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IMPROVING ACCESS AND SUSTAINABILITY****A methodology for evaluating education and training  
activities: a case study in Ethiopia***B. Coff, D. Simon & T.K.K. Ngai (Canada)***REFEREED PAPER 2154**

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*Organizations that provide capacity development services within the water, sanitation and hygiene (WASH) sector aim to improve access to water and sanitation through improved implementation of WASH projects. A key challenge for these organizations is a lack of clarity on how their results should be measured. Through a series of university research partnerships, the Centre for Affordable Water and Sanitation Technology has developed an evaluation methodology to enable organizations to evaluate the outcomes and impacts of their education and training activities in WASH. In 2014, CAWST and the Ethiopian Kale Heywet Church Development Program Water Expertise and Training Centre applied the methodology to evaluate their WASH Awareness training program to health workers in Ethiopia. The evaluation methodology was found to be practical and useful in gathering rich information on program outcomes and for program improvement. It is recommended that the methodology be further developed, and applied widely by capacity development organizations.*

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**Introduction and background**

Many organizations within the water, sanitation and hygiene (WASH) sector offer education and training activities. The purpose of these activities is to improve access to water and sanitation through better design and implementation of WASH interventions (Broughton & Hampshire, 1997; Cracknell, 2000). However, it is often not clear how effective these activities are at achieving their objectives. A key challenge to organizations that deliver education and training in WASH is a lack of clarity on how the results of these activities should be measured and reported.

The Centre for Affordable Water and Sanitation Technology (CAWST) is a Canadian non-profit organization that supports organizations that work directly with populations in developing countries who lack access to clean water and basic sanitation by providing education, technical training and consulting services. Between 2012 and 2015, CAWST conducted studies in partnership with several universities to develop a methodology for evaluating education and training activities in a practical, straightforward way, in order to learn about the activities' outcomes and to implement improvements.

Following is an overview of the objectives and outcomes of the university partnerships:

- Articulating the theory of change (with the University of Cambridge): Clarified and evaluated a "theory of change" for CAWST's education and training activities. (O'Hanlon F., 2014).
- Measuring and reporting for capacity building activities (with Cranfield University): A review of >100 WASH organizations who included education and training in their activities. Only one third of the reviewed organizations publically reported the results of their capacity building activities. The methods that were used for reporting only showed whether outputs were achieved (e.g. the number of people who attended trainings), rather than outcomes or impacts of their work (Ngai et al, 2013).
- Identifying metrics for capacity building (with the University of Cambridge): Reviewed reporting of capacity building organizations within and outside of the WASH sector to identify metrics used for outcomes and longer-term impacts, and to identify best practices.
- Development and piloting an evaluation methodology (with Mount Royal University): Developed a methodology to capture and interpret outcomes and impacts from capacity development activities.

Following a review of over 20 different evaluation processes, Kirkpatrick's four levels of learning was selected as a basis for the evaluation methodology (Kirkpatrick, D.L. & Kirkpatrick, J.D. 2006). Kirkpatrick's four levels of learning was selected because it is simple, easy to understand, easy to apply, and relevant to the educational activities undertaken by CAWST and CAWST's partners. The methodology was applied to two case studies in Peru and Nepal, after which the methodology was revised and improved (Ngai et al., 2014). A theoretical framework which explores how evaluation fits into the capacity development process was also produced from this study.

The Ethiopian Kale Heywet Church Development Program (EKHCDP) Water Expertise and Training (WET) Centre's Integrated Water and Sanitation Program has been addressing the water supply, sanitation and hygiene needs of local communities in Ethiopia for over 30 years. EKHCDP and CAWST have been working together since 2010 to develop the WET Centre. The EKHCDP WET Centre's objective is to support sector professionals in Ethiopia, including non-governmental and government organizations, with training, consulting support, water quality testing services, WASH awareness, education program development, and action research.

In September 2014, CAWST and the EKHCDP WET Centre applied the evaluation methodology that CAWST had developed to evaluate one of the WET Centre's training programs in Ethiopia. The evaluation was focused on the WASH Awareness training for Health Extension Workers (HEWs), a two day workshop that was co-developed by CAWST and the WET Centre in 2013. HEWs are front line government health workers who work with their communities on disease prevention. In 2014, the WET Centre trained around 170 HEWs with the WASH Awareness training workshop.

## **Objectives**

The objective for this study was to apply the evaluation methodology that CAWST has developed to a case study to determine how practical it is for learning and improvement, and to recommend how the methodology could be improved in the future.

The specific objectives for the evaluation of the WASH Awareness training to HEWs in Ethiopia were:

1. To find out whether the WASH Awareness training has enabled HEWs to deliver WASH services in their communities effectively.
2. To develop recommendations and an action plan to improve the WASH Awareness training for HEWs.
3. To develop the capacity of the WET Centre staff in evaluation for improvement.

## **Methodology**

The evaluation was planned and completed by CAWST and WET Centre staff during a three week program in September 2014. CAWST staff shared their experience in evaluation, with the objective of building capacity of the WET Centre staff. Twenty interviews were conducted with HEWs and twenty interviews were conducted with community members. Data analysis, action planning, and draft reporting were also completed within the three weeks.

Improvements were made to the evaluation methodology that CAWST had piloted in Nepal and Peru, before being applied to this evaluation (Ngai et al., 2014). The key elements of the methodology are:

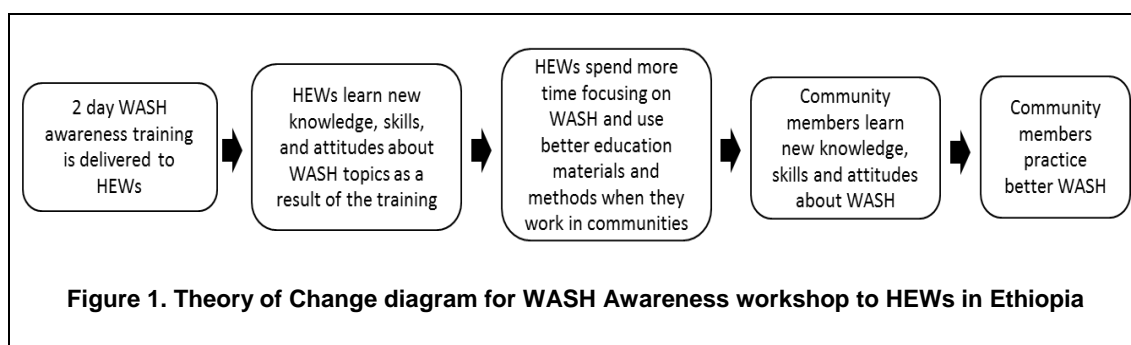
- 1) Articulation of the theory of change for the education program, in order to define the goals and key information needed for the evaluation.
- 2) Completion of the evaluation using Kirkpatrick's four levels of learning. All evaluation tools (such as questionnaires and surveys) are developed specifically for the particular evaluation being undertaken.
- 3) Development of recommendations and an action plan as a result of the evaluation so that program improvements can be implemented as soon as possible.

## **Articulating the theory of change for the education program**

The process began with the development of a theory of change. A theory of change is a story that describes how an intervention makes progress toward reaching its objectives. It is commonly presented in a diagram as a series of steps leading from the intervention's activities to the intervention's goals. The evaluation team developed a theory of change for the WASH Awareness training delivered to HEWs in order to articulate the goals and underlying assumptions about the program. This was important in defining what information was needed for the evaluation.

The theory of change diagram for the WASH awareness workshop is shown in Figure 1. It describes the intended chain of events starting with delivering WASH training to HEWs and resulting in improvements in

the WASH situation in communities. At each step of the theory of change there are underlying assumptions about how the education program contributes to the goal of improved WASH in the community.



### Applying the evaluation methodology

Imbedded in the theory of change of most WASH education and training programs, and as illustrated in the Ethiopian case study, is the belief that training activities can lead, in the end, to better WASH practices in communities. For this to occur, participants must do more than simply acquire new knowledge and skills, they must also act on this new knowledge by changing their behaviour, and then creating change in the behaviour of others. One model that CAWST has found works well at describing learning in these terms is the Kirkpatrick model.

Kirkpatrick's four levels of learning consists of four stages; reaction, learning, behaviour and results (Kirkpatrick, D.L. & Kirkpatrick, J.D. 2006). Once the theory of change had been developed with the WET Centre staff, they then worked to develop indicators relevant to the WASH Awareness training program for each of the Kirkpatrick stages. These indicators will differ from evaluation to evaluation. A description of each stage and some examples of the information collected for each stage are given in Table 1.

<b>Kirkpatrick Stage</b>	<b>Description of stage</b>	<b>Example indicators</b>
Reaction	How did participants respond to the training?	<ul style="list-style-type: none"> <li>• How well the workshop met the expectations of HEWs</li> <li>• How relevant the training was</li> <li>• How useful the tools used in the training were</li> </ul>
Learning	To what extent did the participants experience changes in knowledge, skills and attitudes as a result of the training?	<ul style="list-style-type: none"> <li>• Key knowledge that HEWs had learned, related to diseases transmission, multi barrier approach to household water treatment and safe storage (HWTS) and hand washing techniques</li> <li>• Key skills such as the HEW's ability to construct a tippy tap</li> <li>• Changes in motivation to include WASH topics in their work in communities</li> </ul>
Behavior	Can changes be observed in the participant's behaviour as a result of training?	<ul style="list-style-type: none"> <li>• Whether HEWs are using different methods of teaching in communities as a result of the workshop</li> <li>• Whether HEWs have started including WASH issues as part of their Health Extension packages</li> <li>• Level of confidence of HEWs in delivering WASH in their communities</li> </ul>
Results	How have organizational outcomes changed as a result of the training program?	<ul style="list-style-type: none"> <li>• Whether the HEWs have seen changes in the community as a result of the training</li> <li>• Observation of the community WASH situation where the trained HEWs are working.</li> </ul>

### Data collection

The tools developed for this evaluation consisted of two sets of interview protocols: one for HEWS who had participated in the WASH awareness training approximately one year earlier and one for community members living where the interviewed HEWs work. The HEWs and community members were interviewed

from two different regions of Ethiopia. The regions were selected due to accessibility of the roads, when the training was conducted (approximately 1 year prior to the evaluation), and for geographic and cultural diversity. The two regions that were selected were the Cheha region from the Southern Nations, Nationalities and Peoples' Region (SNNPR) and the Liben Chukala region within the Oromia region. Ten HEWs and ten community members were interviewed from each region for a total of 40 interviews.

Interview data was compiled, analysed and interpreted at the EKHCDP office following the data collection. Much of the analysis and interpretation was different to what the staff were familiar with. The analysis of qualitative data includes interpretive steps, such as identifying themes, categorizing responses, and sorting data.

## Results

### Results of the evaluation of EKCHDP WET Centre's WASH Awareness training

The evaluation found rich information about the strengths and weaknesses of the WET Centre's WASH Awareness program to health workers in Ethiopia. The HEWs interviewed had positive reactions to the training, said that it increased their knowledge and skills in key WASH topics, and gave them confidence to include more WASH topics in their work with community members. The evaluation also identified several weaknesses, such as a less than ideal transfer from improved knowledge to specific action within the participants' communities. Recommendations for improvement included changes to the workshop lesson plans to better emphasise key points, more frequent follow up with training participants to consolidate learning, and providing more educational tools to assist the training participants. Specific results from the evaluation are shown in Table 2.

<b>Kirkpatrick Stage</b>	<b>Results</b>
<b>Reaction</b>	<ul style="list-style-type: none"> <li>All of the HEWs that were interviewed reported that the workshop met their expectations, and that it was relevant to their work.</li> <li>All of the HEWs that were interviewed reported that the workshop tools (pictures, posters, games) were effective. Suggestions for improvement included reviewing picture cards to improve community understanding, and translation into local languages.</li> </ul>
<b>Learning</b>	<ul style="list-style-type: none"> <li>Knowledge in disease transmission and blocking, and critical hand washing times was well remembered by HEWs.</li> <li>Improvement is needed in the HEWs knowledge of the multi barrier approach, and HWTS options.</li> <li>Improvement in tippy tap construction skills is needed, particularly in Cheha region.</li> <li>The WET Centre should consider repeating or refreshing the training, and doing follow up to remind the HEWs about the key areas of knowledge from the WASH Awareness training.</li> <li>Another way to increase knowledge and skill retention is to include more repetition and hands on practice of skills during the workshop.</li> <li>Posters and materials which can remind the HEWs (such as hand washing posters, tippy tap construction poster) should be distributed immediately following the workshop.</li> </ul>
<b>Behaviour</b>	<ul style="list-style-type: none"> <li>All of the HEWs interviewed reported using at least one new method to teach WASH topics as a result of the WASH Awareness workshop. The most common change was from lecture methods prior to the workshop, to demonstrations or using pictures/posters to teach WASH after the workshop.</li> <li>The results of community member interviews, however, suggested that HEWs may have over-reported their use of participatory approaches to the interviewers in this study, as community members indicated less participatory approaches had been used by the HEWs.</li> <li>Some HEWs started to include WASH in non-WASH specific health extension packages, but they did not recognize the links with WASH for all packages.</li> <li>All of the HEWs in Cheha, and nine of the ten HEWs in Liben Chukala said that they have more confidence at teaching WASH topics in communities after the WASH Awareness workshop.</li> </ul>

<b>Results</b>	<ul style="list-style-type: none"> <li>• HEWs perceived that a range of positive changes have happened in communities since they have been using new knowledge and skills to teach about WASH.</li> <li>• Community level knowledge was not as high as HEW's knowledge. However community members demonstrated a basic level of knowledge on disease transmission and hand washing times. Due to the lack of a baseline study, it is not possible to know how much of the knowledge was known in the communities before the HEW training, and how much was transferred by the HEWs. The biggest area for improvement was identified to be knowledge of HWTS options.</li> <li>• To increase knowledge transfer to communities, the WET Centre should focus on coaching/training 1 in 5 leaders, and health development representatives as well as HEWs. 1 in 5 leaders are community members who lead health related discussions in small groups of 5 community members.</li> <li>• Rates of latrine ownership and use were much higher in communities than rates of use of HWTS and appropriate hand washing. This shows that more focus on HWTS and hygiene topics are needed in communities.</li> <li>• This emphasized a need for including HWTS and/or hand washing indicators in the HEW reporting format (as latrines are already included).</li> </ul>
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### Results of applying the evaluation tool

The evaluation methodology was found to be a useful tool to enable the WET Centre to systematically self-reflect and efficiently evaluate the outcomes of their work. The strengths and challenges in applying the methodology are summarized in Table 3.

<b>Table 3. Strengths and weaknesses of the evaluation methodology</b>	
<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• The process of articulating the theory of change for the training program was extremely helpful in clarifying the goals and underlying assumptions about the program. This was important in defining what information was needed for the evaluation.</li> <li>• The evaluation methodology was easy to communicate and understand.</li> <li>• The evaluation provided rich information on the outcomes and impacts of the training, right down to the community level. The WET Centre staff now have a clear idea of what happened to the HEWs who participated in their workshop, and the outcomes in communities as a result of the training. An action plan was made for program improvements.</li> <li>• The evaluation methodology was efficient, with the evaluation activities all completed within a three week program.</li> <li>• The process of conducting the evaluation enabled WET Centre staff to step away from their day to day program implementation and think about why they are delivering this training. This will help them communicate their work, and make strategic decisions about training in the future.</li> <li>• After completing one evaluation, the WET Centre staff will be much more confident working on another evaluation in the future.</li> </ul>	<ul style="list-style-type: none"> <li>• The three week evaluation program was relatively intensive, and required the WET Centre and CAWST staff to dedicate 100% of their time to the evaluation. This is rarely possible, and in some cases a reduced or 'light' evaluation version may be needed.</li> <li>• The evaluation attempted to collect the 'baseline' and 'end of project' data in one step, one year after the training had taken place. This often occurs when an organization wants to capture learning mid-way or toward the end of a project, but has not conducted a baseline assessment before the project start. Conducting a baseline survey at the start of a project, and then a separate closing study is best to most accurately evaluate the outcomes of a training activity. However, this evaluation still gained useful information about the project, despite the lack of baseline data.</li> <li>• The nature of the information collected was primarily qualitative, and hence interpretation of the results required a significant amount of judgement. This requires more experience and skill than quantitative assessment and can be subject to interpretive bias.</li> </ul>

The three weeks required for this evaluation took longer than most evaluations of its type because it included capacity building of WET Centre staff on evaluation theory and practice. It would be beneficial to consider articulating the theory of change and planning evaluation processes at the beginning of new training and education programs as a part of their development, before they are implemented. This could lead to greater efficiency and reduce the evaluation costs.

## Conclusions

The evaluation methodology used by CAWST and the WET Centre was found to be practical and useful in gathering rich information that can help the WET Centre to learn about the outcomes of their WASH Awareness training, and other education programs.

It is recommended that the evaluation methodology be applied widely by organizations involved with capacity development. The specific evaluation activities would need to be modified to evaluate different types of education and training activities; however the basic methodology can remain standard. CAWST is further developing evaluation support materials so they can continue working with clients and partners to implement similar evaluations in the future.

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