iDE Tactic Report

An Accessible Latrine Prototype: Improving the toilet experience for people with disabilities.

Mr. Horm Vuthy is a 30-year old wheelchair user who lives in rural Cambodia with his family. Horn feels particularly vulnerable to venomous animals and insects while practicing open defecation—he must leave his wheelchair and find privacy, even during the rainy season. His parents are concerned for the safety of both of their children, including 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 it 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 accessible latrine shelter. The prototype was the result of two independent R&D efforts: exploring the needs of differently abled latrine users and testing a new construction technology for shelters called Interlocking Bricks. The accessible latrine shelter prototype enabled iDE to test design assumptions and collect user feedback.

Since 2011, iDE Cambodia's Sanitation Marketing Scale-Up Program (SMSU 1.0 & 2.0) has facilitated the sale of over 275,000 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 close to 1.4 million Cambodians. SMSU 2.0 is underway and slated to reach an additional 150,000 rural Cambodians by its completion in 2018.

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WASH

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Lessons Learned

The prototype allows iDE to understand how their shelter could be modified to meet the needs of people living with disabilities. 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 differently abled 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.
- Some users find sitting toilets more comfortable than squatting toilets. 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 differently abled users a better toilet experience while testing the adaptability of Interlocking Bricks.

To pursue these efforts, iDE intends to:

- Use human-centered design to better understand the necessary modifications for differently abled 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 consumers with disabilities, increasing the likelihood that they will change behavior around sanitation.
- Work closely with people with disabilities and Disabled People Organizations throughout the process to ensure the desirability and affordability of the customizations.
- Create a go-to-market strategy to sell these options 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 users with disabilities and served as inspiration for WASH staff to design more accessible latrines.

Designing a shelter for users with disabilities 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 latrine users.

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