POLICY BRIEF

September 2017
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

Tapping into the power of mobile technology for strengthening behavioral change

A Water Research Commission (WRC) study, undertaken by the University of Cape Town's Department of Information Systems, assessed the impact of a mobile application in strengthening behavioral change in household water consumption and leak detection amid the Cape Town drought. This briefing note summarises the highlights of the study.

Background

South Africa's scarce water resources are becoming increasingly stressed as a result of factors such as urbanisation, population growth and the impacts of climate change.

To promote water efficiency, municipalities that have been given Water Services Provider status are required to implement measures to promote water conservation and demand management which should be included in their Water Conservation and Water Demand Management (WC/WDM) strategy and business plan and Water Services Development Plan (WSDP). Instilling a WC/WDM culture in municipal water conservation and water demand management at household level in this context is of high importance.

Previous studies funded by the Water Research Commission have demonstrated that behavioral science plays a vital role in persistently nudging residential customers to use water more efficiently. Providing citizens with information about their water consumption, and the resulting knowledge supports and enables water users to adequately manage or adjust their daily water demands and uses.

The internet and mobile phones (and other forms of information and communication technologies – or ICT) have become ubiquitous in households around the world, and have been identified in many contexts as being a useful tool to provide citizens with contextual information to help steer behavior change.

This study assessed the impact of water-related information provided by a mobile phone application on behavioral change in water consumption and leak detection at domestic or household level, through a case study in the City of Cape Town.

Prior to implementing the mobile application, preliminary work on the successes of past and existing WC/WDM interventions, as well an assessment of the applicability of mobile technology as an innovative intervention was undertaken. This information was used for designing and developing a mobile phone application called "DropDrop". The application was implemented in households in the City of Cape Town in order to assess if the water-related information supplied has an impact on water usage and leak detection.

Two sets of research were undertaken. An initial investigative survey was done to assess citizens' access and attitudes towards mobile phones and applications. The second part of the research – the main study – entailed the selection of participants who either made use of the mobile application or formed part of a control group.

Both groups were monitored over three months to assess

changes in water use and attitude before and after the implementation of DropDrop.

The DropDrop app

DropDrop is a standalone mobile application that has been developed for Android smartphones. The app allows users to access information about their daily water usage, predicted estimate of their end-month water bill, water conservation methods, municipal contacts and information about water resource. In order to generate water usage data, the user needs to enter the water meter readings into the DropDrop app on a regular basis.

Figure 1. The opening screen of the DropDrop mobile application.

Main results

The study found that water-related information generally increased water-related knowledge and conservation awareness of the sample population on leak detection, consumption monitoring and conservation measures. It was noted that the cumulative monthly water consumption of the participants in the treatment group was consistently lower than the cumulative consumption of participants in the control group during the study period.

The percentage of householders who were aware of their daily water consumption increased from 42% (before use of DropDrop) to 74% (after using DropDrop). Also, after using the app 95% of users started reading their water meters at least monthly (compared to 27% before). Thus the water-related information from the mobile app provoked the participants to monitor their consumption regularly during the study period.

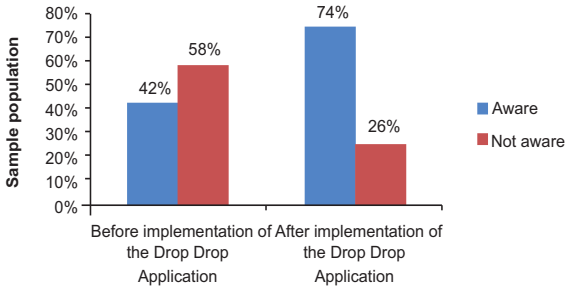

Figure 2. Effect of water-related information on the knowledge of daily water consumption

At the same time, the gap between cumulative consumption of the treatment group and that of the control group widened. This was attributed to intensified water conservation practice by participants in the treatment group, due to availing the water-related information provided by the DropDrop app.

The usability of the app, in providing water-related information, was generally satisfactory. In In summary, findings from this study have demonstrated that meaningful household WC/WDM behavioral change is achievable using a mobile application. In addition, the study has illustrated that opportunities for more extensive and consistent conservation participation at homes can be realised if water conservation was presented through media that fosters self-monitoring and is easily accessed by consumers (such as mobile phones).

DropDrop is available free of charge from Google Play, Visit: http://bit.ly/2kZlBrk.

Associate project: ***Assessing the impact of a mobile application in promoting responsible household water use: A Cape Town case study*** (**Project no. K5/2485**). Contact Publications at Tel: (012) 761-9300, Email: orders@wrc.org.za or Visit: www.wrc.org.za.