Washing HomeLabs: Longitudinal impact study

High Level Findings

November 2015

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1.1 Introduction

The CONSENSUS Washing HomeLabs Project (see Davies and Doyle, 2015) adopted an in-depth ethnographic approach employing a range of cutting-edge social and technical innovations and interventions with households over a five-week period to test and evaluate a number of sustainable washing practice interventions. A purposive sampling approach (Creswell, 2007) was utilised to recruit five households (with 19 occupants in total) to participate in the Homelabs experiment. This sample is illustrative of major household types within Ireland but is not intended to be representative in a statistical sense.

This report explores the extent and duration of changes in washing practices following the completion of the Washing Homelabs study. A survey completed by each participant assessing personal washing practices prior to the Homelabs study in 2014 was administered again after six months and then after twelve months in order to evaluate the extent to which any changes induced by the study were maintained. The survey explored the washing activities performed and, drawing on Verplanken and Orbell’s (2003) Self-Reported Habit Strength Index, the frequency and automaticity of their washing practices.

The Washing Homelabs interventions are presented overleaf in Table 1.
## HomeLab Framework

<table>
<thead>
<tr>
<th>Practice Dimension</th>
<th>Week 1: Baseline</th>
<th>Week 2: Connected</th>
<th>Week 3: Efficient</th>
<th>Week 4: Adaptive</th>
<th>Week 5: Wrap-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Establish current habits and practices</td>
<td>Enhance understanding of water services and water availability</td>
<td>Identification of litre targets and prompting lower flow and social feedback</td>
<td>Trial less familiar practices that enable more substantial water reduction</td>
<td>Users adopt preferred practices based on experience and impacts measured</td>
</tr>
</tbody>
</table>

### Governance:
- **Rules & regulations**
  - Targets for average water consumption in litres per person per day
    - No targets
    - 40 litres
    - 25 litres
    - 15 litres
    - No targets

### Tools:
- **Devices to enable participants to measure and manage consumption**
  - Shower litre meter
  - Shower timer
- **Hair and personal care products that may facilitate reduced water use**
  - Users existing products
  - Low foam shampoo
  - Leave-in conditioner
  - Hair and body wash
  - Low flow showerhead
  - 2-in-1 shampoo & conditioner
  - Co-wash
  - Low flow bath product
  - Dry shampoo product
  - User selected products

### Skills & understandings:
- **Behavioural guidance and motivational information**
  - Communications on water cycle
  - Shower pausing & flow adjustments
  - Costs & comparisons
  - Reduced washing & splash-washing
  - Norms & minimise literature

### Research process:
- **Methods used to gather data**
  - Shower logs
  - WhatsApp
  - Home visit

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Table 1 Washing Homelabs intervention matrix
1.2 Households profiles

Five households participated in the Homelabs study; with a total of 17 individuals. Of these 17 participants, eight were male (47%) and nine were female (53%). The participants’ ages ranged from 13 years to 63 years of age. The household size ranged from a minimum of three people per household to a maximum of five people in a household and included a family with adult offspring living at home (FA), a family with teenagers (FT), and a mixed non-familial household (M), a couple (C), and a family with young children (FY). An overview of the households is provided in Table 2 below. In terms of continued involvement with the Homelab’s study, four out of five households continued to participate in the six month survey and respondents from each of the five households participated in some form in the twelve month follow-on survey. Overall, twelve individuals (71% of total sample) participated again in the six-month follow on study in April 2015 and 14 individuals (82% of sample) participated again in the twelve-month follow on study in September 2015.

<table>
<thead>
<tr>
<th>Profile</th>
<th>Couple (C) household</th>
<th>Family (F) with young (Y) children</th>
<th>Mixed (M) household (i.e. non-familial)</th>
<th>Family (F) with teenagers (T)</th>
<th>Family (F) with adults (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifier</td>
<td>Household C</td>
<td>Household FY</td>
<td>Household M</td>
<td>Household FT</td>
<td>Household FA</td>
</tr>
<tr>
<td>Occupants</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Name &amp; Age</td>
<td>Amy 29, Darren 32</td>
<td>Sam 42, Luara 40, Edel 13, Connor 9*, Jack 7*</td>
<td>Damian 35, Ruth 36, Martin 36, Alison 33</td>
<td>Gareth 50, Kathy 49, Ronan 18, Jill 16</td>
<td>Aisling 61, James 63, Peter 25, Claire 21</td>
</tr>
<tr>
<td>Home type</td>
<td>Apartment</td>
<td>Bungalow</td>
<td>Terraced flat</td>
<td>Semi-detached</td>
<td>Semi-detached</td>
</tr>
<tr>
<td>Housing Tenure</td>
<td>Owner-occupied</td>
<td>Owner-occupied</td>
<td>Rented</td>
<td>Owner-occupied</td>
<td>Owner-occupied</td>
</tr>
<tr>
<td>Location</td>
<td>City-centre</td>
<td>Rural</td>
<td>Suburban</td>
<td>Suburban</td>
<td>Suburban</td>
</tr>
<tr>
<td>Shower flow (Litres per Minute)</td>
<td>13.8 LPM</td>
<td>13 LPM</td>
<td>7 LPM</td>
<td>8 LPM</td>
<td>7.5 LPM</td>
</tr>
</tbody>
</table>

*These participants were deemed too young to participate in the survey but parents answered on their behalf where necessary on a household level.

Table 2: Overview of Homelab households

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1 Household FY comprised of five individuals in total. However, two of these individuals were deemed too young to participate in the Homelab’s survey.

2 The Household keys outlined here (Household C, FY, M, FT and FA) are used as identifiers in the results section along with the name and ages of participants.

3 As defined by the CSO see: CSO: Population Classified by Area, Volume 1, 2002, Appendix 2 p 164.
1.3 Washing practices

**Highlights:**
- **Showering and bathing frequency declined on average across all households**
- **Nearly a quarter of all participants reported an increase in the sustainability of their washing practices**

During the initial Homelabs’ experiment and during follow-on studies at six months and twelve months post-Homelabs, participants were interviewed to explore information about their showering and bathing practices. The results showed that overall there was a decrease in the average number of showers that participants reported taking per week. During the baseline survey, participants reported taking on average eight showers per week. During the six-month follow-on survey, participants also reported showering on average eight times per week. This figure reduced to seven showers on average per week during the twelve-month follow-on study ⁴(see Table 2).

The number of people showering most frequently (i.e. ten times a week or more) dropped over the course of the study. However the number of people showering less frequently (i.e. five times a week or less) remained fairly constant from baseline to twelve months post-Homelabs (see Table 3).

While it is acknowledged that taking a bath is not necessarily more consumptive of water than a long duration power shower, for example, the survey did reveal a general decline in reported incidence of bathing from 50% at the baseline stage to just 31% after twelve months. The uptake of splash or spot washing as a means to negate the need for a full body shower however, did not see an increase in incidence over the research period. Indeed, there was a slight increase in the number of people claiming that they never undertook this type of washing from 81% of participants pre-Homelabs to 93% of participants who agreed post-Homelabs. Overall, nearly three-quarters (72%) of participants felt that they were behaving more, or indeed much more, sustainably than they were prior to their participation in the Homelabs study.

<table>
<thead>
<tr>
<th></th>
<th>Baseline data</th>
<th>Six-month data</th>
<th>Twelve-month data</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median number of showers</strong></td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>😐</td>
</tr>
<tr>
<td><strong>Min. showers per week</strong></td>
<td>5 (n=1, 6%)</td>
<td>4 (n=4, 33%)</td>
<td>5 (n=1, 7%)</td>
<td>😊</td>
</tr>
<tr>
<td><strong>(Low level users)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max. showers per week</strong></td>
<td>10 (n=6, 35%)</td>
<td>10 (n=3, 25%)</td>
<td>10 (n=4, 29%)</td>
<td>😋</td>
</tr>
<tr>
<td><strong>(High level users)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Median number of showers taken by participants across the HomeLab’s study period

⁴ All figures are rounded to the nearest whole number for this report.
1.4 Intervention impacts

**Highlights:**
- **Taking a shorter shower is the most commonly adopted practice change across all households**
- **The use of the shower timer and/or meter was adopted by at least some participants in 4 out of 5 households**
- **Litre meters can provide a useful reminder of water use, but currently few incentives exist to motivate people to purchase and install them**

At the twelve month phase, households were asked what changes – stimulated by Homelabs – they had incorporated into their washing practices. The responses are detailed in Table 4. Practices based on ‘skills and understanding approaches’ were commonly adopted i.e. taking shorter showers, as well as pausing and stopping the shower. The continued use of devices to save water were also reported i.e. using low flow-shower heads, shower timers and water meters.

<table>
<thead>
<tr>
<th>Practice dimension</th>
<th>Change</th>
<th>FA</th>
<th>FT</th>
<th>M</th>
<th>C</th>
<th>FY</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills &amp; understanding</td>
<td>Taking shorter showers</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
<td>64% (n=9)*</td>
</tr>
<tr>
<td>Tool (device)</td>
<td>Using low-flow shower heads</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td>29% (n=4)</td>
</tr>
<tr>
<td>Skills &amp; understanding</td>
<td>Pause and stopping the shower</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td>21% (n=3)</td>
</tr>
<tr>
<td>Tool (product)</td>
<td>2-in-1 grooming steps e.g. leave-in conditioner</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td></td>
<td>21% (n=3)</td>
</tr>
<tr>
<td>Skills &amp; understanding</td>
<td>Turning off taps</td>
<td>😊</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)</td>
</tr>
<tr>
<td>Skills &amp; understanding</td>
<td>Taking less showers</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)</td>
</tr>
<tr>
<td>Tool (device)</td>
<td>Using a shower timer</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)</td>
</tr>
<tr>
<td>Tool (device)</td>
<td>Using a water meter</td>
<td>😊</td>
<td>😊</td>
<td></td>
<td></td>
<td></td>
<td>29% (n=4)</td>
</tr>
</tbody>
</table>

* of the total sample (n=14) still practising this behaviour

**Table 4 Persistent practice changes**
In contrast, households were much less likely to incorporate novel products in their routines, such as low-foam products, 2-in-1 products or dry-cleaning products. During follow-up interviews, participants from each household mentioned that they had not incorporated at least one of these products in their washing practices. Only one person said they had not incorporated shorter showers into their routines and one other said they had not incorporated reducing water pressure in their everyday washing practices.

**Highlights: Litre meter**

- *Water litre meters were a learning tool for estimating water used during showering*
- *Provision and installation of litre meters increased their usage*
- *In isolation, the existence of a litre meter alone does not necessarily lead to its utilisation*

A water litre meter was attached to participant’s showers indicating litre-consumption in real-time. This served the dual purpose of 1) communications (enhancing visibility of water use to participants) and 2) data collection (where participants manually recorded their water use in each shower to facilitate research analysis). Every household opted to keep their litre meter after the HomeLabs experiment; with 25% of respondents (n=3) still using the water meter when surveyed six months later. This increased slightly to 29% of respondents (n=4) twelve months on from the initial study.

The decline in the use of meters is interesting given that many participants stated their key learning experience from participating in HomeLabs, was the sheer volume of water consumed in their personal washing activities. Most respondents felt that the continual presence of a visual cue would be an important prompter. As the intervention study progressed, most participants felt they could more accurately estimate their litre and time consumption for a typical shower and they were aware of how this changed in accordance with different washing activities. This would indicate that the knowledge generated by the meter could become engrained which would be important for the continuation of sustainable washing practices beyond the life of the experiment and in and in the absence of the litre meters.

During the six month follow-on study, Household M had disbanded and one household member retained the meter. The individual who kept the meter indicated at the six-month follow up stage that he might set up the meter at his new location. However, results from the twelve-month follow-on study revealed that this had not occurred. One year on from the initial study some respondents reported reverting back to ‘bad habits’ (Amy, Household C). Indeed, Kathy (Household FT) mentioned how as the months moved on ‘it (the meter) faded into memory’. Respondents mentioned how being contacted again by the researchers to take part in follow-on surveys triggered thinking around water use once more.

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5 Households were not guided by a list of interventions during interviews so the list provided is not comprehensive but relates to those changes that households reported that they had adopted.

6 The Amphiro water meter was ultimately selected after experimenting with similar alternatives such as the Water Pebble (http://www.waterpebble.com/), Energy (http://efergy.com/eu/products/showertime), and Sprav (http://www.sprav.com/).
1.5 Habitual behaviour change

Some studies (see Conner and Armitage, 1998; Trafimow, 2000) argue that including additional factors such as habits into current behavioural change models like the Theory of Planned Behaviour (Ajzen, 1991) can better predict environmental behaviours. For the HomeLabs, the Self-Reported Habit Index (SRHI) (Verplanken and Orbell, 2003) was utilised as a response-frequency measure to assess habit strength for certain washing practices across the five households. Respondents completed the SRHI at the start of the Washing HomeLabs and then again at the six month follow-on study and lastly at the twelve month follow-on study.

Respondents were asked to indicate their level of agreement, using a five point Likert-scale response, with statements related to washing habits. Each individual then received a total score for each washing habit that ranged from 6 to 30; with higher scores indicating stronger habit strength for each particular washing practice. A habit was considered to be strong with scores greater than or equal to 20, neutral for scores between 15 and 19 and weak between 6 and 14.

Highlights

- A shorter shower remained a strong habit for most households throughout the study period and after twelve months was a strong habit for all households
- Adjusting the flow of water while showering was predominantly a neutral habit for all households but had become a strong habit after twelve months for two households
- Reducing water use while in the shower was a neutral habit for all households prior to the Homelabs but had become a strong habit for three households by month twelve
- Reducing water use in the sink was a strong habit for all households prior to the Homelabs, but while three households identified a stronger habit after twelve months in two households the habit strength had decreased
- Turning off the tap while brushing teeth was a strong habit for all bar one household at the baseline stage but had become a strong habit in all households after twelve months
- Considering the environmental impacts of everyday water use more broadly had been a strong habit for three households and this persisted to the twelve month stage

1.6 Future needs

In order to promote more sustainable washing practices, respondents were asked to indicate which supports (i.e. products, regulations and information) might encourage them to further change their washing practices in future. Table 5 illustrates the respondents’ suggestions. It is clear from the responses provided that there is no one-size-fits-all solution to promote more sustainable washing practices. Interestingly, individuals cited further interventions like HomeLabs would be useful to maintain practice changes. The importance of reminders and behavioural cues was also paramount.
<table>
<thead>
<tr>
<th>Practice dimension</th>
<th>Support</th>
<th>FA</th>
<th>FT</th>
<th>M</th>
<th>C</th>
<th>FY</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding</td>
<td>Information on water conservation and usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)*</td>
</tr>
<tr>
<td>Understanding</td>
<td>Educational programmes for schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21% (n=3)</td>
</tr>
<tr>
<td>Tools (devices)</td>
<td>Installation of HH water meters and timers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21% (n=3)</td>
</tr>
<tr>
<td>Understanding</td>
<td>Information on weather conditions i.e. low rainfall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7% (n=1)</td>
</tr>
<tr>
<td>Understanding</td>
<td>Media campaigns on conservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)</td>
</tr>
<tr>
<td>Rules</td>
<td>Water charges based on metering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29% (n=4)</td>
</tr>
<tr>
<td>Tools, rules,</td>
<td>Homelabs-style interventions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14% (n=2)</td>
</tr>
<tr>
<td>skills &amp;</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>understanding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rules</td>
<td>Water grants and incentives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7% (n=1)</td>
</tr>
<tr>
<td>Tools (products)</td>
<td>Better products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7% (n=1)</td>
</tr>
</tbody>
</table>

*of the total sample (n=14) stated this support

Table 5: Additional supports suggested by household participants
References


CONSENSUS Project

This report is an output of the CONSENSUS research project, funded by the Environmental Protection Agency to support transformations towards sustainable household consumption in Ireland (www.consensus.ie). Launched in 2009, CONSENSUS is examining the drivers and practices of, and importantly the solutions for, unsustainable household consumption relating to water, food, energy and transport. The report summarises key insights from the CONSENSUS Homelabs study on sustainable personal washing practices (focusing on showering, bathing and bathroom sink usage).

Acknowledgements

CONSENSUS Phase I and II was funded by the Irish Environmental Protection Agency STRIVE Programme (2007-2015). CONSENSUS would like to thank the research funders along with all the Homelabs’ participants and collaborators who voluntarily gave their time to improve the research findings, impact and relevance.

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