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THE FUTURE OF WATER, SANITATION AND HYGIENE:  
INNOVATION, ADAPTATION AND ENGAGEMENT IN A CHANGING WORLD

**Returning knowledge back to Bellavista Nanay:  
a researcher's perspective**

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*A previous study found that drinking water was becoming contaminated in households and there was a general lack of understanding surrounding household water contamination. It was felt that if this information was returned to the community it could be used to build capacity, so people can make informed choices regarding their drinking water practices. Participatory methods were explored and Ketso® a pre-packaged tool was thought to be the most appropriate for this community. Ketso was used to develop workshops with the focus being household drinking water contamination, which were delivered to 35 participants. The workshops provided an enjoyable forum for participants to exchange ideas on household water contamination. It was felt that capacity was built during the process through the participants' exchange of ideas, and it gave participants a space to question their own practices. The aim of this paper is to describe, discuss and evaluate the process used.*

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## **Background**

This paper discusses a participatory method used to engage stakeholders to explore and discuss the results of a research project (C. Furlong, 2009). The main aim of which was to explore the link between actual and perceived drinking water quality. This study entailed a household survey which included socioeconomic status, water and sanitation practices and perception; analysis of household and source water samples; observational data; a media study and interviews with members of the community and elites. The field work and data collection was undertaken from June to July 2006 and September to December 2007, which covered both the rainy and dry season. It was designed so that data was not 'mined' from the community, the knowledge and information gained was returned in the form of newsletters and posters which were displayed around the community.

Although neither the main aim nor an objective of this work, a number of discoveries were made in relation to drinking water and contamination. Firstly, water was being contaminated *within* the home, due to established drinking water practices. There were very high levels of fecal contamination in household samples, a majority of the samples were deemed to be of very high risk according to the WHO guidelines. Secondly, there was a general lack of understanding of how water became contaminated or re-contaminated and few people were aware that a cheap source of chlorine (household bleach) was widely available. Whilst several years had passed since the gathering of this data, the practices referred to were thought to be deep seated cultural practices that were unlikely to have changed in the intervening period, as there had been no major changes in technology or the social situation in this community. As verified by discussions with the Gatekeeper, field assistant and participants.

The aim of the fieldwork described in this paper was to return the knowledge from this analysis to the community in a participatory way. The method was chosen to enable capacity to be built, so that household drinking water managers could make informed choices when managing water. The approaches explored were based on participatory rural appraisal (PRA) (R. Chambers, 1997) due to their emancipatory underpinning, combined with their ability to collect data for analysis.

A 'pre-packaged' tool was felt to be most appropriate, opposed to constructing a tool from indigenous materials. As previous research had identified the community's aspirations for modernity and the

appropriateness of bringing such a tool was confirmed by discussion with the Gatekeeper. Ketso was developed by Dr Joanne Tippet to encourage local involvement in planning villages in Lesotho and South Africa in the mid 90s, and was further developed and tested in USA and the UK (J. Tippet *et al.*, 2007, J. Tippet & E. Griffiths, 2007). It has since been used in a variety of group situations as a tool for gathering data in a range of research projects, from environmental governance in South Africa to perceptions of street trees in the UK (Ketso, 2010). The roots of the Ketso tool lie in the flow diagrams and problem trees of PRA, creative thinking tools (E. de Bono, 1990) and mind mapping (T. Buzan & B. Buzan, 1993). The portable kit consists of colorful reusable 'branches', 'leaves' and other shapes that can be wrote or drawn upon, placed and moved around a felt desktop workspace. The aim of this paper is to describe, discuss and evaluate the process used in these workshops.

### **Case study area**

Bellavista Nanay is a peri-urban community 5 km from Iquitos in the Peruvian Amazon. It has an estimated population of 3,000 people with the average household consisting of seven people (five people over 16 years, one child and one infant). A typical house in this area has wooden walls and floors, and a metal roof. While 96% of households had electricity and 61% had an inside toilet, but only 2% had tap water. People had a choice of seven water sources: river water, rain water, well water, municipally treated water from a tanker, tap or standpipe, and two types of purchased water (contained in white or blue sealed barrels). Drinking water practices in Bellavista Nanay were found to be driven by availability. Parasites, diarrhea, hepatitis A, bacterial skin infections and cholera (in order of decreasing importance) were considered the most common diseases by medical staff (C. Furlong, 2009). As improved drinking water quality is known to reduce diarrhea cases (Arnold and Colford, 2007, Fewtrell *et al.*, 2005, Clasen *et al.*, 2007), building capacity amongst household drinking water managers to make informed choices could significantly impact the lives of people in this community.

### **Methodology**

Participants for these workshops were recruited via a party to thank them for participating in the author's previous work. Five workshops were held with between five and nine participants. A total of 35 participants attended the workshops. The participants ranged in age from 16 to 70 years, and 91% were women, as with the previous study the workshops were aimed at the household water managers (who were predominately women).

Prior to each session written consent was requested to take photographs and record the workshops using a dictaphone, this form was kept as a record of attendance. The workshops were led by a local field assistant, who had been trained by the researcher. This was due to a number of reasons: it had worked extremely well in the previous study, it maximised the amount of data that could be captured during the workshop sessions, it aided access to the community and reduced problems due to the language barrier. Initially, everyone was asked to introduce themselves to obtain a record of participants' names and voices for the recording. Then the field assistant explained the main findings of the previous research and why the workshop had been developed.

The workshop process was then described using an analogy of a tree. The trunk being the main focus 'contamination of water in your house' and the branches being the main themes: 'drinking water sources', 'drinking water practices', 'drinking water properties' and 'other'. The 'other' category gave the participants the freedom to give answers which did not full within the predetermined categories. Four questions were asked during the workshop, starting with the easier questions to build the participants confidence. The four questions were: What is good drinking water? What is bad drinking water? How does water become contaminated? What are the solutions? The questions were asked one at a time and approximately 15 minutes were timetabled to allow the participants to answer each question. The participants wrote their answer on the colour-coded reusable leaves of the Ketso kit (the colour-codes were related to the questions) and then placed the leaf on the felt workspace by the branch representing the theme they felt that it related too. The leaves could then be moved around the felt and developed into clusters to show areas of like meaning. The process of moving the leaves around allowed for exploration of their meaning and peoples' perception of the ideas. After this initial process, the participants were asked to highlight key issues using movable icons to indicate the following: the most important drinking water practice, where water becomes contaminated, and anything they found interesting or new (each person was given three colour-coded icons).

## Discussion

During the workshops knowledge was shared with the participants about household water contamination and the participants shared their practices and ideas. Ketso and the workshop allowed complicated arguments and discussions to form due to the questioning process initiated by the field assistant, which was developed further by the participants due their interactions with the kit. This was seen in all the workshops.

Two discussions re-occurred during all workshops. During the discussions on which sources of water were good and bad for drinking, the use and quality of rain water for drinking was explored. It had been noted in previous work that rain water was used exclusively for washing, cleaning and hygiene as it was considered primitive to use it for drinking. A debate the virtues of using rain water and its various beneficial properties were discussed, as was its use for drinking after treatment. It was in these discussions that key issues to do with perceptions of water and different practices were able to be explored. Having different participants' ideas visible on the workspace encouraged such exploration of views and learning from each other. Interestingly, the source classifications varied within participant groups and between participant groups. The other re-occurring debate was on household chlorination. The workshop provided a forum for the participants to discuss the use of different types of chlorine including household bleach and dosage. In all of the workshops it was noted that good drinking water was linked with the taste, smell and use of chlorine. This has implications for household treatment strategies in this community.

Participants used their knowledge of other communities and systems when thinking about these themes, this was demonstrated when they discussed different forms of household drinking water treatment. The participants talked about sedimentation, different forms of filtration and solar disinfection which are not used in their community. Participants identified the main areas of good practice as: treating their water before consumption, using it daily and covering their water containers. They identified the use other treatment methods, the need for cleaning their water containers and the link between rubbish and general water contamination as interesting points to come out of these workshops.

The depth of some participants' knowledge would suggest that since the original study, further information had been available on the themes being discussed. Prior to this work it was thought that the participants were not knowledgeable about how their water became contaminated. During the workshops this assumption was found to be false as some participants were well informed on this topic and shared their knowledge with the group. This workshop created a setting where the knowledge held could be shared with and within the groups.

The section on highlighting key issues was generally the most animated part of the workshop and caused more discussion and debates as people assessed their initial ideas on the Ketso workspace. A weakness of this method is that it was reliant on the literacy of the participants. It is believed that this can be overcome as illustrated by an example in these workshops. Two participants encountered problems with writing their answers, due to poor eyesight, these participants used other group members as their scribes and participated actively in the discussions.

Participants were asked to give verbal feedback on the process used; participants said that they had enjoyed the experience. They positively highlighted the game-like nature of the process and how this made it interesting. Several participants commented that the tool enabled everyone to participate in the workshop. One respondent stated "... it was good because we have all given ideas". In all of the workshops participants highlighted the uniqueness of being involved in a participatory process, one participant stated "...we are used to being dictated too, so it is nice to be able to give our ideas", while another commented that "...we are not used to thinking about such things, we are normally told what to do". Participants did not raise any negative concerns about the process, but it is possible that they felt constrained to do so by the presence of the researcher. As the participants were not used to participatory methods the workshop leader had to encourage them with prompting questions for the first one or two stages of the workshop. These were designed not to be leading. After this process the confidence of the participants was seen to be enhanced and the workshop gained momentum.

This method created a unique forum for household water manager to discuss drinking water practices, their ideas and perceptions. Some very valuable and interesting discussions were witnessed during these workshops.

## Conclusion

In conclusion, it is not yet known if this process changed behaviour in the community, as this would require follow up work to explore subsequent changes in behaviour. It did provide an enjoyable forum, for

participants to exchange ideas on household water contamination. It was felt that capacity was built during the process through the participants' exchange of ideas and it gave participants a space to question their own practices. It is thought that the uniqueness of the forum in participants' experience, and the visual and tactile nature of Ketso, will make the information discussed more memorable. This paper shows that the Ketso has great potential as a participatory tool in a number of situations, where the use of indigenous materials are inappropriate such as peri-urban areas.

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