Australian Aid

iDE | WASH-SUP

A DISABLED-FRIENDLY LATRINE PROTOTYPE

Improving the toilet experience for the disabled.

Mr. Horm Vuthy is a 30-year old disabled man who lives with his family. Horn feels particularly vulnerable to venomous animals and insects while practicing open defecation—he must leave his wheelchair and crawl to privacy, even during the rainy season. His parents are concerned for his safety as well as the safety of his younger sister. Horn's parents, Mr. Tay Hoeung and Mrs. Horn Sothea, are rice farmers, and the family volunteered to receive the iDE prototype after hearing about the program in their village.

While building this prototype, iDE gathered valuable feedback and sees an opportunity to iterate on its design and share learned lessons.

BACKGROUND In September 2015, iDE Cambodia constructed its first disabled-friendly latrine shelter. The prototype was the result of two independent R&D efforts: exploring the needs of disabled latrine users and testing a new construction technology for shelters called Interlocking Bricks. The disabled-friendly latrine shelter prototype enabled iDE to test design assumptions and collect user feedback.

iDE CAMBODIA Since 2011, iDE Cambodia's Sanitation Marketing Scale-Up Program (SMSU 1.0 & 2.0) has facilitated the sale of over 180,000 low-cost Easy Latrines without subsidy—the largest of any rural sanitation development program to date. The program has enabled access to hygienic sanitation for over 900,000 Cambodians. The second iteration of the scale-up efforts (SMSU 2.0) is underway and slated to reach just as many rural Cambodians by its completion in 2017.

This program is a component of the WASH-SUP project suppported by the Australian Government.

Lessons Learned

The prototype allows iDE to understand how their shelter could be modified to meet the needs of disabled users. Mr. Horn Vurthy and his family provided the engineers feedback throughout the process and helped iDE identify necessary improvements:

- The prototype did not resolve the challenge of accessing water from a water basin, which can be difficult for disabled users. Future designs should carefully explore the placement and shape of the water basin.
- The latrine shelter design included a wide sliding door that moved on rails. The door was wide enough for a wheelchair and was built to reduce the difficulty of opening and closing the door from a sitting wheelchair position. However, field tests showed that it was unlikely to stand the test of time in outdoor conditions.
- Toilets allowing users to be in the sitting position are often more comfortable for disabled users than toilets requiring a squatting position. Contrary to design assumptions, the cost of the chamber box, slab and pan for a squatting toilet was not significantly cheaper than a sitting toilet. However, the supply of sitting toilets remains a challenge in remote areas.
- Interlocking Bricks is a flexible and sturdy material and accommodates the addition of any kind of assistive grab rails to a shelter design.

Future Vision

The purpose of this prototype is to provide disabled users a better toilet experience while testing the adaptability of Interlocking Bricks. To pursue these efforts, iDE intends to:

- Leverage inCompass, iDE's in-house Human-Centered Design lab, to better understand the necessary modifications for disabled users to independently use iDE's latrines. By taking a HCD approach, iDE can design products that are tailored to the particular needs, wants, and desires of disabled consumers, increasing the likelihood that they will change behavior around sanitation.
- Work closely with disabled users and Disabled People Organization throughout the process to ensure the desirability and affordability of the customizations.
- Create a go-to market strategy to propose these opt-in options for disabled users through iDE's affiliated sales agents and local businesses' distribution capabilities.
- Refine and diversify the Interlocking brick shelter design for different categories of mobility-challenged users.

Preliminary Research

iDE Cambodia participated in a workshop led by the Australian Engineers Without Borders' Assistive Technology and Livelihoods Project. This workshop identified the limitations of iDE's latrine shelters for disabled users and served as inspiration for WASH staff to design more accessible latrines.

Designing a disabled-friendly shelter was also the perfect opportunity to test a new construction technology for low-cost shelters called Interlocking Bricks. These bricks are compressed with high precision and resemble the shape of a Lego piece.

There are many advantages to using Interlocking Bricks.

- They are less expensive than using conventional bricks, mortar and plaster.
- They require less manpower.
- They can be assembled without skilled masons, reducing labor costs.

This innovation also allows builders to construct a latrine shelter of any shape and size. Such flexibility is particularly attractive when constructing latrine shelters to meet the differing needs of disabled latrine users.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT
MICHEL DAUGUET, WASH PROGRAM DIRECTOR, IDE CAMBODIA
MDAUGUET@IDE-CAMBODIA.ORG