Scaling up Group Handwashing in Schools

COMPENDIUM OF GROUP WASHING FACILITIES ACROSS THE GLOBE

Publication prepared by:

FIT FOR SCHOOL INTERNATIONAL

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unicef

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FOREWORD

Washing hands with soap is among the most powerful hygiene behaviours helping to prevent infectious diseases. Yet, it is only effective if done regularly and habitually at critical times, especially after using the toilet and before contact with food.

Adopting healthy hygiene habits at an early age is a crucial step that contributes to children's healthy development and the reduction of preventable diseases, which enhances school attendance.

A child's first encounter with handwashing typically takes place in the family context where parents and older siblings are the role models for younger children. However, the learning and habituation process needs to be reinforced beyond the family's realm. For this reason, educational settings like preschools, kindergartens and schools must provide a healthy environment to further encourage children in developing strong and healthy habits. What children learn and practise there is likely to become a lifelong habit.

The provision and maintenance of adequate water, sanitation and hygiene (WASH) infrastructure remain a challenge in schools worldwide. Hygiene education is commonly taught theoretically as part of the school curriculum but often cannot be practiced due to lack of usable (functional and clean) washing facilities. Everything starts with the most basic prerequisites: availability of water and soap. Group activities, which are effective pedagogic approaches, can be applied to handwashing and other hygiene activities as well. They may enhance the habit formation through a multitude of cues, social interactions and routine practices. Scheduled group activities performed daily at school provide the necessary practice to complement theoretical learning. The group activities may also help to overcome the barriers to individual handwashing behaviour.

At the same time, group hygiene activities using suitable washing facilities are practical and realistic. Group activities can ensure that each student is washing hands at least once a day. Washing hands in groups simultaneously also saves time and water.

The importance of daily group handwashing has been recognized and integrated into the UNICEF/GIZ Three Star Approach (TSA) to WASH in Schools (WinS), which has gained momentum around the world. With its focus on usable, cost-efficient and adequate infrastructure, the TSA provides a realistic stepwise concept to improve WinS infrastructure. It also creates opportunities for schools, school communities and decision makers in the education and other relevant sectors to establish a healthy learning environment for children to practise good hygiene behaviour in the school setting.

This compendium is testimony to the incredible creativity and ingenuity of school communities to design, construct, operate and maintain group washing facilities. As an essential building block in the context of the TSA and the journey towards adequate WinS, we are happy to share these examples of group washing facilities from around the world so that they can inspire and motivate many more people to engage in sustainable WinS activities. Presented designs include the entire span of possible existing facilities: from basic tippy taps, which a school community can construct immediately even with very limited financial resources to more complex and advanced constructions, reflecting different circumstances, necessities and resources of school communities.

WinS is integral to sustainable development as recognized in Sustainable Development Goal (SDG) 6 on water and sanitation, SDG 5 on gender equality, SDG 4 on education and SDG 3 on health and well-being, as well as others. We will continue to advocate, advise and assist decision makers, schools and school communities to make the well-intended ambition of universal access to WinS a reality.

Murat Sahin, UNICEF | Bella Monse, GIZ | Arne Panesar, GIZ

HOW TO USE THE COMPENDIUM

This publication is a collection of exemplary designs for group washing facilities. It is intended as an introduction to the topic and the concept of group handwashing, as well as the principles and the basic requirements for facilities. It is not a detailed step-by-step guide on how to plan or construct facilities. Rather it is intended as an inspiration and motivation for school communities to construct and use group washing facilities in schools and to present possible designs for different settings and contexts. This is the first step to make handwashing with soap and water, as well as other hygiene activities, a daily routine in the life of school children.

The first chapter provides essential background information and facts on the role of group handwashing in schools and other education settings attended by children and adolescents. The UNICEF/GIZ TSA for WinS is highlighted since it provides the conceptual framework for promoting and introducing daily group handwashing with soap and water.

The second chapter explains some of the principles that need to be taken into account in the planning, construction, installation and maintenance of group washing facilities.

Finally, the third chapter presents different types of facility designs that have been developed and are successfully used in countries around the world. These facilities serve as examples for practical solutions suitable for different settings and conditions. They range from the most basic to rather advanced constructions, yet all are considered to provide a minimum of functionality in relation to the resources available. Different key features of the facilities are presented, such as their structural design, level of difficulty regarding construction, operation and maintenance (O&M), usability aspects, rough expenditures for material and labour costs, advantages and limitations. In addition, simplified isometric technical drawings and a Bill of Quantities (BoQ) outlining the main materials used and related costs are shown. It should be noted that expenses for transport of the material and other costs such as the material and construction of or connection to a piped water system are generally not included. Listed costs are intended to be used for general orientation only since they are based on local prices at a specific point in time or estimations where no data was available. A detailed and standardized comparison is therefore not possible.

This publication is complemented with a brief list of selected resources and documents for further reading, as well as discussion platforms to encourage exchange among interested persons.

ABBREVIATIONS

ARMM	Autonomous Region in Muslim Mindanao
BMZ	German Federal Ministry of Economic Cooperation and Development
BoQ	Bill of Quantities
DFAT	Australian Department of Foreign Affairs and Trade
DFID	United Kingdom Department for International Development
EHC	Environmental Health Club
GFS	Gravity-fed System
GI	Galvanized Iron
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
LGA	Local Government Authority
LMIC	Low- and middle-income country
MoE	Ministry of Education
NGO	Non-governmental Organization
O&M	Operation & Maintenance
PCS	Pieces
PTA	Parent Teacher Association
PVC	Polyvinyl chloride
SBM	School-based Management
TSA	Three Star Approach for WASH in Schools
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WinS	Water, Sanitation and Hygiene in Schools

CHAPTER 1 CONCEPTS & CONTEXT OF GROUP HANDWASHING

Handwashing with soap and water is widely recognized as one of the most essential and impactful hygiene activities. This is the reason for promoting regular handwashing with soap and water, at least at critical times, as the centre of all approaches to prevent common infectious diseases and to encourage healthy behaviour.

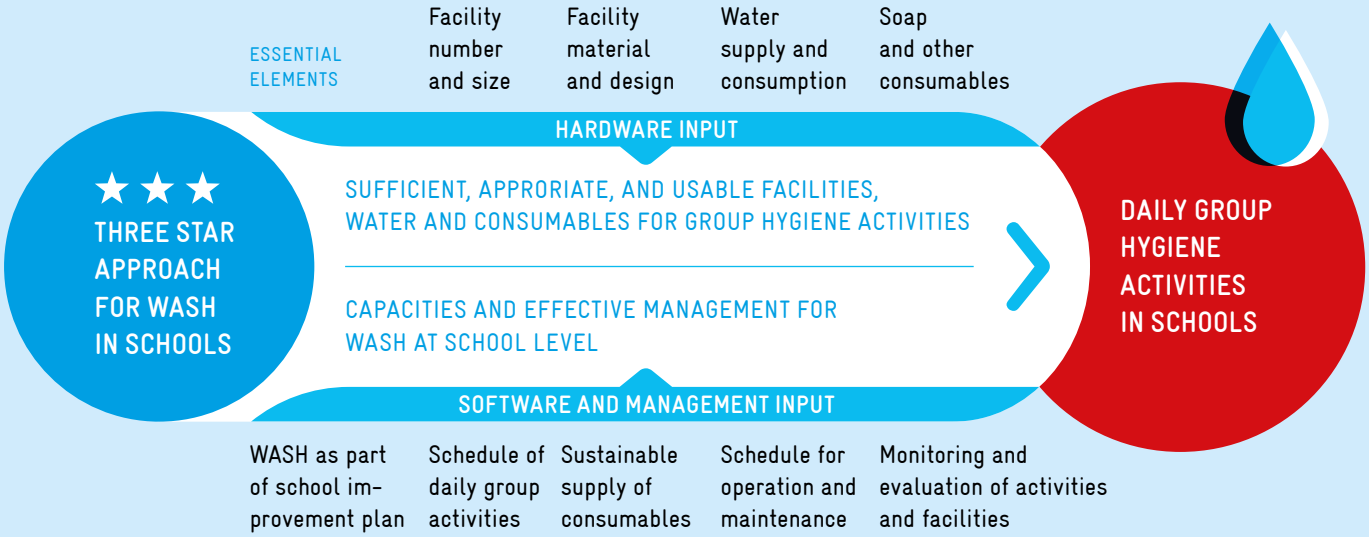
What is the Three Star Approach for WASH in Schools?

A healthy and hygienic school environment is the starting point for promoting healthy behaviour and for developing essential hygiene skills in children. Health and education go hand in hand: Healthy children have higher chances to benefit from education, while better education increases socio-economic status and long-term health gains. Only if water and necessary consumables such as soap, as well as appropriate sanitation facilities, are available, opportunities for health education and related practices become tangible for children and have a chance to form lasting habits. However, the realities of school environments worldwide, and particularly in low- and middle-income (LMIC) countries, are oftentimes very different.

The TSA for WinS is a new and innovative concept developed by UNICEF and GIZ and first published in 2013. It aims at changing the "traditional" way of programming for WinS. The objective is to facilitate realistic and stepwise improvements in order to make usable facilities and practices in WASH universal features in all schools, even when only limited resources are available. Simple and doable improvements add up and enable a school to reach the first milestone of becoming a "one star" school. This first level ensures that basic, but usable WASH facilities are available and hygiene activities can be practised. Moreover, keeping facilities clean and functional is the prerequisite for the most important aspect, which is to use them on a daily basis. The next levels bring further enhancements of infrastructure and practices depending on available resources and management capacities of schools.

The table below summarizes the changes and conceptual shifts that constitute the core of the TSA. More information and details are listed in the section on selected references and websites/fora.

SHIFTING FROM TRADITIONAL WASH PROGRAMMING	TOWARDS THE THREE STAR APPROACH FOR WASH IN SCHOOLS
INFRASTRUCTURE FOCUS	HYGIENE FOCUS
EDUCATION FOCUS ON INDIVIDUAL HANDWASHING	SKILLS-BASED LEARNING AS A GROUP
HIGH INVESTMENTS	COST-EFFECTIVE SOLUTIONS
FACILITIES MEETING NATIONAL STANDARDS	STEPWISE PROCESS TOWARDS NATIONAL STANDARDS
COMPLEX TECHNOLOGY	SIMPLE MODELS
LIMITED REACH	REALISTIC SCALE-UP



What is the objective of group handwashing with soap and water in the TSA?

Handwashing with soap and water as a daily group activity is a key element of the TSA. The intention is to overcome bottlenecks and to facilitate daily hygiene practices, which are important stepping-stones in building lasting healthy hygiene habits. In order to make such daily activities happen at scale, appropriate facilities need to be installed and maintained on the school grounds. Once daily group handwashing is running smoothly, soap and water supplies are ensured on a sustainable basis, and a functioning workflow for O&M is in place, it is easier to include additional activities, such as daily toothbrushing with fluoride toothpaste or daily facewashing to address trachoma infection where it is endemic.

How can group handwashing make a difference?

The concept of washing hands in a group has practical advantages and potential long-term impacts. Doing activities in a group is a natural way of interaction in the school context, fostering inclusion, and general participation, thus reducing the need to encourage and ensure individual behaviour. Observing others and being observed may create peer pressure and positively influence hygiene behaviour norms. This might even be enhanced when children are able to use a facility from both sides so that they can face each other while washing their hands. By conducting the activity in a group it becomes realistic for children of an entire school to wash their hands with soap and water within a minimal amount of time and disruption of lessons, thus making it easier to manage and integrate the activity into the daily schedule.

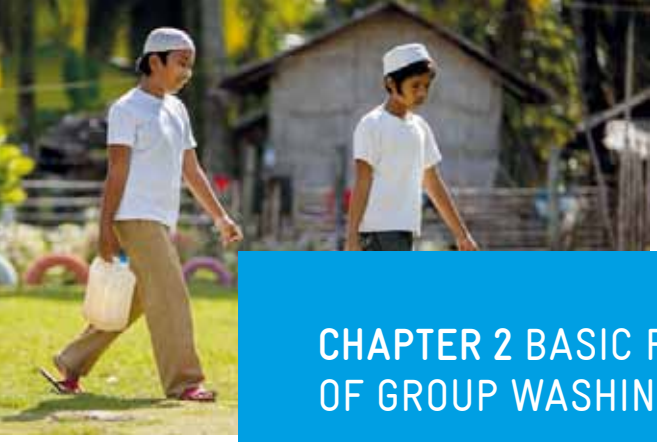
Research into aspects of behaviour change, transfer of behaviour to individual habits, as well as to settings outside of the school is currently under way; indications are that group handwashing may be more effective compared to traditional educational approaches. Initial research also demonstrated that children participating in daily group activities with their peers are also more likely to wash their hands individually at critical moments.

Why do group washing facilities matter?

Functioning group washing facilities allow schools to integrate handwashing for a larger number of children at various times throughout the day: prior to eating (toothbrushing after eating), after physical activity, playing or gardening, or at any critical time or other suitable moment. However, group activities do not replace individual handwashing after using the toilet and appropriate infrastructure needs to be in place. Washing facilities can be designed to make group and individual handwashing possible.

Handwashing with soap and water as a group activity provides a practical learning experience based on the principle of skills-based education. Additionally, it encourages peer learning, may lead to improved social norms and is a motivating and fun activity for the children.

Group washing facilities are a means to an end, as they encourage and enable schools to conduct daily hygiene activities for groups. They are thus an important element of the TSA, but need to be complemented by activities that relate to School-based Management (SBM), such as improving planning and strengthening of capacities to operate and maintain facilities, the management of daily activities or simple monitoring of tasks. The figure above shows essential hard- and software inputs required to make daily group handwashing with soap and water, and wherever possible, daily toothbrushing with fluoride toothpaste or other group hygiene activities, a reality.



CHAPTER 2 BASIC PRINCIPLES OF GROUP WASHING FACILITIES

When planning a group washing facility, a few basic principles should be kept in mind to guide the planning process and to ensure successful implementation. It may be helpful to build and test a prototype first in order to learn from benefits and challenges before expanding to a larger production and coverage. Some of the basic principles include:

Simplicity of design

The design of the facility should be kept as simple as possible while ensuring functionality, appropriateness and durability. Simplicity of design is an important basic consideration for possible replication and scale-up. Materials and parts used for the construction should be available locally. Expanding coverage can be further promoted if facilities are pre-fabricated and easy to assemble on the school grounds through participation of the school and the community. When no artisans such as plumbers, carpenters or masons need to be involved, the costs are reduced and community ownership is increased. A facility should ideally be usable by differently-abled children. It must also be easy to maintain, requiring as little attention and action as possible to keep it functional. If repairs are necessary they should be easy to perform.

KEY PRINCIPLE: SIMPLICITY IN DESIGN FACILITATES REPLICATION, REDUCES MAINTENANCE, REPAIR, AND COSTS, INCREASES COMMUNITY INVOLVEMENT AND OWNERSHIP, AND CHANCES FOR SCALE-UP.

Facility size & number

A facility ideally accommodates at least ten children. Bigger schools may build much larger facilities, which may accommodate 50 children or more. The size also depends on the total number of facilities per school – if every classroom has its own facility then they may be smaller, if several classes share a facility it is more practical to build a larger facility. Facilities, which allow face-to-face handwashing, encourage interaction among students, increase the number of children who can wash hands at the same time and may contribute to peer learning and to strengthening hygiene behaviour norms. However, available space and resources must also be considered when determining the total number and size of required facilities.

KEY PRINCIPLE: FACILITY SHOULD ACCOMMODATE AT LEAST TEN CHILDREN – TOTAL NUMBER DEPENDS ON SCHOOL SIZE, AVAILABLE SPACE AND RESOURCES.

Water availability & consumption

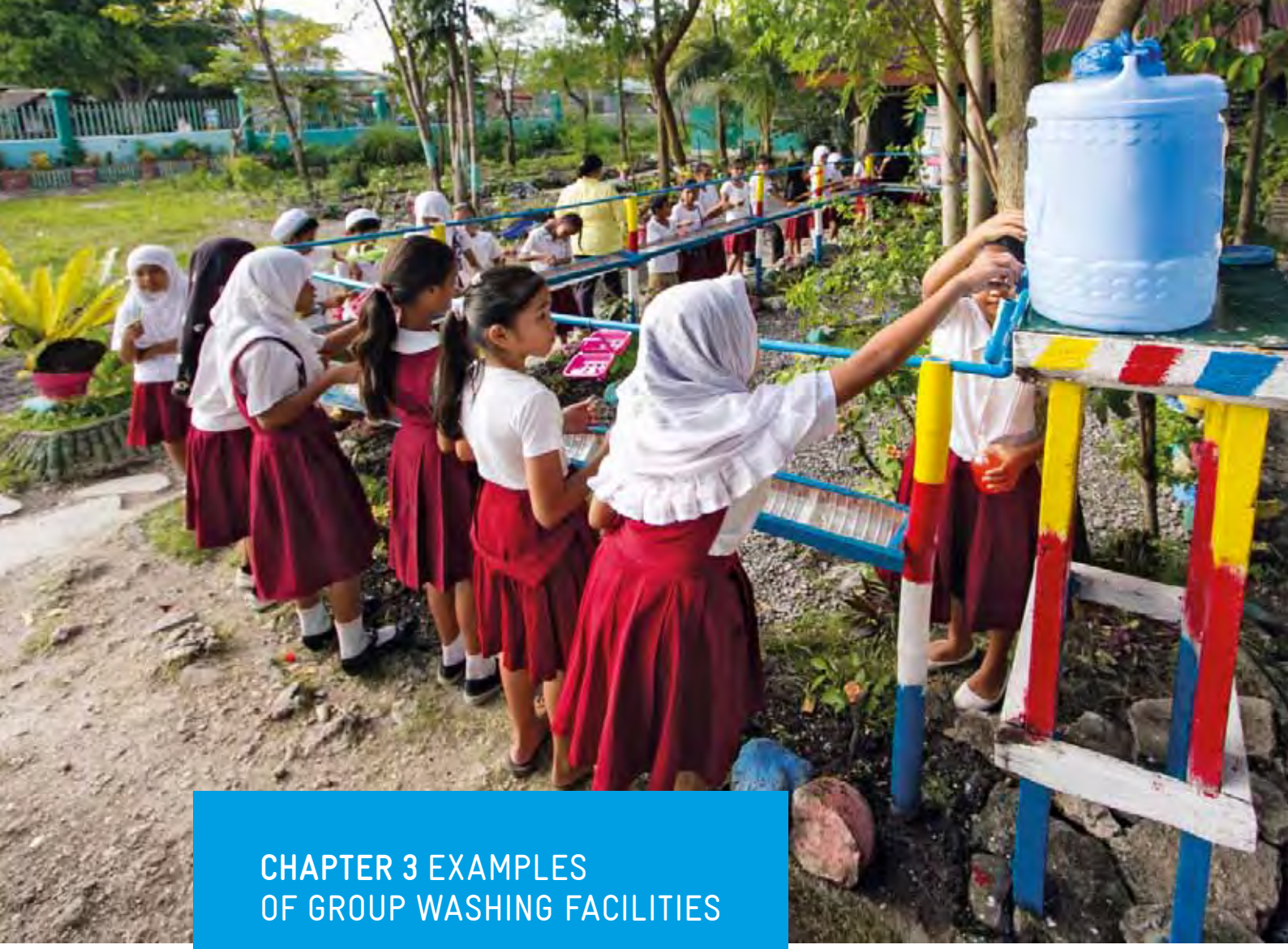
The continuous availability and the source of water are major determining factors for the facility design. If a school has a stable connection to a piped water system, the design of the facility will be different from a setting where water needs to be brought from a well manually or where it is only available intermittently. Unfortunately, the latter is common in rural or remote settings. Yet, even schools connected to a piped water system often experience interruption or insufficient water pressure. Therefore, a water container is recommended for local storage that can be filled regularly (manually or automatically). In addition, the design should aim at minimizing water consumption in every setting in order to save water as a precious resource and reduce expenses for schools. A facility with a punched pipe will use up to ten times less water than a faucet while achieving the same results in reducing germ load.

KEY PRINCIPLE: FACILITY MUST BE APPROPRIATE WITH REGARD TO WATER AVAILABILITY TO ENSURE A STEADY WATER SUPPLY AND MINIMIZE WATER CONSUMPTION.

Functionality, maintenance & location

Ideally, a facility should be easy to operate and maintain while remaining functional without major repairs as long as possible under daily usage. This requires a solid and durable construction principle, but also the use of appropriate materials, which should be affordable and available locally. Depending on available resources, the school community may agree on compromises regarding the expected durability, while still ensuring good functionality. It is important that the process of O&M follows an agreed schedule where roles and responsibilities are clearly defined. Facilities should be located in proximity of class rooms to facilitate hygiene activities and save time. Experiences show that facilities in front of classrooms are more likely to be maintained well. Depending on the respective climate, protection from sun or rain may be necessary. In some places vandalism and theft are also issues that need to be taken into account. Thus, a central location on school premises is advisable and protection such as fences may be considered.

KEY PRINCIPLE: USE LOCALLY AVAILABLE AND AFFORDABLE MATERIALS AND ENSURE THAT THE FACILITY REMAINS FUNCTIONAL AS LONG AS POSSIBLE. CHOOSE A CONVENIENT AND SAFE LOCATION. CLARIFICATION OF ROLES AND RESPONSIBILITIES FOR O&M IN THE SCHOOL COMMUNITY WILL HELP TO MAINTAIN FUNCTIONALITY.



CHAPTER 3 EXAMPLES OF GROUP WASHING FACILITIES

This chapter shows a range of technical solutions and concepts that enable and facilitate group handwashing in the school context. These facilities are not restricted to be used for group handwashing only, but also for toothbrushing or face washing where trachoma prevention is important, or to some extent also for ablution and hygiene activities related to religious practices.

Group washing facilities generally consist of a water source and/or a water container, a structure for supporting water pipes, faucets/outlets or other technical solutions to have water running or dripping, an optional basin, and a system for draining or capturing used water.

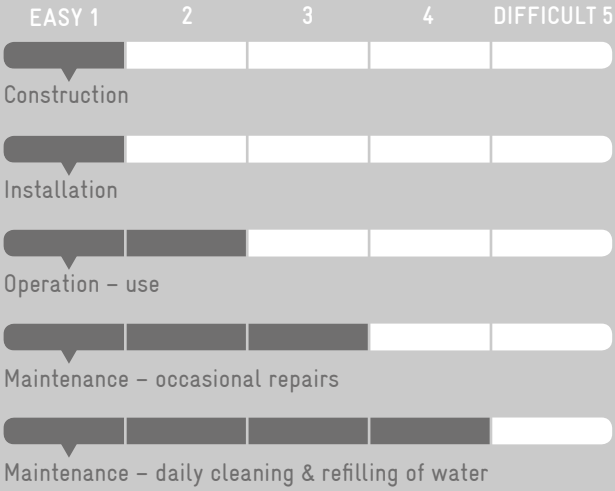
The key features and characteristics of each presented facility are summarized in tables that allow for simple comparison between different designs and technical solutions. These tables provide basic facts about the design structure, as well as aspects of construction, installation, O&M, estimated expenses, usability, and the opportunity of community involvement. A section on advantages, limitations and recommendations summarizes key aspects for prospective users. A simplified isometric drawing displays main elements of the facility and a BoQ details different materials and estimated costs of each facility.

FACTS & FIGURES

DESIGN STRUCTURE

Age of students	Facility designs need to be child-friendly and appropriate taking height, body size, reach and skills of children into account.
Water source	Description of the origin of the water used at the facility such as piped, tank, tippy tap, or others.
# water outlets	The number of outlets or faucets determines the number of children who can be accommodated at the same time.
# students who can use the facility at the same time	The number of children who can use the facility at the same time.
Overall water consumption per handwashing station for one group handwashing activity	The amount of water used for one group handwashing activity is important to know with regard to the overall availability of water and related management and expenses. A handwashing activity includes wetting hands and rinsing off foam, while closing the water tap during the lathering process. Keeping water consumption low should be the overarching principle.
Piping	Information on materials used for piping may include metals like galvanized iron (GI) or plastics like polyvinyl chloride (PVC)
Basin	Whether a basin is included in the construction and if yes, some details about the material used.
Disposal of waste water	Brief explanation of how used water is disposed.
Type of facility structure	Information whether a facility is permanent, semi-permanent or dismountable.
Expected durability	An estimation of the facility's service life if regular maintenance is performed.
Time needed for construction of parts and installation	Overall time required to manufacture the facility and to install it on the school premises.

CONSTRUCTION, OPERATION & MAINTENANCE



LEVEL OF DIFFICULTY, 1 (EASY) – 5 (DIFFICULT):
When planning and deciding on a facility, it is important to keep construction, installation, operation and maintenance activities in mind. The rating from one (easy) to five (difficult) is intended to give an indication as the level of difficulty also depends on the context and local skills available.

CONSTRUCTION: Construction of facility parts and pieces.
INSTALLATION: Installation of parts and set up on the school premise.
OPERATION/USE: Using the facility on a daily basis.
MAINTENANCE: Installing and setting up a facility is not enough. Continuous maintenance is needed to ensure functionality and to prolong durability of the facility. This includes occasional repairs such as replacing broken parts as well as daily cleaning and making sure water is available.

COMMUNITY INVOLVEMENT

Construction	Community involvement is a crucial component. It raises awareness, strengthens ownership and reduces costs. All members of the school and the community may be involved in the different activities and processes related to the construction, installation, enhancement/beautification, daily cleaning, refilling of water, regular facility maintenance or other activities.
Installation	
Enhancement/beautification	
Daily cleaning	
Refilling of water	
Regular facility maintenance	
Others	

USABILITY ASPECTS

Usable from both sides ✓	A facility that is usable from both sides can accommodate more children, save time, and may also enhance the peer learning process.
Individual handwashing ✓	An single tap can be used for individual handwashing without letting water run for the entire facility.
Usable by differently-abled children ✓	Information if a facility is useable by differently-abled children.

ADVANTAGES/LIMITATIONS/RECOMMENDATIONS

All facilities have certain advantages and limitations. Provided information are based on experiences from developers and users to inform potential users.

EXPENSES

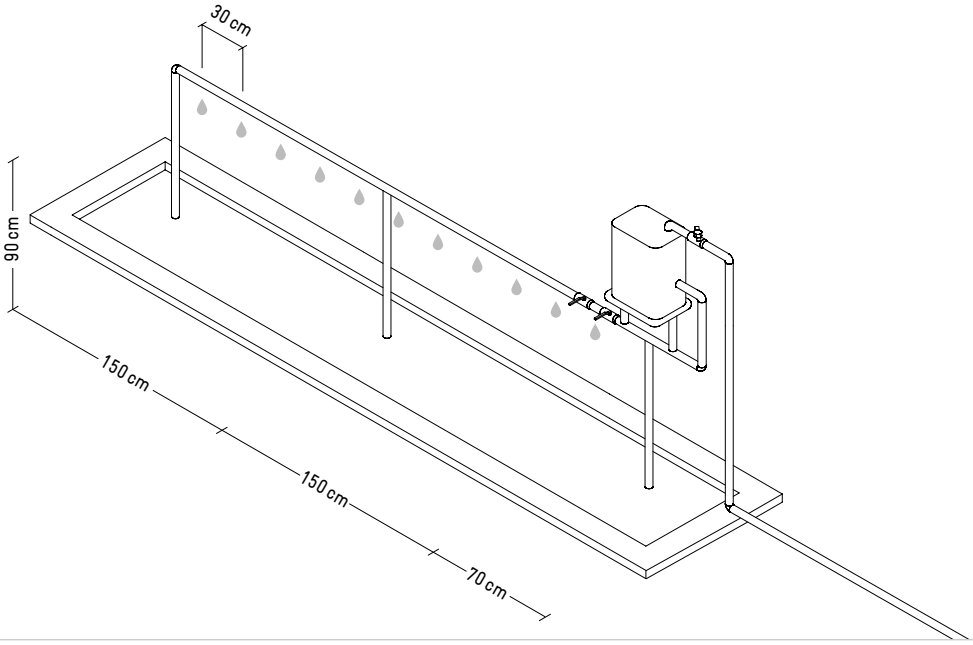
Average material cost	Expected costs for material and labour are important information for schools when identifying an appropriate facility design. Listed expenses are supposed to provide an orientation only, as they are based on local prices at a specific point in time or rough estimations where data was not available.
Average labour cost	

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
Item 1	The BoQ provides an overview of all materials used for constructing a group washing facility. It also includes expenses, which may vary within and between countries and are based on estimations in cases where no data was available. Thus, indicated expenses should be used with care. Measurements are based on the respective national units (metric/imperial system).			
Item 2				
Item 3				
				19.10 USD

DRAWING

A simplified isometric technical drawing provides an overview of the main parts and measurements of the facility in the metric system.



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www.unicef.org/wash/schools/files/UNICEF_Field_Guide-3_Star-Guide.pdf

Compendium of WASH in Schools Facilities in Emergencies. New York: UNICEF Programme Division/WASH; 2012
www.unicef.org/wash/schools/files/Compendium_of_WinS_Facilities_in_Emergencies.pdf

School Community Manual: Indonesia. Manila: GIZ Regional Fit for School Programme; 2014
www.fitforschool.international/wp-content/ezdocs/School_Community_Manual_Indonesia_English_version_2015_2nd_edition.pdf

Field Guide: WASHaLOT. Prefabricated Group Washing Facilities for Schools. Manila: GIZ Regional Fit for School Programme/SEAMEO Innotech; 2015
www.fitforschool.international/wp-content/ezdocs/1444819827_WASHaLOT_Field_Guide_English_version_2015_3rd_edition.pdf

WEBSITES/FORA

UNICEF WASH in Schools Network – Yammer
www.yammer.com/washinschoolsnetwork

UNICEF WASH in Schools
www.unicef.org/wash/schools

Sustainable Sanitation Alliance (SuSanA)
www.susana.org/en/

GIZ Regional Fit for School Programme
www.fitforschool.international

COUNTRY EXAMPLES

01

NIGERIA

TIPPY TAP FACILITY MADE OUT OF TWO WOODEN POLES SUPPORTING A CROSS BAR WITH A HANGING ROW OF TILTED PLASTIC BOTTLES.

LOCATION: Nigeria, Kujama Ward SCHOOL: Bugai 1, Public School
RESPONSIBLE LOCAL AUTHORITY: Chikun Local Government Authority (LGA) WASH Department and Local Government Education Authority
DEVELOPED BY: UNICEF Nigeria in collaboration with Chikun LGA WASH Department, Kaduna State BUILT BY: Teachers and students
OTHERS: The United Kingdom Department for International Development (DFID)

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 14 years
Water source	Water bottles (500 ml and 1 litre) provided by the students and/or teachers and filled at home or at existing hand pump well located on school premise
# water outlets	10 tippy taps
# students who can use the facility at the same time	10 students
Overall water consumption per handwashing station for one group handwashing activity	2.5 litres
Piping	Not applicable
Basin	Not applicable
Disposal of waste water	Concrete drain channelling water towards soil absorption
Type of facility structure	Dismountable
Expected durability	The pole and cross-bar may last up to one year; bottles need replacement approximately every month
Time needed for construction of parts and installation	1 day

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Teachers and students
Installation	Teachers and students
Enhancement/beautification	Teachers and students
Daily cleaning	Environmental Health Club (EHC) and students
Refilling of water	EHC
Regular facility maintenance	Teachers and EHC
Others	Community members

EXPENSES	
Average material cost	19.50 USD
Average labour cost	Time of teachers and students

ADVANTAGES:

Affordable entry solution for group handwashing. No specific training required for installation and dismounting. Concrete drain to channel waste water. Good way to start and then shift to a more advanced facility type once group handwashing activities are well established and resources are available.

LIMITATIONS:

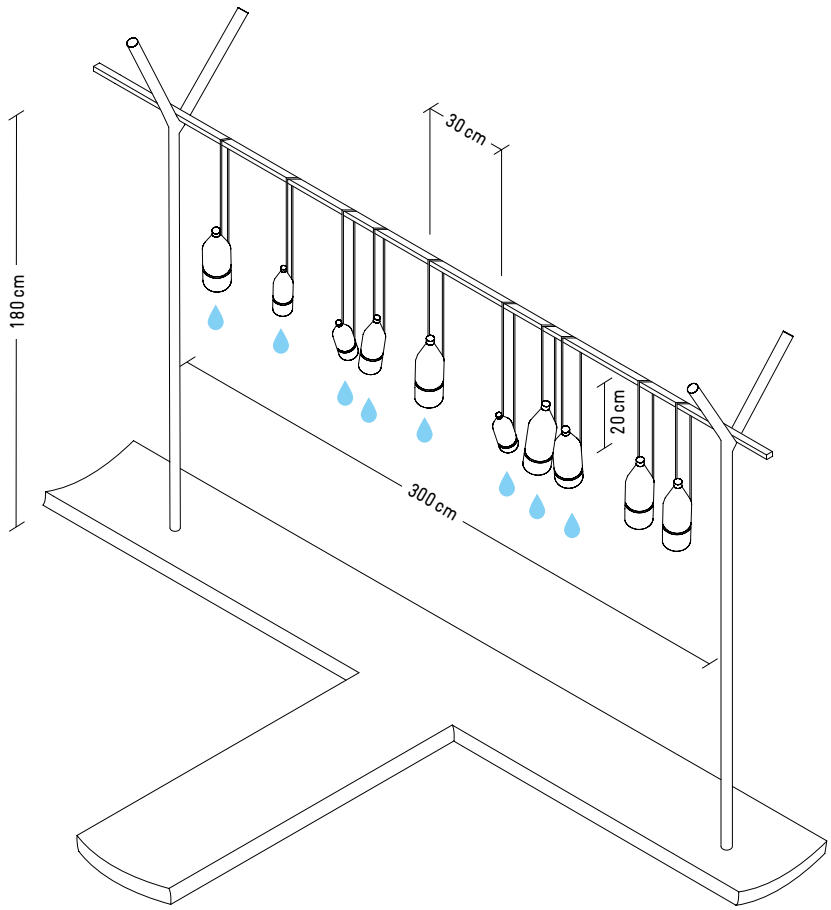
Maintenance effort to refill and replace bottles. Limited durability.

RECOMMENDATIONS:

Standardize hole size to 5 mm.

Ensure proper drainage to avoid wet soil.

DRAWING



MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
Y-shaped pole, 2 m	pcs	2	3.00 USD	6.00 USD
Cross bar wood, 3.40 m	pcs	1	3.00 USD	3.00 USD
Bottles, 500 ml or 1 litre	pcs	10	recycled	0.00 USD
Twine	m	5	0.10 USD	0.50 USD
Concrete	lump-sum	1	10.00 USD	10.00 USD
				19.50 USD

DESIGN VARIATION

KIRIBATI

FACILITY FROM KIRIBATI USING FOOT PEDALS TO TILT THE BOTTLES.

LOCATION: Kiribati, South Tarawa, Temaiku Village RESPONSIBLE LOCAL AUTHORITY: Ministry of Education DEVELOPED BY: UNICEF Kiribati Field Office Tekabutikeke, Tarawa BUILT BY: School teachers and community members, Temaiku Village, Tarawa OTHERS: School teachers provide training on construction to community members and students

02

AUTONOMOUS REGION IN MUSLIM MINDANAO PHILIPPINES

TIPPY TAP CONSTRUCTION MADE OUT OF BAMBOO WITH A SIMPLE BASIN.

LOCATION: Autonomous Region in Muslim Mindanao (ARMM) Philippines, Maguindanao SCHOOL: Tenorio Elementary School, Public School
RESPONSIBLE LOCAL AUTHORITY: Department of Education, ARMM
DEVELOPED BY: School community BUILT BY: Parent Teacher Association, coordinated by school principal and division school nurse
OTHERS: Department of Education, ARMM, GIZ, and Australian Department of Foreign Affairs and Trade (DFAT)

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 12 years
Water source	Water bottles (500 ml and 1 litre) provided by the students and/or teachers and filled on the school premises
# water outlets	8 tippy taps
# students who can use the facility at the same time	8 students
Overall water consumption per handwashing station for one group handwashing activity	3 litres
Piping	Not applicable
Basin	Halved water containers
Disposal of waste water	Soil absorption
Type of facility structure	Permanent facility
Expected durability	1 – 2 years
Time needed for construction of parts and installation	1 day

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Teachers and parents
Installation	Teachers and parents
Enhancement/beautification	Teachers, parents, students
Daily cleaning	Students
Refilling of water	Students
Regular facility maintenance	Teachers and parents

EXPENSES	
Average material cost	3.00 USD
Average labour cost	Time of teachers and parents

ADVANTAGES:

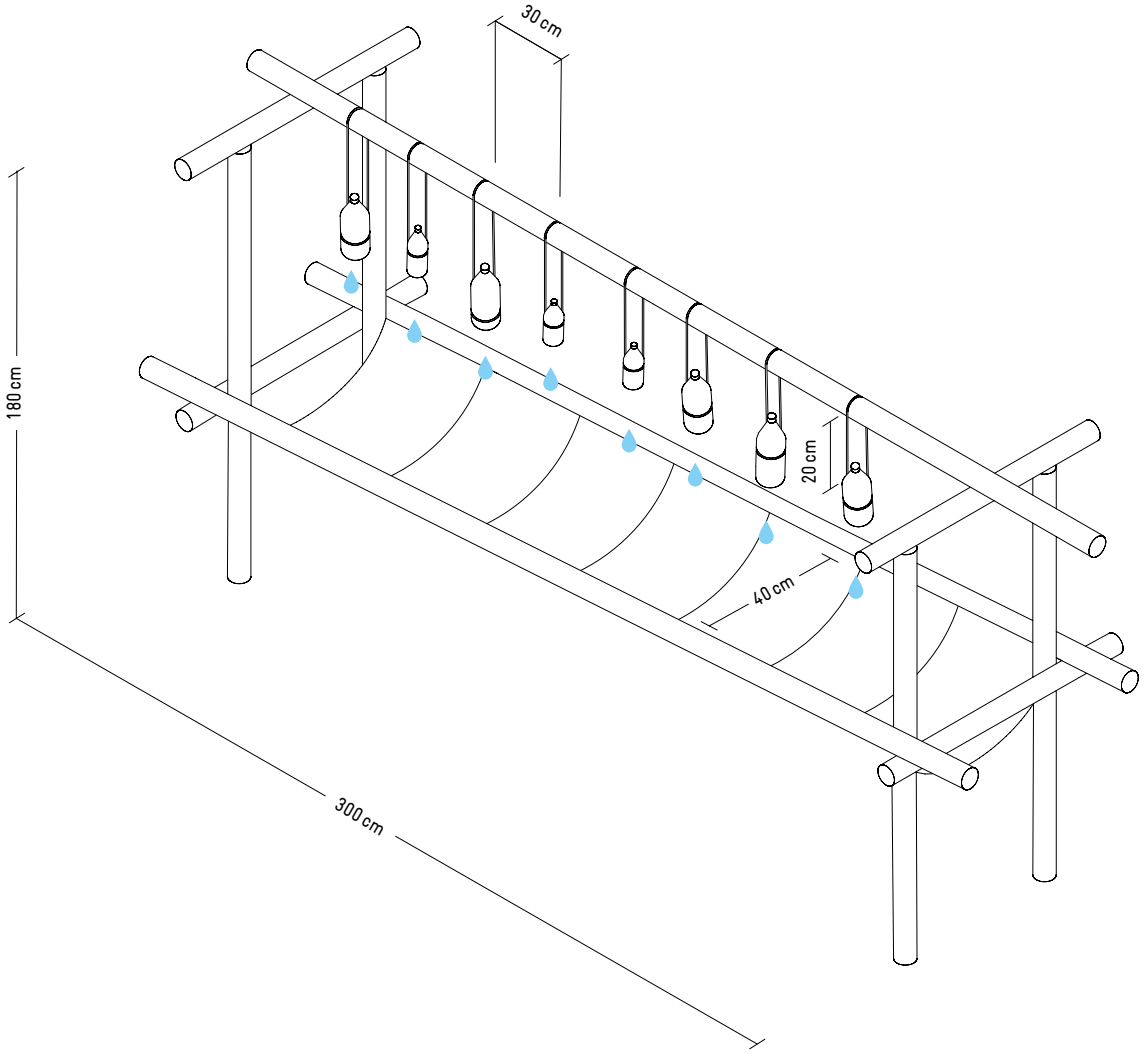
- Affordable entry solution for group handwashing.
- No specific training required for installation.
- Good way to start and then shift to a more advanced facility type once group handwashing activities are well established and resources are available.

LIMITATIONS:

- Limited durability.
- Maintenance effort to refill and replace bottles.

RECOMMENDATIONS:

- Standardize hole size to 5 mm.


30 cm
180 cm
20 cm
40 cm
300 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
Bamboo	m	24	recycled	0.00 USD
Twine	m	4	0.20 USD	0.80 USD
Nails	pcs	20	0.02 USD	0.40 USD
Bottles, 500 ml and 1 litre	pcs	8	recycled	0.00 USD
Water container, 20 litres	pcs	3	recycled	0.00 USD
Paint	ltr	0.1	18.00 USD	1.80 USD
				3.00 USD

03

INDIA

LIGHT AND PORTABLE FACILITY WITH METAL BASIN AND ATTACHED BUCKET SUITABLE FOR PRE-SCHOOL CHILDREN.

LOCATION: India, Uttar Pradesh, Mirzapur, Village Hasipur
SCHOOL: Pre-primary School Hasipur, Public School RESPONSIBLE LOCAL AUTHORITY: Village level local government (Gram Panchayat) – Pradeep Singh, Village Development Officer DEVELOPED BY: UNICEF India BUILT BY: Panchayati Raj Department, DPRO, Civil Lines, Mirzapur

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	2 – 6 years
Water source	40 litre-plastic bucket
# water outlets	4 faucets
# students who can use the facility at the same time	4 students
Overall water consumption per handwashing station for one group handwashing activity	2 litres
Piping	GI pipe and soft PVC
Basin	Basin with side slope
Disposal of waste water	PVC pipe leading to the drain
Type of facility # structure	Dismountable and portable
Expected durability	5 years
Time needed for construction of parts and installation	3 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Local welding store
Installation	Local welding store
Enhancement/beautification	Local government and school
Daily cleaning	Attendant at school
Refilling of water	Attendant at school
Regular facility maintenance	Attendant at school

EXPENSES	
Average material cost	75.00 USD
Average labour cost	30.00 USD

ADVANTAGES:

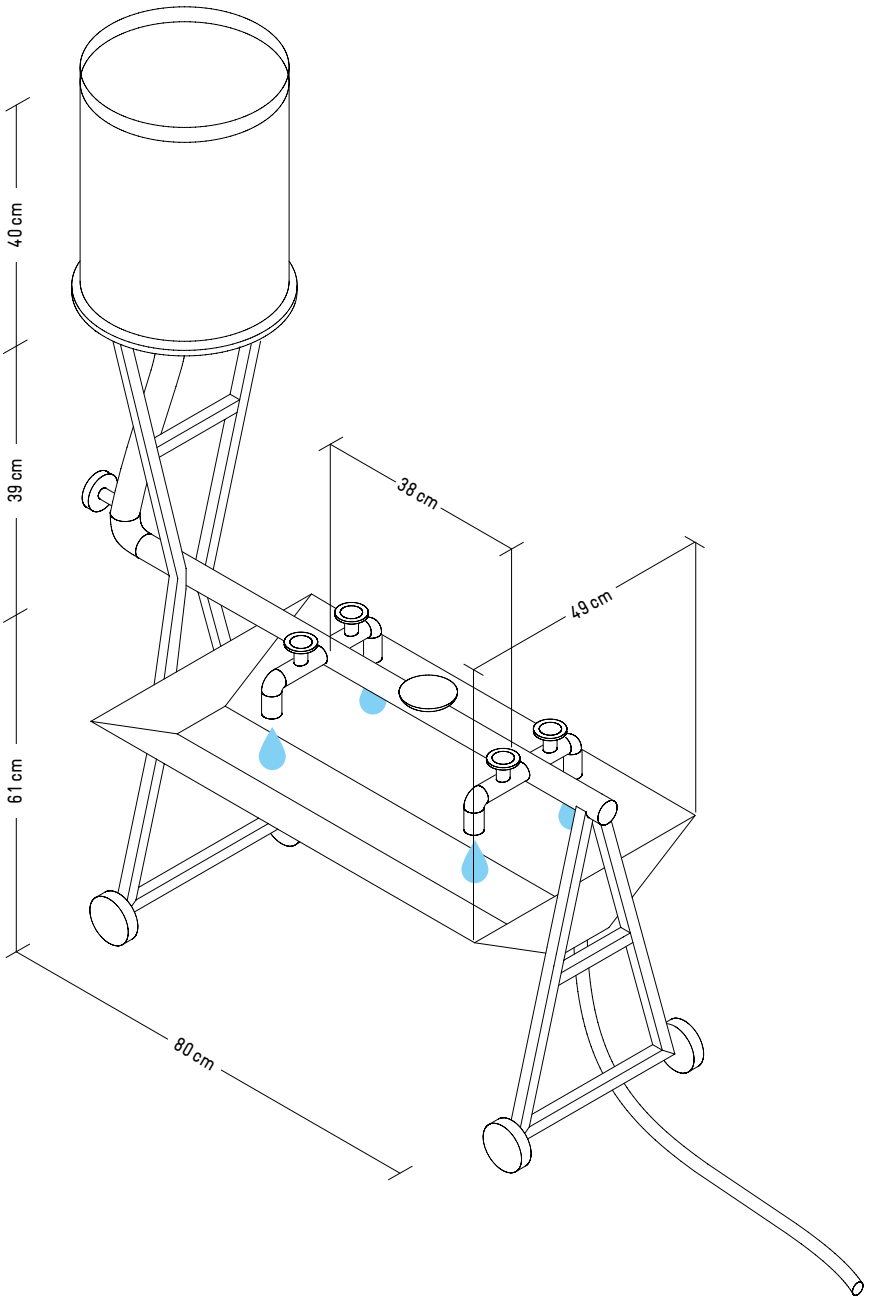
- Light and portable.
- Suitable for pre-school children.

LIMITATIONS:

- Accommodates limited number of children.
- Refilling needs to be managed.
- Requires skilled labour for construction.

RECOMMENDATIONS:

- Round edges and corners.
- Minimize water consumption.
- Increase number of slots for handwashing.


40 cm
39 cm
61 cm
38 cm
49 cm
80 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
Flexible rubber pipe	m	0.5	3.50 USD	1.75 USD
GI pipe, 1 inch	m	1	13.00 USD	13.00 USD
Faucets	pcs	4	1.50 USD	6.00 USD
PVC couplings	lump-sum	1	5.50 USD	5.50 USD
Tube bar	m	3.5	3.50 USD	12.25 USD
GI grid	m^2	0.5	5.00 USD	2.50 USD
Bucket, 40 litres	pcs	1	9.00 USD	9.00 USD
Wheels	pcs	4	5.00 USD	20.00 USD
Paint	lump-sum	1	5.00 USD	5.00 USD
				75.00 USD

04

CAMBODIA

PRE-FABRICATED FACILITY ("WASHaLOT") PRODUCED IN A CENTRAL WORKSHOP, PACKAGED AND SENT TO SCHOOLS. EASY TO ASSEMBLE BY SCHOOL COMMUNITY.

LOCATION: Cambodia, Phnom Penh, Chamkom Districts SCHOOL: Neak Ouknha Mohapheakdey Hun Neang Toul Tumpung 2 Primary School, Public School RESPONSIBLE LOCAL AUTHORITY: District Official of Education DEVELOPED BY: GIZ Regional Fit for School Programme BUILT BY: Don Bosco Technical School OTHERS: UNICEF Cambodia, World Vision Cambodia, Bremen Overseas Research & Development Association – Environmental Sanitation Cambodia, RainWater Cambodia, Maddox Jolie-Pitt Foundation and others

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 12 years
Water source	25 litre-container attached to the facility (possible to refill by connecting the bucket to piped water system)
# water outlets	11 outlets
# students who can use the facility at the same time	22 students
Overall water consumption per handwashing station for one group handwashing activity	2.5 litres
Piping	GI pipe with 1.5 mm diameter
Basin	Not applicable
Disposal of waste water	Soil absorption in flower bed
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for pre-fabrication and installation at school	1 day

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction/pre-fabrication

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Possible, if community members have basic plumbing skills
Installation	Community members or labourers without special training
Enhancement/beautification	Flower bed and painting done by the community
Daily cleaning	Students
Refilling of water	Students
Regular facility maintenance	Teachers and School Support Committee

EXPENSES	
Average material cost	67.00 USD
Average labour cost	19.00 USD

ADVANTAGES:

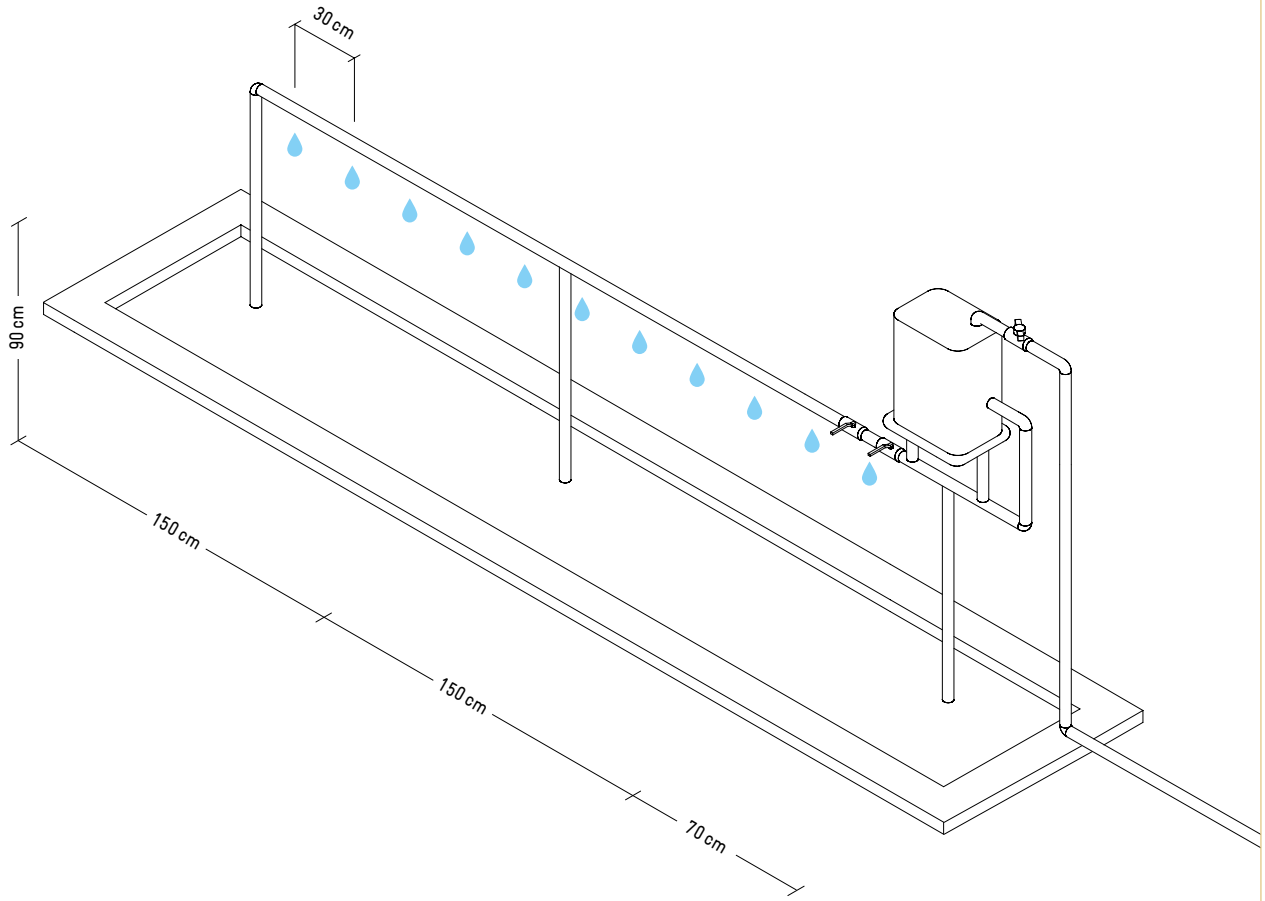
- Pre-fabricated and ready to assemble on the school premise.
- No specific training needed for installation.
- Provides room for enhancements.
- Usable with and without piped water.

LIMITATIONS:

- Management and planning necessary for centralized pre-fabrication.
- Refilling needs to be managed.

RECOMMENDATIONS:

- Keep differently-abled students in mind when adding a basin or gravel/flower bed.


30 cm
90 cm
150 cm
150 cm
70 cm

MATERIAL PER FACILITY

BILL OF QUANTITY / PRE-FABRICATION				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
GI pipe, Ø 27 mm, Sch. 40, 2.8 mm wallthickness	m	6.60	2.11 USD	14.00 USD
GI Double nipple, Ø 27 mm x 45 mm	pcs	8	0.60 USD	4.80 USD
GI Double nipple, Ø 27 mm x 100 mm	pcs	9	0.75 USD	6.75 USD
GI Double nipple, Ø 27 mm x 240 mm	pcs	2	1.30 USD	2.60 USD
GI Double nipple, Ø 27 mm x 250 mm	pcs	1	1.30 USD	1.30 USD
Bulkhead, Ø 27 mm	pcs	1	1.50 USD	1.50 USD
Elbow, Ø 27 mm	pcs	6	0.50 USD	3.00 USD
Tee connection, Ø 27 mm, female	pcs	7	0.80 USD	5.60 USD
Gate valve, Ø 27 mm, female	pcs	2	5.00 USD	10.00 USD
Union patente, Ø 27 mm, female thread	pcs	5	1.60 USD	8.00 USD
Metal sheet, 0.5 mm, 40 cm x 40 cm	pcs	1	1.35 USD	1.35 USD
Plug, Ø 27 mm, male	pcs	1	0.50 USD	0.50 USD
Teflon tape, 27 mm	roll	3	0.20 USD	0.60 USD
Container, 25 litres	pcs	1	5.00 USD	5.00 USD
Black rubber sealing plate, Ø 41 mm	pcs	5	0.10 USD	0.50 USD
Primer, 200 ml	can	1	0.50 USD	0.50 USD
Cement, 45 kg	bag	0.2	5.00 USD	1.00 USD
				67.00 USD

DESIGN VARIATION

AUTONOMOUS REGION IN MUSLIM MINDANAO PHILIPPINES

WASHaLOT VARATION WITH REMOVABLE BUCKET.

LOCATION: Autonomous Region in Muslim Mindanao (ARMM) Philippines, Maguindanao SCHOOL: Tenorio Elementary School RESPONSIBLE LOCAL AUTHORITY: Department of Education, ARMM DEVELOPED BY: GIZ BUILT BY: Technical Education and Skills Development Authority ARMM OTHERS: PTA and the school community, DFAT

05

TANZANIA

BASED ON WASHaLOT CONSTRUCTION, YET TANK STAND WAS MADE FROM WELDED SQUARE TUBE AND THE CONTAINER WAS REPLACED BY A BUCKET WITH LID.

LOCATION: Tanzania, Moshi, Bomambuzi Ward SCHOOL: Nelson Mandela Primary School, Public School RESPONSIBLE LOCAL AUTHORITY: School WASH coordinators, Moshi District Council, Moshi Municipal Council DEVELOPED BY: GIZ Programme Supporting Water Sector Development in Tanzania BUILT BY: ZESHAK (local manufacturer) OTHERS: Childreach Tanzania (implementing NGO on behalf of GIZ)

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 14 years
Water source	20 litre-plastic bucket with lid connected by a 3/4 inch tank connector to GI pipe. Refilled with a bucket filled from piped water system available on school premise.
# water outlets	11 outlets
# students who can use the facility at the same time	22 students
Overall water consumption per handwashing station for one group handwashing activity	4 litres
Piping	Water pipe and legs are made of 3/4 inch GI pipe coated with anti-rust primer and painted with oil paint
Basin	Not applicable
Disposal of waste water	Soil absorption in flower bed, surrounded by stones or concrete blocks
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for pre-fabrication and installation at school	1 day

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	ZESHAK
Installation	ZESHAK and parents
Enhancement/beautification	Teachers and students
Daily cleaning	Students
Refilling of water	Students
Regular facility maintenance	Teachers and parents

EXPENSES	
Average material cost	77.00 USD
Average labour cost	26.00 USD

ADVANTAGES:

Material and workmanship are locally available. Pre-fabricated and ready to assemble on school premises. No specific training needed for installation. Provides room for enhancements. Usable with and without piped water.

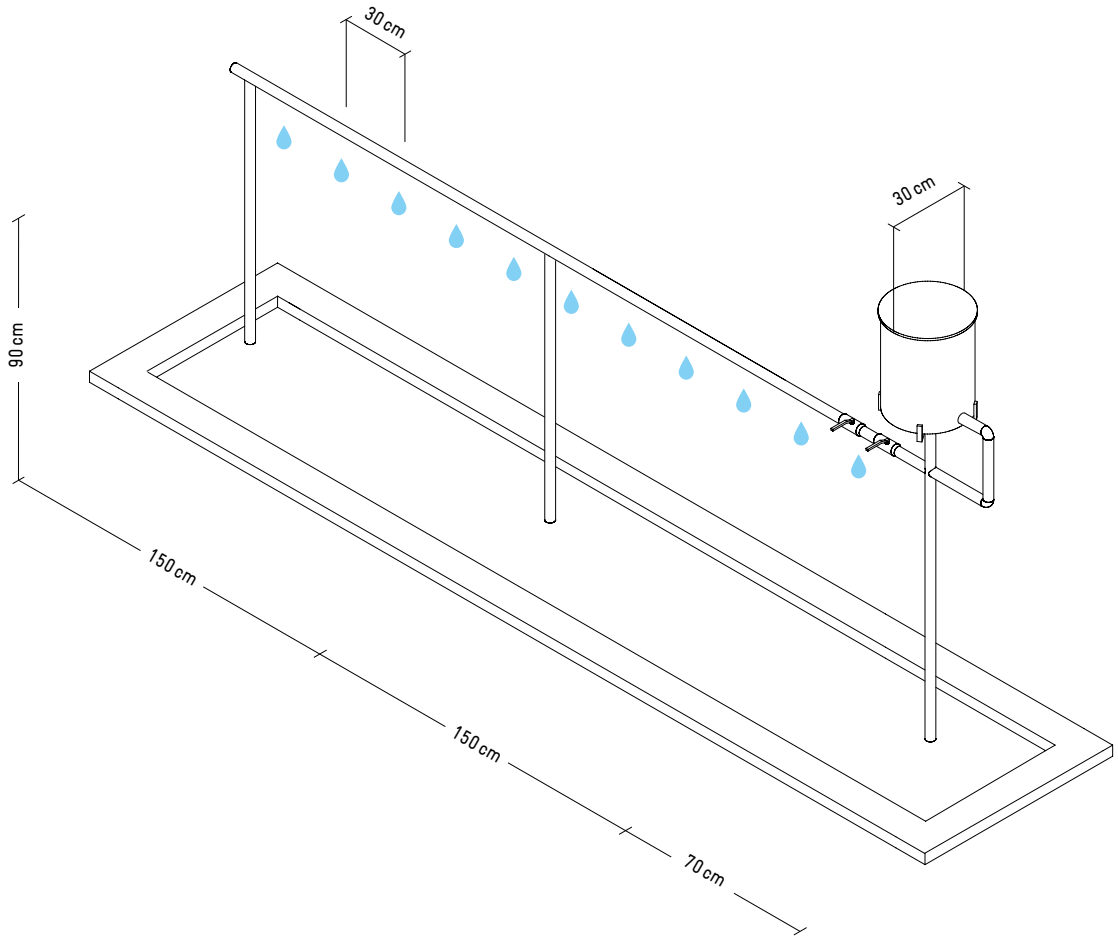
LIMITATIONS:

Pipes need to be cut if valves have to be replaced. Refilling needs to be managed by adults as bucket is fixed on the stand which makes cleaning and refilling difficult for students.

RECOMMENDATIONS:

Put one union connector near the valves so they can be replaced without cutting. Keep differently-abled students in mind when adding a basin or gravel/flower bed.

DRAWING



MATERIAL PER FACILITY

BILL OF QUANTITY / PRE-FABRICATION				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
GI pipe, 3/4 inch	m	7.5	3.20 USD	24.00 USD
GI elbow, 3/4 inch	pcs	2	0.90 USD	1.80 USD
GI nipple, 3/3 inch	pcs	2	0.60 USD	1.20 USD
GI union, 3/4 inch	pcs	1	2.20 USD	2.20 USD
GI tee, ff. 3/4 inch	pcs	2	0.90 USD	1.80 USD
Ball valve, 3/4 inch	pcs	2	9.50 USD	19.00 USD
Brass tank connector, 3/4 inch	pcs	1	4.20 USD	4.20 USD
GI plug, 3/4 inch, male	pcs	1	0.90 USD	0.90 USD
GI cross tee, 3/4 inch	pcs	1	2.00 USD	2.00 USD
Cross tee from square tube, 3/4 inch, mild steel	pcs	1	14.30 USD	14.30 USD
Teflon tape	roll	4	0.40 USD	1.60 USD
Bucket with lid, 20 litres	pcs	1	3.00 USD	3.00 USD
Anti-rust primer	ltr	0.25	4.00 USD	1.00 USD
				77.00 USD

06

CAMBODIA

GROUP WASHING FACILITY INSIDE THE CLASSROOM USING A PUNCHED PVC PIPE OVER A RAIN GUTTER ATTACHED TO THE WALL.

LOCATION: Cambodia, Takeo, Daun Keo Krong District
SCHOOL: Anuwat Takeo Primary School, Public School
RESPONSIBLE LOCAL AUTHORITY: District Official of Education
DEVELOPED BY: RainWater Cambodia BUILT BY: Local contractor OTHERS: GIZ Regional Fit for School Programme

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 12 years
Water source	Connected to piped water system
# water outlets	15 outlets
# students who can use the facility at the same time	15 students
Overall water consumption per handwashing station for one group handwashing activity	2.6 litres
Piping	PVC pipe
Basin	Pre-fabricated standard metal rain gutter
Disposal of waste water	Connected to central drainage system
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for construction of parts and installation	2 – 3 days

USABILITY ASPECTS	
Usable from both sides	⊖
Individual handwashing	✓
Usable by differently-abled children	⊖

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance occasional repairs

Maintenance daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Skilled labour
Installation	Skilled labour
Enhancement/beautification	Painting and beautification can be done by the community
Daily cleaning	Students
Refilling of water	Not applicable
Regular facility maintenance	Teachers and School Support Committee

EXPENSES	
Average material cost	80.00 USD
Average labour cost	40.00 USD

ADVANTAGES:

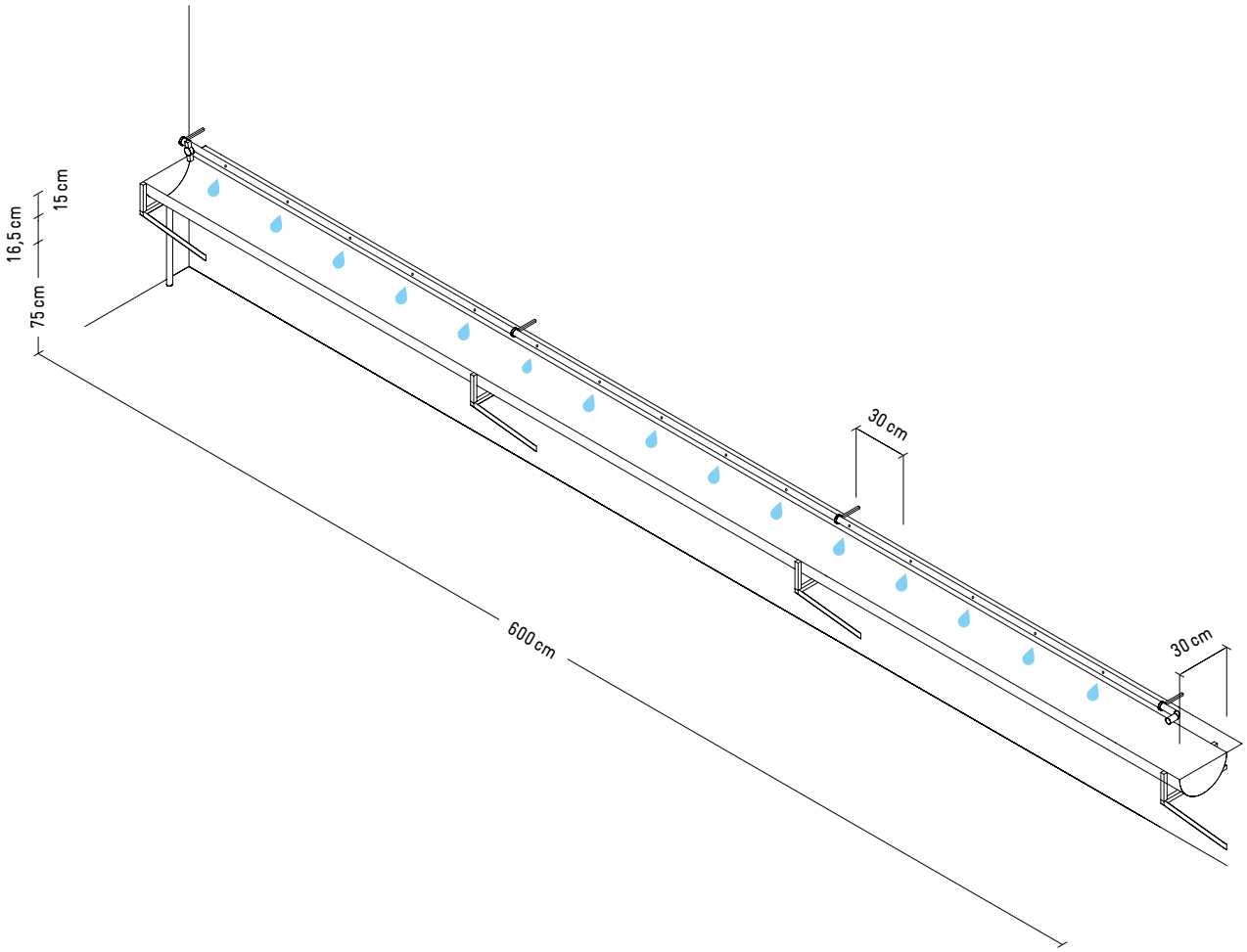
- Good weather protection and security inside the classroom.
- Facilitation of maintenance and ownership by the class.

LIMITATIONS:

- Space inside classrooms is needed.
- Water can splash on the ground.

RECOMMENDATIONS:

- Increase number of outlets.


16,5 cm
15 cm
75 cm
600 cm
30 cm
30 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
All PVC pipe and fittings	lump-sum	1	18.00 USD	18.00 USD
Tube bar, 18 mm x 18 mm, 1.2 mm wall thickness	m	19	0.84 USD	16.00 USD
Flate bar, 15 mm x 2.4 mm	m	6	0.83 USD	5.00 USD
Gutter sheet	m^2	3	10.30 USD	31.00 USD
Bracket	pcs	3	0.66 USD	2.00 USD
Screw	lump-sum	1	4.00 USD	4.00 USD
Paint	m^2	2	2.00 USD	4.00 USD
				80.00 USD

07

LAO PDR

PRE-FABRICATED STEEL TUBE FACILITY WITH PVC PIPES AND PVC RAIN GUTTER AS BASIN.

LOCATION: Lao PDR, Saravane Province, LaoNgam District, Vong Khae Village SCHOOL: Vong Khae Primary School, Public School RESPONSIBLE LOCAL AUTHORITY: Provincial Nam Saat and Education Department DEVELOPED BY: UNICEF Lao PDR BUILT BY: Pref-fabricated by Lao Engineering School and assembled on site by teachers.

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 12 years
Water source	Connected to a central metal tank, 1000 litres, or an optional 15 litre-water bucket next to the facility. Water comes from nearby borehole with hand/electric pump or gravity-fed system (GFS)
# water outlets	12 outlets
# students who can use the facility at the same time	24 students
Overall water consumption per handwashing station for one group handwashing activity	2.5 litres
Piping	Steel tube for the structure and PVC for the plumbing
Basin	PVC rain gutter, 8 inch
Disposal of waste water	Soil absorption or soak pit. Alternatives include grey-water re-use for school gardens
Type of facility structure	Semi-permanent; movable
Expected durability	3 – 5 years
Time needed for pre-fabrication and installation at school	1 day

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction / pre-fabrication

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Limited because of the necessary welding
Installation	Parents and teachers
Enhancement/beautification	Students and parents
Daily cleaning	School hygiene club
Refilling of water	Teachers can refill water tank or bucket. Electric pump or GFS system eliminate manual filling if resources allow
Regular facility maintenance	School community (painting, cleaning, and tightening of bolts)

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

EXPENSES	
Average material cost	75.00 USD
Average labour cost	29.00 USD

ADVANTAGES:

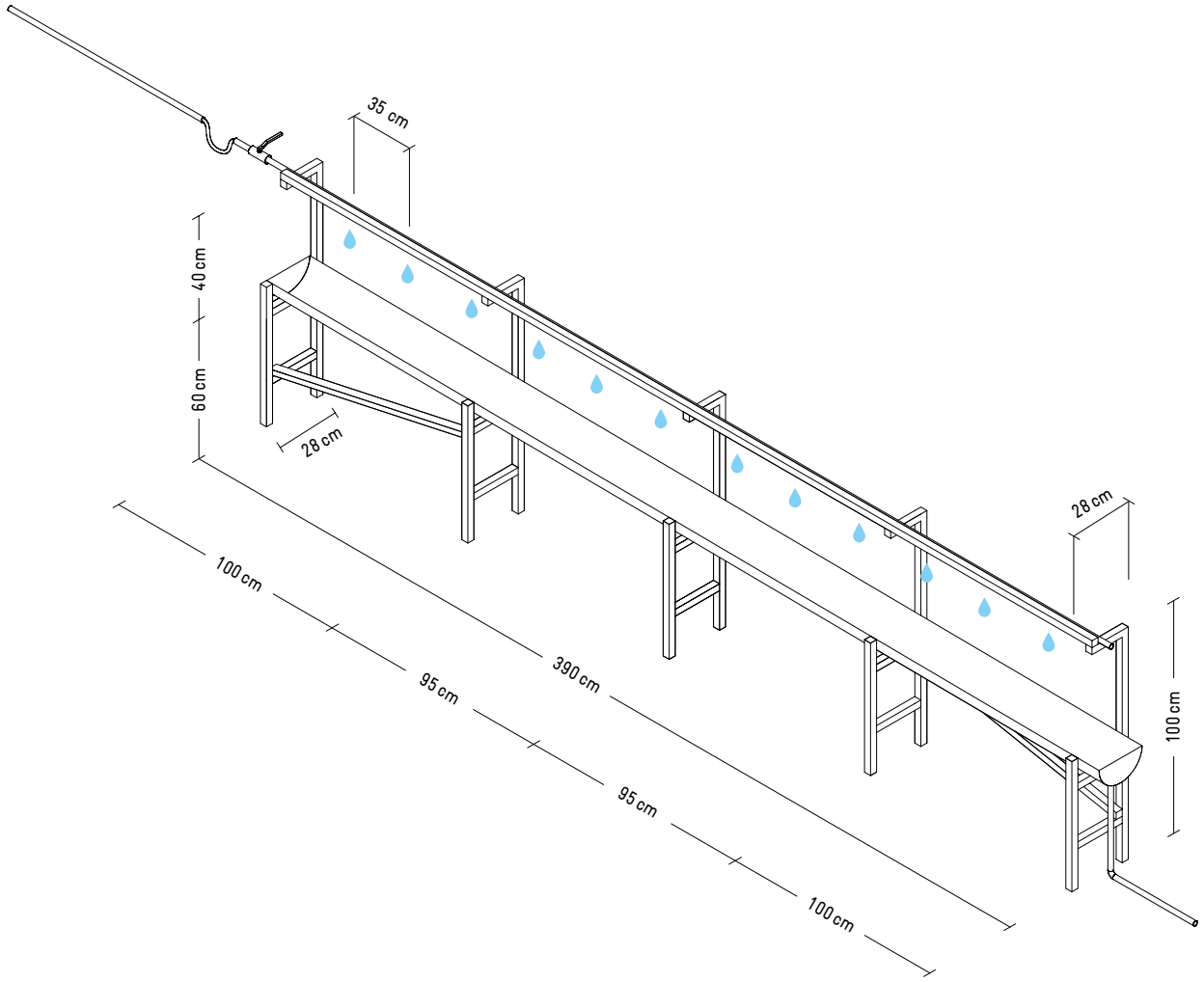
- Simple design allows for pre-fabrication.
- No special skills for installation needed.
- Facility is adaptable, light, movable.
- Minimal water consumption.

LIMITATIONS:

- Spare parts may not be available in remote rural areas.

RECOMMENDATIONS:

- Replace welded parts by bolts and nuts to make repairs easier.
- Valves need to be handled with care.


35 cm
40 cm
60 cm
28 cm
28 cm
100 cm
390 cm
95 cm
95 cm
100 cm
100 cm

MATERIAL PER FACILITY

BILL OF QUANTITY / PRE-FABRICATION				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC pipe, 1/2 inch	m	4	1.25 USD	5.00 USD
PVC pipe, 8 inch, for basin	m	4	8.75 USD	35.00 USD
Valves, 1/2 inch	pcs	2	2.00 USD	4.00 USD
Steel tube, 1 x 1 inch	m	16	1.50 USD	24.00 USD
Bolts and nuts	lump-sum	1	7.00 USD	7.00 USD
				75.00 USD

08

LAO PDR

FACILITY WITH SEMI-AUTOMATIC REFILLABLE BUCKET AND HALVED PVC PIPE AS BASIN.

LOCATION: Lao PDR, Vientiane Capital, Sisattanak District
SCHOOL: Dongsavath, Public School RESPONSIBLE LOCAL AUTHORITY: Sisattanak District Education DEVELOPED BY: School community BUILT BY: School community
OTHERS: GIZ Regional Fit for School Programme

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 12 years
Water source	80 litre-bucket with lid attached to the facility (refilled manually or by connecting to piped water system)
# water outlets	10 outlets
# students who can use the facility at the same time	20 students
Overall water consumption per handwashing station for one group handwashing activity	2.7 litres
Piping	Punched PVC pipe
Basin	Inclined halved PVC pipe
Disposal of waste water	Bucket
Type of facility structure	Permanent facility
Expected durability	4 – 8 years
Time needed for construction of parts and installation	2 – 3 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	–
Usable by differently-abled children	–

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Possible support by school community
Installation	School community
Enhancement/beautification	Students and school community (painting and gravel bed)
Daily cleaning	Students
Refilling of water	Teachers
Regular facility maintenance	Teachers and School Support Committee

EXPENSES	
Average material cost	80.00 USD
Average labour cost	25.00 USD

ADVANTAGES:

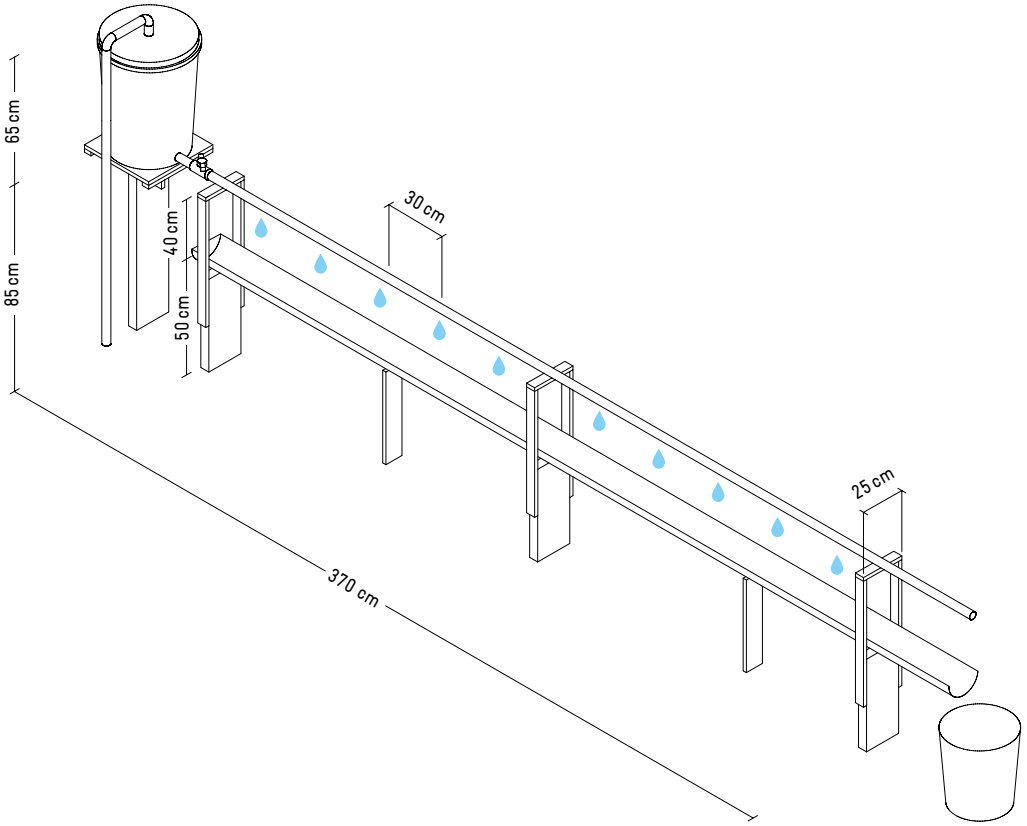
- Usable with and without connection to piped water system.
- Community involvement possible.

LIMITATIONS:

- No individual handwashing possible.
- Refilling needs to be managed.

RECOMMENDATIONS:

- Make individual handwashing possible.
- Use metal instead of wood for supporting structure.
- Connect bucket for waste water to soak pit or flower bed.


65 cm
85 cm
40 cm
50 cm
30 cm
25 cm
370 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC water pipe, 3/4 inch	m	3.50	1.20 USD	4.20 USD
PVC basin pipe	m	3.50	3.50 USD	12.25 USD
PVC fittings	lump-sum	1	6.30 USD	6.30 USD
Water drum with lid, 80 litres	pcs	1	30.00 USD	30.00 USD
Wood	lump-sum	1	20.00 USD	20.00 USD
Concrete	lump-sum	1	5.00 USD	5.00 USD
Paint	can	3	0.75 USD	2.25 USD
				80.00 USD

09

ZAMBIA

SOLID FACILITY BUILT FROM BRICKS, WITH A WATER TANK, A PUNCHED PVC PIPE AND GRAVEL DRAINAGE.

LOCATION: Zambia, Choma District SCHOOL: Kusukwe Community School, Public School RESPONSIBLE LOCAL AUTHORITY: Zambia Ministry of General Education DEVELOPED BY: Designed by UNICEF Zambia and piloted by Ministry of General Education BUILT BY: NGO Akros

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 16 years
Water source	60 litre-drum with lid
# water outlets	12 – 14 outlets
# students who can use the facility at the same time	12 – 14 students
Overall water consumption per handwashing station for one group handwashing activity	4 – 5 litres
Piping	Punched PVC pipe
Basin	Not applicable
Disposal of waste water	Gravel bed
Type of facility structure	Permanent facility
Expected durability	5 years
Time needed for construction of parts and installation	1.5 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	–
Usable by differently-abled children (WASH Club member operates tap and dispenses soap solution to the hands)	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

- Construction
- Installation
- Operation – use
- Maintenance – occasional repairs
- Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Trained village builder
Installation	Trained village builder
Enhancement/beautification	Trained village builder
Daily cleaning	School cleaning schedule
Refilling of water	School cleaning schedule
Regular facility maintenance	Head teacher and PTA
Others	WASH club supervision

EXPENSES	
Average material cost	81.00 USD
Average labour cost	23.00 USD

ADVANTAGES:

- Simple and durable construction.

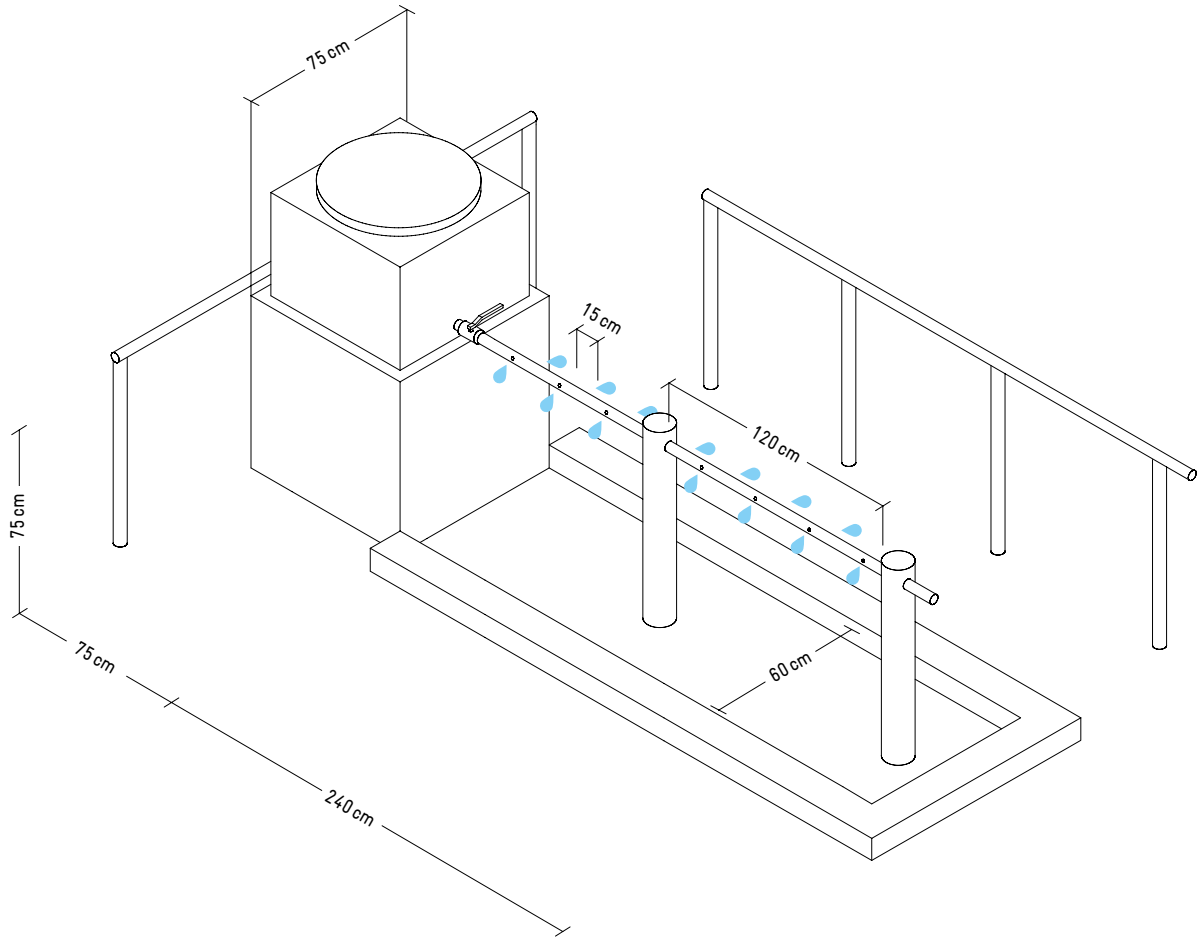
LIMITATIONS:

- Requires skilled labour for construction.
- Refiling needs to be managed.

RECOMMENDATIONS:

- Improve taps and make them more durable.
- Keep children's body dimensions in mind.
- Make individual handwashing possible.

DRAWING



MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC plumbers pipe, 3/4 inch	m	2.4	2.10 USD	5.00 USD
PVC ball valve, 3/4 inch, female threaded	pcs	1	9.00 USD	9.00 USD
PVC tank connector, 3/4 inch, complete with washers	pcs	1	3.00 USD	3.00 USD
PVC female double ended socket, 3/4 inch	pcs	1	2.00 USD	2.00 USD
PVC end cap, 3/4 inch	pcs	1	3.00 USD	3.00 USD
PVC drum, 60 litres	pcs	1	9.00 USD	9.00 USD
Drilling drum and pipe	lump-sum	1	3.00 USD	3.00 USD
Bricks (stand, steps, standing strips, drum encasement)	pcs	150	0.08 USD	12.00 USD
Cement, 50 kg	bag	2	9.00 USD	18.00 USD
Building sand	wheelbarrow	3	3.00 USD	9.00 USD
Broken bricks and rubble (soak away)	wheelbarrow	6	1.30 USD	8.00 USD
				81.00 USD

10

FIJI

WOODEN FACILITY WITH FLAT IRON SHEET AS A BASIN AND CONNECTED TO WATER TANK.

LOCATION: Fiji, Viti Levu, close to Korovou SCHOOL: Nasautoka District School, Private School RESPONSIBLE LOCAL AUTHORITY: Education Department DEVELOPED BY: UNICEF Fiji BUILT BY: Fijian Teachers Association WASH Unit

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 15 years
Water source	PVC tank
# water faucets	10 faucets
# students who can use the facility at the same time	10 students
Overall water consumption per handwashing station for one group handwashing activity	4 litres
Piping	PVC pipe
Basin	Folded flat iron sheet as drain tray over wooden support
Disposal of waste water	Soil absorption
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for construction of parts and installation	2 days

USABILITY ASPECTS	
Usable from both sides	⊖
Individual handwashing	✓
Usable by differently-abled children	⊖

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	School management and community
Installation	School management and community
Enhancement/beautification	Teachers and students
Daily cleaning	Students
Refilling of water	Not applicable
Regular facility maintenance	School management and teachers

EXPENSES	
Average material cost	165.00 USD
Average labour cost	Free labour provided by community, construction and installation led by Fijian Teachers Association WASH Unit

ADVANTAGES:

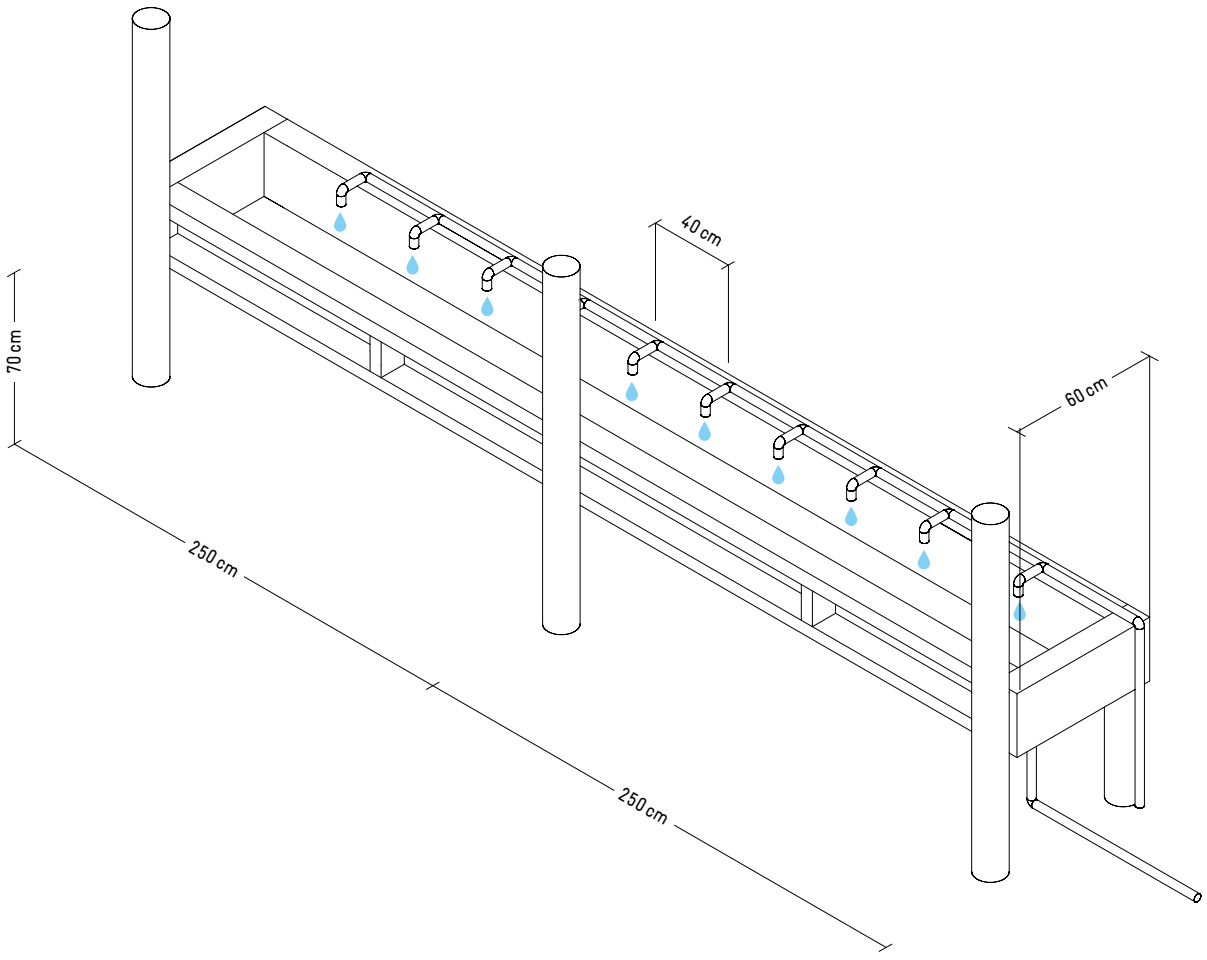
- No specific training needed for construction and installation.

LIMITATIONS:

- Wood used as support may not be as durable as other materials.

RECOMMENDATIONS:

- Keep children's height in mind.
- Consider using a punched PVC pipe to reduce water consumption.


70 cm
250 cm
250 cm
40 cm
60 cm

MATERIAL PER FACILITY

BILL OF QUANTITY / ONE FACILITY IN THE PICTURE				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST*
PVC pipe	m	6	2.00 USD	12.00 USD
Plumbing couplings, faucets and connection to tank	lump-sum	1	20.00 USD	20.00 USD
Iron sheet	m^2	4	3.00 USD	12.00 USD
PVC tank	pcs	1	45.00 USD	45.00 USD
Timber	m	19	4.00 USD	76.00 USD
				165.00 USD

* Estimations since original BoQ was not available.

11

FIJI

WOODEN FACILTY WITH PERFORATED PVC PIPE AND FOLDED FLAT IRON SHEET AS BASIN.

LOCATION: Fiji, Viti Levu, close to Korovou SCHOOL: Navunisea District School, Private School RESPONSIBLE LOCAL AUTHORITY: Education Department DEVELOPED BY: UNICEF Fiji
BUILT BY: Fijian Teachers Association WASH Unit

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 14 years
Water source	PVC tank
# water outlets	50 outlets
# students who can use the facility at the same time	50 students
Overall water consumption per handwashing station for one group handwashing activity	12 litres
Piping	Punched PVC pipe
Basin	Folded flat iron sheet as drain tray over wooden support
Disposal of waste water	Water percolates into the ground at the end of the facility
Type of facility structure	Permanent facility
Expected durability	5 years
Time needed for construction of parts and installation	2 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	–

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	School management and community
Installation	School management and community
Enhancement/beautification	Teachers and students
Daily cleaning	Students
Refilling of water	Not applicable
Regular facility maintenance	School management and teachers

EXPENSES	
Average material cost	300.00 USD
Average labour cost	Free labour provided by community, construction and installation led by Fijian Teachers Association WASH Unit

ADVANTAGES:

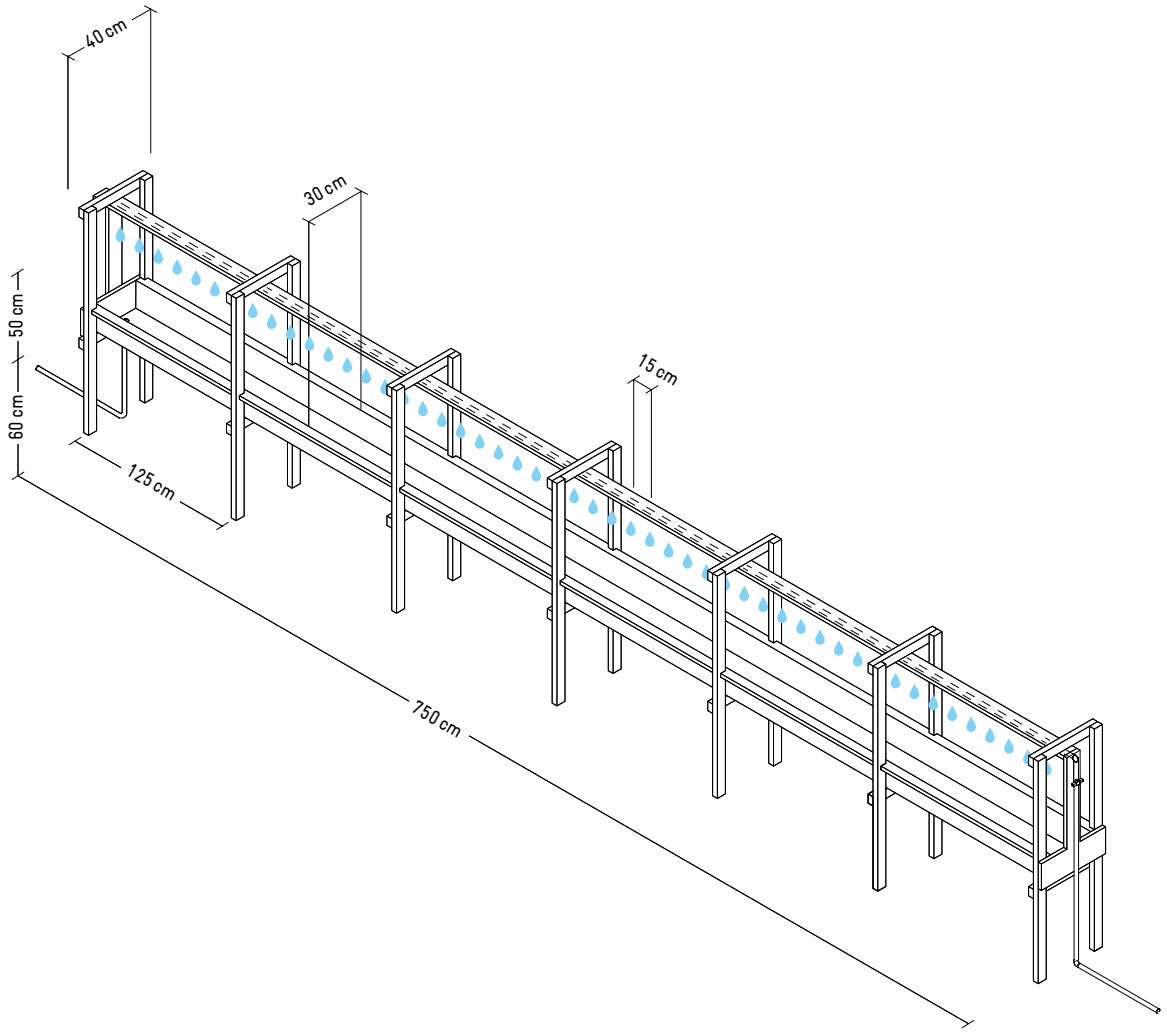
- Community involvement possible.
- No specific training for installation needed.

LIMITATIONS:

- Wood used as support structure may not be as durable as other materials.

RECOMMENDATIONS:

- Use more durable material as support structure
- Reduce number of outlets and increase spacing.
- Improve drainage of waste water.
- Make individual handwashing possible.


40 cm
30 cm
15 cm
50 cm
60 cm
125 cm
750 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST*
PVC pipe	m	7.50	2.00 USD	15.00 USD
Plumbing couplings, faucets and connection to tank	lump-sum	1	25.00 USD	25.00 USD
Iron sheet	m^2	3	3.30 USD	10.00 USD
PVC tank	pcs	1	78.00 USD	78.00 USD
Wooden beams (threaded)	m	43	4.00 USD	172.00 USD
* Estimations since original BoQ was not available				300.00 USD

12

INDONESIA

GROUP WASHING FACILITY WITH RAINWATER HARVESTING.

LOCATION: Indonesia, Papua Province, Biak Numfor District, North Biak SCHOOL: SD Warsansan, Private School RESPONSIBLE LOCAL AUTHORITY: District Education Office of Biak Numfor District DEVELOPED BY: UNICEF Indonesia and Yayasan Rumsram (local NGO in Biak Numfor) BUILT BY: Yayasan Rumsram

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 12 years
Water source	1000 litre-plastic container filled through rainwater harvesting
# water outlets	40 outlets
# students who can use the facility at the same time	80 students
Overall water consumption per handwashing station for one group handwashing activity	20 litres
Piping	PVC pipe
Basin	PVC gutter
Disposal of waste water	Soakaway pit filled with gravel
Type of facility structure	Permanent facility
Expected durability	3 – 5 years
Time needed for construction of parts and installation	3 – 4 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	–
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

- Construction
- Installation
- Operation – use
- Maintenance – occasional repairs
- Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Any community members who have labour skills
Installation	Community members
Enhancement/beautification	Community members, school staff and students
Daily cleaning	School staff and students
Refilling of water	Rainwater catchment
Regular facility maintenance	School staff and students

EXPENSES	
Average material cost	281.00 USD
Average labour cost	166.00 USD

ADVANTAGES:

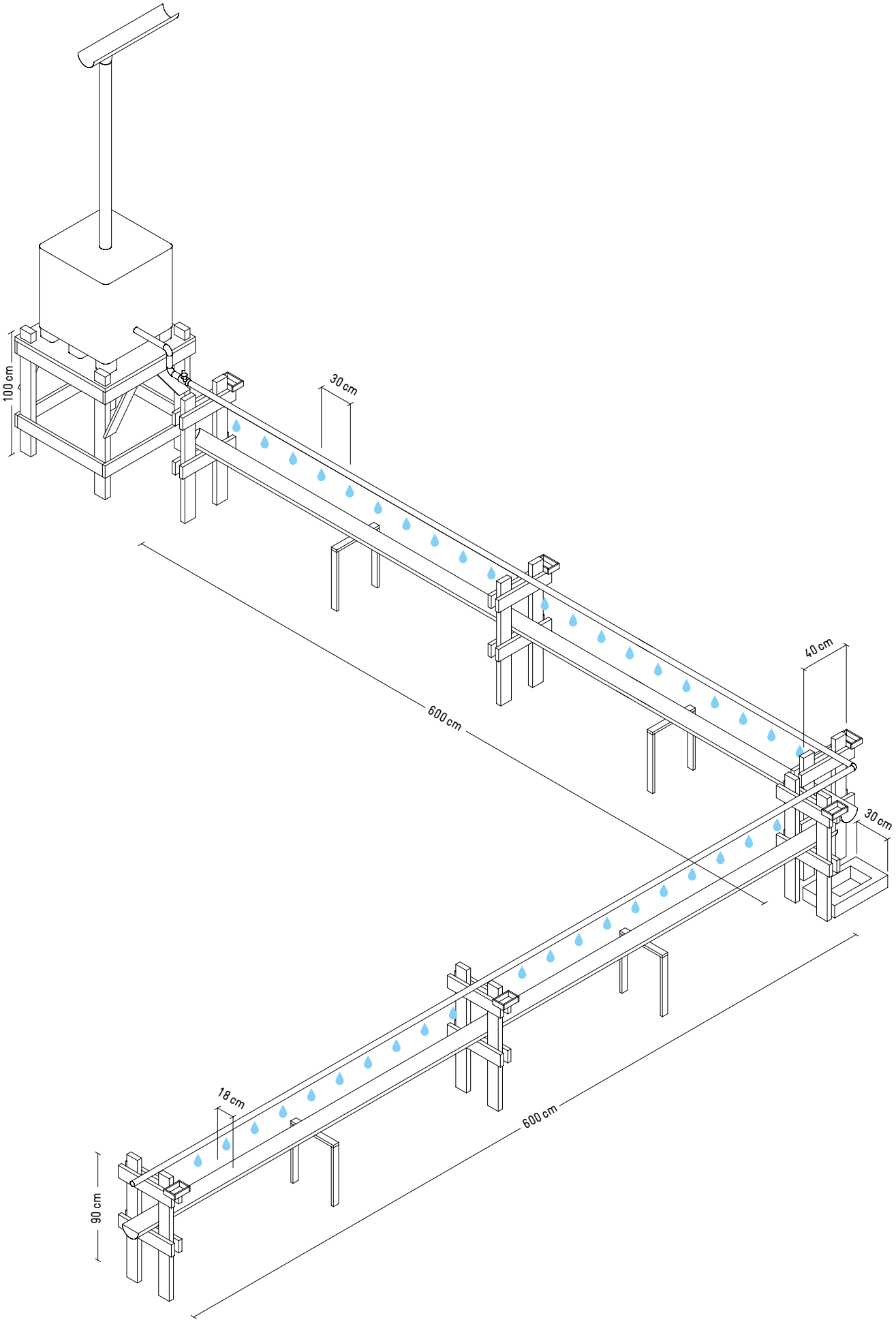
Container can also be connected to piped water system. Harvesting of rainwater for handwashing saves expenses.

LIMITATIONS:

Rainwater harvesting only appropriate in areas with sufficient rainfall. No individual handwashing possible. Valve might have to be replaced after 1 year.

RECOMMENDATIONS:

Make individual handwashing possible. Replace PVC pipes with GI pipes to prolong the durability of the facility.


100 cm
30 cm
600 cm
40 cm
30 cm
18 cm
600 cm
90 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC pipe, 1 inch	m	20	0.40 USD	8.00 USD
PVC valve, 1 inch	pcs	1	3.00 USD	3.00 USD
PVC elbow, 1 inch	pcs	3	1.50 USD	4.50 USD
PVC dop, 1 inch	pcs	1	1.00 USD	1.00 USD
Pipe clamp, 1 inch	pcs	7	0.50 USD	3.50 USD
Plastic container with iron bar protection, 1000 litres	pcs	1	134.00 USD	134.00 USD
PVC gutter and fittings, 6 inch	pcs	6	6.00 USD	36.00 USD
Timber, 100 mm x 100 mm	m	8	1.75 USD	14.00 USD
Timber, 100 mm x 50 mm	m	32	1.00 USD	32.00 USD
Timber, 100 mm x 20 mm	m	8	1.75 USD	14.00 USD
Nails	kg	4	2.25 USD	9.00 USD
Cement, 50 kg	bag	1	8.00 USD	8.00 USD
Sand	m^3	0.1	50.00 USD	5.00 USD
Stone	m^3	0.2	45.00 USD	9.00 USD
				281.00 USD

13

INDIA

DURABLE AND PERMANENT FACILITY WITH SLAB BASIN AND FAUCETS.

LOCATION: India, Jalna, Bhokardan, Dehed Village
SCHOOL: Primary and Upper-Primary School Dehed, Public School RESPONSIBLE LOCAL AUTHORITY: Headmaster of School and School Management Committee
DEVELOPED BY: UNICEF India and local NGO SACRED
BUILT BY: Local NGO SACRED

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 13 years
Water source	Cement tank connected to piped water system
# water outlets	16 faucets
# students who can use the facility at the same time	16 students
Overall water consumption per handwashing station for one group handwashing activity	8 litres
Piping	GI pipe
Basin	Basin made from kadappa stone with slope to ensure drainage of waste water at the end of the facility through an outlet covered with a mesh
Disposal of waste water	PVC pipe leading to garden for irrigation of plants
Type of facility structure	Permanent facility
Expected durability	10 years
Time needed for construction of parts and installation	3 – 4 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Local mason and plumber
Installation	Local mason and plumber
Enhancement/beautification	Local government and school
Daily cleaning	Attendant and older students
Refilling of water	Attendant
Regular facility maintenance	Attendant and older students

EXPENSES	
Average material cost	280.00 USD
Average labour cost	30.00 USD

ADVANTAGES:

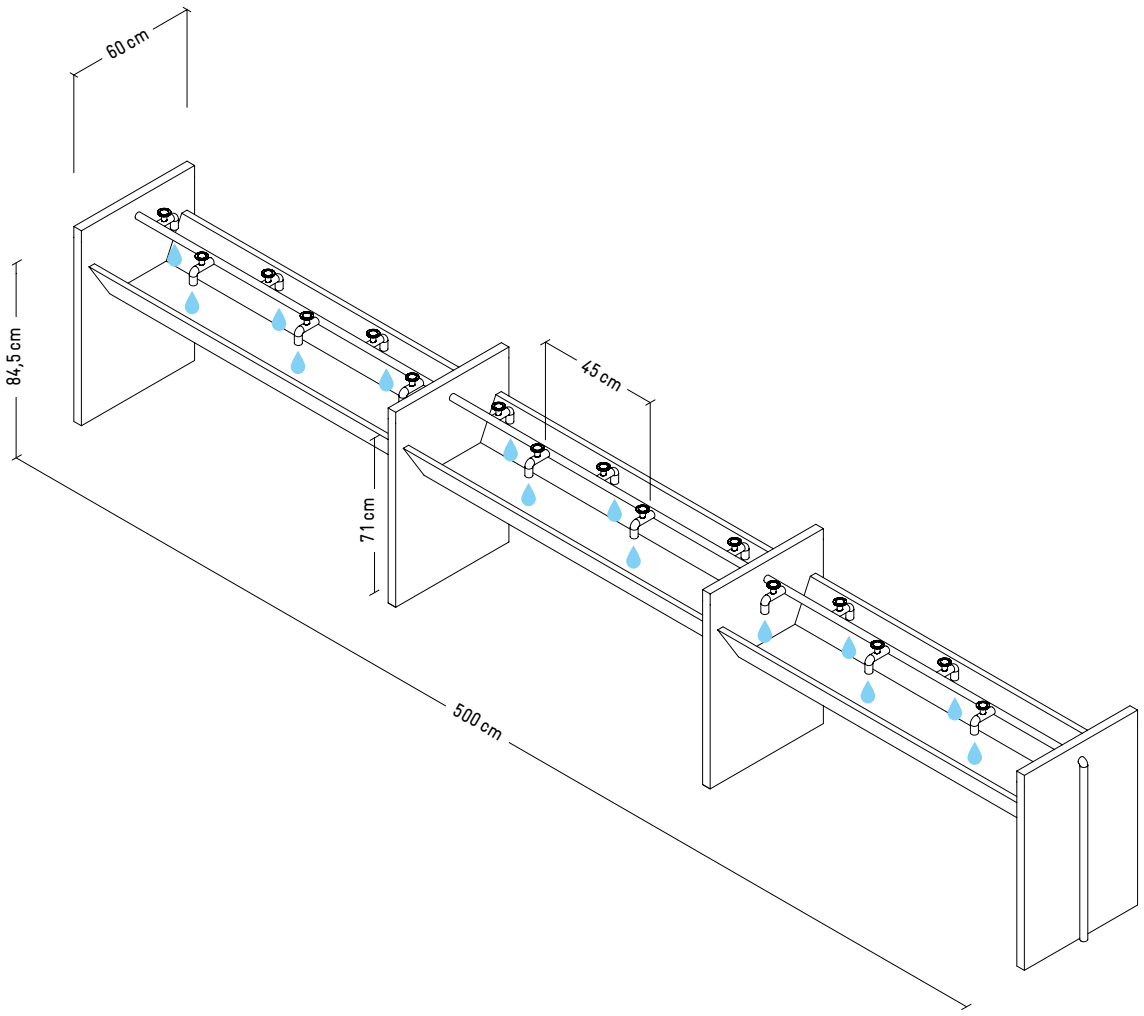
- Permanent and durable structure.

LIMITATIONS:

- Construction requires skilled labour.
- High water consumption.

RECOMMENDATIONS:

- Minimize water consumption by using a punched pipe.
- Keep children's body dimensions and differently-abled children in mind.


60 cm
84,5 cm
71 cm
45 cm
500 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
GI pipe, 1 inch	m	12	3.00 USD	36.00 USD
GI faucet, 1/2 inch	pcs	16	3.00 USD	48.00 USD
PVC pipe, 4 inch, to the soakpit	m	1.2	30.00 USD	36.00 USD
Kadappa stone	lump-sum	1	109.00 USD	109.00 USD
Structural steel	m	10	1.70 USD	17.00 USD
Miscellaneous items (e.g. valves)	lump-sum	1	10.50 USD	10.50 USD
Concrete	m^3	1.8	5.60 USD	10.00 USD
Plaster paint	m^3	3	4.50 USD	13.50 USD
				280.00 USD

14

AFGHANISTAN

SOLID METAL FACILITY WITH A WIDE METAL BASIN AND PIPING CONNECTED TO A WELL WITH A HAND PUMP AND WATER TANK.

LOCATION: Afghanistan, Kabul, Kolola Pushta SCHOOL: Manuchehri Public School RESPONSIBLE LOCAL AUTHORITY: Health Manager of the Ministry of Education DEVELOPED BY: UNICEF Afghanistan in close coordination with the Ministry of Education BUILT BY: External engineer with direct supervision of an engineer from the Ministry of Education

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	7 – 18 years
Water source	200 litre-metal tank and hand pump connected to well
# water faucets	12 faucets
# students who can use the facility at the same time	12 students
Overall water consumption per handwashing station for one group handwashing activity	14 litres
Piping	GI pipe
Basin	Metallic iron sheets
Disposal of waste water	The waste water drains into a septic tank, which needs to be emptied approximately every 6 months
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for construction of parts and installation	4 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water (high water consumption)

COMMUNITY INVOLVEMENT	
Construction	School Shura (including teachers, students and the community) and principal were involved in quality control
Installation	School staff and Ministry of Education staff
Enhancement/beautification	School staff and School Shura
Daily cleaning	Cleaners
Refilling of water	Cleaners
Regular facility maintenance	School principal, head master, cleaners; child clubs are involved in monitoring

EXPENSES	
Average material cost	441.00 USD
Average labour cost	250.00 USD

ADVANTAGES:

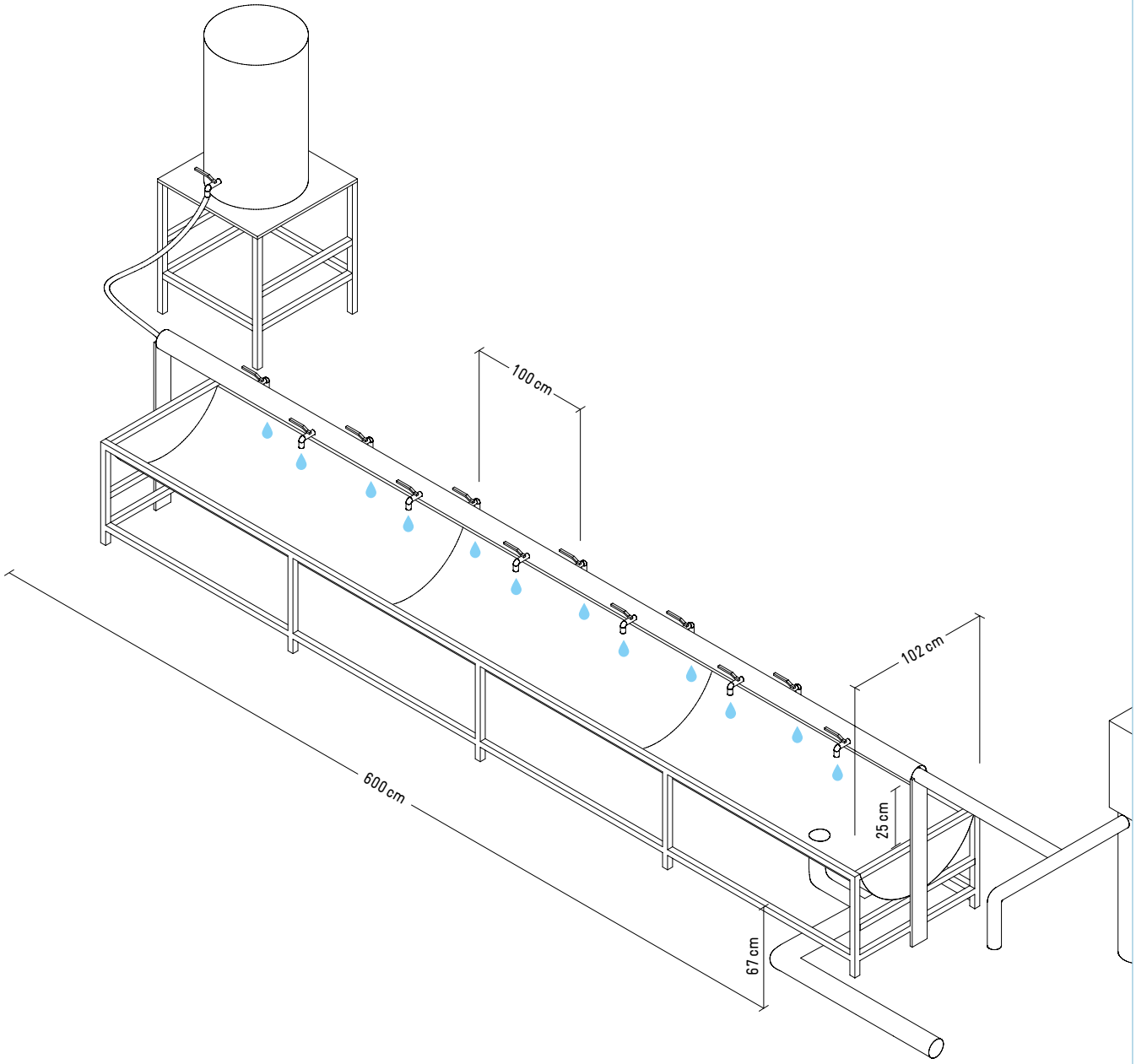
- Flexible water sources.
- Durable construction.

LIMITATIONS:

- Higher water consumption.
- Refilling needs to be managed.

RECOMMENDATIONS:

- Smaller diameter of water pipe.
- Minimize water consumption by using a punched pipe.


100 cm
102 cm
600 cm
25 cm
67 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
GI pipe, 3 inch	m	6	11.50 USD	69.00 USD
GI reducer, 3 x 1 inch	pcs	1	7.00 USD	7.00 USD
GI cap, 3 inch	pcs	1	9.00 USD	9.00 USD
Brass faucet, 1/2 inch	pcs	12	4.00 USD	48.00 USD
Drain PVC pipe, 2 inch	m	3	2.00 USD	6.00 USD
PVC 90 degree bend, 2 inch	pcs	1	2.00 USD	2.00 USD
GI sheet metal, 1 x 6 m, including steel supports	lump-sum	1	300.00 USD	300.00 USD
				441.00 USD

15

LIBERIA

FACILITY WITH CENTRAL WATER CONTAINER FEEDING INTO TWO PUNCHED PVC PIPES FIXED OVER A CONCRETE BASIN.

LOCATION: Liberia, Monrovia SCHOOL: Prinsia Memorial Institute Elementary Junior High School, Private School RESPONSIBLE LOCAL AUTHORITY: Education Department, WASH in School
DEVELOPED BY: Community Development Services (CODES)
BUILT BY: CODES OTHERS: UNICEF Liberia

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 14 years
Water source	PVC tank, 150 litres or more (water from hand pump)
# water outlets	12 outlets
# students who can use the facility at the same time	24 students
Overall water consumption per handwashing station for one group handwashing activity	12 litres
Piping	Perforated PVC pipe
Basin	Concrete blocks with gravel bed
Disposal of waste water	Water is disposed in a soak pit next to the group washing facility (soak pit is fenced for better security)
Type of facility structure	Permanent
Expected durability	5 years or more
Time needed for construction of parts and installation	3 days

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Parents and community
Installation	Parents and community
Enhancement/beautification	Students
Daily cleaning	Students
Refilling of water	Teachers
Regular facility maintenance	Parents and community

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

EXPENSES	
Average material cost	347.00 USD
Average labour cost	100.00 USD

ADVANTAGES:

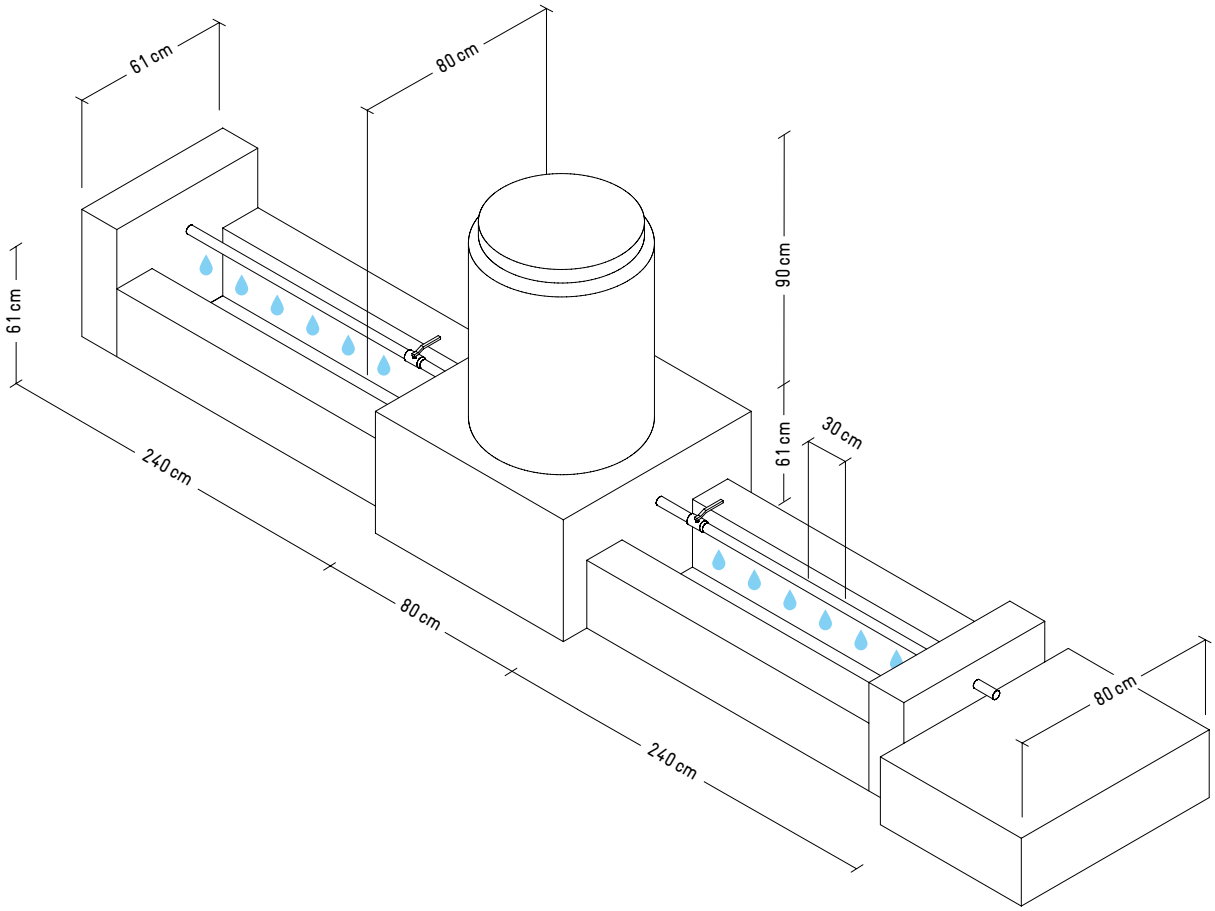
- Gravel bed as basin.

LIMITATIONS:

- Refilling needs to be managed.
- Requires skilled labour for construction.

RECOMMENDATIONS:

- Standardize outlet diameter to 5 mm.
- Areas where water table or rain fall is high the soak pit may fail – provide a soak trench or alternative to increase water percolation.


61 cm
80 cm
90 cm
61 cm
61 cm
30 cm
240 cm
80 cm
240 cm
80 cm

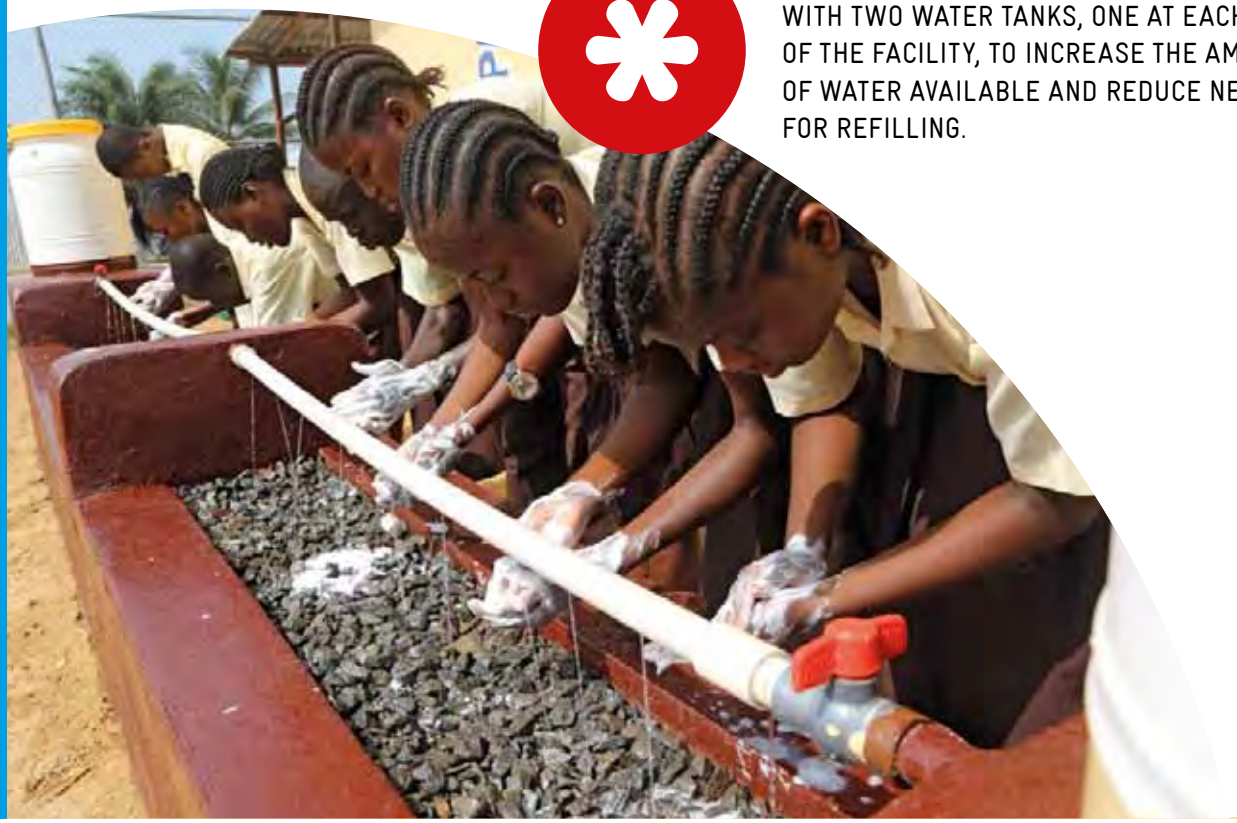
MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC pipe, 1 inch	m	6	3.00 USD	18.00 USD
Valve, 1 inch	pcs	2	12.00 USD	24.00 USD
Coupling, 1 inch	pcs	2	3.00 USD	6.00 USD
Union, 1 inch	pcs	1	5.00 USD	5.00 USD
PVC tank	pcs	1	25.00 USD	25.00 USD
Crush racks	m^3	0.75	48.00 USD	36.00 USD
Cement	bag	11	8.50 USD	93.50 USD
Sand	m^3	1.50	27.00 USD	40.50 USD
Concrete block, 6 inch	pcs	60	1.00 USD	60.00 USD
White wash	bag	1	15.00 USD	15.00 USD
Oil paint	ltr	8	3.00 USD	24.00 USD
				347.00 USD

DESIGN VARIATION

LIBERIA

FACILITY VARIATION IN THE SAME SCHOOL WITH TWO WATER TANKS, ONE AT EACH END OF THE FACILITY, TO INCREASE THE AMOUNT OF WATER AVAILABLE AND REDUCE NEED FOR REFILLING.



16

MALI

CONCRETE FACILITY WITH FIXED WATER CONTAINER AND A PERFORATED STEEL PIPE OVER A CONCRETE BASIN.

LOCATION: Mali, District of Koulikoro, Commune of Sirakorola
SCHOOL: Sirakorola East, Public School RESPONSIBLE LOCAL AUTHORITY: District Education Department DEVELOPED BY: UNICEF Mali BUILT BY: Entreprise Moulaye Emanuel Toure (EMET)
OTHERS: Association Malienne pour la Promotion du Développement Rural (AMPDR)

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 15 years
Water source	160 litre-ferro-cement container
# water outlets	9 outlets
# students who can use the facility at the same time	18 students
Overall water consumption per handwashing station for one group handwashing activity	4.5 litres
Piping	Removable, perforated GI pipe
Basin	Concrete basin with screed and inclined towards the drain
Disposal of waste water	PVC pipe leading to a manhole and then to a 2 m deep cesspit
Type of facility structure	Permanent facility
Expected durability	5 – 10 years
Time needed for construction of parts and installation	5 – 8 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	–
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Community members
Installation	Community members
Enhancement/beautification	Teachers and students
Daily cleaning	Students
Refilling of water	Students
Regular facility maintenance	Teachers and students
Others	Repair by skilled labour

EXPENSES	
Average material cost	427.00 USD
Average labour cost	110.00 USD

ADVANTAGES:

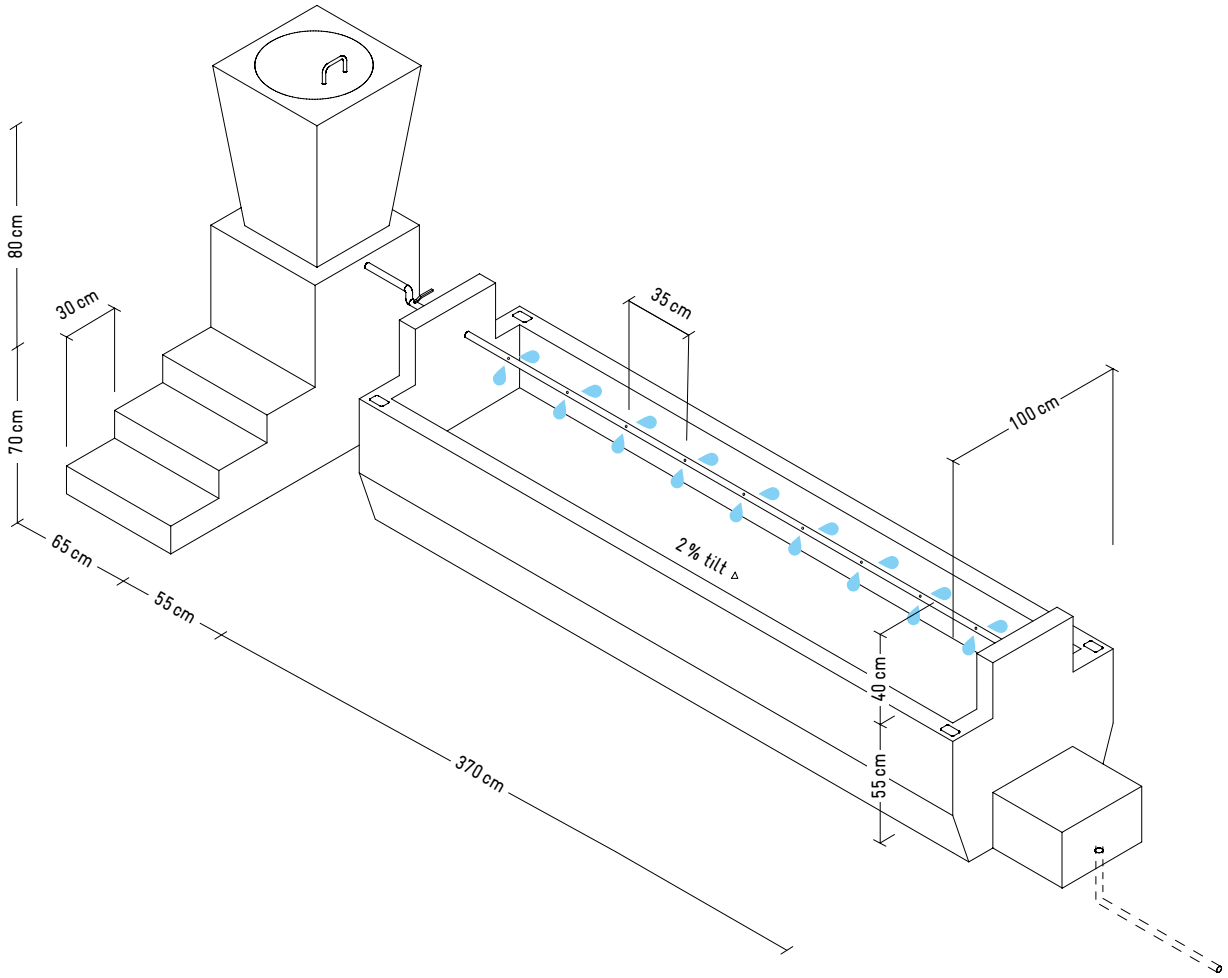
- Permanent and durable structure requiring little maintenance and repair.

LIMITATIONS:

- Requires skilled labour for installation.
- No individual handwashing possible.
- Refilling needs to be managed.

RECOMMENDATIONS:

- Keep children's body dimensions in mind.
- Make individual handwashing possible.


80 cm
70 cm
30 cm
35 cm
100 cm
2 % tilt
65 cm
55 cm
370 cm
40 cm
55 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
GI pipe, 32 mm	m	4.50	4.40 USD	20.00 USD
PVC plumbing (ball valve, drain valve, PVC cap, PVC pipe 32 mm)	lump-sum	1	50.00 USD	50.00 USD
Ferro-cement storage container, 160 litres, and accessories (lid, padlock, etc.)	pcs	1	16.00 USD	16.00 USD
Cement blocks, solid, 15 cm	m^2	2.10	58.00 USD	122.00 USD
Concrete mix (different densities)	lump-sum	1	212.00 USD	212.00 USD
Paint	lump-sum	1	7.00 USD	7.00 USD
				427.00 USD

17

CAMBODIA

SOLID CONCRETE FACILITY WITH PUNCHED PIPES CONNECTED TO THE PIPED WATER SYSTEM.

LOCATION: Cambodia, Kompong Chhnang, Kompong Trolach District
SCHOOL: Banteay Longvek Primary School, Public School
RESPONSIBLE LOCAL AUTHORITY: District Office of Education
DEVELOPED BY: RainWater Cambodia BUILT BY: Local contractor
OTHERS: GIZ Regional Fit for School Programme

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	6 – 12 years
Water source	Connected to piped water system
# water outlets	36 outlets
# students who can use the facility at the same time	36 students
Overall water consumption per handwashing station for one group handwashing activity	9 litres
Piping	PVC pipe attached to concrete structure
Basin	Concrete basin, slightly inclined to one side
Disposal of waste water	Connected to drainage system
Type of facility structure	Permanent facility
Expected durability	5 – 8 years
Time needed for construction of parts and installation	5 – 8 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	–

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

- Construction
- Installation
- Operation – use
- Maintenance – occasional repairs
- Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Skilled labour
Installation	Skilled labour
Enhancement/beautification	Painting can be done by the community
Daily cleaning	Students
Refilling of water	Not applicable
Regular facility maintenance	Teachers and School Support Committee

EXPENSES	
Average material cost	129.00 USD
Average labour cost	81.00 USD

ADVANTAGES:

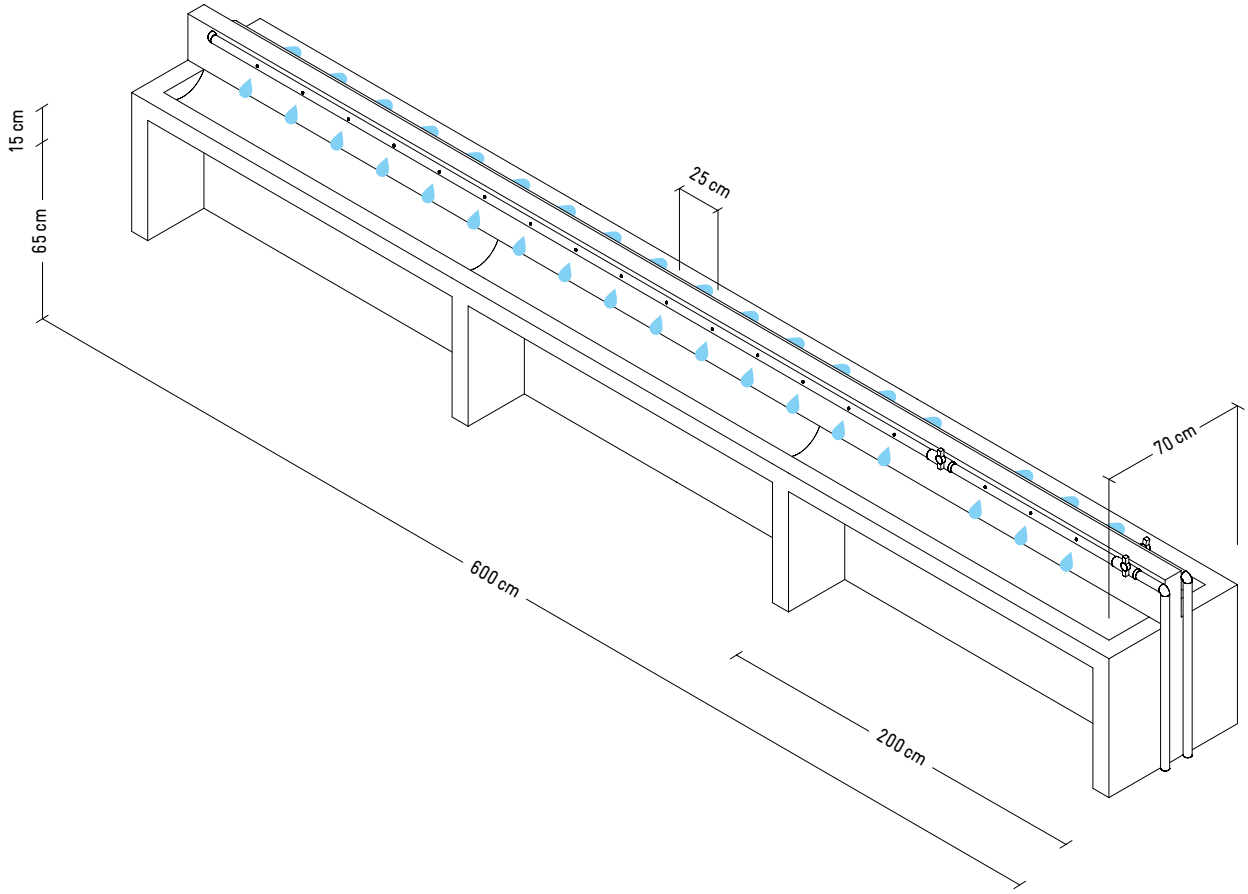
Durable. Accommodates a large group of students while only using limited amount of water.

LIMITATIONS:

PVC connection to the concrete wall is vulnerable. No option for individual handwashing. Not usable for children with physical disabilities. Requires skilled labour for construction.

RECOMMENDATIONS:

Make individual handwashing possible.


15 cm
65 cm
25 cm
70 cm
600 cm
200 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST
PVC pipe and fittings	lump-sum	1	24.00 USD	24.00 USD
Steel	kg	10	0.80 USD	8.00 USD
Brick	pcs	470	0.05 USD	23.50 USD
Cement	t	0.45	100.00 USD	45.00 USD
Sand	m^3	1.05	10.00 USD	10.50 USD
Foundation	lump-sum	1	18.00 USD	18.00 USD
				129.00 USD

18

PHILIPPINES

LARGE CONCRETE FACILITY WITH PERFORATED PVC PIPES CONNECTED TO PIPED WATER SYSTEM AND COMMUNITY SEWERAGE.

LOCATION: Philippines, Quezon City SCHOOL: LR Pascual ES, QC, Public School RESPONSIBLE LOCAL AUTHORITY: Department of Education Division Office DEVELOPED BY: School BUILT BY: School assisted by the community (Barangay Baesa)

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	5 – 12 years
Water source	Piped water system
# water outlets	60 outlets
# students who can use the facility at the same time	60 students
Overall water consumption per handwashing station for one group handwashing activity	20 litres
Piping	PVC pipe
Basin	Cemented and tiled
Disposal of waste water	Water drains through a pipe towards the sewerage
Type of facility structure	Permanent facility
Expected durability	4 years
Time needed for construction of parts and installation	14 days

USABILITY ASPECTS	
Usable from both sides	⊖
Individual handwashing	⊖
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Volunteer teachers, non-teaching staff and skilled community labourers
Installation	Volunteer teachers, non-teaching staff and skilled community labourers
Enhancement/beautification	Teachers and non-teaching staff (e.g. utility/clerk)
Daily cleaning	Non-teaching staff (e.g. utility/clerk)
Refilling of water	Not applicable
Regular facility maintenance	Teachers and non-teaching staff (e.g. utility/clerk)

EXPENSES	
Average material cost	646.00 USD
Average labour cost	Community contribution

ADVANTAGES:

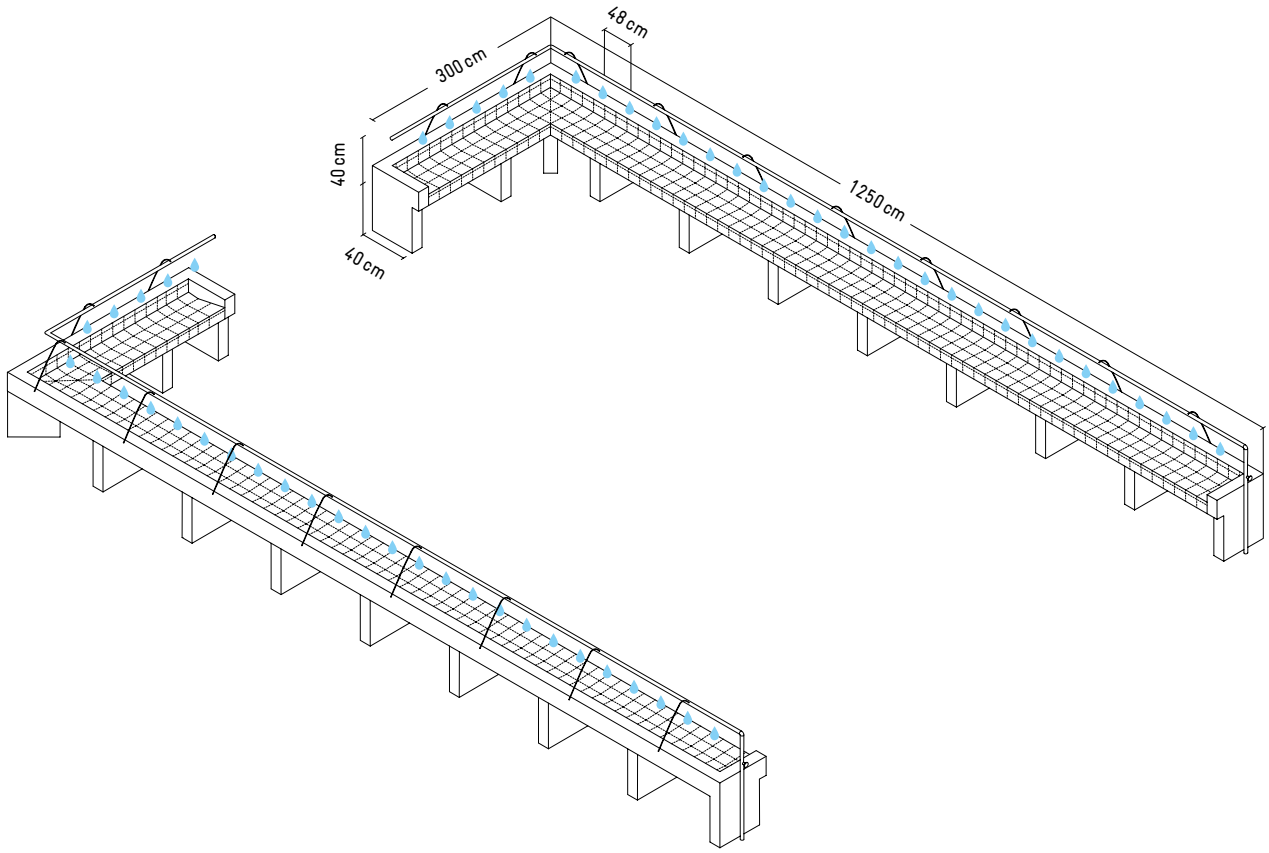
- Accommodates large groups of students.

LIMITATIONS:

- Requires skilled labour for installation.
- No individual handwashing possible.

RECOMMENDATIONS:

- Make individual handwashing possible.


48 cm
300 cm
40 cm
40 cm
1250 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST*
PVC pipe, 12 feet	pcs	9	4.00 USD	36.00 USD
Valves	pcs	2	2.00 USD	4.00 USD
Steel bar, 20 feet, 10 mm thickness (cut and used as PVC pipe holder)	pcs	1	10.00 USD	10.00 USD
Hollow blocks & concrete	lump-sum	1	500.00 USD	500.00 USD
Tiles	pcs	480	0.20 USD	96.00 USD
				646.00 USD

* Estimations since original BoQ was not available.

19

INDONESIA

TILED FACILITY OF A MADRASHA RELIGIOUS SCHOOL USED FOR ABLUTION AND DAILY GROUP HYGIENE ACTIVITIES.

LOCATION: Indonesia, Bandung City SCHOOL: MIN Margasaril, Public School RESPONSIBLE LOCAL AUTHORITY: Head of School Committee DEVELOPED BY: School Committee BUILT BY: Local contractors OTHERS: PartnerAid International on behalf of GIZ Regional Fit for School Programme

FACTS & FIGURES

DESIGN STRUCTURE	
Age of students	7 – 12 years
Water source	Piped water system and 700-litres container
# water faucets	30 faucets
# students who can use the facility at the same time	30 students
Overall water consumption per handwashing station for one group handwashing activity	15 litres
Piping	PVC pipe
Basin	Cemented and tiled basin close to the floor
Disposal of waste water	Used water is channeled towards drain connected to drain system
Type of facility structure	Permanent facility
Expected durability	› 10 years
Time needed for construction of parts and installation	21 days

USABILITY ASPECTS	
Usable from both sides	✓
Individual handwashing	✓
Usable by differently-abled children	✓

CONSTRUCTION, OPERATION & MAINTENANCE

EASY 1 2 3 4 DIFFICULT 5

Construction

Installation

Operation – use

Maintenance – occasional repairs

Maintenance – daily cleaning & refilling of water

COMMUNITY INVOLVEMENT	
Construction	Hired labourer
Installation	Hired labourer, local contractor, community
Enhancement/beautification	Teachers, parents, school, committee
Daily cleaning	Students, janitor
Refilling of water	Teacher, janitor
Regular facility maintenance	Janitor

EXPENSES	
Average material cost	1,000.00 USD
Average labour cost	500.00 USD

ADVANTAGES:

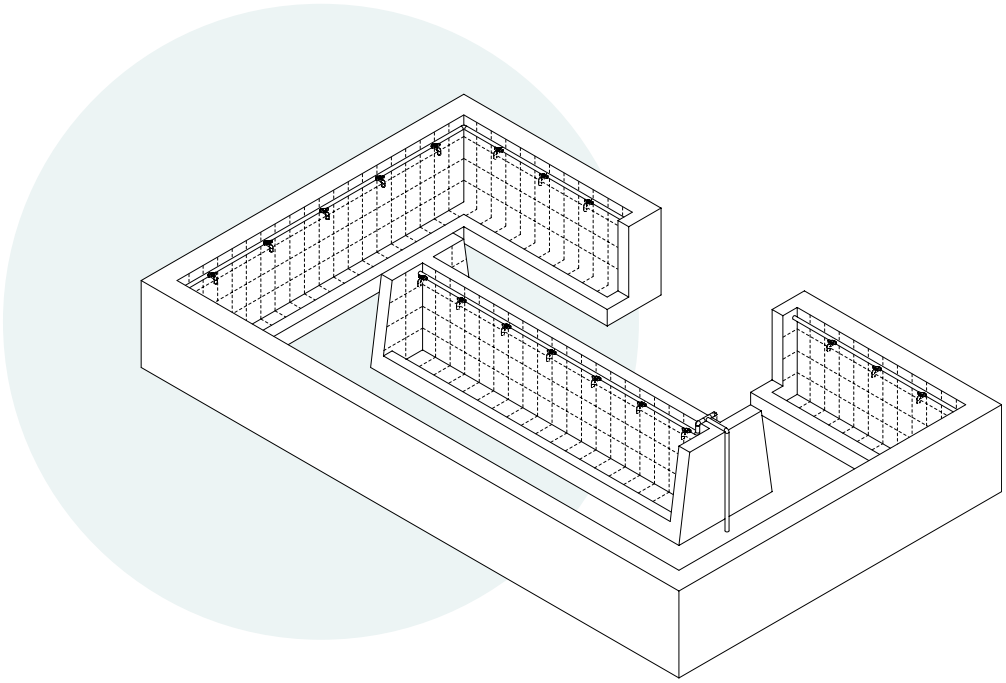
- Multi-purpose.
- Easy to clean.

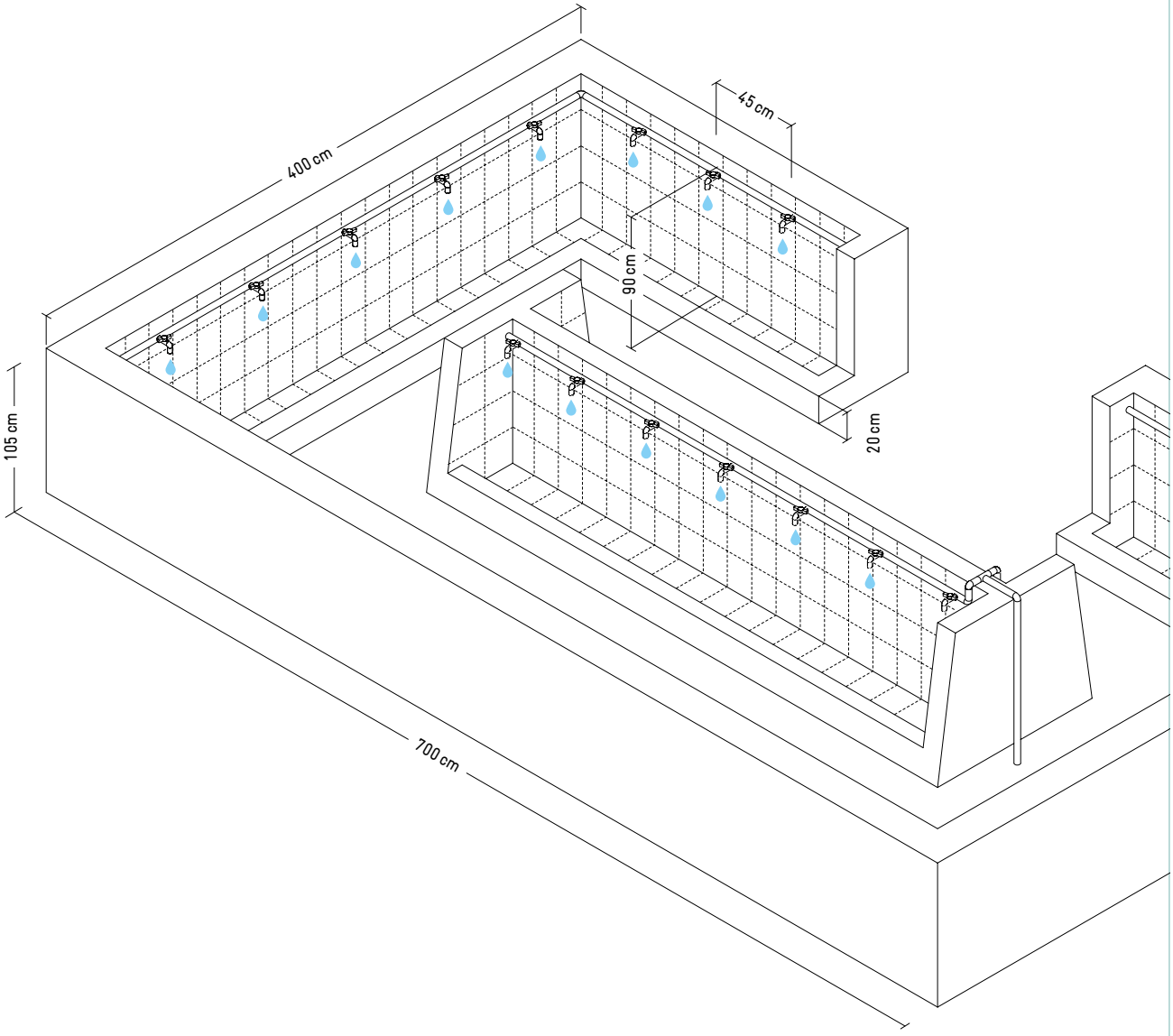
LIMITATIONS:

- High water consumption.
- Requires skilled labour for installation.

RECOMMENDATIONS:

- Minimize water consumption through punched pipe.




400 cm
45 cm
90 cm
20 cm
105 cm
700 cm

MATERIAL PER FACILITY

BILL OF QUANTITY				
ITEMS	UNIT	QUANTITY PER FACILITY	COST PER UNIT	TOTAL COST*
PVC pipes and fittings including drainage	lump-sum	1	200.00 USD	200.00 USD
Metal faucets	pcs	30	1.50 USD	45.00 USD
Bricks/cement	lump-sum	1	125.00 USD	125.00 USD
Roof	lump-sum	1	330.00 USD	330.00 USD
Tiles (floor and wall)	m^2	80	3.75 USD	300.00 USD
				1,000.00 USD

* Estimations since original BoQ was not available.

IMPRINT

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UNICEF; GIZ: Scaling up group handwashing in schools.
Compendium of group washing facilities across the globe.
New York, USA; Eschborn, Germany; 2016