Towards Curricula in Design for All for Information and Communication Products, Systems and Services

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Abstract

The aim of the Inclusive Design Curriculum Network (IDCnet) is to integrate information and identify core knowledge sets and skills for model curricula in design for all (DfA) specifically for information and communication products, systems and services. Identifying such knowledge and skills is a step towards providing designers with training and competence in inclusive design principles, methods and tools. One of the first major activities of IDCnet is a workshop to be held in Helsinki in February 2003 called 'Design for All Curriculum: Towards a synergy of the needs of ICT industry and education.' The workshop will be bringing together:

- Experts from DfA-aware industries to discuss and suggest what they would expect from graduates they would employ who claim to have proficiency in DfA, and
- Experts from the academic world, with teaching or research interests in DfA, to use their own experiences in the field to suggest key knowledge sets and skills that would be necessary for curricula in this area.

This presentation will:

- summarise and discuss the Helsinki results and recommendations
- discuss existing fora, information resources, materials and tools which could form part of model DfA curricula
- seek further views and opinions from educators, trainers, students, education policy makers and end-users, and
- promote the network to a wider audience of those interested in design for all curricula in the specific field of ICT.

1.   Introduction

The Inclusive Design Curriculum Network (IDCnet) project began in August 2002 under the EU Information Society Technologies (IST) Programme (http://www.idcnet.info). The aim of this project is to integrate information and identify core knowledge sets and skills for model curricula in design for all (DfA) specifically for information and communication products, systems and services. As a thematic network, a major aim of the project is also to support the creation of a European network to promote these interests, following the e-Europe objectives (http://europa.eu.int/information_society/eeurope/index_en.htm) and coordinating our efforts with the European Design for All e-Accessibility Network (EDeAN, http://www.e-accessibility.org).

   It is evident that information and communication technologies (ICT), ranging from, for example, computers to mobile telephones, are important in many sectors of society today. Such technologies enable participation not only in tele-working and tele-education, but also in e-health, leisure, e-shopping and other consumer activities. In many cases, older and disabled people may be the most likely to benefit from such new technologies, products and services. However, in reality they may have difficulties in taking advantage of the systems due to limitations in their physical, sensory or cognitive abilities. Thus, as advances are made in ICT, older and disabled people may lag behind—unless technologies are designed with their requirements in mind (Abascal J and Nicolle C 2001). Professionals in the field of ICT are becoming increasingly aware of the needs of people who are older or disabled, a population that is quickly growing. In principle, professionals may even <u>want</u> to design more inclusively (and know in many cases that they may <u>have</u> to do so to comply with legislation), but they are likely to be struggling with exactly <u>how</u> to go about it.

2.   Promoting Inclusive Design

To try to make a product or technology usable by everyone is a near impossible task—but designers of everyday products, technologies, services and environments should try to consider the individual needs and preferences of as many people as possible. This principle of 'inclusive design' or 'design for all' can be promoted through a top-down approach, for example through legislation such as the Disability Discrimination Act (www.disability.gov.uk/dda/index.html). Inclusive design can also be promoted through a bottom-up approach by providing designers in the field with the principles, methods and tools that they can use to achieve more usable products for all.

   Designers are, however, often under a great deal of time-pressure and so if knowledge is not presented in a usable format, it will be either discarded or ignored (Macdonald A 2001). In addition, designers may find it difficult to translate and implement knowledge of user requirements into a functional and technical specification. Training and competence in the use of appropriate user research methods and tools for inclusive design are needed, and this clearly emerged during discussions on obstacles and solutions for more inclusive design at the Include 2001 Conference (April 2001, see http://www.hhrc.rca.ac.uk/events/include/).

   Our experiences show that guidance in the use of human factors methods with older and disabled people is not in a practical form that designers find accessible and usable. One example stems from the TIDE USER project, led by the HUSAT Research Institute at Loughborough University (now part of the Ergonomics and Safety Research Institute). One of the outputs of this work was a design manual called USERfit (Poulson, D, Ashby M and Richardson S 1996), which included a paper-based toolkit providing guidance on user

involvement and user-centred design, methods to achieve it and a range of recommendations and design advice. Although USERfit was designed as a handbook for the assistive technology sector, its principles and methods are grounded in an inclusive design approach, but it is clear to its authors that its impact in the field has been limited. This is not just because it is paper-based and quite unwieldly to handle, but also because it is not easily integrated into developers' modes of working. Such methods and tools for inclusive design need to become an integral part of the designers' culture and way of thinking before they can be taken up as a matter of course. If designers can be encouraged and more easily enabled to consider the needs of older and disabled people, then the quality of life for all older or disabled consumers, even if only temporarily disabled, will increase. Products, technologies and services will not only be more accessible to them, but also more usable for everybody.

3.   The IDCnet approach

IDCnet aims to identify how the knowledge and skills needed for inclusive design can be integrated into design courses for ICT. The first step towards providing designers with training and competence in inclusive design principles, methods and tools is to determine core knowledge sets and skills for model curricula in design for all.

3.1   The Helsinki Workshop

One of the first major activities of the project is a workshop to be held in Helsinki in February 2003 called 'Design for All Curriculum: Towards a synergy of the needs of ICT industry and education.'   The workshop is focusing on one of the key points of the eEurope 2002 action plan, in particular, to "Ensure the establishment and networking of national centres of excellence in design-for-all and create recommendations for a European curriculum for designers and engineers."

   Experts in DfA-aware industries (e.g. software and hardware designers) will be discussing their needs and suggesting what they would expect from graduates they would employ who claim to have proficiency in DfA. We will also try to elicit from industry their perception of the design for all philosophy, what strategies they have for implementing DfA, and what impact legislation is having or is expected to have on current design practices.

   In addition, experts from the academic world, with teaching or research interests in DfA, will use their own experiences in the field to suggest key knowledge sets and skills that they feel are necessary for curricula in this area. An overview will be provided of current DfA curricula and courses which have a DfA element to them, as well as obtaining examples of existing course material used for this purpose.

3.2   Some examples of existing strategies

Many programmes teaching design for all focus on architecture and the built environment, and there are fewer specific programmes which can apply to design for all in a wider range of application areas, in particular with regard to ICT. In the UK, our survey has found that design for all can be covered:

- As part of a mainstream course, with often 1 or 2 lectures on design for all tending to be concentrated on awareness raising, demographics, requirements of older and disabled people, and guidelines, or

- Specialist courses or modules in DfA, which are likely to be less common.

As an example of the latter, the Department of Human Sciences at Loughborough University offers a module called Ergonomics of Disability and Ageing, taught by ergonomists from the Ergonomics and Safety Research Institute (ESRI). This module is offered as a final year option for one semester to students in ergonomics, psychology, human biology and information technology, as well as to the MSc programme. The aims of this module are for the student:

- to develop an awareness of ageing and disability and explore how ergonomists can play a part in the design of products, services and the built environment for elderly people and people with disabilities,
- to explore the concepts of 'universal', 'inclusive' and 'barrier free' design, as applied to particular applications (low and high technology examples), and
- to examine the role of ergonomists in the development and evaluation of adaptations, generic or individual solutions.

In addition, the Department of Design and Technology at Loughborough University offers a module called Inclusive Design as a third-year option to both final year undergraduates and MSc students. This module examines the needs of older and disabled people specifically from a designer's point of view. However, for the first time this past year, ergonomists and designers have taken the earlier mentioned module Ergonomics of Disability and Ageing together and have benefited from multi-disciplinary class exercises and discussions. Perhaps this can be seen as just the beginning of a more integrated approach to a wider curriculum in design for all across the university?

It is also important to investigate other programmes which are addressing inclusive design issues and when and how the concepts should be introduced. For example, through the Research Associates programme at the Helen Hamlyn Research Centre, new design graduates are employed to work three days a week for 12 months on 'live' design research projects in collaboration with industry (http://www.designcouncil.info/inclusivedesign/helen_hamlyn.html). Case studies from this programme (http://www.designcouncil.info/inclusivedesign/) demonstrate that inclusive design forms an important part of their work, ranging from packaging design, product design, communication design, environmental design and furniture design, and a number of these projects include applications of ICT. Programmes such as this demonstrate the various educational levels at which a design-for-all curriculum can be promoted, and consideration should also be given as to the optimum methods that should be employed.

Examples such as these from higher education will be synthesised in order to suggest core knowledge sets and skills that academics feel should be included in a design for all curriculum. Matching these experiences and suggestions with the needs of industry will then lead to implications for further curriculum development in DfA.

4.   Conclusions and Next Steps

Conclusions cannot be drawn until the results of the first IDCnet workshop in Helsinki have been analysed, just in time for our presentation at Include 2003. At that time, we shall :

- summarise and discuss the Helsinki results and recommendations

- discuss existing fora, information resources, materials and tools which could form part of model DfA curricula
- seek further views and opinions from educators, trainers, students, education policy makers and end-users, and
- promote the network to a wider audience of those interested in design for all curricula in the specific field of ICT.

The results of both the Helsinki Workshop and feedback from this presentation at Include will feed into the IDCnet's second workshop, to be held at the Fraunhofer Institute in Sankt Augustin, Germany, in late 2003, on the topic of "DfA Education & Research Policies and Strategies" to suggest best practices for adoption in the future. We would like to make these results available to participants at Include 2003, and we will also welcome comments or suggestions in the future.

5. Acknowledgements

6. References

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Poulson, D, Ashby, M, and Richardson, S (1996). USERfit: A practical handbook on user centred design for assistive technology.   ECSC-EC-EAEC, Brussels-Luxembourg (can be found on the EU INCLUDE project's Web site at www.stakes.fi/include/)