Equipping designers for Inclusive Design

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J. Goodman, P.M. Langdon, P.J. Clarkson, Equipping Designers for Inclusive Design. Gerontechnology 4(4): 229-233. To foster good design for older and disabled people and to equip designers to address their needs, we must engage with the design process in real situations. To do this, we need to know more about what the design industry actually does and, in particular, how it involves users and user information. This paper presents initial results on this from an observational study of designers and a literature review and discusses their implications for the provision of guidance and user information to designers engaged in inclusive design.

Keywords: inclusive design, industry.

Widespread population ageing[1] has prompted increasing acknowledgement of the importance of inclusive design (i.e. making products useable by the wider population including older and disabled people), resulting in, for example, the UK Disability Discrimination Act[2]. However, companies and their designers do not always know how to meet these needs. They often lack clarity about target users' characteristics and lack knowledge about how to address these in design. If there are going to be truly accessible and usable products in the marketplace, we must provide designers with more information and guidance on inclusive design and particularly on users. However, for such information to be effective, it needs to be tailored to designers' needs and ways of working. We need to know what methods designers currently use to inform and guide design and how they obtain and apply user information.

In this paper, we seek to expand this knowledge by presenting initial results from a study of design practice, in particular, from an observation and interview study of designers, backed up with information from the relevant literature. We focus on product and communication designers because their remits increasingly cover computer systems and services. Computer systems are increasingly embedded in daily life as computers move off the desktop and into everyday devices like mobile phones and microwaves, which sit within the remit of the product designer rather than the information technology (IT) professional. In addition, communication designers now commonly design information in electronic formats. Therefore, if computer systems as a whole are to be designed effectively for older people, we must influence these designers as well as more traditional IT professionals and interface designers.

Methodology

A convergent approach

We employ a convergent methodology, using multiple methods that are capable of independent results. This allows cross-checking of findings and produces a rounded picture of design practice, without favouring any one interpretation. A literature review has fed into surveys, observational studies and expert

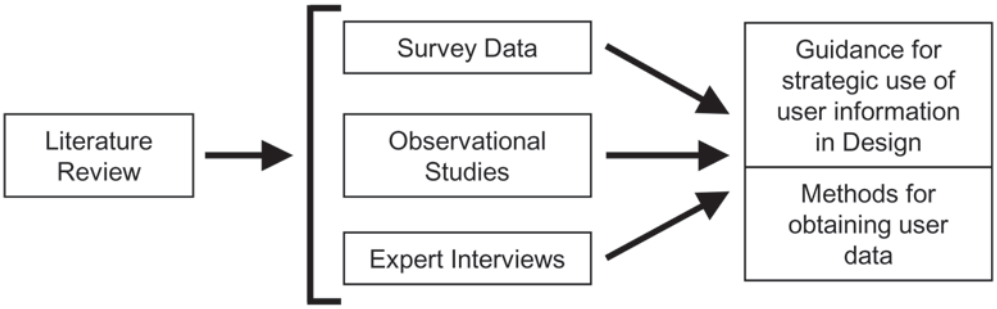

Figure 1. Overview of methodology

interviews (*Figure 1*). This second phase is ongoing and we here present initial results from the observational studies, showing how they are backed up by information from the literature review. A fuller description of the literature review has been published elsewhere[3], as have initial results from the surveys[4].

Observational study

The observation and interview study examined the 2005 Design Business Association (DBA) Inclusive Design Challenge[5], an annual inclusive design competition, organised by the Helen Hamlyn Research Centre at the Royal College of Art in collaboration with the DBA. Information was collected from all six companies involved in the challenge but we focused especially on three of them, tracking their processes in more detail.

We tracked the teams' process in formal meetings and interactions with users, collecting audio and visual data and structured observations. These were augmented with semi-structured interviews, developed based on findings from the literature review and earlier projects. These interviews investigated what happened outside meetings and examined the companies' general design process.

This paper presents preliminary results from the investigation, examining design methods and information use in early and middle stages of the design process. Analysis takes into account the differences caused by the nature of the design challenge, in particular, the use of critical user forums (i.e., directed interaction between designers and a mixed group of disabled users[6]).

Table 1. Design Methods

Stage	Method
Early stages (idea generation, concept design)	Brainstorming / idea generation by discussion; may be guided, e.g. using functional or task analysis
	Existing and parallel product search
	Sketching; basic mockups
	Design concept exploration, developing several concepts at a basic level
Later stages (design development)	Narrow down concepts, using informal, team-based evaluation
	Sketching; more detailed and sophisticated mockups
	3D computer models and animations
	Investigation of technical details

Results and Discussion

Design methods

Table 1 shows some of the more common general design methods used by the companies, both on the challenge and in general (user involvement methods are described below). There was, however, a degree of variety, with individual companies and designers adopting and adapting their own methods.

There was a tendency, especially in early stages, to use informal, exploratory, light-weight methods. In later stages, design possibilities were narrowed down, often still using informal techniques, and details of designs were considered, using more detailed mockups and computer-aided design.

Similarly, the literature suggests that commonly used methods tend to be those that can be adapted and 'used in an intuitive and iterative manner'[7]. Visualisation methods, such as sketching and modelling, are also popular[8] and it is considered important that methods provide an appropriate level of detail for the current design phase[9].

These findings indicate that methods provided to designers, e.g., to support inclusive design, should be flexible, indicate where in the design process they are suitable, and not be prescriptive or overly formal.

User data

Designers refer to various sources of information to inform their designs. In their usual design process, designers in our study placed a high emphasis on information provided by the client in the design brief (as also indicated in the literature[8]) This may or may not include information about target users, although some companies did insist to clients that briefs should contain some specified user information. Other information was provided by the company's marketing or research department[10].

This user information was commonly backed up by introspection, anecdotal evidence, reference to designers' own experiences and imagining themselves in the user's role[10]. Some published material was also referred to, especially regulations, standards, statistics and public information. Experts were sometimes consulted, particularly when these were readily available, as on the DBA Inclusive Design Challenge. Some user research was carried out as described in the section on User Involvement, below.

These practices are useful but limited. Commonly used published material often fails to give in-depth insight into users and many of the methods used are very informal, with designers even referring to introspection and their own experiences to ascertain users' needs. Such methods, while helpful, are limited, especially when the target users are older or disabled. Designers are usually young and able and there is an enormous gap between their experiences and needs and those of the target users. They can find it hard to imagine what it is like to be in the position of someone so different from themselves, particularly without detailed, in-depth information about the users' lives[11].

The reasons why designers do not probe further are unclear. However, in some companies there was a perception that the brief contains all the user information needed. Although this may be true in some cases, it seems doubtful in general, particularly when dealing with the complexities of older people's characteristics, given that briefs vary widely and often only present summarised information, specific to the client's desires for the product. In fact, some of the designers in our study complained

that "the clients just don't have that level of detail – the information is very brief". Other barriers were the lack of time and money necessary to search out further information or to do user research.

We need to raise awareness of the importance of detailed user information, both on the part of the client, who provides information and allocates time and money for research during design, and of the designer, who needs to be motivated to search for more information. User information must also be made more easily accessible, perhaps by educating designers on useful data sources. More information is needed for helping designers to empathize with older and disabled people, to improve the realism and efficacy of popular methods such as introspection and reference to own experience. This information needs to go beyond statistics and demographics to give insight into users' lives and needs to be presented in easily accessible formats that encourage empathy, such as stories about users' lives, personas[12], capability simulators[13] and card and magazine formats.

User involvement

The design challenge projects were atypical in the encouragement given to involve users, particularly through user forums. Therefore this paper does not discuss user involvement on the observed projects but rather companies' descriptions of it in their general processes.

Although contact with older and disabled people has been shown to be important for ensuring inclusive designs[14], we found that, in practice, user data was sometimes, but not always, backed up by user contact. In half of the companies examined, designers usually had little user contact. Some companies relied on information in the brief, while others had specialist departments carrying out user research and felt that this was then outside the designers' role.

When users were involved, employed methods were often informal, especially early in the design process. Designers often talked to users through unstructured interviews (or just conversation) and focus groups. It was also common to do informal observation, watching users in real-life situations (e.g., in the supermarket), but without particularly going out of their way to do so. When users were brought in, they were often friends and family. The use of such informal methods is also attested to in the literature[15]. Reasons for this limited user involvement were similar to those above: lack of time, money and awareness of need.

As well as increased awareness of the importance of user contact, designers need both more light-weight, cheap methods that give reliable results and guidance on how to better use existing methods. Critical user forums, for instance, have proved to be very effective but can be expensive in terms of preparation, time and money. Informal observation is light-weight and can provide good results but can be unreliable and open to biases, particularly when considering older and disabled people. Work on how to improve such methods without losing their current advantages, perhaps by combining diverse methods into a unified strategy, would be particularly valuable for ensuring inclusive design.

Selecting users is also an issue. Family members and friends may be fairly representative of the general population but are unlikely to contain the range of ages and disabilities needed for inclusive design. We need to make it easier for designers to access and involve older and disabled people.

Conclusions and Further Work

These results highlight designers' informal ways of working and their restricted use of user information and involvement. Implications for equipping designers in inclusive design include the need for methods, particularly user research methods, that are informal and lightweight, yet give more reliable data and deeper insight into users' needs. More accessible user information is needed, particularly information that builds empathy with and in-depth understanding of users.

We plan to continue this study, combining the results with data from a survey and forthcoming expert interviews to get a broader picture of designers' work practices and the subsequent implications for supporting them in inclusive design, and putting these into practice in the development of information and guidance for designers.

Acknowledgements

This work is funded by the Engineering and Physical Sciences Research Council through the i~design 2 project. We would also like to thank Julia Cassim who ran the Inclusive Design Challenge. Some of the findings from the literature review have been previously published in conferences[3,16].

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