ADDRESSING CAPABILITY LOSS IN DESIGN

Joy Goodman-Deane, Pat Langdon, & John Clarkson

Engineering Design Centre, Department of Engineering
University of Cambridge, Cambridge CB2 1 PZ, UK
Email: jag76@cam.ac.uk

Past work and interest in the topic

Our work focuses on inclusive design, which is a design approach that seeks to make mainstream products and services more usable by and suitable for a wider range of people, including those who are older or have disabilities [2]. In particular, we focus on the impact of capability loss on usability, and strive to develop guidance and tools for designers to help them to take this into account.

Much of our work to date has focused on the impact of motor and sensory capability losses, such as reductions in dexterity, vision and hearing. We have drawn together guidance for designers [1], explaining how to address these in design, based on an understanding of the effects of these capability losses and on best practice guidelines. The guidance covers a range of different design situations and the vision section explicitly addresses the design of text to be easy to read.

This resource also includes sections on cognitive capabilities. However, while there has been significant progress on understanding the impact of physical and sensory capability loss, the effect of cognitive loss is less clear. While good guidelines are available in some areas, how to tackle other aspects is rather confused.

One of the areas in which this is highly significant is in the use of written language. Many products and services are highly reliant on the use of text to explain their use, convey important information or even just to label buttons. Yet cognitive disabilities, learning difficulties and serious memory problems can make reading difficult or even impossible.

Current motivation for the workshop

In order to present comprehensive design guidance, we want to know how best to address the difficulties with written language, including those caused by both sensory and cognitive impairments. We are keen to find out how written language can be designed and presented so as to reduce the barriers to its readability to a minimum. In addition, because reading is sometimes impossible, we want to find out more about alternatives to text, such as (but not restricted to) images, symbols, speech and multimedia, and how they can best be used. Our focus is not on researching these issues ourselves but on presenting the best possible guidance and information to those who will put it into practice, such as designers, clients and design managers.

Therefore, we hope that the workshop will give us a better understanding of the field, and the ways in which these issues are currently addressed. We also hope that discussion will suggest new ways of dealing with these complex issues in design.

Critical issues

- There are many different reasons why someone might have difficulty reading and it is challenging to address all of these at once. However, it is important that we do consider the whole range, so that we do not produce a set of disparate solutions that cannot be easily applied together. We feel that we should avoid producing a

confusing number of different designs, all suitable for slightly different groups of users. We should try to seek commonalities and common solutions where possible.

- Designs should not just be easy to read and understand, they should also be attractive. One of the issues with accessible products is that although they may be easy to use, they are often also ugly or boring, and people do not want to use them. In some cases, these designs are even seen as stigmatising. Designers also often complain that they do not want to make their text accessible because they assume this means using large, ugly fonts or standardised layouts. We must therefore be careful not to present guidance that leads to restrictive, unattractive designs.
- It is important to consider the whole range of user needs, and not focus on readability to the exclusion of other issues. For example, people with cognitive loss often have other cognitive difficulties in addition to problems with reading. As a result, it is unhelpful (for example) to replace a block of text with a complex system of symbols that relies heavily on memory. Such people also often have other disabilities, such as poor eyesight or weak hearing, and these should be taken into account in the design of information for them.
- It is also important to examine the social context in which the product or service would be used. We need to consider issues such as whether the user will have someone to help him or her, whether the need to get help from someone else would be embarrassing or acceptable, and whether admitting the inability (or ability!) to read has social implications. We also need to consider whether the type and form of the product or service is actually suitable for the social and cultural context. If it is not, then its ease of use and ease of readability become largely irrelevant.
- Electronic materials have great potential for increasing readability by allowing the reader to customise the text. For example, a reader may be able to change the text size, contrast or language, or to convert written text into another modality, such as speech. However, these materials must be implemented with care to avoid the increased complexity in their use excluding the very people they are intended to help.

Issues to avoid

We consider that the workshop should avoid focusing on the technical details of any individual research area that attendees from other fields or application areas may not understand or find very interesting. It is more helpful to focus on the larger picture and on questions that are relevant to many fields.

Design guidelines

Our work is focused on the inclusive design approach, which seeks to extend mainstream products to be usable by as many people as possible, rather than producing specialised products for people with particular needs. In particular, our approach is detailed in a set of guidance we have produced on inclusive design, which is freely available on: http://www.inclusivedesigntoolkit.com [1]. This includes descriptions of key capabilities and their impact on the use of products, as well as design guidance on how to address capability loss. In particular, the Vision section (in "User Capabilities > Vision") contains guidance on designing text so that it is easy to read for people with vision loss. However, while we have guidance on addressing issues of perception and attention, memory and learning (in the "User Capabilities > Thinking" section), we do not currently have explicit guidance on the impact on cognitive capability loss on reading.

References and Resources

[1] Clarkson, P.J., Coleman, R., Hosking, I., and Waller, S. (2007). Inclusive design toolkit, Engineering Design Centre, University of Cambridge, UK. Also available online at: http://www.inclusivedesigntoolkit.com.
[2] Keates, S., Clarkson, P.J. (2003). Countering design exclusion: An introduction to inclusive design. London: Springer.