User interaction with heating controls to improve energy efficiency in the UK

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Overview

• Why heating controls?
• Results from a local information and advice trial
• User interaction with technological advances in heating controls
Why heating controls?

• Domestic energy use accounts for a quarter of total UK emissions

• Space heating is responsible for 66% of energy use in homes
Most homes have gas central heating controlled by:

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmers / timers</td>
<td>97%</td>
</tr>
<tr>
<td>Room thermostats</td>
<td>77%</td>
</tr>
<tr>
<td>Thermostatic Radiator valves</td>
<td>66%</td>
</tr>
</tbody>
</table>
User issues with controls

• Design and location of controls affect behaviour
• Confusion around heating practices
• Variable occupancy and activities can lead to energy inefficiency / waste
• Knowledge and usability barriers
Newcastle trusted messenger trial

How to take control of your heating
Intervention and evaluation details

• Piloted in 150 homes
• 18 engineers trained and randomly allocated
• 1,556 participants – social tenants
• Outcome – gas consumption over 6 months
• Qualitative evaluation of implementation
Qualitative findings – participants report positive impacts from advice

- Knowledge outcomes
- Behavioural outcomes
- Financial outcomes

Variability – people; heating system; engineer
‘Trusted messengers’ welcomed

Varied delivery style depending on tenants’ knowledge and context

Varied detail according to needs
Quantitative analysis showed no overall impact on gas consumption - why?

- Limited scope to save
- Inconsistent implementation
- Knowledge did / could not translate into behaviour change for many
- Indication that behaviour change may have reduced waste and increased comfort
Conclusions from Newcastle trial

- Further evidence of user difficulties with heating controls
- Evidence mixed depending on success factor - well-being vs energy reduction
- Need other solutions for social tenants
- Advice and information could be effective for other groups
Technological solutions? Emergence of smart heating controls with different functions
Evidence on user interaction with smarter heating controls

- Significant potential for energy savings reported but:
  - Lack of conclusive independent evidence
  - Issues with defining the baseline
  - Variable functionality and pace of innovation complicate
  - Interaction with Smart Meters, etc. unclear
  - Evidence of usability issues

- Energy Technologies Institute development and trial

- Discussions with manufacturers and energy suppliers to get better evidence
Questions?

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