

Frontiers of CLTS: Innovations and Insights



Participatory Design Development for Sanitation

Ben Cole for UNICEF Malawi

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About the CLTS Knowledge Hub

IDS has been working in support of Community-Led Total Sanitation (CLTS) since its beginnings. CLTS has now become an international movement for which IDS is the recognised knowledge hub.

The Knowledge Hub is dedicated to understanding the on-the-ground realities of CLTS practice and to learn about, share and promote good practices, ideas and innovations that lead to sustainability and scale. We seek to keep the CLTS community well connected and informed and to provide space for reflection, continuous learning and knowledge exchange. We work in collaboration with practitioners, policy-makers, researchers and others working in the development, sanitation and related communities.

Ultimately, the Hub's overarching aim is to contribute to the dignity, health and wellbeing of children, women and men in the developing world who currently suffer the consequences of inadequate or no sanitation and poor hygiene.

Front cover

Masons weight test their latest version of a brick dome flooring in mangochi. This was one of seven designs created during the participatory latrine design session.

ALL PHOTOGRAPHS: BEN COLE

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Participatory Design Development for Sanitation

What is participatory design?

Participatory design provides future users of an innovation with a central role in the design process. Participatory design provides a space for users to express their traditional, unspoken and often hidden knowledge and skills in partnership with designers and researchers.

Why use participatory design in sanitation programs?

Demand-led approaches to sanitation (including CLTS and sanitation marketing) encourage participation of users to create, identify and select appropriate sanitation technologies. Participatory design offers an established methodology to embrace the knowledge and skills of local users and suppliers of sanitation.

Background

In 2011, UNICEF Malawi decided to apply social marketing tools to improve and enhance their existing CLTS programme. The CLTS programme had demonstrated great advances in improving sanitation coverage. However, reports were coming into the office that households were continuing to struggle with poor product designs that collapsed after a short time in use.

Therefore, UNICEF Malawi used mixed methods market research to understand the existing sanitation market in three districts which had areas with both sandy and clay soils that lead to collapse of latrines. In the case of clay soils, the problem is that the wooden flooring used for the latrine's pit hole in clay soils is eaten by termites, or rots due to surface water intrusion. The flooring then collapses in 6-12 months. The research confirmed anecdotal reports that sanitation products were failing to match both the needs and wants of householders. Moreover, suppliers were offering products in a price range that only very wealthy households could afford.

Next, UNICEF Malawi moved on to investigate options for product design. Traditionally, programmes have looked to sanitation engineer textbooks and tried to identify an 'expert solution'. However, UNICEF decided against this approach as it was clear that the existing solutions would not recognise the local conditions of the market (no access to cement, very limited transport infrastructure to gain access to external building materials) nor utilise the local builders' and villagers' knowledge and skills.

Participatory design

Therefore, UNICEF turned to participatory design. Participatory design has been around since the 1970s when it was used to help factory workers provide insights and advice into the design of new industrial technology. It aims to create a space that allows users and designers/researchers to co-create solutions to overcome design problems. It is commonly applied in the agricultural, industrial design, IT and architectural sectors.

UNICEF drew on two proven and established methodologies to create participatory design sessions: Spinuzzi's 'The methodology of participatory design' (2005) and IDEO's 'Human Centred Design Toolkit' (2009).

The sessions

The three-day design sessions consisted of four main stages:

Stage 1: Initial exploration of work

We invited 25 – 30 people to each session and then divided them into four teams. Teams were formed to consist of five builders/masons, two village health workers/householders and one Environmental Health Officer (EHO). Each team was asked to draw and label the existing sanitation technologies in their villages. The teams were then instructed to identify the 'advantages' and 'disadvantages' of each technology. Each team then presented their findings to the group.



Stage 2: Discovery processes

The discovery process asked each team to identify numerous potential design options. The design options were framed by a design challenge. A design challenge presents a challenge in human terms, in a broad manner that offers opportunities for discovery in areas of unexpected value but is 'narrow enough to make the topic manageable' (IDEO 2009). The design challenge used during the sessions was: Can we create a toilet that matches what the majority

of villagers want, need and can afford using local materials? The resulting designs were all low cost. For example, the price of the brick-dome latrine came to USD5 based on 1 and a half days' labour costs. Market research found bricks and clay could be provided by the household.

Teams visualised their designs through drawing and text. After two hours of brainstorming, each team was asked to identify three designs that they would like to prototype. For the remaining hour, the teams identified the materials required to create the prototypes and these were submitted to the government staff for collection from local suppliers.



Stage 3: Prototyping

Day two was dedicated to the process of creating small and medium-sized prototypes. Local building materials were provided to allow each team to explore and create their design directions. Users were encouraged to share and discuss their ideas with people from outside of their nominated team.

Stage 4: Feedback

The first half of day three allowed the design teams to estimate the material and labour costs of their prototypes. During the final afternoon on day three, teams presented their designs to 12 – 15 local villagers including both men and women. The villagers were invited to review the prototypes and provide feedback. The feedback sessions were intended to allow the design teams to hear critiques from potential users.

Outcomes

We identified three exciting, non-cement design directions:

1.

Corbelled bricks to create durable flooring in clay soils



2.

Trapezium bricks to create circular pit linings in sandy soil



3.

Sand bags to reinforce wooden frames used to line pits in sandy soils



Technical review and testing

A qualified structural engineer reviewed the three design directions identified during the participatory design sessions. The review identified numerous technical recommendations and testing procedures. For example, the engineer identified the corbelled design had a weak point that could be improved by changing the parabolic shape of the dome. Testing has included load testing the parabolic, corbelled dome with 400kg of weight for two months. The new parabolic, corbelled dome design was shown to a subset of the local builders and masons involved in the participatory design sessions. The new design received wide praise and a gauge was developed to improve the standardisation of the construction process.

Training sanitation entrepreneurs



Sanitation entrepreneurs were identified through a competitive recruitment process. The successful entrepreneurs have commenced training in both business and technical skills. The training is being offered in two phases and is complemented with ongoing support for the next six months. The intensive support is intended to identify sanitation entrepreneurs who

are capable of conducting quality assurance and control processes during and after construction of the corbelled latrines.

Protecting the brand

The corbelled latrine is a new innovation and a key threat to its diffusion is negative reports from customers. It is hoped the strong emphasis on quality assurance and control improves the likelihood of customers providing positive word-of-mouth recommendations to their friends and family, which in turn would improve the sales and profitability of the sanitation enterprises. Future monitoring will provide evidence of the success (or failure) of sanitation entrepreneurs to extend into their neighbouring villages and beyond. Monitoring of sanitation coverage will be carried out in partnership with the local council's Environmental Health staff (who were involved with the initial market research). Business training is also being provided by a business

consultant (contracted by UNICEF) with a background in agricultural Small and Medium Enterprise's (SMEs) and entrepreneurship. UNICEF are also engaging Mzuzu University's SMART Centre to support the entrepreneurs in technical training and ongoing quality control.

Practical hints and tips

- Return to the same location where you conduct the market research – this improves continuity for the local leaders and villagers and also keeps to Fred Hollow's golden rule 'no survey without service'.
- Invite people such as natural leaders and others with a strong interest in sanitation to the participatory design session. We found these people had a lot of good ideas to share.
- Make sure you have adequate space to conduct the prototyping. The space should be open to the public to let other villagers watch and provide feedback.
- Beware the subsidy hangover – we had many participants ask us 'when will you provide the cement'. Be prepared to spend time explaining this is a no-hardware subsidy approach.
- We found that some local leaders (such as village chiefs) can subtly dominate a participatory design session. Of course, they should be invited but make it clear that everyone's ideas are important and should be shared.
- Identify a technical group to conduct testing and revisions of the designs created by the participatory sessions. These revisions should then be returned to the local sanitation suppliers and villagers for feedback and ongoing local revisions. Participatory design is an ongoing process – this is just the beginning.

References

- IDEO (2009) Human Centred Design Toolkit, available at www.ideo.com/work/human-centered-design-toolkit/ (accessed 13 November 2013)
- Spinuzzi, C. (2005) 'The Methodology of Participatory Design', Technical Communication 52.2: 163-174

About the series

This is a series of short notes offering practical guidance on new methods and approaches, and thinking on broader issues. We welcome comments, ideas and suggestions, please contact us at clts@ids.ac.uk

Other key resources on CLTS

**These and many other resources are available at
www.communityledtotalsanitation.org/resources**

Bongartz, P. and Chambers, R. (2009) 'Beyond Subsidies: Triggering a Revolution in Rural Sanitation', *In Focus* 10, Brighton: IDS

Bongartz, P., Musembi Musyoki, S., Milligan, A. and Ashley, H. (2010) *Tales of Shit: Community-Led Total Sanitation in Africa*, Participatory Learning and Action 61, London: International Institute for Environment and Development (IIED)

Kar, K. (2010) *Facilitating 'Hands-on' Training Workshops for CLTS: A Trainer's Training Guide*, Geneva: WSSCC

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Participatory Design Development for Sanitation

Sustainability of latrines is a key issue in CLTS. Sandy or rocky soils, seasonal flooding and termites can present challenges to communities who have taken sanitation into their own hands as a result of CLTS and are building latrines. The CLTS Handbook identifies the need for participatory design approaches during follow-up sessions with triggered communities. Sanitation marketing programmes have also applied participatory design through engaging users and sanitation suppliers to create innovative sanitation technologies.

Participatory design offers a methodology for ensuring that users participate in creating and selecting sanitation technologies that are appropriate and affordable for them. It provides an opportunity for users to express their traditional and often hidden knowledge and skills in partnership with designers and researchers.

In this issue, Ben Cole, who helped UNICEF to adapt and trial participatory latrine design in Malawi, describes the different stages of participatory latrine design and gives practical guidance based on the experiences in Malawi.

About the author

Ben Cole is an environmental health consultant that enjoys using participatory approaches to build self-supporting small businesses that improve public health. He is the Director of www.karibon.com and founded <http://malawisanitationmarketing.wordpress.com/>. You can contact him on ben_cole_h2o@mac.com.



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