DESIGN4 HEALTH

Extract of the

Proceedings of the 3rd European Conference on Design4Health

Sheffield 13-16th July 2015

Editor: Kirsty Christer

ISBN: 978-1-84387-385-3

Sheffield Hallam University | Art and Design Research Centre

LAB 4 LIVING

YORKSHIRE & HUMBER
ACADEMIC HEALTH SCIENCE NETWORK

DESIGN4 HEALTH
2015 European Conference

Integrating the voice of older people in the development of bathroom design research methods through the use of participatory co-design

Oya Demirbilek, Catherine Bridge, Alicia Mintzes and Peter Sweatman

University of New South Wales, Faculty of the Built Environment, Sydney

Abstract
The design of conventional domestic bathrooms is limited in its consideration for the needs of older people ageing at home. Unsupportive bathrooms can create environmental barriers to everyday activities. Although more supportive features and systems in the bathroom can help increase older people's ability to maintain independence and autonomy, products that fail to take into consideration the preferences and needs of older people can result in failed solutions. The lack of reliable, extensive and valid data on what older people want and require in their domestic environment highlights the need for including older people in research to guide inclusive product innovation in the bathroom. The 'Livable Bathrooms: Designing out dependence in activities of daily living for older persons by product innovation' is a collaboration between researchers at the UNSW, Australia and GWA Int. with an older persons participatory co-design group. The advice and guidance of an involved group of older people has helped develop research methods that resonate with older people in order to achieve more relevant results for an ageing population.

Keywords: bathroom design, older participant involvement, participatory design, co-design

ISBN 978-1-84387-385-3

Introduction

In this paper, we explore the design of domestic spaces and their elements, with the bathroom as the focus of enquiry, by reporting on the co-design activities and key contributions in a bathroom redesign project that was comprised of three components; a National Survey; an ergonomic and activity laboratory and co-design collaboration with older people. The Livable Bathrooms: Designing out dependence in activities of daily living for older persons by product innovation research project is a collaboration between researchers at UNSW, Australia and GWA Bathrooms and Kitchens which aimed to: minimise human mortality and morbidity from accidents (falls in particular); improve placement and layout of bathroom assemblies, fixtures and fittings; create new products and examine the feasibility of autonomous reconfiguration of fixtures within the bathroom prototype in relation to Human-factors sensing.

Co-design by older people is an active form of participation in the design process, and this paper aims to highlight the important role that older people can play in the design process. Previous work demonstrates older persons can actively participate in the design process and do contribute in their own way (Demirbilek & Demrikan, 2004). Further, a better understanding of what is important, valued and what works for older persons is required to give designers the necessary knowledge and insight to plan and design products and solutions such that older people can and do continue to enjoy all the daily life activities on offer within their built environment (Bridge and Elias, 2010). Recognition of the important contribution that older people can make is gaining ground, however age related discrimination, while often implicit, is still the norm in most design activities (Weisman, 1994; Clarkson & Coleman, 2015).

Involving users, and especially elderly users early in the design process leads to design solutions that are more aligned with the universal design approach (Demirbilek, 1999). The World Health Organisation does not have a standardised definition of aging. For the purpose of this paper and our research, an older person is defined as a person of sixty year old and above (WHO, 2013). Importantly, active participation in the design process by older people has a much wider and more universal benefit (Clarkson & Coleman, 2015). For instance, providing a towel rail that can also function as a comfortable and easy to reach grab bar is useful for everyone, irrespective of age if additional support is of benefit. Active participation has also been shown to have positive psychological benefits for the older people concerned (Tinsley, Colbs, Teaff, and Kaufman, 1987).

ISBN 978-1-84387-385-3

Background

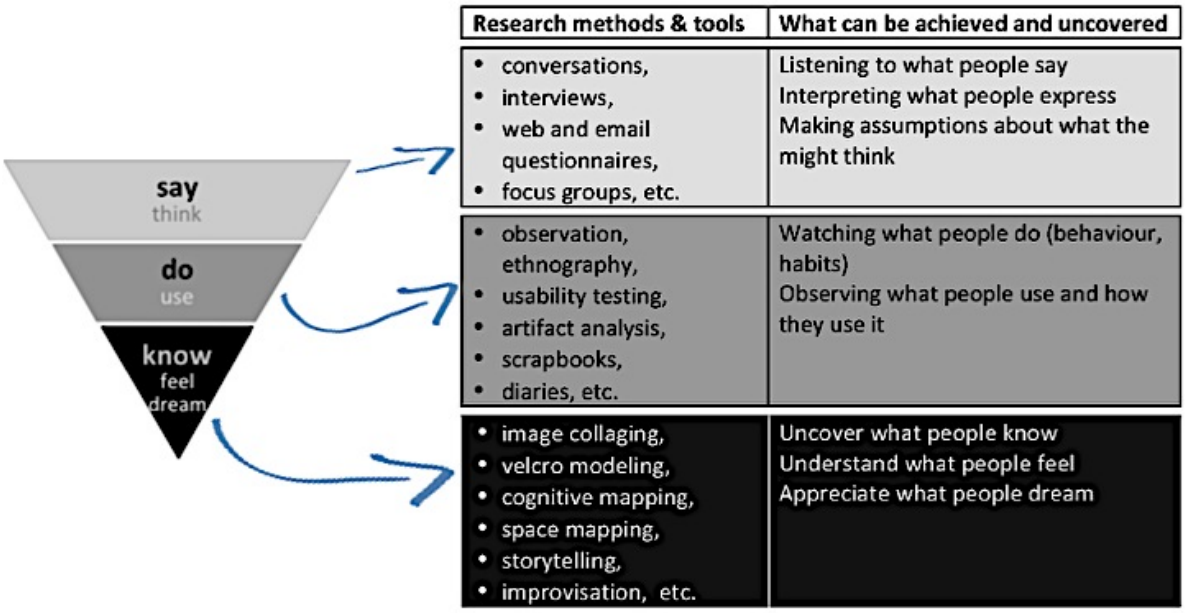
The design of the conventional domestic bathrooms is limited in its consideration for the needs of older people ageing at home. Unsupportive bathrooms combined with difficulties in self-care tasks are common and can lead to functional decline (Zingmark and Bernspång, 2011), dependence and reduced quality of life (Burton, Reed & Chamberlain, 2011). Although more supportive features and systems in the bathroom can help increase older people's ability to maintain independence and autonomy, products that fail to take into consideration the preferences and needs of older people can result in failed solutions (Heywood, 2004; Johansson, Josephsson & Lilja, 2009). Additionally the social model of disability predicts that an insufficiently supportive built environment may lead to greater rates of institutionalisation (Newman, Struyk, Wright & Rice, 1990), loss of social participation (Leyden, 2003), and a greater economic burden for both taxpayers and older persons alike (Carnemolla and Bridge, 2011).

Mapping the design activities that inform design outcomes

The user-centred design discourse has seen an increasing interest and emphasis on people's relationships and experiences towards products, services and systems Kocsis (2010). Past memories, current experiences and dreamed ideal experiences are all sources of inspiration and ideation for design (Sanders, 2000). To access that calibre of information, Sanders (1999) pioneered an empathic approach, crossing over between psychology and design where a designer aims to uncover what people say (widely used in marketing); what people do – as in their behaviour (studied in anthropology and design research); and finally what people know and can therefore make or create using projective tools (overlapping territories of psychology and design). Figure 1 below illustrates the different user involvement approaches and the related research methods employed in each one.

Combining different design research methods from these three different slices of qualitative information (what people say, what they do, and what they know) leads to better outcomes in terms of the quality of insight that may be obtained in that way. For instance, Brown (2009) views empathy as a critical mental habit that moves designers beyond thinking of end users as a set of metrics or standard deviations.

ISBN 978-1-84387-385-3



Research methods & tools	What can be achieved and uncovered
• conversations, • interviews, • web and email questionnaires, • focus groups, etc.	Listening to what people say Interpreting what people express Making assumptions about what the might think
• observation, ethnography, • usability testing, • artifact analysis, • scrapbooks, • diaries, etc.	Watching what people do (behaviour, habits) Observing what people use and how they use it
• image collaging, • velcro modeling, • cognitive mapping, • space mapping, • storytelling, • improvisation, etc.	Uncover what people know Understand what people feel Appreciate what people dream

Figure 1. Ways of understanding people (adapted from Sanders, 2000)

Our approach to our co-design strategy and its nine stages

Starting in September 2012, we organised co-design sessions with six elderly participants who volunteered to participate in co-design workshops. Applying Sanders' approach to understand people of *say*, *do*, *know* (See Figure 1), the co-designers were given booklets to individually fill out prior to the workshop (*say* and *do*), were involved in round table discussions of their bathroom environments (say), and finally were involved in storytelling through various co-design workshops (*do* and *know*). For instance, at the first meeting with our co-designers for the project, we did a walk-through exercise at the GWA Bathrooms and Kitchens public exhibition of the new Marc Newson range. During the viewing, we asked our co-design group members' feedback on the exhibited items. At that stage, we also asked the co-design group members for their assessment and feedback on the survey questions which we provided as hard copy. They were also given a booklet, which asked them to reflect on their current bathroom in terms of likes and dislikes.

Our co-designer's role involved input into the research methods e.g. "nothing about us without us", and participation in collaborative design workshops where their input and ideas provided insights that assisted our GWA Bathrooms and Kitchens design collaborators to better "design" a bathroom environment for the future, i.e. bathroom products that are safer, more supportive for those with functional issues, more usable and more desirable and attractive. Co-design also guided and validating our research approach. Figure 2 below illustrates the action based research cycle representing the co-design activities and the

ISBN 978-1-84387-385-3

timeline of the project, for instance, the nine steps coloured black, orange and red represent the co-design sessions or workshops by year (black=2012, orange=2013, and red=2014). Each of these steps is described briefly later in the paper.

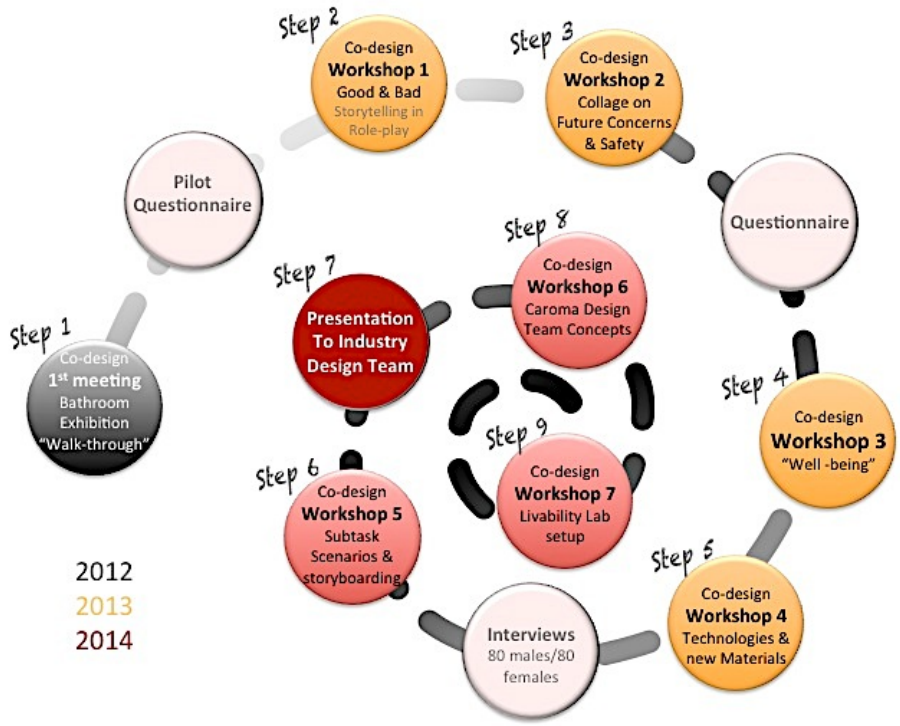


Figure 2: Summary of the co-design steps in the bigger project

Figure 2, also denotes activities (the pale pink circles), which the co-designers were not actively involved in, but contributed in different ways to. The co-designers contributed to questionnaire item development (for pilot testing) involved testing the content and structure in consultation with our co-design group. Additionally, the co-designers advised on the emotional impact of the questionnaire, including the pack contents, and its look-and-feel so as to engage as many older people as possible. For example, the topic of accessing help or assistance after a fall was brought up on several occasions. Many of the co-designers recounted stories of older people not being able to get up or get help for hours after a fall in the bathroom due to being alone, not being heard or falling in a position where they blocked access. As a result, a subjective survey item on concerns for bathroom safety was added.

Overall, the co-design workshop program successfully identified commonalities between older people in relation to domestic environments. Creating several co-design toolkits for our workshop program allowed us to explore a combination of methods to uncover older people's views, feelings and ideas on the domestic environment and introduce them into

ISBN 978-1-84387-385-3

the process of developing solutions. The main activities in which the co-designers were engaged are listed in Table 1 below.

Table 1. The 9 stepped co-design process on the domestic bathroom environment

Step 1: Bathroom exhibition 'walkthrough'	Co-designers provided feedback on new products and draft bathroom survey
Step 2: Co-design Workshop 1	Storytelling and role play were used in small groups to identify bathroom likes and dislikes
Step 3: Co-design Workshop 2	Collage and photos were used to discover and rank concerns for changes that might be required over time.
Step 4: Co-design Workshop 3	Interaction with cutting edge technologies, followed by discussion and questions
Step 5: Co-design Workshop 4	Interactive feedback concerning traditional anthropometric and other video and audio measurement practices, followed by discussion and questions
Step 6: Co-design Workshop 5	Storyboarding of bathroom usage when preparing to go out and returning home after a hot/sweaty day.
Step 7: Presentation to Industry design team	Co-designers design concepts aspirations presented to GWA Bathroom and Kitchen team by researchers
Step 8: Co-design Workshop 6	Focus group feedback on two full bathroom design concepts developed from the design concept aspirations by the GWA Bathroom and Kitchen team.
Step 9: Co-design Workshop 7	Pilot testing of livability laboratory protocol for feasibility and comfort.

Involving older people as our co-designers in this research has been clearly useful, yet with some obvious challenges. For example, when older participants are taken out of their everyday life context, they may not be well equipped to contribute to a creative process (Whiteside, Bennett, and Holtzblatt, 1988). To avoid this issue, we provided information on state of the art technology and advanced materials, so that the participants would feel more confident to know what is available and what is possible, and could therefore build their ideas on that knowledge.

Conclusion

Active participation of elderly people early in the design process involves their collaboration with designers, as partners, as well as enhancing the knowledge they need to be equal participants in the design process. The presented stages of co-design activities demonstrate that older people can contribute effectively to the design of domestic bathroom environments. Key learnings from our work to date include: the importance of trust;

ISBN 978-1-84387-385-3

sensitivity to older persons needs, which differ in relation to history, geography, culture and gender; importance of enhancing visualisation of alternative outcomes and perspectives; and provision of some additional training in what is technologically possible. Importantly, the design concepts and solutions that we reached with the contribution of older co-designers provided the research team and the industry partner with rich avenues for insight and other ways of knowing about a more inclusive bathroom environment. We are currently applying our enriched understanding to our next steps and to new projects.

This work was supported by the Australian Research Council in partnership with GWA Bathrooms and Kitchens [grant Linkage Project LP120100395].

ISBN 978-1-84387-385-3

References

BRIDGE, C., and ELIAS, A. M. (2010). Future proofing our environments for an ageing population. Paper presented at the 3rd International Urban Design Conference: Designs on our Future, Southport BC, Qld.

BROWN, T. (2009) Change By Design: How Thinking Transforms Organizations and Inspires Innovation. New York: Harper Business.

BURTON, M., REED, H. and CHAMBERLAIN, P. (2011). Age-Related Disability and Bathroom Use. *Journal of Integrated Care*, **19**, 6.

CARNEMOLLA, P., and BRIDGE, C. (2011). Home Modifications and their impact on waged care substitution. Home Modification Information Clearinghouse, University of NSW. Available from www.homemods.info: Sydney

CHARMAN, H. (2011). Exploring, Experimenting and Evolving with Audiences for the new Design Museum. Last accessed 18 April, 2013 at: www.engage.org/training/.../Helen_Charman_presentation_SS11.ppt

CLARKSON, P. J, and R COLEMAN. (2015) History of Inclusive Design in the UK. Applied ergonomics **46**: 235-247.

DEMIRBILEK, O. (1999). Involving the Elderly in the Design Process: A Participatory Design Model for Usability, Safety and Attractiveness, PhD Thesis, Ankara: Bilkent University.

DEMIRBILEK, O. (2001). Users as designers. Include 2001. 18-20 April 2001, the Royal College of Art, London.

DEMIRBILEK, O. & DEMIRKAN, H. (2004). Universal product design involving elderly users: a participatory design model. Applied Ergonomics, **35**, 361-370.

GILLEARD, C., & HIGGS, P. (2014). Third and Fourth Ages. The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society.

HEYWOOD, F. (2004). The health outcomes of housing adaptations. *Disability & Society*, **19**, 129-143.

JOHANSSON, K., JOSEPHSSON, S. and LILJA, M. (2009). Creating possibilities for action in the presence of environmental barriers in the process of 'ageing in place'. *Ageing & Society*, **29**, 49-70.

KOCSIS, A. (2010). Co-Designing New Media Spaces, Doctor of Philosophy, School of Media Arts, iCinema Centre for Interactive Cinema Research, University of New South Wales, 42.

KUJALA, S. (2003). User involvement: a review of the benefits and challenges. *Behaviour and Information Technology*, **22** (1), 1-16.

LEYDEN, K M. (2003). Social Capital and the Built Environment: The Importance of Walkable Neighbourhoods. *American Journal of Public Health* (September), **93** (9), 1546-1551.

NEWMAN , S J., STRUYK , R., WRIGHT. P., and RICE, M. (1990). Overwhelming Odds: Caregiving and the Risk of Institutionalization. *Journal of Gerontology*: Social Sciences **45**: 173-S183

PANCAKE, C.M. (1997). Can Users Play an Effective Role in Parallel Tools Research? *International Journal of Supercomputing and HPC,* **11** (1), 84-94.

ISBN 978-1-84387-385-3

SANDERS E.B.N. (1999). Postdesign and Participatory Culture. Useful and Critical: The Position of Research in Design. 9-11 September 1999; Tuusula, Finland. University of Art and Design Helsinki (UIAH).
SANDERS E.B.N. (2000). How we do it: Understand Consumers. Sonicrim. Retrieved 16 March, 2001 from http://www.sonicrim.com/red/how/under.html.
SANDERS, E.B.N. (2006). Scaffolds for building everyday creativity, Designing Effective Communications: Creating Contexts for Clarity and Meaning, (ed.) Frascara, Jorge, New York, Allworth Press, 65-77.
TINSLEY, H., COLBS, S., TEAFF, J. and KAUFMAN, N. (1987). The relationship of age, gender, health and economic status to the psychological benefits older persons report from participation in leisure activities. *Leisure Sciences*, (1), 53-65.
WEISMAN, L. K. (1994). Discrimination by design: A feminist critique of the man-made environment. University of Illinois Press.
WHITESIDE, J., BENNETT, J., & HOLTZBLATT, K. (1988). Usability engineering: Our experience and evolution. Handbook of human-computer interaction, 35.
WINDLEY, P. G., and MCCLURE, W. R. (2007). Designing with People: Human Behavior, Culture, and User Participation, in The Built Environment: A Collaborative Inquiry Into Design and Planning, Wiley, John Wiley and Sons Ltd, 45-55: 45.
WORLD HEALTH ORGANISATION (WHO) (2013). Health statistics and health information systems: Definition of an older or elderly person. Last accessed 6 May 2013 at: http://www.who.int/healthinfo/survey/ageingdefnolder/en/
ZINGMARK, M. and BERNSPÅNG, B. (2011). Meeting the needs of elderly with bathing disability. *Australian Occupational Therapy Journal*, **58**, 164-171.

ISBN 978-1-84387-385-3