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REPORT

Field Guide:

Hardware for Group Handwashing in Schools

FIT FOR SCHOOL

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Foreword

Schools are the heart of a community, a place where our children spend half of their day. Schools play a unique role in creating a healthy learning environment. The social norms and habits developed in children will stay with them all their lives. Thus, by providing a healthy learning environment and promoting healthy practices, schools act as an equalizer by providing all children from varied economic backgrounds with access to the same healthy practices. The school environment can enable development of healthy behaviors among children who may not have the same learning opportunity in their homes. In this way, schools serve as the center of development. Investment in healthy schools is an investment in healthy children.

School resources are limited in poor communities throughout Asia. Action must be taken at the local level in creating healthy schools. This catalog serves to provide examples of making improvements in washing facilities. These, in turn, can make a significant difference for the functionality, acceptability and sustainability of the facilities to ensure that daily hand washing and tooth brushing can be practiced as part of group activities in schools. While financial resources may be limited, small simple solutions can be adapted for building functional, low cost facilities or for improving existing washing facilities. As schools throughout the region have demonstrated, small measures can have big impacts.

Much experience has been made in implementing the GIZ Regional Fit for School program in South East Asia; key lessons have emerged that will guide future work. They are compiled in this report to provide guidance for school communities to make the right decisions and learn from failures others were willing to share. It takes the school community to take care of 'their' school and make it a healthy place, where children can flourish and reach their full potential. Strong school-based management lies at the heart of this success.

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Introduction and Context

The simple practices of handwashing and toothbrushing contribute to a holistic health and well-being that should be an integrated essential of a child's education. The Filipino NGO, Fit for School Inc. has supported implementations of a public school health program to start or enhance this largely unmet basic need.

In the pioneering country of the Philippines, it is dubbed as the Essential Health Care Program (EHCP), where it is expanding nationwide, having been incorporated into policy under the mandate of the Department of Education. Indonesia, Lao PDR and Cambodia have also recently adopted it and have launched the program in several pilot schools.

Despite the provision of guidelines on facility construction, the different socio-political realities and cultures in these countries produced diverse results. The aim of this report is to showcase the differing implementations in these pilot countries, especially how each one has built their facilities to date. This is primarily a photo catalog of the various facilities with a close look at the materials used. This analysis will explore design, durability and practicality issues encountered.

The Philippines is the first pilot country and has been implementing the program for the past 5 years. It was adopted by the national government in 2009, and now targets more than 2.5 million public elementary school children in 40 provinces.

Due to the high demand from other Southeast Asian governments, the Regional Fit for School Program was launched in 2011 as a joint three-year research and development initiative led by GIZ in partnership with the Southeast Asian Ministries of Education Organization and its Regional Center for Educational Innovation and Technology (SEAMEO INNOTECH). The program aims to adapt the Fit for School approach to the specific national context in Cambodia, Indonesia and Lao PDR, thereby creating a tailored implementation template and respective human capacity development tools, which will support the respective Ministries of Education to implement the program using its own manpower and financial resources. In 2012, the program facilitated the construction of group washing facilities and conducted baseline studies on health and sanitation indicators in model schools in each country. At present, all model schools are currently conducting the group activities as part of their daily school curricula. This catalog looks at approaches, common mistakes and lessons learned regarding water sources, basins, piping and drainage, and introduces a new facility with improved functionality.

1 Water Sources

Access to water is paramount to ensuring that daily handwashing and toothbrushing can be conducted in schools.

Approaches

In general, there have been two approaches for schools that are not connected to water mains:

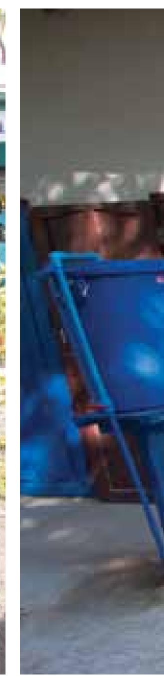
- **School wide system:** First is the school wide system where a central tank or reservoir is built to service all the facilities. Water is pumped, when available, and stored for future use. It is supplemented by collected rainwater. This approach includes the provision of a well or hand pump within the school premises.
- **Self-contained system:** Second is the the self-contained system where a smaller container, usually a water jug or repurposed pail, is elevated to service its own integrated facility. This has been used in classrooms or outside where it is shared by several classrooms. On an even more compact system is the tippy-tap where each student has his or her own water bottle to perform the exercise.

On a smaller scale as compared to the example below, this facility below integrates a previous program where a small tank was built to improve water access. The location of the tank determined the final placement of the wash facility nearby. This is a good example of using existing resources within the school grounds.

The tank in the photo on the right, made from stacked culverts, are able to accumulate enough water to ensure a year-round supply. This stood out in Cambodia for being the most impressive facility. It has to be stressed though that this facility was only made possible by the significant financial contribution of an individual donor.

When lacking any significant water collection facility, a water pump is essential. This one is a village pump in the Philippines, which the local chiefs decided would be best situated within the school. The rest of the community has agreed to gather water only before and after school hours. In this situation, students fill their containers with water, which are then carried to the self-contained system's reservoir near their classrooms.

The Tippy-tap approach, shown right, was developed in sub-Saharan Africa where access to water is limited. In this case, each child provides his or her own water bottle for handwashing. Tied on both ends by a string, the water bottle becomes a minituare reservoir that gives continued flow of water once tipped to its flowing end. To be efficient, the drip hole must be big enough relative to the volume of the container. This is a simple, low-cost technology but a highly effective self-contained approach.



The photo on the left shows the ideal self-contained system where a bucket is elevated. The bucket has been fitted with an inclined pipe attached to the bottom. In this case from Lao PDR, there is also a pipe that is connected to the water mains. This is a dual system, which can use the main water system if and when it is working. It can also be manually refilled.

Common Mistakes

Common mistakes of water sources vary between school-wide and self-contained systems. The most common mistakes observed in schools were:

→ **Narrow-mouth Containers.** Using a narrow-mouthed container poses frequent refilling problems especially as filling is usually done by hand.

→ **Weak Foundation.** The main post or support for the water container should be made from durable materials. In the case of the second photo from the top, wood that is close to soil has been easily compromised by the infestation of termites. Avoid the hazard of a falling cistern by using concrete or steel when possible.

→ **Not Elevating the Cistern.** Rainwater aggregation facilities like the interconnected jars would benefit greatly from the water pressure differential created by elevating the water source when an outflow is needed.

Tip

The size of the hole is directly related to water flow. As one may simply tip the bottle back to stop it from pouring, it is important to get the hole size just right. A 1-centimeter perforation seems to be ideal for bottles from 300 ml to 1 liter. Having a big hole will result in a fast drip while having a hole that is too small may require added squeeze pressure for it to dispense water.

Tippy Tap Mistakes

Common mistakes when constructing tippy tap systems included:

- not tying the string to both ends of the bottle. Failure to tie the bottle at both ends will make the bottle difficult to tip, and
- making the exit hole too big or too small

The above photo on the right shows an example of the correct flow of water where the amount of water is just right to perform the exercise.

! The tippy tap approach requires only 300 mL of water for daily handwashing and toothbrushing

Lessons Learned

Water access is crucial in all Fit for School interventions. Over half of the sites visited had no access to regular running water while only a fraction had their own reservoirs and tanks. This reality is what the Millennium Development Goals set by the United Nations underscores as an unmet basic need. While access to safe drinking water has improved worldwide according to the 2012 report by WHO and UNICEF, our pilot countries demonstrate that it is neither regular nor comprehensive.

The implementation of Fit for School programs has been known to fast track water supply to certain areas, as the local politicians seem to recognize the importance.

However, the best practice is still to assume that for the majority of the implementation sites, water supply will be the responsibility of the respective schools and communities.

It is also important to note that most schools that are connected to the water mains complain about the unexpected spike in water bills when the intervention is implemented.

A general recommendation is for all schools to have their own reservoirs. It can be a container for collecting rainwater and/or a depository for pumped water from a well or water mains. They may then build self-contained facilities, which use less water and are easier to manage.

In many contexts, the Tippy-tap will turn out to be the best solution for schools with limited water supply and insuffcient funding. It is only hampered by low social acceptability and incorrect implementation.

2 Basins

Basins provide schools with the opportunity to make their facilities unique and can be adapted to meet financial constraints. In many cases, facilities can also function well without a basin.

Approach

Generally, water needs to be managed right after its use. To direct wastewater, a basin is built. The basin usually happens to be the most costly element in the facility especially for those already with water connections to the main waterworks, being the largest physical component. Several approaches are documented using different materials. We have also observed how other implementations forgo this element and simply have the water hydrate the plants under it or fall straight to the floor, where it is drained by soil or concrete. A wide range of basins have been constructed in implementing schools as shown in the following photos.

- **Tiles.** The top photo from Cambodia shows a tiled basin which is basically dressed concrete. These basins are easier to clean and are more efficient water channels. They also add substantial cost to a facility.

- **Galvanized Metal.** The basin shown in the second photo in Cambodia is located inside the classroom. It is riveted to a framework of steel bars.

- **PVC Pipe.** The halved 8-inch pipe in the photo from Lao PDR makes for a very efficient basin, able to easily direct flow when inclined and has a slim profile, making it ideal for use, indoors and outdoors.

- **Concrete.** The basin shown in the bottom photo in Lao PDR is built with a foundation of brickwork. The concrete basin floor is polished and slightly inclined to aid water flow into the drain.

Approaches (continued)

- **Gutter Floor.** Some schools have chosen to take advantage of existing infrastructure. The photo shows the use of a gutter floor in Indonesia. Forgoing the basin, this approach allows water to go directly to the drainage system.

- **Wood.** While wood is often cheaper and easier to work with, its relative durability is questionable. An example of a painted wood basin from the Philippines is shown in the second photo.

- **Above Plants.** Forgoing the basin as well, this approach allows the direct recycling of wastewater to hydrate the vegetation below.

Building facilities above an existing garden can eliminate the cost of a basin while also reducing water usage for watering plants.

Common Mistakes

Miscalculations of end-user size considerations comprise the most common mistakes in design of basins. In other cases there have been construction errors where the incline is insufficient to efficiently direct water flow to the drain. The most common mistakes are summarized below.

→ **Too Flat.** A basin that is insufficiently inclined will not be able to direct water efficiently into the drain and will easily accumulate grime and debris, as seen in the top photo.

→ **Too Few Taps.** The basin in the second photo does not have enough taps to accommodate students on both sides.

→ **Too High.** The third photo shows an example of a facility which is too high. Height of the basin structure should be within reach of children.

→ **Inadequate Implementation.** Ideally, a facility should be able to accommodate at least 10-15 students at a time. The fourth photo shows an example of a facility which would not be sufficient to accommodate group handwashing.

Common Mistakes (continued)

→ **Too Wide.** This shows an example of a basin that is too wide. There is no need to have a very wide basin as it is sufficient to consider the relative arm length of a child.

Ensuring Group Participation

Practicing group hygiene with only one tap is impossible. Handwashing facilities must be constructed to accommodate a class of students. Without sufficient facilities, developing a daily group handwashing routine becomes disorganized and inefficient, making it difficult to adopt.

Tip

A single tap should not be used for group activities. A facility should accommodate a minimum of 10 students. Facilities which can accommodate children on both sides help to increase the number of students able to participate at one time while also minimizing costs.

Lessons Learned

While guidelines have been created for the construction of basins, it varies the most among the facility components. Cost is the key issue and basins often comprise the biggest expense of the whole facility. Any recommendations will necessarily be contextual.

As the long-term goal is to integrate handwashing activities into basic education, a more permanent structure is clearly the best approach. But this is an ideal model only if funding is readily available at the local level.

Alternatively, the halved PVC pipe can be recommended as one of the best practices owing to its slim profile, clean design and easy workability. It can also be removed and relocated unlike more permanent concrete structures.

The only seeming drawback is the relative cost and sporadic availability.

Another approach which can be recommended for areas where funding is limited is the practice of having no basin at all and just designing a garden around the facility or vice versa. There is no cost for the basin and the water is recycled meaningfully. This should be adopted by schools that implement the Tippy-tap method, as the water used is so minimal that it negates the need for a basin, as long as the facility is located on naturally absorbent substrate surfaces. The only potential flaw is the effect of soap and toothpaste-laden water on the plants, although, on the sites visited that used this system, the plants appeared healthy.

3 Piping

Piping can be made from low cost materials and is central to efficiently distributing water to a large number of children.

Approaches

There are several solutions available for water distribution. Punched or punctured pipes have been found to be the most effective. The use of faucets is discouraged, as they tend to break down, and are costly. They also give too much flow and consequently waste a lot of water. In some areas they are also attractive to thieves and vandals. However, it is important to ensure availability of individual hand-washing stands in addition to group facilities. The variety of piping used in implementing schools is discussed below.

- **Punched Pipe.** The top photo shows a punched plastic piping implementation, which uses pressure from the water mains. It is both cheap and effective. The spacing of each hole should be based on the target children's shoulder widths that will vary slightly with age.

- **Drilled Metal Pipe.** A drilled metal pipe, as shown in the second photo is the most expensive approach but also the most durable.

To reduce water usage, water should be turned off when children are lathering hands and brushing teeth.

Common Mistakes

A variety of challenges with regards to piping was seen in implementing schools. The most common mistakes encountered are summarized below.

→ **Poor Connection to Cistern.** All connections to the water source have to be firm and secure. In the example on the top right, water pressure will be compromised and spillage will occur.

→ **Too Many Punched Holes.** Spacing for the punches or perforations to the pipe should consider the average shoulder-to-shoulder distances of the children. In the second photo there are too many punch holes; pressure is lost and much of the water just goes to the basin and is wasted.

→ **Water Splashing Outside Basin.** In the example in the third photo, which is a double-sided basin, holes have been made at a bad angle. They should be at the bottom of the pipe.

→ **Unsupported Pipes.** For the sake of durability and water flow, pipes should be supported to resist flex and maintain their incline. Insufficient pipe support is shown in the bottom photo.

Lessons Learned

One of the best materials for efficient implementation would be the PVC pipe due to its wide availability, relatively cheaper cost and easy workability. It is also quite durable and is corrosion resistant. In the pilot implementations, most schools have chosen this product for their facilities. Galvanized steel pipes are the most durable piping option and are UV-resistant. They are also more stable so they do not sag the way unsupported pipes do.

For reservoir and gravity self-contained systems, the hole size on a punch pipe should be 1mm to provide optimal drip flow.

A dual valve setup was also found to be ideal. In this model shown below, there are two lock valves. One is the main valve which is followed shortly after at around 3-4 holes, by another valve, which opens up flow to all the other drip holes in the facility. This allows the minimized use of the facility where only 3-4 holes can drip for those occasions when only a single or a few individuals need to access water.

4 Drainage

Correct disposal or reuse of wastewater is key to proper maintenance of facilities and the wider school grounds.

Approaches

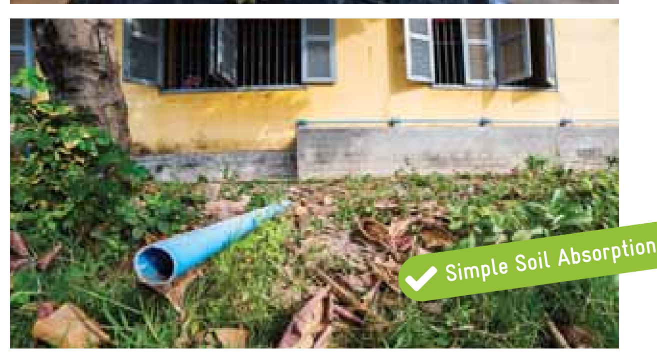
This is where the water-use cycle terminates. Used water has to be diverted away from the facility. Usually it is ideal to let the wastewater join the existing drainage system in schools. It was found, however, that a significant number of schools do not have such a system as they do not have a water system to begin with. In these cases the drainage is built simply to move the water some distance from the facility. In many schools, it merely comes out of a pipe to be reabsorbed by the soil. The most common solutions are explained below.

- **Existing Drain System.** The facility in the top right photo was built very near the existing drain system and used the proximity to its full advantage by having it drain directly into the gutter.

- **Gravel Bed.** The second photo shows a facility that was located in an area with good natural drainage, with the landscape sloping down to an actual pond; it sufficed to just make a gravel bed on the outflow so as to prevent mud pools.

- **Portable Drain Receptacle.** The simple bucket in the third photo aggregates wastewater that may be reused to water plants or to wet dusty areas of the school grounds.

- **Simple Soil Absorption.** The facility on the bottom right is located in the same school as the above left example but was too far from the drainage system. The builders chose to make the outlet flow into grassy soil.



Common Mistakes

→ **Open Drain Hole.** The most common mistake identified was leaving a hazardous open drain hole. The uncovered hole in the photo on the right poses significant risk to everyone who uses the schoolyard. If a pit is to be created to hold wastewater, it should always be covered to prevent people from falling or tripping.

Tip

Recycling the wastewater, as is very easy for the facilities with a portable collector, is one of the best practices encountered. This is most appropriate for areas with the least access to water.

Instead of drawing fresh water to hydrate ornamental plants, the reuse of wastewater makes for a very sound practice. In the photos below a teacher is collecting the wastewater from the handwashing facility and watering the school garden.

Lessons Learned

The amount of water used in the Fit for School exercises is not significant. As the Tippy-tap approach illustrates, about 300ml of water per child are sufficient to complete the health practices. This makes the issue of drainage simpler to address, removing it from major structural engineering considerations.

Draining into the soil is acceptable as long as the water is kept under a protective material or substrate to allow time for it to soak back into the soil. A perforated pipe that spreads out the wastewater over a longer span but still away from the facility is ideal, especially on locations where the substrate is mostly clay where water has difficulty getting absorbed.

5 The Way Forward

Coming up: A new simplified and optimized design of a group hand washing facility that is made from simple, low-cost materials has been developed to address most of the challenges of functionality discussed in the previous chapters..

A New Generation of Facilities

After observing the implementation of the program throughout the region, it is clear that there have been significant challenges in successfully constructing and maintaining washing facilities. Local efforts to construct facilities have been encouraging, yet some communities lack the expertise to ensure that the facilities are functional. This capacity gap leads to schools constructing facilities which they are unable to maintain or which do not function properly, and subsequently the children can no longer perform their daily activities.

Based on these findings, GIZ is developing a universally applicable group washing facility which can be easily assembled at a school. The learnings from the program countries have been gathered to develop a facility, which can be adapted to a variety of contexts while ensuring the basic functionality that is currently lacking in many schools. Only the components of the facility which tend to impede function are pre-designed, leaving space for communities to continue participating in design and construction. The facility has been developed to function in conditions with variable access to water – the system can be manually refilled or attached to a piped system. It can also be very easily maintained and repaired with minimal expertise found within any community. Communities will be able to decide whether and how to construct a basin for the facility as well as aesthetic aspects of the facility.

The Basic Model

The basic model is shown on the cover of this chapter. It is a 10 feet galvanized steel pipe with drilled holes, which can accommodate 15 children. It is kept very simple. The purpose is to ensure the functioning of the piping only. Most importantly, it is low-cost; making it attainable for any school and it minimizes water usage, keeping operation costs low. The cost of the facility does not exceed USD 45. This facility could also be pre-fabricated and shipped in case of urgent or mass demand. Elements can be folded and packed for cost-efficient shipping.

For stable installation in any kind of soil condition, the feet of the facility can be planted in buckets of cement, which can be buried into the ground as shown in the photo below.

The basic model has no basin. The water can just drip to the ground. As described in chapter 2, the basin can be foregone or flowers can be planted below. Alternatively, the school can design and construct a basin according to their preferences. Through this the communities can still determine whether the facility will be high or low-cost and how it should be decorated and enhanced, varying from gutter floor (as seen in Indonesia), flowers (as practiced in the Philippines) or concrete tiled basins, as shown in the picture on the top right.

Add-ons

Depending on the needs and preferences of the school, a basin of canvas/tarpaulin can easily be added by attaching pipes to support it as shown in the second photo. The material used can be cancas, tarp or halved PVC pipe or any other materials that can be fixed to the holder on a slope. As described in chapter 4, depending on the type of of basin chosen, several drainage options are available including soil absorption, gravel beds, draining into a bucket or connecting to an existing drainage system.

The third photo shows the facility with UV-resistant truck canvas welded to the holder.

In order to accommodate more children, the basic facility (here with basin) can be extended in increments of 10 feet, as shown in the fourth picture on the right.

Individual Handwashing

While it is recommended that schools provide individual handwashing facilities where sanitation facilities are located, group washing facilities should also provide an option for individual handwashing.

To avoid distributing water to the entire facility when only one student needs to wash their hands, the facility incorporates a dual valve system. One option is to place a valve behind the first drilled hole (see first photo on the right). For individual handwashing a child needs to close access to the rest of the pipe and open the faucet at the water canister, so that water only runs through the first drilled hole.t

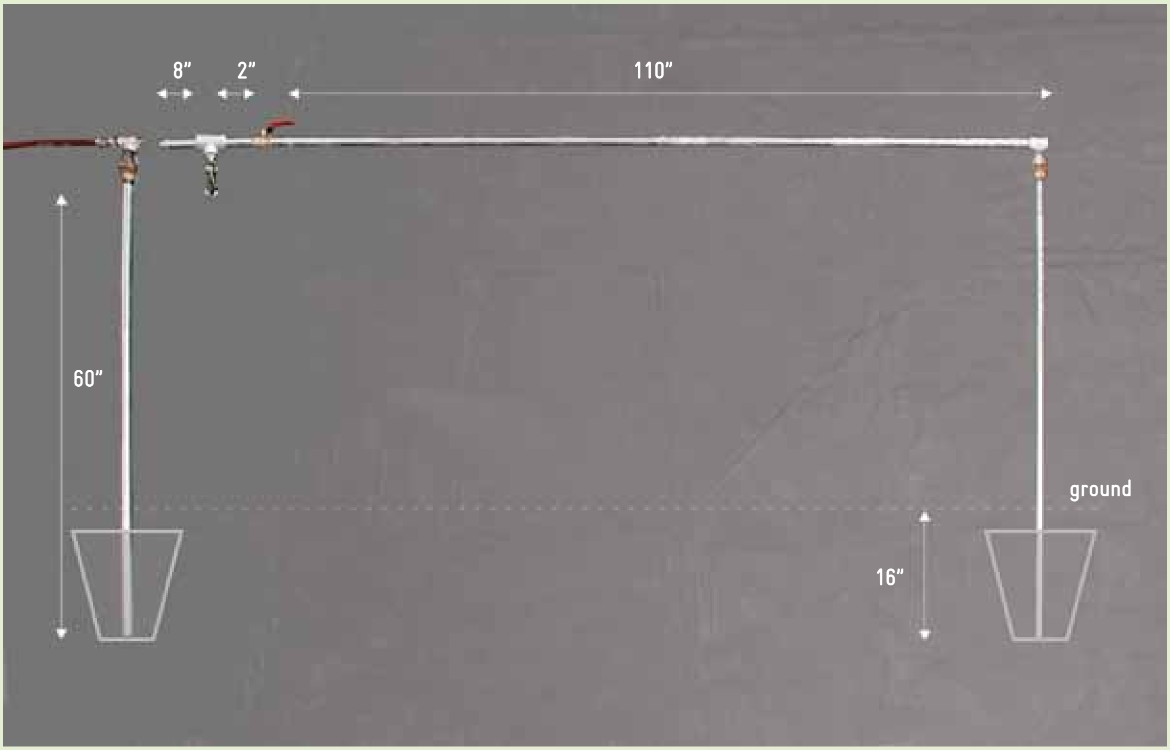
The group facility in the second photo has an extra faucet instead of a drilled hole for individual handwashing. With this option, the water tank remains open at all times. When the first valve on the pipe is closed, water for one child can be accessed by opening the faucet. In this way, one child can access water without assistance from a teacher. Through this system, group washing facilities can help to develop individual handwashing habits, which are more reflective of a daily household environment.

Expanding Access to Facilities

This simplified model will eliminate some of the functionality challenges faced in many schools and will make facilities more affordable. When distributied widely, it could provide washing facilities to many schools that previously lacked the expertise or financial capacity to attain them. Through this distribution, group handwashing can be practiced in more schools in different contexts, reducing differences respective of access resources.

To minimize water usage, a faucet is provided on the side of the punch pipe to allow individual handwashing without assistance.

Technical Drawing



Technical Considerations

Above is a diagram which shows the different components of the facilitiy as well as the detailed measurements. A local contractor could follow the designs to construct this facility.

Costs

The chart above provides details of materials needed and an estimate of costs. In the Philippines the costs are around USD 45, while costs are likely to vary between countries, the materials are simple and widely available meaning that costs will be low in most contexts. Add-ons to the facility will increase the cost and will depend in part upon the materials chosen.

Table 1: Material List Basic (based on prices in Manila, Philippines, October 2013)			
Item (All pieces are in the size 3/4")	Price	Amount	Cost (USD)
GI Pipe, Schedule 40, 20 Feet	9.00	1.00	9.00
Tee Joint	0.90	3.00	2.70
Ball Valve	5.10	1.00	5.10
Union Patente (with sealing rubber)	1.75	2.00	3.50
Double Nipple	0.45	2.00	0.90
Faucet	6.05	2.00	12.10
Plug (inside thread)	0.60	1.00	0.60
Water Container 5 Gallon	3.15	1.00	3.15
Bucket (foundation)	0.80	2.00	1.60
Cement and Sand	5.35	1.00	5.35
Garden Hose Set	0.80	1.00	0.80
Total Cost			44.80
Add-Ons			
Item (All pieces are in the size 3/4")	Price	Amount	Cost (USD)
GI Pipe, Schedule 40, 21.5 Feet	10.00	1.00	10.00
Elbow	0.45	4.00	1.80
Tee Joint	0.90	4.00	3.60
Lock Nut	0.50	2.00	1.00
Tarpaulin	21.00	1.00	21.00
Total Add-Ons Cost			37.40

6 Acceptance

The maintenance and sustainability of handwashing facilities is in part dependent upon the community ownership of the facilities. Small measures can be taken to improve community acceptance and ownership.

Social Acceptance

Despite the option of building simpler facilities that could ensure regular compliance with the exercises, in most pilot countries, schools almost always decided to adopt the highest costing methods. Save for some rural schools in the Philippines, no other areas adopted the simple approach of the Tippy-tap, which in some areas should have been the only feasible option.

This may stem from an Asian notion of schools as projections of community spaces, which usually are religious venues such as temples or churches. In some areas it is apparent that even if places of residence were very basic with earthen floors and bamboo walls, the temples would be disproportionately grand. Most schools visited would be the most obvious durable structure for the whole village or town. This may explain the approaches adopted by most pilot areas. While we cannot recommend the suppression of this notion and just push efficacy as the sole standard, it may be useful to stress what is most important, which is the actual proper performance of the health practices.

The low-cost Tippy-tap approach shown in the right photo is arguably as effective as a high-cost facility shown on the left, although the Tippy-tap has not been widely adopted.

Visual Appeal

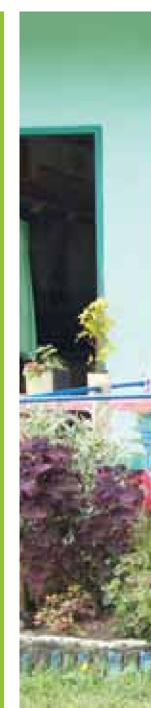
Perhaps the lowest cost measure but most important aspect for making facilities widely accepted and appreciated by the community is their visual appeal. Designing facilities which are esthetically pleasing is essential to making them a valued part of the school ground and a source of pride for the community.

Incorporating small measures, which can improve the appearance, while keeping costs low, is an important aspect to consider in construction and financial planning for washing facilities. However, space should be given for the community to organize themselves to improve facilities in a way that they choose.

Painting facilities is a low-cost solution which can add significant value to a facility. Painting murals on adjacent walls can provide an opportunity for parents and children to get involved in the construction of facilities, without needing any technical skills. This type of involvement fosters a stronger sense of ownership among the community.

To further enforce the healthy activities being practiced, murals can also serve to deliver health messages to educate those using the facilities. Putting health messages where healthy activities are being practiced entrenches healthy practices and contributes to behaviour change.

Murals can support the implementation of activities by displaying the recommendations for proper handwashing and tooth brushing.



Making the area around the facilities attractive will make children more excited to participate in their daily activities. The use of bright colours keeps children at the center of the activities and makes participating in daily handwashing and toothbrushing fun.

Putting plants below facilities without a basin not only saves on watering the plants but also helps to make facilities more attractive. Facilities which are well presented will better serve as a model to inspire visitors to create similar facilities in their schools.

Community Involvement

Certainly not unique but easy to find in rural areas of the Philippines is the culture of *Bayanihan* - where people of a local community come together to provide free labor for their fellow man with only the indeterminate thought of similar treatment, if ever they need the same help in the future, as compensation. By this practice, houses are built and/or moved, fields are sown and harvested, and feasts are prepared and held. It is easy to witness the same energy as parents willingly go to the schools in the week before classes start to offer their free service of rebuilding, repainting, mowing, and general cleaning for the facilities that their children will be using come school time.

This practice of *Bayanihan* applies to Fit for School facilities as well. In the Philippines parents take on the task of building the facility, electing among them the one with the most expertise in construction. If there are no such experts, these are hired and the parents of that particular classroom raise funds as a group to pay for the services. This and other considerations of design and structure are all decided in meetings between the community members, usually convened by an association of parents and school staff. The essential concept is that parents can contribute to the general welfare as individuals or couples without having to do so through a central system. The stakes are made much more personal and the involvement much more real. While sometimes the resulting facilities built will be less than optimal for the functions set out, it is heartening to observe that all children in all schools visited are able to perform the exercise simply because working facilities and systems have been put in place by the community. There is recognition of the value of the exercise and they all strive to make it work even though it may mean building the most basic facility like a tippy-tap frame.

This is another story in other more centralized government systems. While the results will generally be more standardized, resulting in a seemingly better facility, there is very little sense of ownership or involvement created within the community. This is a lost opportunity to engage in participatory welfare building and improving sustainability. It has also been observed that despite the presence of seemingly optimal facilities, some areas are not able to practice the exercises simply because there is no regular access to water and facilities have been designed based on the assumption that the school has and can afford regular piped-in water supply.

Bayanihan (buy-uh-nee-hun) is a Filipino word derived from the word *bayan*, meaning nation, country, town or community. Bayanihan is a Filipino practice in which a community comes together to complete a task that otherwise would not have been possible. This tradition of cooperation has proven invaluable in constructing washing facilities in schools which would have otherwise lacked the financial and technical capacity to do so.

7 Conclusion

While successes have been seen in schools throughout South East Asia, challenges of functionality and financial constraints still limit effectiveness.

It is encouraging to see that there is a universal recognition and acceptance of the importance of basic hygiene activities in daily school life. From national governments all the way down to the individual preschooler, there is an understanding that the exercises are decidedly beneficial and children love to perform them. Thus, there has been no incidence of non-compliance or refusal for the basic concept of the Fit for School program.

In the pilot settings however, the approaches taken yield a variation that sometimes affect the effectiveness of the program. It has been observed that the highest variance of implementation is found in the Philippines where decision-making rests upon the basic community group, the Parents and Teachers Association or PTA, who choose the method they can afford to build. Oftentimes, the specifics of design and materials used will be left to the discretion of a fellow parent who volunteers his skills or in the absence of such, a contracted person. This is usually the point where the guidelines get lost and the builder makes an almost arbitrary design. A step-by-step approach would be better for an improved adherence to the guidelines. Site selection is quite important and the guidelines have no clear contribution to this except to indicate that it should be near the classrooms. Best areas for facilities could be identified in any given school as locations. It should be recommended that each classroom should have its own facility. It becomes an adjunct to all future classrooms built and forces implementers and planners to think in an integrative manner.

In other settings where decision-making is centralized, facilities largely stick to the same blueprint. Aside from forgoing the benefits of a more participatory approach discussed in the chapter on community involvement, it has been noted that some areas cannot successfully perform the exercises as the facilities built fail to address the local conditions on the ground. A beautifully made facility is no substitute to the actual practicing of the exercises.

The core issue of all this is access to water that the simplest approach of Tippy-Tap perfectly addresses; yet, almost none of the pilot sites chose this method. It is therefore necessary to recommend that the Tippy-Tap system be redesigned and recalibrated to increase its social acceptability. This method is almost foolproof when it comes to results, since water is always available.

Consequently, it may even be necessary to reset the guidelines that a water capacity assessment is first made and if the findings show that there is no continuous supply of water, then facilities which minimize water usage should be strongly encouraged before other methods are considered. For areas that have intermittent access to water, a dual system could be built so as to ensure regular performance of the health practices.

As described in chapter 5, GIZ has developed a new prototype facility to ensure functionality and to allow adjustment to local preferences and resources at the same time. In this way, low-cost facilities can be constructed with minimal local expertise, while also allowing the school community to make additions where they deem necessary.

As the underlying impetus of the program is to bring about behavioral changes to children in public schools, it is affirmed that the Fit for School approach has the ultimate goal of being integrated universally in the education systems especially of the developing world. The vision is that a Handwashing and Toothbrushing facility will be as important educational fixtures as blackboards and school desks are. With these basic behaviors established in children, it is easy to foresee that there will be healthier children from public school systems in the generations to come.

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