RP3009 HIGH PERFORMANCE HOUSING: MONITORING, EVALUATING & COMMUNICATING THE JOURNEY

TEN HOUSE LIVING LABORATORY STUDY

Research Question

Recent research has found that low-emission buildings do not meet their full potential and the main reason for this discrepancy is related to occupancy. Inside the building, users interact with technologies and are influenced by everyday practice and subsequent behaviour. This research aims to answer the following overall question:

Is there a home system of practice (HSOP) and if so, can it be influenced to enable the reduction of resource consumption?

"Everyday practices drive home operation and resource consumption. Behaviours are only thought of when there is a change in context"

Methodology

Ten Western Australian houses were established as embedded Living Labs and were monitored (energy, water, temperature, PV) for two years, having been subject to an educational intervention strategy (behaviour change) at the start of Year 2.

The results were analysed in terms of changes to everyday practice and changes to the building system.

The results enabled the understanding of the home system of practice, which drives everyday resource use.

Results

74% of the changes made by participants during the second year were changes in technology; especially automated technologies such as irrigation. Changes in meaning and skill were rare and only resulted in limited resource savings.

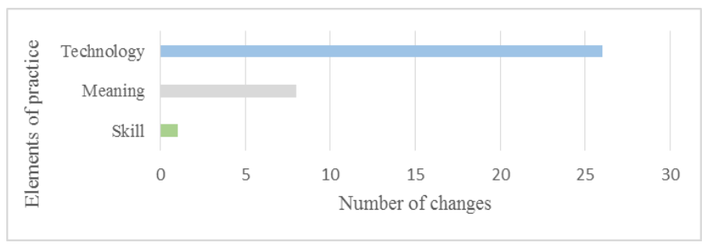

Figure 1. Changes made classified according to the three practice elements (i.e. meaning, skill and technology)

Everyday routines are composed of practices which are reproduced in a sequential manner, overlap and interlock with one another.

Weekday practices (e.g. showers – Figure 2) are highly bound in time, occurring in line with established routines such as work. However, practices realign when there is a change in context (e.g. weekends). Weekend and evening practices are usually more flexible and less interlocked to the home system.

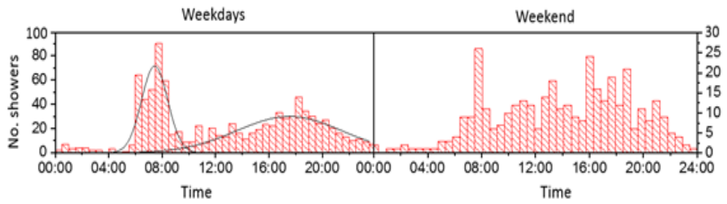

Figure 2. Reproduction of personal showering practices in time

Changing or affecting an established system of practice (Fig.3a) requires the system to become disestablished (Fig.3b) and then realigned with new interlocked connections (Fig.3c).

The integration of new practice into established routines is challenging. However, automated technologies could enable improved resource efficiency through acting completely independently of the HSOP.

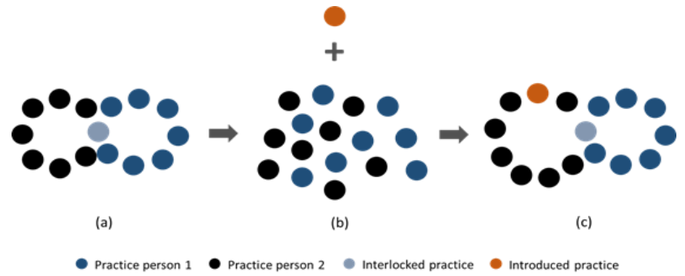

Figure 3. The home system of practice

Conclusions

The behaviour change approach commonly employed by energy and water utilities (through public campaigns) is unlikely to succeed.

Home occupant energy and water use can be enabled by technology design but not by persuasion to change behaviour aimed at meaning and skills.

Anticipated impacts

This research enabled a better understanding of what is required for an effective transition to a more sustainable housing future, benefiting the community in the following ways:

- Households: improved awareness of available strategies for reducing home resource use;
- Researchers: better understanding of the home system and what affect resource use;
- Industry: inform strategies to enable resource reduction in homes;
- Government: inform policy and strategic initiatives.

Further information

For further information about this project, please access the CRC LCL website: http://lowcarbonlivingcrc.com.au/research

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