Spring 4-5-2017

A pilot study of homeworking: WorkHouse (30)

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Abstract

*Work*house *aims to improve technology-based homeworking, through an understanding of working patterns, interactions with architecture and furniture. A log record participants working environments, their hours of work, and their posture. The 10 participants revealed a range of working patterns (6:30 to midnight); choice of rooms, even with a dedicated study available. There are some issues to be resolved with the logs: recording of working hours, posture, and the need to make further decisions about the data required.*

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Keywords: homeworking, telecommuting, architecture, furniture, working practice, posture

1.0 Background

Homeworkers can be described as workers who complete work within their own home on an occasional or regular, but not full-time, basis.

The Confederation of British Industry (CBI) report rising trend in homeworking, with around 22% of firms with employees working remotely in 2003, rising to around 59% in 2011 (CBI, 2015). In 2014 over 85% of responding companies offered flexible working such as non-standard hours or home working (CBI, 2014). The employees' representatives of TUC (Trades Union Congress) reported (2013) that the previous five years had shown average 13% increase in home working. TUC research indicates 4.2 million people working from home, and that 1.8 million more people would like to (2015).

1.1 Enabling Factors for homeworking:

Improving Communications Technology

Computers, desktop or handheld, allow both procedural and knowledge-based work in the home.

> *"In Great Britain, 22 million households (84%) had Internet access in 2014, up from 57% in 2006. Fixed broadband Internet connections were used by 91% of households." (ONS, 2014b).*

"For those in work, 66% owned a smart phone, 71% a tablet, and 62% a laptop" (Ofcom 2013).

Access and ownership are expected to increase.

Flexible Employment Practices

Benefits to employees and employers: reduced absence, improved productivity, retention, and recruitment, improved staff commitment "happiness", satisfaction, and engagement (Smeaton et al, 2014).

Reduction In Time, Financial Costs and Associated Stress of Commuting

Commuting costs are driven by the price of public transport and of private transport fuels.

"A British worker on an average salary of £27,200 a year will be spending 17% of their wages on a £391 monthly season ticket from Brighton to London... Workers making similar journeys spend 12% of their salary on train fares in France, 9% in Germany, and 6% in Spain and Italy." (Monaghan, 2015). 17% represents "average", The Hay Group (2015) show this can rise to 21%, according to region.

Distances for commutes vary by region:

"The average distance commuted to work in England and Wales increased from 13.4 km in 2001 to 15.0 km in 2011. ...Overall commuting distances were longest for:- Male workers - Workers in managerial and professional occupations - Full-time workers - Workers aged 35 to 39."; data from 2011 (ONS, 2014a)

Sustainable Implications of Not Travelling.

Cutting car commuting contributes to improved health; the effect is likely to be greater in larger conurbations and cities.

"Despite decreases in particle emissions over the last fifty years, exposure to airborne particles is currently believed to cause a life length reduction of 6 months averaged across each UK citizen (COMEAP, 2010 in Price et al 2014)."

Working at home can be made more difficult by:

Employees don't always feel comfortable asking to homework:

"… many employers are doing a good job of encouraging flexible working, as 40% of all employees said they would feel comfortable asking their employer about working more flexibly but 42% said they would feel uncomfortable."

Ergonomic Issues

Werth and Babski-Reeves (2012) found sofa working could result in poor posture, with potential for injury or illness. Particular problems were with neck and wrist bending, being worse for tablet users.

Small Size of UK Homes Limits available Space for Homeworking

UK homes are, on average, smallest in Europe:

"…the average new home in UK was 76m² and had 4.8 rooms, with average area of 15.8m² per room…. In Ireland, new homes were 87.7m² (15% bigger). In Denmark, new homes were 137m² (80% bigger)." (RIBA, 2011)

1.2 Aims

Work*house* will:

Improve the understanding of how technology, working practices, and design all interact within the home.

Explore interactions between technology, employment practice, design, and transport and their impact on home working.

Evaluate the benefits to homeworkers of spending less time and money commuting, reduced pollution, and work-life balance.

1.3 Pre-Pilot Objectives

As exploratory research Work*house* project will identify how homeworking is done, revealing key factors and behaviours affecting key stakeholders: employers, employees, and their families. Patterns of working with technology in the home will

be revealed, along with the impact of architecture and interior design, on homeworking.

2.0 Proposed Plan of Work after the Pre-Pilot

Phase 0: Pre-pilot Study

-Test ways of collecting data. We used what we perceived to be the most obvious and straightforward approach, and examine the returned data for value, and richness.

Phase 1: Pilot Study

-Refine and apply data capture methods using a small group of participants

Phase 2: Main Study

-A much larger participant group, from a wider range of employment situations.

Phase 3: Active Collaboration with Architects, Designers and Employers

-Design and construct prototypes: architectural space (shape, soft and hard furniture, movable walls, lighting), technology forms (size and weight, luminance, keyboard design), furniture (form, multi-functionality)

-Collaborate with manufacturers

-Review working practices with employers and employees

3.0 Methods: Pre-Pilot

Use of video presents ethical issues. Whilst this may not be a problem in single occupancy homes, there may be issues with multiple-occupancy. This suggested a user-completed log format. A word document enabled participants to choose to print and complete by hand, or complete as a word-processed document. Log extracts are in appendix 1. Appendix 2 shows two posture categories used by participants to self-code.

For reasons of economy and focus only log data was collected. Consequently no interviews, additional questionnaires, focus groups, or direct observations were considered. It was hoped that this approach would provide data for refining the pre-pilot instrument by revealing gaps in the data needing to be filled by alterations to the log, or the addition of other data collection methods.

4.0 Findings and Discussion

Ten participants were enrolled. Of these four were from marketing and digital business specialisms within a business school; the other six were from the design school of a different university.

Form of completion

Diary element: Eight of the respondents completed the diary element using a word processor, the other two, both from the design school, used pen.

Workspace diagram

One participant used photographs, one with computer added blocks and labels, one abstention on the basis of privacy invasion, five completed in pen or pencil, two missing for reasons unknown. This mix shows a need for a variety of forms of data capture to suit participants, if they are to be encouraged to complete the log.

Though many of the participants had access to a "study", this was not used exclusively. Some work might be in a study, or it might be in a living/dining room. Reasons for choice need to be further explored.

One participant described their worktable-desk in detail, and was able to give the model of chair they sit on. This will not be forthcoming from many people, though it may be useful to allow for it, and allow for a user critique.

Posture

Not all participants made use of the standardised forms of posture and the numerical labels provided at the back of the log: one did not complete this section, one provided their own descriptions that could broadly be linked to the standardised forms.

Posture images could be added to every page for participants to select from. This might improve accuracy, but at the expense of making documents larger. However, larger documents might only present a problem where it is necessary to provide physical copies. Since most completed using a word processor this should not be a significant issue, though this does clash with the need for a variety of formats to be available.

Timing

Work hours were provided by all but one participant (who had rejected the log on privacy grounds). Different participants had their own style of approximation. This might be to the nearest minute; 10 or fifteen minutes; half-hour, or hour. The project will need to determine the precision that we require, and then determine how to best encourage participants to record it. It may be that boxes for each segment of time (e.g. 15 minutes) are used, to be either shaded or ticked, according to user preference. The reported range of working hours, across all participants, was 6:30am to 00:00 midnight. Some work sessions were as short as 15 minutes, whilst typically they were several hours.

Diary

While the log we used has limitations, it seems that most participants felt able to complete according to their own preferences. Apart from the participant who objected on privacy grounds, others were able to describe their work environment. A limitation is that the current log does not encourage participants to reveal shortcomings in their environment, workarounds develop; decision making regarding room choice; or indeed, areas where working at home is specifically beneficial over an office base.

5.0 Conclusions

Some refining of data capture is needed. The data shows that decisions need to be made that we were previously unaware of. Our participants were academic colleagues. It is expected that a wider cross-section will reveal different issues.

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Appendix 1: Two extracts from participant log

Log Sample 1

Start time	End time	Room	Furniture and equipment used	posture	light	Others in the room	Others in the home	comment
08:30	10:30	Lounge	Reclining chair with cushion to support back Laptop on knees – screen text enlarged to 130	6 Reclined with legs stretched out straight in front - cushion behind back	Natural from main window	1: spouse coming and going and cat	1: Spouse	Window open TV on – a.m. news channel then music channel Answering emails Ringing colleague in office with student queries and induction week queries – not too much concentration required

Log Sample 2

Start time	End time	Room	Furniture and equipment used	posture	light	Others in the room	Others in the home	comment
10:30	12:30	Living room	Floor, coffee table, sofa, laptop	8, but with laptop on coffee table. Legs sometimes stretched out. Leaning back against sofa	Natural from main window	0 and 1 Spouse coming and going	1, spouse	Informal searches not needing much concentration.

Appendix 2: Postures 6 & 8, images used as part of instructions to participants

6) Knees raised leaning back: as for knees raised, but back tipped significantly out of vertical.

8) Crossed legged: sitting on floor, sofa or chair, with legs crossed and with laptop, tablet, or book on knees.