, nine did not have toilet facilities and eleven could not meet the requirement for drinking water storage capacity that was calculated as 0.5L/day/student for 85 days. These issues are currently being addressed with the assistance of the Ministry of Health.

2.2 School Health Program

A School Health Program was established in 1986 by the Ministry of Education in order to give an additional impetus to the health issues related to school children. A policy level committee steers the program with representatives from the Ministry of Health, Faculty of Health Sciences, Department of Public Health and Ministry of Education.

Under this program the following activities are carried out:

- Medical screening of children and follow-up
- Health Education and awareness programme
- Provision of health related information to teachers

The School Health programme is presently conducted mainly in Male’. The basis of this program is that a teacher is trained as a “Focal Health Point” or a Health Assistant is employed in each school and is responsible for designing and implementing a School Health Program for their school. There are also Health Clubs in each school. It is compulsory for all schools to have a program, however to date this has not been achieved.

One of the strategies of the program is to “Establish a School Environment that will promote healthy well being”. This is directly related to water and sanitation issues requiring schools to be kept in sanitary conditions to prevent the spread of diseases. The sanitation component involves checks on the school waste disposal, drinking water supplies and facilities as well as messages at
assemblies and hygiene checks of students. This area is the least active of the overall programme.

The success of the program in its existing capacity is dependant on the support given by the school management to implementing its own program. There is a wide variation between the programs and no evaluation or monitoring conducted. As the administration in the Ministry of Education is done by only one coordinator the level of supervision and support is limited. If the focal health point leaves the school there is a risk the program will cease within the particular school.

The future direction of the program is currently under review with a plan to strengthen the program by expanding the number of permanent trained health assistants in the larger island schools. One proposal is to develop a course with the Faculty of Health Sciences to train the Health Assistants in which water; sanitation and hygiene education issues could be addressed.

2.3 Existing Curriculum and Teaching Methods

Health or Hygiene Education is not a separate examinable topic in the national curriculum. Water, sanitation and health components are included currently in the national syllabus of Environmental Studies, which is taught from Grades 1 to 5 in the units The Earth and The People. The current syllabus is under review. The activities are designed in such a way that the students are meant to play an active role in collecting, analyzing, evaluating and presenting information. Skill development and participation is the focus. Inadequate training of teachers poses a substantial limitation to the delivery of subjects that requires a different teaching style to other subjects and the use of participatory skills. The objectives that are currently related to hygiene, water and sanitation are -

<table>
<thead>
<tr>
<th>Grade 1</th>
<th>Identify and name various items used for cleanliness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Express the importance of eating clean food</td>
</tr>
<tr>
<td></td>
<td>Demonstrate to show that fresh water lies on top of salt water</td>
</tr>
<tr>
<td></td>
<td>Identify uses of water and describe ways to minimize wastage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade 2</th>
<th>Identify different methods of purifying water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Describe the basic principles of desalination</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade 3</th>
<th>Name the common diseases and how they spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Describe the process of the water cycle</td>
</tr>
</tbody>
</table>

| Grade 4       | Discuss and describe what happens to the fresh water aquifer when it is used up |

<table>
<thead>
<tr>
<th>Grade 5</th>
<th>Find out about the dangerous diseases in the country and their causes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identify the causes of water pollution and demonstrate ways of purifying it to consume</td>
</tr>
</tbody>
</table>
Hygiene education that incorporates safe water and sanitation, environmental and personal hygiene, use and protection of water resources and identifying the risks of transmission of water and sanitation related diseases within their environments are not clearly addressed within these existing objectives. The scientific principles and technologies could be considered advanced for the age groups, not of a rational learning progression and difficult for students to apply to their surroundings.

The method of teaching stressed for this subject would be suitable to incorporate components related to the student’s actual surroundings rather than abstract concepts. In the youngest grades focusing on basic concepts relevant to their environment such as the difference between safe and unsafe water, why we wash our hands with soap or how germs may spread would be an opportunity to help instill healthy behaviors patterns as they are forming that the current curriculum may not.

2.4 External Hygiene Education

Health Education in the Maldives remains primarily with the Ministry of Health. At a national level, the Ministry of Health produces materials and utilizes the mass media to deliver IEC campaigns and health education messages, which may include water, sanitation and hygiene as a component. MWSA, under the Ministry of Health, specifically includes hygiene education as part of its programs through workshops, educational materials and IEC campaigns in the islands.

The Ministries’ Department of Public Health, Atoll Public Health Units and Health Workers all play a role in delivering health education messages to the schools and communities in the islands. Each island has at least one family health worker who has undergone a 6-month training course of which health education is a component. However there is little support or supervision for the family health workers and a wide variation exists between the methods used, the content and the responses from the community.

The Health Master Plan establishes the Health Promotion and Health Education Programme, which commits to working in collaboration with the Ministry of Education’s School Health Programme. The aim of this was to address important health issues that are not yet incorporated into the curriculum and to train teachers to provide them with the skills needed for integrating health issues into regular class activities. This link however is not currently effectively utilized.

The issue of worm infestations was partially addressed by the Ministry of Health using pilot projects for mass deworming of school aged children initiated in 2000 under the School Health programme. In addition the Public Health Unit includes health education on the prevention of helminth infestations in its programs. If they are to be successful, deworming campaigns must be also be accompanied by improving facilities and hygiene education that changes behaviors (WHO, 2002).
AT THE SCHOOL AND COMMUNITY LEVEL

3. Field observations, interviews and group discussions were undertaken with 46 schools between April and August 2002 in Lhaviyani, Haa Dhaal, Seenu, Vaavu Atolls and Male’. Of these schools eight were in Male’ with desalinated water supply, 13 were Pre Schools, 19 were government, 16 were community and 11 were private schools.

Self-completing questionnaires were received from 86 schools and 63 family health workers randomly selected to represent 30% of all schools in the country. Summaries of the database results for each region are given in Appendix F. Examples of a group discussion meeting with health assistants in Male’ are given in Appendix C.

3.1 Hardware

Hardware relates to the sanitary conditions and facilities available within the school. The basic facilities assumed for a school are:

- Provision of safe adequate drinking water supply,
- Toilets with water supplied,
- Hand washing facilities with soap
- Maintenance program to ensure they continue working.

Design, construction materials and suitability are also factors considered.

3.1.1 Potable Drinking Water Supply

Drinking water supply is a registration requirement for schools. The calculation used by the Ministry of Education for schools without a desalinated water supply is 0.5L/Student/85 days. Male’ is the only island where a continuous piped water supply is available from a desalination plant. All schools in the atolls rely on rainwater tanks. The following chart (2) indicates the status of drinking water supplies in island schools at the time of field observations between the months of April and August.
This indicates that only 36% of island schools are able to supply rainwater for drinking purposes to students throughout the school year.

The capacity of rainwater tanks in the North Region was calculated from tank sizes provided by the schools as an indication to determine whether or not on average schools currently could meet the requirement of \textit{0.5L/per student/85 days}. Table 1 indicates the actual capacity compared to the required capacity.

<table>
<thead>
<tr>
<th>Island</th>
<th>Students</th>
<th>Required (L)</th>
<th>Available (L)</th>
<th>Deficit (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA.Utheemu</td>
<td>160</td>
<td>6800</td>
<td>2500</td>
<td>-4300</td>
</tr>
<tr>
<td>Sh.Komandoo</td>
<td>719</td>
<td>30558</td>
<td>17500</td>
<td>-13058</td>
</tr>
<tr>
<td>Sh.Foakaidhoo</td>
<td>366</td>
<td>15555</td>
<td>2500</td>
<td>-13055</td>
</tr>
<tr>
<td>Sh.Maakandoodhoo</td>
<td>503</td>
<td>21378</td>
<td>2500</td>
<td>-18878</td>
</tr>
<tr>
<td>Sh.Maroshi</td>
<td>265</td>
<td>11263</td>
<td>9000</td>
<td>-2263</td>
</tr>
<tr>
<td>Sh.Funadhoo</td>
<td>556</td>
<td>23630</td>
<td>2500</td>
<td>-21130</td>
</tr>
<tr>
<td>N.Maafaru</td>
<td>272</td>
<td>11560</td>
<td>2500</td>
<td>-9060</td>
</tr>
<tr>
<td>N.Holhee</td>
<td>177</td>
<td>7523</td>
<td>500</td>
<td>-7023</td>
</tr>
<tr>
<td>N.Miladhoo</td>
<td>268</td>
<td>11390</td>
<td>2500</td>
<td>-8890</td>
</tr>
<tr>
<td>HD.Kumundhoo</td>
<td>308</td>
<td>13090</td>
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<tr>
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<td>HD.Finey</td>
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<td>4845</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>HD.Neykurendhoo</td>
<td>327</td>
<td>13898</td>
<td>3000</td>
<td>-10898</td>
</tr>
</tbody>
</table>

Table 1 Existing and Required Rainwater Storage Capacity of Selected Schools in the Northern Region
The allowance of 0.5L/per student/ 85 days is based on the length of term and the dry period. The table (1) shows that schools do not meet this storage capacity. Further calculations concluded that the issue was not one of insufficient rainfall or roof size preventing the schools from providing drinking water. The limitation is insufficient storage capacity.

Table 2  
Number of Days island schools can provide 0.5 L Rainwater / Day / Student without rainfall.

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Number of Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 days</td>
<td>6%</td>
</tr>
<tr>
<td>5 to 10 days</td>
<td>6%</td>
</tr>
<tr>
<td>11 to 20 days</td>
<td>29%</td>
</tr>
<tr>
<td>21 to 40 days</td>
<td>27%</td>
</tr>
<tr>
<td>41 to 60 days</td>
<td>15%</td>
</tr>
<tr>
<td>61 to 100 days</td>
<td>8%</td>
</tr>
<tr>
<td>up to 150 days</td>
<td>3%</td>
</tr>
</tbody>
</table>

- Based on questionnaire data of existing storage capacity for 66 schools in all regions excluding Male’.

The following chart (3) compiled using rainfall data also highlights the difficulty of collecting rain in first term (Ministry of Planning, 2001). Coinciding with the dry period the tanks will not be full at the start of the term. This emphasizes the need for schools to be able to meet their minimum storage requirement.
Alternative Water Supplies

The following chart (4) shows the methods observed to be used by schools to supply water when they do not have rainwater available for drinking purposes either due to inadequate storage capacity, facilities or during maintenance.

Chart 4
Alternate Drinking Water Supplies used by Schools

1. **Recommend students bring bottles from home.**
   
The small water bottles the students carry from home are not sufficient for a student’s daily water requirements to prevent dehydration and to ensure optimum performance at school.

2. **Transporting from outside the school and distributing from large containers from various sources.**
   
   This occurs by the school collecting water in large containers from private/community rainwater tanks or wells each day. Sources varied from the teacher’s home tanks, community rainwater tanks and in Lhaviyani Atoll water was only available from wells. The safety of this water for drinking purposes cannot be assured if the school is not involved in its collection or its source.

3. **Supply untreated well water**
   
   Ground water on the islands is susceptible to contamination from sources such as poor septic tanks and inadequate waste disposal techniques. It is not considered safe for human consumption. It is advised that all groundwater should be treated prior to drinking by boiling or chlorination methods. The supply of untreated groundwater from wells is a high-risk practice that schools should be prevented from continuing.
In Lh.Kurendhoo, the Pre School had been supplied a new rainwater tank six months previously but did not have the resources to connect it. The students continue to use water from home or the Mosque well opposite.

Source MWSA 2002

Table 3  
Drinking Water Supplies  
Summary of Questionnaire Responses from 80 Schools in all Regions (excluding Male’)

- **Does the rain water tank run dry?**
  
  44 % indicated it does each year for 1-3 months  
  40 % indicated it never runs dry  
  9% indicated it runs dry for more than half of the year.  
  Remaining schools had not connected their tanks or had not installed them long enough to know.

- **6 of 80 schools indicated that they did not provide drinking water at all.**

- **Alternative water supplies?**
  
  31 of the 80 schools indicated they obtain alternative water supplies from outside the school grounds when their tank is empty from the following sources.  
  35 % request students to bring from home  
  35% from a community rainwater tank  
  30% from a mosque well if all other tanks are empty.
Drinking Water Distribution

Drinking water distribution was varied. In half the schools the water was piped to taps in easily accessible positions with cups. In 20% of schools there was only a single stand post sometimes as low as four inches from the ground to serve the entire student population. The remaining schools relied on a large dispenser container. The taps used were not always ones that automatically closed off. In these instances the teachers indicated water was wasted regularly.

A filtering cloth over taps or containers was common; whilst this will remove large particles it does not render the water safe to drink. Poor maintenance can make them a hazard as the cloth can act as a medium for bacterial growth.

The sharing of metal cups is commonly practiced. Health Assistants in Male’ schools are actively discouraging this practice in an effort to stop the transmission of diseases.

Examples of the variation of drinking water distributions used.

Drinking Water Collection Practices

In all of the schools observed the tanks were connected in a manner that allowed the first flush to clean the roof. Schools satisfactorily described the appropriate way to collect water for drinking. Not all of the tanks were protected from insects with the gauzes commonly missing from the overflows.
Only the water supplies in the Male’ schools are able to be regularly sampled for microbiological analysis by MWSA. Only two of the schools currently use rainwater tanks for drinking water for their students rather than the desalinated water supply. The water quality for both of these tanks failed “WHO Standards for Drinking Water Quality” both in the initial sample and the resample by having unacceptable levels of bacteriological contamination. This contamination is most likely attributable to poor collection practices.

All of the schools in Male’ have water supply connections that ensure there is no mixing between desalinated water/rainwater/ground water. Drainage was generally addressed appropriately. In only two schools was water permitted to collect to a level that may provide a breeding site for insects. Maintenance of roof, gutters and tanks was required of a small percentage of community island schools.

Treatment of Drinking Water

None of the schools treated water for drinking purposes using chlorination or boiling techniques. Chlorine is not regularly available on the islands. The use of cloths to remove particles from tanks was common practice. In Lh.Naifaru the school was using well water as an emergency supply from the hospital grounds that it believed was being chlorinated. Discussion with the hospital indicated that this was rarely if ever the case.
Table 4  Use of Ground Water
Summary of Questionnaire Responses from 86 Schools in the Five Regions including Male’

- All schools indicated they used groundwater for cleansing in the toilets and/or hand washing.
- 20% of schools indicated the ground water had a strong odor.
- Location of the septic tanks serving the 71 schools not connected to sewers. (Septic tanks are recommended to be located at least 15 meters from the nearest well to prevent contamination, MWSA Guidelines for Septic Tanks, 2002)
  - 4% are within 3 meters of the well.
  - 44% are within 4 - 9 meters of the well.
  - 52% are more than 10 meters from the well.
- No schools desludge their tanks every 5 years as recommended and all only undertake maintenance if they experience problems.

3.1.2 Sanitation

The design and condition of the sanitation facilities of the schools also varied widely. Generally the government schools had been designed with running water and hand washing facilities. The older community schools and Pre Schools were less likely to have running water available, relied on wells and in some instance had no regular electricity supplies to operate pumps. The toilets most commonly found were squat toilets with hoses and buckets. Only one school was observed without toilet facilities and one pre-school used a squat toilet in a fenced open area. All schools were connected to septic tanks or sewers however as shown in Table 4 the appropriate distance of 15 meters from wells was not always observed.

Ratio of Toilets to Students

The standard ratio used by the Ministry of Education is 1 toilet per 60 students. It was not possible to determine if this was a sufficient ratio of toilets to students to minimize queuing. Whilst schools generally had a minimum of two toilets, both of them were not always working. Other schools such as Jalaaludheen School in HDh.Kulhudufushi had an excess of toilets where whole blocks remained locked and unused. Commonly island community schools with similar student enrollments and numbers of toilets would express opposing opinions as to whether students were queuing to use these. Students avoiding facilities in certain instances meant the demand might be artificially lower. It was not uncommon for teachers to indicate that more toilets were needed and to request separated toilets for teachers and students.
The most apparent pressure on toilet facilities was in the larger schools of Male’ and Addu. The large numbers of students exceeded the specified ration of 60 and overwhelmed the physical capacity of some schools to keep the areas clean. Poor ventilation in the facilities in schools such as Majeedhiya in Male’ compounded the problem.

Table 5 below shows the number of students sharing each toilet provided by the school calculated from questionnaire responses from 86 schools. Male’ and Addu were the only two atolls with schools in the highest ratio value.

The following chart illustrates the ratio of toilets to students taking into account sessions and gender separated for an atoll and Male’. The ratio is significantly higher in the two bigger schools in Male’.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Ratio of toilets/students/sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20 Students per toilet</td>
<td>20%</td>
</tr>
<tr>
<td>21 to 30 students per toilet</td>
<td>15%</td>
</tr>
<tr>
<td>31 to 50 students per toilet</td>
<td>30%</td>
</tr>
<tr>
<td>51 to 75 students per toilet</td>
<td>21%</td>
</tr>
<tr>
<td>76 to 100 students per toilet</td>
<td>8%</td>
</tr>
<tr>
<td>More than 100 students per toilet</td>
<td>6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chart 5</th>
<th>Comparison of Ratio of Toilets to Students for Selected Schools in Male’ and Lhaviyani Atoll</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Lh.Hinnaruu - Easy PS</td>
<td></td>
</tr>
<tr>
<td>Lh.Maalifaafushi</td>
<td></td>
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<tr>
<td>Lh.Kurendhoo</td>
<td></td>
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<tr>
<td>Lh.Kurendhoo - Habashi PS</td>
<td></td>
</tr>
<tr>
<td>Lh.Hinnaruu - AEC</td>
<td></td>
</tr>
<tr>
<td>Lh.Naafaru Govt Girls</td>
<td></td>
</tr>
<tr>
<td>Lh.Naafaru Govt Boys</td>
<td></td>
</tr>
<tr>
<td>Lh.Naafaru - Noorane PS</td>
<td></td>
</tr>
<tr>
<td>Lh.Olahuveliffushi</td>
<td></td>
</tr>
<tr>
<td>MES - Girls</td>
<td></td>
</tr>
<tr>
<td>MES - Boys</td>
<td></td>
</tr>
<tr>
<td>Galhoonmadhurasa - Girls</td>
<td></td>
</tr>
<tr>
<td>Galhoonmadhurasa - Boys</td>
<td></td>
</tr>
<tr>
<td>Jamaludheen</td>
<td></td>
</tr>
<tr>
<td>Amirah</td>
<td></td>
</tr>
<tr>
<td>Dhanumavanaththa</td>
<td></td>
</tr>
<tr>
<td>Majeedhiya</td>
<td></td>
</tr>
</tbody>
</table>
Use of Toilets by Students and Staff

It was common practice for students and teachers to use private toilets in the islands rather than school facilities. The toilets without running water and with wells located outside were the least used in the islands. In discussions with teachers and students, they indicated the lack of privacy for the well was the main disincentive. If the well were enclosed, they would be more likely to use them. Only one school had wells within enclosed areas. Location was also at times an issue. In V.Keyodhoo, the toilet had been built on a reclaimed area. Correspondingly, the well water was very salty and with a strong odor. The students chose to use neighboring houses in preference to the school facilities. Two other schools indicated the students thought the toilet had been built too far from the school.

In addition, the following situations were observed in relation to the standard of sanitation facilities:

- Facilities were more commonly suitable for adults rather than children of varied age groups.
- Floors in community schools were often cemented without tiles.
- Plastic taps used in more than half the instances were not working.
- Taps, buckets, or hoses were often not working/available in the toilet areas, which means no water for anal cleansing and toilets were left unflushed.
- Ventilation and light were commonly inadequate.
- No means for sanitary waste disposal for females.

### Table 6: Sanitation and Hand washing Facilities

Summary of Questionnaire Responses from 86 Schools in the Five Regions including Male’

- **What facilities are provided for hand washing?**
  33% of schools only have wells, remaining provide taps or basins.
- **Is there a specific area for hand washing?**
  50% of schools indicated there was not.
- **Are the toilets designed to be accessible by the smallest children?**
  40% indicated that they did not consider them suitably designed.
- **Gender differences in facilities**
  30% of schools provided their facilities combined boys and girls for all grades.
  There was no significant difference between the number available for boys and for girls.
- **Is soap always available?**
  59% indicated it was not provided – no budget or arrangements for it, not considered necessary, toilets only for urination or a belief that communal soap is unhygienic.
3.1.3 Hand Washing Facilities

The following chart indicates the hand washing facilities observed in 46 schools during field observations. Soap was only found in one of the schools during the field observations.

For smaller children the use of the well would provide a barrier to using the facilities. These children are also the least able to use alternate facilities. The importance of hand washing facilities needs to be stressed in schools. Typically these were the most poorly maintained areas of the facilities. In Aminiya School in Male’ observations and discussions with staff showed that the original hand wash facilities had been removed by the school management leaving the students without facilities to wash their hands.

The plastic taps used in the majority of schools were in many instances broken and the sinks unclean and not apparently in use. In V.Fulidhoo, the government school’s hand wash area was used as a storeroom and access to the sinks was completely blocked. The commonly expressed opinion in schools was that students only used the toilets for urination, they used private toilets instead or they washed their hands inside the toilets using the bucket or hose without soap.

Provision of Soap

Soap, specifically for students, was only found in one of the schools. This contradicted the questionnaire responses that indicated 41% of schools provided it. Soap was commonly found in Pre Schools where attendants or teachers were responsible for washing the students. The soap was not intended for the students and as such was at a height that would prevent students from reaching it.
The provision of soap was discussed with students and teachers. Commonly arrangements and funding did not exist for it. Some schools complained that supervision and discipline problems resulted in students removing it or blocking the systems with it. The option of having a class soap which could be linked to the existing exit card system was discussed with several schools that all responded positively. Students commonly requested that soapboxes be used. Liquid soap in bulk is not readily available for schools.

Providing hand-washing facilities does not in every case mean installing plumbing and pumps. As the photo below shows the existing facilities could be adapted. Alternatively small water tanks could be installed next to the facilities with a roster system of older students to fill the tank from the well.

![Image of a school with a water tank and tap for hand washing]

This school in Shaviyani Atoll had no taps for hand washing, however it could adapt the tap available from the garden adjacent.

Source MWSA 2002

### 3.1.4 Maintenance

The issue of maintenance was a priority for schools. In almost all schools the shortage of laborers, along with insufficient budget, to clean and maintain facilities was brought up in discussions. They believed toilet attendants would improve the situation. An estimated third of the toilet areas were considered unsatisfactorily dirty. Furthermore in the majority of facilities, with the exception of the newer built ones, maintenance was required. Generally it was replacing non-durable parts that the schools were reluctant to do due to the frequency with which it was required with a minimal budget.
The situation is commonly blamed on students damaging facilities. The use of more durable, better quality parts would limit this maintenance need. For community schools requests for maintenance are sent to the Island Office where poor communication may mean repairs may take an indefinite amount of time.

Three maintenance systems were in use

1. **School laborers** – Government schools had laborers to clean and maintain facilities and were supervised by senior staff. In HDh.Hanimaadhoo and HDh.Felidhoo the facilities were very well maintained and cleaned to an acceptable standard. The AEC in HDh.Kulhudhuvalu had insufficient laborers and as such was not always able to keep the facilities clean for its 2,000 students.

2. **Roster system** – Schools used a roster system either for students, teachers or parents. This was done via the prefects or PTA in some instances. The school then supervised and checked to ensure this was done. This system was used by Finey School in Haa Dhaal with success. In HDh.Kumundhoo, without constant electricity, the PTA was heavily relied upon to organize parents to assist the younger students with the well and buckets. Rosters rely heavily on the participation of the community and motivation of the school to organize it. Unless the school considered sanitation important the facilities were inadequately maintained and cleaned.

3. **Reactive system** – Schools without laborers or rosters used the “clean when it’s dirty” system. Parents, teachers and students all were involved. This system showed the least success. In many instances the toilets were blocked and unclean. This environment does not encourage safe and hygienic practices.

In HDh.Nellaidhoo and Nooraanee School (S.Hittadhoo) the school management had no system. The facilities were so unclean and badly maintained that they were beyond use.

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summary of Questionnaire Responses from 86 Schools in the Five Regions including Male’</td>
</tr>
<tr>
<td></td>
<td>• Is there a maintenance program and spare parts available to repair tanks and broken taps?</td>
</tr>
<tr>
<td></td>
<td>31% indicated there was no maintenance program</td>
</tr>
<tr>
<td></td>
<td>• Are tanks and wells maintained during holiday periods?</td>
</tr>
<tr>
<td></td>
<td>42% indicated they were not.</td>
</tr>
<tr>
<td></td>
<td>• Are all taps currently working?</td>
</tr>
<tr>
<td></td>
<td>22% indicated they were not.</td>
</tr>
</tbody>
</table>
3.2 Software

Software refers to the activities aiming to promote conditions at school and practices of school staff and students that prevent water and sanitation related diseases (UNICEF & IRC, 1998). Hygiene education itself is defined as all activities aimed at encouraging behaviors and conditions that help to prevent water and sanitation related diseases (IRC 1991). In this context it is taken to include activities such as increasing the use of toilet facilities, encouragement to look after facilities, hand washing with soap at the critical times, safe collection and storage of drinking water and personal hygiene. It applies not only to the students, but the staff including teachers, laborers, toilet attendants and health assistants and PTA’s. It can also be applied to the stages of designing or maintaining the facilities in a way that is suitable for children, well located and easy to clean.

3.2.1 Existing Hygiene Education

Where present, hygiene education in school environments was of an informal arrangement. It existed as an initiative of the school management or due to a strong link with the community and family health worker. It varied widely in both content and occurrence, was generally not part of a planned approach to instill healthy behaviors but rather as a component of the School Health Program for students only.

Where schools had a School Health Programme the hygiene education component consisted of the following

1. Messages delivered by resource persons to classes or assemblies. The resource persons were typically the Family Health Workers or from the Regional Hospitals.
2. Messages from teachers / focal health points to classes and assemblies.
3. Personal hygiene checks of students by staff or prefects.

There is no specific training given to management, teachers, health assistants or supervisors in hygiene education or concerning water and sanitation. Hygiene education as such is not directed at school employees such as toilet attendants and laborers nor is it included in job roles. During a focus group discussion with health assistants in Male’ they believed educating toilet attendants to supervise and assist students was an important opportunity to encourage improved hygiene practices and hand washing with soap which is currently not utilized.

There were many examples in the island community schools of involving parents, teachers and students in cleaning and maintaining the facilities such as the roster system discussed previously when no laborers were provided. If done with the correct message and fair participation this is a form of hygiene
education that teachers the importance of and encourages responsibility towards facilities, which is not limited to students alone.

Supervision of students is limited and identified by management as a means to improve hygiene practices. In Finey School (Haa Dhaal), the roster system with older students supervising younger students is an opportunity for child-to-child learning whereby students could teach and encourage hand washing.

**As a component of School Health Programs**

The definition applied to hygiene education as part of the school health program is a narrow one. Personal hygiene is the focus with regular inspections of nails and hair or personal hygiene messages given to groups. Hand washing occasionally was included as part of health education messages given. Only a few schools indicated they did practical activities. The family health worker for HDh.Nellaidhoo had developed participatory activities to teach children the importance of hand washing including community surveys.

During a workshop in Shaviyani Atoll the focal health points and teachers involved expressed their belief that hygiene education was covered adequately under the existing curriculum and as such had designed their school health programs to focus on other health issues. This is in contradiction with the current Environmental Studies curriculum and the reality that none of their schools provided soap and more than half lacked adequate hand wash facilities.

Family Health Workers play a role in the School Health Programme. However commonly in discussions there was a reluctance to be proactive with the schools in hygiene education and was dependant on their relationship with the school. Whilst they would attend on the request of the schools few appeared to be willing to do more than give brief talks. They did indicate that hygiene was something they commonly discussed with parents. This is an area that would benefit from more training and support to assist in their capacity to deliver hygiene education.

<table>
<thead>
<tr>
<th>Table 8</th>
<th>Health Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of Questionnaire Responses from 63 Family Health Workers</strong></td>
<td></td>
</tr>
<tr>
<td>• How regularly do you visit your nearest school each year to provide information regarding health or hygiene?</td>
<td></td>
</tr>
<tr>
<td>15 visited between 1 to 3 times per year</td>
<td></td>
</tr>
<tr>
<td>6 visited between 4 to 6 times per year</td>
<td></td>
</tr>
<tr>
<td>1 visited up to 10 times</td>
<td></td>
</tr>
<tr>
<td>2 visited monthly</td>
<td></td>
</tr>
<tr>
<td>24 remaining do not visit, only on special occasions or did not answer this question.</td>
<td></td>
</tr>
</tbody>
</table>
The following table (9) summarises the responses received in the questionnaires concerning current hygiene behavior and education as understood by the school management.

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Existing Hygiene Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summary of Questionnaire Responses from 86 Schools in the Five Regions</td>
</tr>
</tbody>
</table>

- In your opinion are the current standards of hygiene at the school?  
  42% Good / 26% Average / 32% Poor and in need of improvement

- Do you consider that the hygiene behaviors of the students are?  
  52% Good / 39% Average / 9% Poor and in need of improvement

- Is there any supervision of younger children to ensure they wash their hands with soap after defecation and before eating food?  
  56% indicated there was.

- Please rate in order of importance the schools most important sanitation or hygiene education issue?  
  Overall Behavior practices of students rated 1st  
  Three regions rated Lack of Adequate Facilities the second most  
  Three regions rated Lack of Adequate Hygiene Education third, whilst two rated 2nd  
  Four regions considered Poor Maintenance of Facilities to be the least important.

3.2.2 Indicator to monitor safe hygiene practices

Hand washing as an indirect indicator to monitor safe hygiene practices

A child of about 9 years being able to demonstrate how to wash hands correctly at school is an indicator of the prevalence of safe hygiene practices.

Criteria:  He/she uses sufficient water, rubs both hands at least 3 times vigorously, rinses, and uses a friction agent such as soap. Materials are easily available and do not have to be collected from different places.

Out of three children asked in different classes at least 2 will demonstrate correctly.
This indicator monitoring was applied to all the schools as part of the field observations. The indicator showed safe hygienic practices in only one school. This was because only one school had soap available for students. However if soap had of been available, the second issue is that only 39% of schools observed have hand-washing facilities and a further 21% of schools must rely on wells. As discussed before wells prove too difficult for younger children to use unsupervised.

This indicator could be incorporated into School Health programs to ascertain the effectiveness at changing behaviors.

3.2.3 Linking Software and Hardware

Provision of appropriate hygiene facilities and hygiene education go hand in hand. Schools should not simply be provided with or build hand washing facilities where there were none before without including hygiene education at the same time if they are to be utilized and have the desired impact on health.

The existing facilities in schools do not enable the students to practice the most important hygiene lesson - hand washing with soap before eating and after defecation.

When facilities are deficient children do not attach the importance to good hygiene that it requires.

The hygiene education, where present, was a straightforward message based and aimed only at students. This approach is founded on the belief that if students are only told about the causes of ill health they would automatically change their attitudes towards unsafe practices and ultimately they would change their behavior. It assumes that when students understand how water and sanitation diseases are transmitted, unhygienic practices are dropped and improved ones adopted. Message based approaches on disease avoidance often have very disappointing results. This method also does not consider whether facilities enable safe practices.

There are many factors that will affect whether or not a child is able to and will adopt safe hygienic practices. Not least of which is the fact that students may be reluctant to use the existing facilities. A message on hand washing at assembly is not appropriate to a student without access to soap and whose facilities may not be clean, existing, accessible or working.
Common existing attitudes and beliefs encountered amongst teachers, parents, students and family health workers:

- **Communal soap is unhygienic**
- **Hygiene is clean nails and neat hair**
- **Students use toilets for urination only so they don’t need to wash their hands**
- **We tell students to wash their hand, that’s enough.**
- **We don’t repair the facilities because the students will only damage them again**
- **We give them soap and they throw it away**
- **Toilets are cleaned when they are dirty**
- **Children refuse to use the toilets because the well is not private.**
- **The well water has always been safe to drink.**
DISCUSSION
Health Concerns in Existing School Environments

4. Overall the following three issues should be identified as areas for concern in the existing school environments with the potential to have a negative impact on a child’s health, development or education.

1. Absence of improved hand washing
2. Inadequate provision of potable water
3. Facilities that do encourage hygienic behaviors.

4.1 Absence of Improved Hand Washing

Students are unable to wash hands correctly with soap at the critical times; after defecation and before handling food or eating. They are learning and practicing unsafe hygiene behaviors and as such places the student’s health at risk from the transmission of water and sanitation related diseases and helminth infections.

Hands were not washed correctly at the critical times for the following reasons

a) No soap is available for students.
b) Hand wash facilities are not always provided, operational or suitable for small children.
c) Schools do not place it as a hygiene priority
d) Hygiene education and curriculum does not link to practice.
e) Existing attitudes and beliefs of students and teachers.

Hand washing is one of the most important hygiene behaviors needed for reducing the incidence of diarrhea. If diarrhea is present then it is possible that conditions are favorable for the spread of other water and sanitation related diseases such as typhoid and cholera. It is not only the issue of whether or not hand washing occurs but also how and when. Sufficient water and soap are essential. The most common failing was to wash hands with water alone – no soap. In addition, failing to wash hands is one of the key ways that helminth infections in school aged children will continue to proliferate.

In recent studies of hand washing a positive relationship was consistently shown between hand washing with soap and diarrhea prevention. In Bangladesh soap distribution with hygiene education reduced childhood diarrhea by 33%, in Malawi soap distribution alone reduced diarrhea by 27% (Hutley et al. 1997).
4.2  Inadequate Provision of Potable Water

4.2.1  Quality of water

The schools rely on the following sources of drinking water. In no schools was the water boiled or chlorinated.

1. Rainwater collected from school roofs into school tanks
2. Rainwater carried in from external sources such as community tanks and private sources.
3. Groundwater from inside or outside the school grounds.
4. Desalinated water supply in Male’

Whilst rainwater is the safest water available for island schools it is only as safe as the means it was collected by. If schools rely on rainwater there should be a clearly supervised maintenance schedule to clean tanks and gutters and protect the tanks from external contamination. If the school cannot guarantee the safety of the collection then the water must be treated by boiling or chlorinating. Sampling of rainwater storage tanks in Male’ schools conducted by MWSA have shown the presence of bacteriological contamination. This was most likely due to poor collection, storage practices and the presence of pests.

As discussed, groundwater is considered an unsafe drinking water source and the provision of this by schools poses an immediate health risk to students. Schools should not practice the utilization of this when its rainwater tanks are empty or at any other times unless it is treated by boiling or chlorination. Additionally, when any water is transported in from sources outside the school grounds the quality cannot be assured by the school and as such should also be treated prior to consumption.

Should schools chlorinate the wells or tanks they should use a chlorination test kit to ensure it is done safely. The availability of chlorine and these kits is currently not viable for schools to rely on. Low costs tests for drinking water quality is another option that could be developed for schools in the islands with the assistance of Regional Hospitals and Health Workers.

4.2.2  Quantity of water provided

Lack of access to adequate drinking water will affect children’s health and education. Studies indicate that children would suffer from headaches, tiredness and poor concentration in lessons as a result (Garner, 2002). It may also cause kidney and urinary track infections common in the Maldives (Ministry of Health, 2001). Health experts say that children should drink at least 8 glasses of water a day. Improving the availability of water has potential to make a huge difference to pupil’s health and performance in school (Garner, 2002).

In the island schools observed only 36% of the schools were able to supply rainwater for drinking purposes throughout the year. Calculations indicate it is not a shortage of rainfall or roof collection space but because of insufficient
storage capacity. Using the guideline of 0.5L/per day/per student for 85 days the majority of island schools clearly do not have enough rainwater storage capacity. It’s probable that students would use more than 0.5L per day for drinking - ideally this figure should only be considered a minimum quantity.

When there is no means to collect rainwater or the tanks are empty or not connected schools transport water in containers, hardly sufficient for the needs of the students. Alternatively schools request students to bring water from home. This is done in small bottles of water that students make last for the whole session.

In 20% of schools a single tap to serve the entire school distributed the drinking water. More taps conveniently placed would encourage students to drink adequate water by removing the need to cue for long periods of time.

4.3 Facilities do not encourage hygienic practices

Hygiene and sanitation facilities at schools should be child friendly environments that facilitate and promote better hygiene practices and are simple to use. The reality is often very different. The result is that children are not comfortable and frightened to use facilities, avoiding them or inducing unhygienic practices. A hygiene and sanitation facility then becomes a risk for public health, spreading diseases rather than blocking them (Zomerplag J & Mooijman A, 2001).

Maintenance and cleanliness issues that remain unresolved will discourage the use of toilets. The issue is compounded when toilets are not provided with buckets, hoses or water to cleanse or flush with. When students cannot go home or to neighboring houses they will wait the entire day without going to the toilet. They may also drink less water and become dehydrated. Female students may be discouraged from attending school. If they do use the toilets, restricted or no access to water or soap or hand washing facilities means that students will not clean themselves hygienically, they will learn unsafe practices and toilets may actually facilitate the spread of illness.

Developing guidelines for the provision of child friendly facilities for both newly built government schools and for the renovation of existing island schools would assist in enabling facilities to be better utilized and to achieve their aim – preventing the spread of water and sanitation related diseases and facilitating health for students.

Child Friendly Facilities

- Have appropriate dimensions for children
- Have enough capacity and no waiting time
- Have operation and maintenance plans
- Address the special needs of boys, girls, young men and women.
- Are lowest cost solutions with no compromise towards quality.
- Accommodate hygienic behavior
- Do not harm the environment
- Are made from durable materials.

Source: School Health
5.1 Incorporating Hygiene Education

As has been illustrated Hygiene Education exists in schools and communities in varying degrees in varying degrees. The most important issue that needs to be addressed is that hygiene education becomes aimed at instilling healthy behaviors and not simply at providing information. If it is not practical it will not be effective. It should also not be limited to students. Preventing the spread of water and sanitation diseases is a part of the school staff’s responsibilities also.

The areas that hygiene education would benefit from being strengthened and could be the most effective are,

**At a Community Level**

1. By formalizing the existing hygiene activities of the School Health Programme utilizing the trained focal health points and health assistants. Such activities should work with the objective of instilling healthy behaviors rather than delivering information, be compulsory, practical and incorporate indicator monitoring and evaluation.

2. As part of Family Health Worker’s health education work. The ability of the Family Health Workers on the islands to deliver effective hygiene education needs to be strengthened and their role in school health defined. This would be beneficial for the wider community also.

3. Incorporated into existing job roles in schools. Providing training and supervision and include a component in job roles for all school staff involved with sanitation issues relevant to their positions including management, teachers, health assistants, toilet attendants and laborers

**At a National Level**

4. As part of a revised Environmental Studies curriculum. Teachers could be utilized and supported to deliver practical components of the subjects relevant to hygiene and sanitation. For it to be part of the curriculum it would ensure the messages reach all the students and was not subject to the ability of the school to assign teachers and time.

5. As a coordinated approach by the Ministry of Health and Ministry of Education under a National Hygiene Initiative as part of the Health Education Program.
Providing training for school staff in sanitation and hygiene education would resolve many of the issues at the school and community levels. Responsibilities could be incorporated into existing job roles, not only for teachers or health assistants but also extended to those for maintenance staff and toilet attendants.

On an informal level, schools could incorporate more activities to encourage good hygiene behaviors in students. Possible examples could be via the toilet attendants for younger students or by child-to-child learning when older students assist the younger ones. Teachers could be better utilized as role models in hygiene and to be imaginative in including it in cross-curricular exercises.

5.2 Prioritizing Interventions

There is a clear need for the development of a School Sanitation and Hygiene Education program for the Maldives if the health concerns discussed in this situation analysis are to be addressed. To be effective the program should be developed by the Ministry of Education with involvement from the Ministry of Health and MWSA. Significant disparities in both the condition and the provision of facilities for the smaller, older community, private and Preschools island based schools exist. Improvements in school environments should prioritize those that ensure a maximum benefit for student's health and performance specifically

- Provision of soap across all schools
- Provide / upgrade hand washing facilities in all schools where they are lacking.
- Provide rainwater tanks adequate for all schools to meet the registration requirements at a minimum
- Eliminate the practice of providing untreated drinking water from unsafe sources e.g. groundwater
- Raise awareness of the importance of school sanitation and hygiene education activities.
- Make hygiene education and curriculum more effective

Hygiene education must always be incorporated when new facilities are provided such as hand washing taps or soap. Much can be done to improve the use of existing facilities and resolving issues by the schools and communities themselves. The emphasis should not be on merely providing new facilities where they are absent but on improving the use of the existing facilities in all schools.

Lack of training, supervision and existing attitudes and beliefs may pose a barrier to implementing changes in the current situation.
It is important that teacher, management and supervisor training includes

- A working knowledge of the relation between water, sanitation, hygiene behavior and health
- Awareness about their importance as a role model, resulting in proper hygiene behavior
- Skills to work with students in participatory ways
- Commitment to bring about improvements themselves or to request assistance when it’s needed. (UNICEF & IRC, 1998).
## RECOMMENDATIONS

### 6. Recommendations for School Sanitation and Hygiene Education

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Lead Agency</th>
<th>Support Agency</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Commit at a national development level to establish and implement a School Sanitation and Hygiene Education program.</td>
<td>MOE</td>
<td>MOH</td>
<td>2003 - 2005</td>
</tr>
<tr>
<td>Which will encompass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. The provision of adequate safe drinking water supplies, sanitation and hand washing facilities with soap to all schools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Establishment and implementation of policies to address identified water, sanitation and hygiene issues to ensure schools are environments where students develop safe hygiene behaviors and that block the spread of water and sanitation diseases.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Adequate training and supervision for all concerned school staff and inclusion in job specifications.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Develop a National Hygiene Strategy to formalise hygiene education and implement a hand washing initiative.</td>
<td>MOH</td>
<td>DPH, MWSA, MOE, UNICEF</td>
<td>June 2003</td>
</tr>
<tr>
<td>3. Revise curriculum for Environmental Studies to incorporate Hygiene Education</td>
<td>MOE</td>
<td>MOH</td>
<td>2002/3</td>
</tr>
<tr>
<td>4. Strengthen the “Healthy School Environment” component of the School Health Programme</td>
<td>MOE</td>
<td></td>
<td>2003/4</td>
</tr>
<tr>
<td>5. Improve the capacity of Family Health Workers to deliver hygiene education and promote improved hand washing within their community through training, support and introducing evaluation.</td>
<td>MOH</td>
<td>MWSA</td>
<td>2003</td>
</tr>
<tr>
<td>6. Develop Design and Construction Guidelines for child friendly facilities that will be relevant to both new facilities and the upgrading of existing ones.</td>
<td>MWSA</td>
<td>MOE</td>
<td>June 2003</td>
</tr>
<tr>
<td>7. Revisit Situation Analysis.</td>
<td>MWSA</td>
<td>MOE</td>
<td>2006</td>
</tr>
</tbody>
</table>

MOE – Ministry of Education, MOH – Ministry of Health, MWSA – Maldives Water and Sanitation Authority
References


<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Schools included in Field Observations</td>
</tr>
<tr>
<td>B</td>
<td>Sample Checklist used for Water and Sanitation Facilities</td>
</tr>
<tr>
<td>C</td>
<td>Sample Focus Group Discussion – Male’ Health Assistants</td>
</tr>
<tr>
<td>D</td>
<td>School Identified Needs – Shaviyani Atoll Workshop</td>
</tr>
<tr>
<td>E</td>
<td>Summary of Sample Questionnaire</td>
</tr>
<tr>
<td>F</td>
<td>Regional Results from Questionnaires</td>
</tr>
</tbody>
</table>
Appendix A
Schools Included in Field Observations

Lhaviyani
1. LH Atoll School (Kurendhoo) - G
2. Habashee Pre School (Kurendhoo) - C
3. Hinnavaru - G
4. Maafilafushi - G
5. Naifaru - G
6. Olhuvelifushi School – C
7. Noaranne Pre School (Naifaru) – C
8. Roashanee Pre School (Naifaru) – C
9. Easy Pre School (Hinnavaru) - P
10. Hussain Gasim Pre School (Hinnavaru) – P
11. Fannu Pre School (Hinnavaru) - P

Haa Dahl
12. Atoll School (Kulhudhuffushi) – G
13. Jalaaludheen School (Kulhudhuffushi) – G
14. Ameeru Ameen Pre School (Kulhudhuffushi) - C
15. Hanimadhow – G
16. Finey – C
17. Kumundhoo – C
18. Athufaal Pre School (Kumundhoo) - P
19. Nellaidhoo – C
20. Neykurendhoo – C
21. Nolihavarum - C

Addu
22. Feydhoo – G
23. Hithadhoo School – G
24. Nooraanee School (Hittadhoo) – P
25. Hulhudhoo – G
26. Medhuvalu School (Hittadhoo) – P
27. Saeediyya Pre School (Hittadhoo) – P
28. Kudhimaa Pre School (Feydhoo) – P
29. Shareefee Pre School (Meedhoo) – P
30. Irushadiyaa School (Maradhoo) – G
31. Maradhow – Feydhoo School – C
32. Muhibuddin (Hittadhoo) - G
33. S. Atholhu Madhrasa (Hulhudhoo/Meedhoo) - G

Vaavu
34. Atoll School (Fulidhoo) – G
35. AEC (Felidhoo) – G
36. Keyodhoo – C
37. Rakeedhoo – C
38. Thinadhoo Madhrasa – C

Male’
39. Jamaaludheen School – G
40. Kalaafaanu School – G
41. Imaadhuddin School - G
42. Aminya – G
43. Galolhu Madhrasa – C
44. Madhrasathul Ameeru Ahmed – C
45. Male’ English School – P
46. Madhrasathul Aliya – P

(G – Government, C – Community, P – Private)
Appendix B
Sample Checklist used for Water and Sanitation Facilities

1. Drinking Water Supplies in School
   ✓ Desalinated water supplies, where connected, ensures no mixing with other water sources (eg rain or wellwater).
   ✓ Water is treated appropriately prior to drinking when it may be unsafe.
   ✓ Rainwater is collected safely.
   ✓ Adequate capacity for rainwater storage for the year to meet student needs and ensure their performance and health is not affected by dehydration.
   ✓ Involving students where possible to teach them the importance of safe water collection.

   **Collecting and Storing Rainwater safely,**
   - Roofs and tanks must be well maintained and free from debris (branches, dirt) and rats/cats discouraged.
   - Roof, gutters and tank must be cleaned and the first rains first flushed through the system before water is collected.
   - A person is assigned responsible and checks.
   - Ensure tanks are protected from insects.

   **A Note on Treating water for Drinking Purposes**
   Boiling and chlorinating are the only acceptable means by which to treat water so that it is safe for drinking in accordance with WHO standards. Chlorinating should be done following the safety guidelines.
   Water sources requiring treatment before consumption
   1. Ground water
   2. Any water that the school cannot guarantee the means in which it was collected. (eg Water transported from outside the grounds)

2. Sanitation Facilities
   ✓ Sanitation facilities and surfaces are maintained and kept clean.
   ✓ Are able to be able to be locked for privacy, have adequate light and ventilation.
   ✓ Are always provided with buckets for squats, hoses, and adequate water is always available for cleansing and flushing.
   ✓ Provide for safe disposal of sanitary waste.
   ✓ Students are encouraged to use the facilities rather than go home during intervals.
   ✓ All toilets are connected to septic tanks. Note: Tanks should be no closer than 15 meters to any well and must be desludged regularly for them to work. Please refer to the MWSA Guidelines for Septic Tank Construction and Maintenance.
   ✓ Adequate drainage ensures no water is permitted to collect around taps or toilet facilities, preventing possible sources of insect breeding sites.

   **Hand washing Facilities**
   ✓ Are always provided where ever toilets are provided
   ✓ Are always supplied with soap.
   ✓ Are in close proximity to toilets to ensure they are used.
   ✓ Are simple and easy to operate.
   ✓ Materials are displayed to encourage/remind children to wash hands with soap near the hand washing facilities.
   ✓ Where only wells are provided consideration is given to supplying assistance for younger students.

   **Use a class soap system – keep a soapbox in each class and give a soapbox with the exit card when students leave the room to the toilet to remind them to wash their hands with soap and keep the soap safe…**

   **Tip – Try using large distribution containers with a tap or use rosters of older students to assist younger students as temporary solutions to making wells accessible hand washing facilities.**

   **Cleaning and maintenance are one of the most important parts to safe school sanitation. When facilities are not maintained children do not attach the needed importance of sa**

   **s**
Appendix C  
Focus Group Discussion – Male’ Health Assistants

Fifteen health assistants from eight schools in Male’ as part of a Hygiene Education workshop by School Health where asked in groups to nominate the biggest issues facing their schools in relation to stopping the spread of water and sanitation related diseases. They were then asked to suggest the action the school could take themselves to improve the situation. The following is the summary of issues by the three groups.

<table>
<thead>
<tr>
<th>Group 1 – Issue</th>
<th>Action for School to Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children don’t have adequate knowledge about hygiene</td>
<td>School should undertake hygiene education</td>
</tr>
<tr>
<td>Cleanliness of toilet areas and water supplies</td>
<td>Awareness program for the cleaners and toilet attendants</td>
</tr>
<tr>
<td>Drinking water – not enough, poor plumbing.</td>
<td>Encourage students to bring their own cup/bottle in addition and improve parent’s awareness.</td>
</tr>
<tr>
<td>Poor maintenance means the taps and flush tanks are broken and not repaired</td>
<td>Provide proper maintenance and supervision</td>
</tr>
<tr>
<td>Children do not wash their hands</td>
<td>School to provide soap, supervision and materials to promote it.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2 – Issue</th>
<th>Action for School to Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygiene behaviors of children</td>
<td>Motivate and educate students about the importance of good hygiene and school property.</td>
</tr>
<tr>
<td>Lack of supervision of students and cleanliness of facilities</td>
<td>Employ toilet attendants for every floor. Have strict rules for them and supervise the toilet attendants. Train the toilet attendants about disinfections and how to deal with young children.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Regularly check the toilets and drinking water facilities and undertake repairs.</td>
</tr>
<tr>
<td>Lack of coolers and cups</td>
<td>Increase the number of coolers. Encourage students to bring cups from home so they don’t have to share.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 3 – Issue</th>
<th>Action for School to Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Hand wash facilities</td>
<td>School to reinstall removed hand wash facilities (Aminiya)</td>
</tr>
<tr>
<td>Poor water in toilets for cleansing</td>
<td>Install freshwater in toilets for anal cleansing as ground water is to polluted.</td>
</tr>
<tr>
<td>Lack of coolers and cups</td>
<td>Increase the number of coolers. Encourage students to bring cups from home so they don’t have to share.</td>
</tr>
<tr>
<td>Poor hygiene practices of students</td>
<td>School should provide soap and hygiene education and train attendants.</td>
</tr>
</tbody>
</table>
Appendix D
Sample of School Identified Needs - Shaviyani Workshop

A workshop was held in Shaviyani Atoll for school management, focal health points and family health workers from every school and island. Upon completion of the two day workshop participants where asked to identify what facilities would be required by each school to improve the existing sanitation and hygiene for the students.

The following table is a summary of the requests made by schools but not verified by MWSA. Soap was not included as it was distributed as part of the workshop.

<table>
<thead>
<tr>
<th>School</th>
<th>Tanks</th>
<th>Toilets (Flush)</th>
<th>Hand Washing</th>
<th>Cleaning Equip</th>
<th>Plumbing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Madrasdul Munavaru</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Maaguoodhoo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>For tanks</td>
</tr>
<tr>
<td>Lhaimagu</td>
<td>1 x 5000</td>
<td>4</td>
<td>1 tap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narudhoo</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>For tanks</td>
</tr>
<tr>
<td>Funadhoo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Maakadhoodhoo</td>
<td>4 x 2000</td>
<td>1</td>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
<td>Tiles Repairs to septic tank</td>
</tr>
<tr>
<td>Milandhoo</td>
<td>2 x 3000</td>
<td>1</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Wiring to toilets</td>
</tr>
<tr>
<td>Fievaku</td>
<td>1 x 5000</td>
<td>1</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Noomara</td>
<td>1 x 500 2 x 2000</td>
<td>3</td>
<td>2 basins 5 taps</td>
<td>Yes</td>
<td></td>
<td>Tiles, Cement</td>
</tr>
<tr>
<td>Foakaidhoo</td>
<td></td>
<td>3</td>
<td>4 basins 3 taps</td>
<td>Yes for toilets and to improve water quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feydhoo</td>
<td>2 x 5000</td>
<td>4</td>
<td>4 basins</td>
<td>Yes</td>
<td></td>
<td>Cement, roof</td>
</tr>
<tr>
<td>Belehfeci</td>
<td>2 x 5000</td>
<td>4</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Tiles, pump, roof</td>
</tr>
<tr>
<td>Kandhitheemu</td>
<td>2 x 5000</td>
<td>8</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Tiles</td>
</tr>
<tr>
<td>Goidhoo</td>
<td>1 x 5000</td>
<td>1 for teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
All schools specifically requested flushing toilets not squats.
All requests for cleaning equipment included requests for budgets to include soap.
Appendix E
Summary of Questionnaire (Original in Dhivehi)

1 School and respondent details
Atoll/Island
School Name
Government / Community / Private
Grades
Female Students
Male Students
Number of Staff
Number of Shifts
Name of Respondent
Designation
Contact Phone Number

2 Current Hygiene Behaviour and Education
2.1 In your opinion are the current standards of hygiene at the school? (Poor/Average/Good/Need of Improvement)
2.2 Do you consider that the hygiene behaviors of the students are? (Poor/Average/Good)
2.3 Are children actively encouraged to wash their hands with soap after defecation and before eating food?
2.4 Is their any supervision of younger children to ensure they wash their hands with soap after defecation and before eating food?
2.5 Are there any posters or materials encouraging hand washing near the toilet facilities?
2.6 Has the school last undertaken any initiatives to promote good hygiene practices? Please give details.
2.7 Please rate in order of importance the schools most important school sanitation and hygiene education issue
   Behaviour practices of students
   Lack of hygiene related education
   Lack of adequate facilities
   Poor maintenance of facilities
2.8 Details of any current hygiene education at the school?

3 Sanitation
3.1 What is the total number of toilets provided for
   Boys
   Girls
   Total if combined
3.2 Is there a maintenance program and spare parts available to ensure facilities are always operational?
   Who is responsible for the maintenance program?
3.3 Do you feel that the majority of the students use the school toilets? If No, why not?
3.4 What facilities are provided for hand washing? (Well with bucket / Soap / Tap)
3.5 Is there a separate area for handwashing?
3.6 Do the handwashing areas and toilets have adequate drainage to prevent water collecting?
3.7 Are the toilet and hand washing facilities designed to be accessible for small children?
3.8 Is soap always available? Yes, who provides and checks that it is always available? If No why?
3.9 How regularly are the toilet areas cleaned thoroughly? (Daily/Weekly/More than daily/When dirty)
3.10 Is the wastewater connected to a septic tank?
    If Yes, how often is this emptied and by whom?
3.11 How and where is the schools garbage disposed of and by whom?

4 Water Supply in School Grounds
Rainwater Tanks
   Type
   Volume
   Quantity
Groundwater Wells
   Condition
   Quantity
4.1 Maintenance
4.1.1 Who is responsible for the maintenance of facilities?
4.1.2 Is there a maintenance program and spare parts available to repair tanks and broken taps?
4.1.3 Are tanks and wells maintained during holiday periods?
4.1.4 Are all taps currently working?

4.2 Drinking Water Facilities
4.2.1 Is drinking water available for students?
   - Well water
   - Bottled water
   - Rainwater
   - Desalinated water
4.2.2 If drinking water is brought in from outside the school for the students where is this from?
4.2.3 How is drinking water provided to the students? (Filter Jug/Drinking Cups/Taps)
4.2.4 Is the drinking water treated by? (Chlorination/None/Filtered/Boiled)
4.2.5 Is chlorine available to the school?

4.3 Rainwater
4.3.1 Does the tank run dry for? (1month/1-3months/3-6months/Never)
4.3.2 Are the gutters for water collection always connected OR the first rainfall is allowed to first flush?
4.3.3 How regularly are the roofs, gutters and tanks cleaned? (Monthly/Every 3 months/When it rains/Never)
4.3.4 Are the tanks protected from insects, birds and animals?

4.4 Well water
4.4.1 Do you use water from wells? If Yes what for?
4.4.2 How regularly are the wells cleaned? (Monthly/1-3months/Annually/Never)
4.4.3 How far are they from the nearest septic tanks in meters?
4.4.4 What is the condition of the well water? (Clear/Salty/Dirty/Odour)

Information to be completed by Health Personnel

Name
Contact Details

1. How many cases of diarrhea have there been amongst school-aged children this year?
2. When did you last visit the school to provide educational information to the students on hygiene and sanitation?
3. How regularly do you visit the school each year to provide this information?
4. Please rate in order of importance the schools most important school sanitation and hygiene education issue
   - Behavior practices of students
   - Lack of hygiene related education
   - Lack of adequate facilities
   - Poor maintenance of facilities

5. Observations of current situation
   - Number of toilets working
   - Number of toilets not working
   - Cleanliness of toilet area?
   - Number of taps working
   - Number of taps not working
   - Cleanliness of area?

6. Rainwater Tanks were
   - Protected from insects / pests
   - Roof and gutters clear.
   - Covered

7. Ground water wells were
   - Clean
   - No water allowed to collect in area
   - Covered
Appendix F
Summary of Regional Results from Questionnaires

North Region..................................................................................................................... 54
Mid North Region ............................................................................................................. 56
Mid South Region .......................................................................................................... 58
South Region .................................................................................................................. 60
Male’ Region ............................................................................................................... 61