

Global Scaling Up Handwashing Project

Insights from Designing a Handwashing Station for Rural Vietnamese Households

February 2010

INTRODUCTION

The Water and Sanitation Program's (WSP) Global Scaling Up Handwashing Project (HWWS) is testing an array of interventions to promote handwashing with soap among mothers and children in rural Vietnam. These interventions include mass media and interpersonal communication through organizations such as the Vietnam Women's Union. Of particular and growing interest is the role of handwashing stations. In a household setting, a handwashing station is a designated space bringing together water and soap to wash hands, ideally in close proximity to the latrine or the food preparation area. Handwashing stations influence individuals' chance to perform a behavior, regardless of their ability and motivation to do so.¹ While sinks in kitchens and bathrooms are the norm in developed nations, they are not in most resource-scarce countries.

PROBLEM STATEMENT

In Vietnam, prior to project implementation, handwashing rates with water alone were much greater than with soap, despite the fact that all households have some form of soap such as laundry detergent (100 percent), dishwashing liquid (88 percent) or bar soap (60 percent).² An emerging hypothesis is that convenient and easy access to both water and soap at critical times is a key behavioral determinant of handwashing with soap among women and children. If a busy mother needs to look for soap before preparing a meal, or a child does not have easy access to water and soap after using the latrine, the probability of handwashing with soap actually taking place is lower. This hypothesis has been confirmed in other countries where HWWS is currently being implemented, namely Peru and Senegal, where handwashing with soap is positively correlated with having a designated place for family members to wash their hands.³

Key findings

- Designing a handwashing station must take user preferences and practices into account.
- A universal design for a handwashing station may not be possible.
- Multiple iterations of prototyping and field-testing of a handwashing station prior to manufacturing are critical to identify user preferences and practices.
- The use of a designer experienced in human-centered approaches is highly recommended.

¹ As part of the HWWS Project, WSP developed a behavior change framework to explain handwashing behavior. Called FOAM (Focus, Opportunity, Ability and Motivation), the framework identifies the key factors or determinants that influence handwashing. Handwashing stations and other enabling products such as "tippy taps" fall under the Opportunity category of determinants.

² Vietnam National Handwashing Initiative Consumer Research Baseline Survey Final Report. 2007. Indochina Research (Vietnam) Ltd.

³ Galiani, Sebastian. 2009. Draft baseline study. Impact Evaluation of Handwashing with Soap in Peru. Water and Sanitation Program; Kane, Momar Serigne. 2009. Unpublished study. Rapport Etude Lavage des Mains Au Savon Senegal. Water and Sanitation Program.

BOX 1: DESIGN BRIEF

The Big Idea: Develop rough design for handwashing station for rural households in Vietnam.

Users:

- Rural household members (adults, children) near latrine or food preparation area

Essentials:

- Low cost
- Allows for water to flow on hands (i.e., no dipping)
- Inexpensive to produce and distribute
- Easy to use/operate
- Durable
- Able to accommodate various types of soap agents or most prevalent one(s) (i.e., not just bar soaps)
- Securely holds soap and water to prevent them from being stolen
- Capable of being produced locally/regionally
- Builds on Peru handwashing station design
- User strategy for waste water generated from use

ACTION

To strengthen mothers' capacity to manage soap and water for handwashing and make both soap and water easily accessible to household members when and where needed, HWWS contracted a consultant⁴ to develop rough designs for a household handwashing station in rural Vietnam. The work took place from April 23-30, 2009. Prior to the start of work, HWWS developed a design brief (Box 1) to guide the design process. This brief outlined key steps and was circulated for comments and improvement. The design process was conducted during a 5-day participatory workshop that included meetings, field visits, prototype building and field-testing. Key steps included:

Step 1: Mobilization. The consultant mobilized a multi-disciplinary team including WSP and key partners including the Ministry of Health, the Vietnam Women's Union and PATH, a nongovernmental organization.

Step 2: Kick-off Meeting (2 hours). Team members discussed their respective roles and the design brief and process were explained.

Step 3: Field Visit (1 day). During a visit to Yun Ben province, the team conducted group interventions with villagers, made household visits, and collected observations.

Step 4: Brainstorming and Prototype Development (1.5 days). Prototypes were developed through brainstorming sessions (Illustration 1) and by deconstructing, altering, and re-assembling objects available in local markets. Prototypes were built to test specific ideas, not to be representative of actual product designs or future manufacturing methods. Three sets of prototypes were developed to independently test the critical components of the handwashing station: water dispensing (four options to test hand motions, flow rate, and level styles); soap presentation (five options to test hand motions, soap type, and dispensing); and overall container (six options to test size, shape, and appearance).

Step 5: Prototype Testing (1 day). During a visit to Hun Yen province, prototypes were shared with a group of about 20 villagers (half male, half female). The villagers were invited to come forward and use each set of prototypes (Illustration 2). After each set was tried by a number of villagers, a discussion was facilitated during which they were asked to share their likes and dislikes, and recommend changes for improvement.

Illustration 1: Brainstorming Handwashing Station Designs

Prototypes were developed through brainstorming sessions. During the initial step, participants sketched features.

⁴ The consultant recruited was an IDEO designer who happened to be on personal leave working on a low-cost latrine in Cambodia. For more information on IDEO, a leading design firm, and human-centered design, see www.ideo.com.

Illustration 2: Testing Prototypes



During a visit to Hun Yen province, prototypes were shared with a group of about 20 villagers. Above, a woman tests a prototype that stores the bar of soap in a covered dish.

Step 6: Identification of Recommended Directions and Team Debrief. The duration of this consultancy did not allow for the entire design process to be completed. During a team debrief, recommended directions and next steps by the consultant were shared and documented.

KEY LEARNINGS

The lessons learned during the short consultancy period are rich and diverse. The main ones are as follows:

- *Test, test and re-test:* Multiple iterations of prototyping and field-testing of a handwashing station prior to manufacturing are critical to identify user preferences and practices.
- *No one model fits all:* A concept similar to a handwashing station that was designed and implemented by the HWWS team in Peru tested poorly in rural Vietnam, indicating that a universal design may not be possible.
- *The mechanics of handwashing stations are complex:* Field-testing revealed that the mechanics of handwashing are more complex than were assumed. Several considerations, including what part of the hand is used to start the water flow (no finger tips), preferred body position (squatting) and hand motion (extensive rubbing) were not clearly known before, and understanding these will help inform feature design (Box 2).
- *Appearances count:* Beyond something utilitarian, users expressed for something that looked nice and new (not using recycled bottles for instance) and would be willing to spend more for a station if installed in a location visible to other villagers.

BOX 2: THE MECHANICS OF HANDWASHING WITH SOAP IN RURAL VIETNAM

Field-testing of an array of prototypes provided meaningful insight⁵ into critical perceptions and preferences around the mechanics of handwashing with soap. For example:

- *Tap design:* Users strongly preferred a tap that allowed water to run freely over their hands as they rubbed them together to get rid of soap. Having to continuously depress a lever makes rinsing very difficult. An ability to adjust the flow rate and to control the on-off function with the back of the hand or some other clean body part (to keep the tap clean) was deemed important.
- *Soap presentation:* Both options presenting a soap bar were well liked, with a preference for the hanging bag, which would allow for the bar to dry and prevent it from getting misplaced or stolen, over the covered dish. A powder shaker, which would allow for dispensing of laundry soap, tested poorly as did a liquid (dishwashing soap) bottle with a nipple dispenser. In the latter case, users were unable to divorce the baby bottle used from its intended purpose, providing an important lesson for future prototyping: avoid using products or materials with strong connotations with another use.
- *Container:* Users stated they would mount the handwashing station to a wall or post rather than rest it on a stand because it would seem like a more permanent installation and that they would bring water to the container to refill it rather than bring the container to water. In this light, a clear container allowing them to see the level of water and a capacity of 10 to 15 liters (enough for a projected two to three days of household use) were other important features. Finally, a flip lid was preferred over a removable lid that could be misplaced.

⁵ Chapin, Jeff. 2009. Unpublished presentation. Designing a Handwashing Station for Rural Vietnamese Households. Water and Sanitation Program. www.wsp.org

- **Size does matter:** Given that users stated they would prefer to bring water to the container rather the other way around, a handwashing with soap station would need to hold enough water for a few days of use.
 - **A station as possible cue to action:** As hoped, the women freely stated that a well-placed station would help remind them and their family to handwash with soap.
 - **Hire a real designer:** The enormous amount learned from this process could not have been obtained without a qualified and experienced consultant who is vested in human-centered design processes.
- WHAT ELSE DO WE NEED TO KNOW?**
- Based on the prototype field-testing, the consultant was able to document directions for the next round of design, including tap and valve design, soap presentation, and container features. The HWWS team will decide on whether it will undertake suggested next steps:
- **Design iteration:** This would involve as many rounds of prototyping and testing as required to “get it right”. As the design progresses, each iteration takes longer and the prototypes cost more money to build. However, the upside is that in later iterations, the prototypes begin to look like a real product and user affinity increases considerably.
 - **Costing:** Users indicated that they would be willing to pay from 50,000 to 70,000 duong for the container. Manufacturing costs and expected mark-ups in the distribution chain needs to be understood. Tooling and other set up costs also need to be estimated.
 - **Identification of manufacturing partner:** The fact that similar plastic containers and valves can be readily found in Vietnam, at reasonable prices, suggests that manufacturers with the required expertise can be found.
 - **Supply chain analysis:** The path from a factory to a wall near a household latrine needs to be thoroughly understood. Who are the middlemen? Where are the warehouses? What are normal margins? What happens to unsold product? What volumes need to be hit to make it a viable business for someone?
 - **Project budgeting:** In addition to the resources required to undertake the preceding research and development steps, manufacturing start-up costs outside the current budget and scope of the Project would also be required.

—By Jacqueline Devine

The Water and Sanitation Program (WSP) is a multi-donor partnership created in 1978 and administered by the World Bank to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services. WSP's donors include Australia, Austria, Canada, Denmark, Finland, France, the Bill & Melinda Gates Foundation, Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States, and the World Bank. For more information please visit www.wsp.org.

WSP reports are published to communicate the results of WSP's work to the development community. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of the World Bank Group concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Acknowledgements

With thanks to Nga Kim Nguyen and Minh Thi Nguyen of WSP and Jeff Chapin of IDEO. Photographs by Jeff Chapin.

About the project

The Water and Sanitation Program's Global Scaling Up Handwashing Project is learning how to apply innovative promotional approaches to behavior change to generate widespread and sustained improvements in handwashing with soap at scale. For more information please visit www.wsp.org/scalinguphandwashing.

Contact us

For more information please visit www.wsp.org or email Jacqueline Devine at wsp@worldbank.org.