Curricula recommendations – an update from IDCnet

Colette Nicolle
Ergonomics and Safety Research Institute (ESRI)
Loughborough University, UK
c.a.nicolle@lboro.ac.uk

Jenny Darzentas*
Department of Product and Systems Engineering,
University of the Aegean, Greece
jennyd@aegean.gr

Christophe Strobbe*
Katholieke Universiteit Leuven, Belgium
christophe.strobbe@esat.kuleuven.ac.be

Päivi Tahkokallio*
National Research and Development Centre for Welfare and
Health (STAKES), Helsinki
paivi.tahkokallio@stakes.fi

Carlos A. Velasco*
Fraunhofer-Institut für Angewandte Informationstechnik (FIT),
Germany
Carlos.Velasco@fit.fraunhofer.de

*Co-authors in alphabetical order

Keywords: inclusive design, design for all, curricula, ICT

Abstract

This paper summarises some of the key findings and recommendations of the Inclusive
Design Curriculum Network (IDCnet) project, under the EU Information Society
Technologies (IST) Programme. These findings include a description of the taxonomy of
core knowledge and skills for model curricula for information and communication
technologies, the piloting of experiences in using the taxonomy, examples of teaching

material, work on the optimal graduate profile, and recommendations for higher education and research policy and strategy.

1. Introduction

The aim of the IDCnet project (http://www.idcnet.info), which ran from August 2002 to May 2004, was to integrate information and identify core knowledge sets and skills for model curricula in Design for All (DfA) specifically for information and communication technologies (ICT) and services. However, from the outset, although the brief was ICT, it was important to consult the experience gained from universal design in the built environment. As a thematic network, a major aim of the project was 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 at http://www.e-accessibility.org).

A number of issues were highlighted at Include 2003 (Nicolle, Rundle and Graupp, 2003) that were relevant to what we were trying to do in IDCnet, for example:

Usable methods and tools need to become an integral part of the designers' culture
Inclusive design learning needs to be integrated into the curriculum. The question is whether inclusive design needs to be a separate element or totally integrated
Students' experiences must be relevant and accurate
Designers need exposure to real users
More case studies are needed that will demonstrate best practice.

In light of the Bologna agreement (http://europa.eu.int/comm/education/policies/educ/tuning/tuning_en.html), it makes sense to approach these issues on a pan-European scale, rather than at a national level, and the IDCnet project was well placed to do so. The main contributions from the project include:

Developing a taxonomy of core knowledge and skills for model curricula
Conducting pilots and documenting experiences to assess the taxonomy
Providing examples of teaching material, as well as recommended websites and other resources
Suggesting thoughts on an 'optimal graduate profile' for Design for All in ICT
Providing specific recommendations for higher education and research policy and strategy.

2. Taxonomy of core knowledge and skills

An initial survey collected information about the type of knowledge and skills being taught under the umbrella of Design for All, and this information was then organised into a taxonomy. The categorisation was then assessed for its usefulness and completeness in several ways – in a practical workshop setting, by expert review, and by using it in a real teaching setting (Darzentas, ed., 2003; Darzentas, ed., 2004a).

The refined framework of this taxonomy is shown in the figure below. This shows how sectors other than ICT, such as those for the Built Environment or Transportation Systems, could be represented.
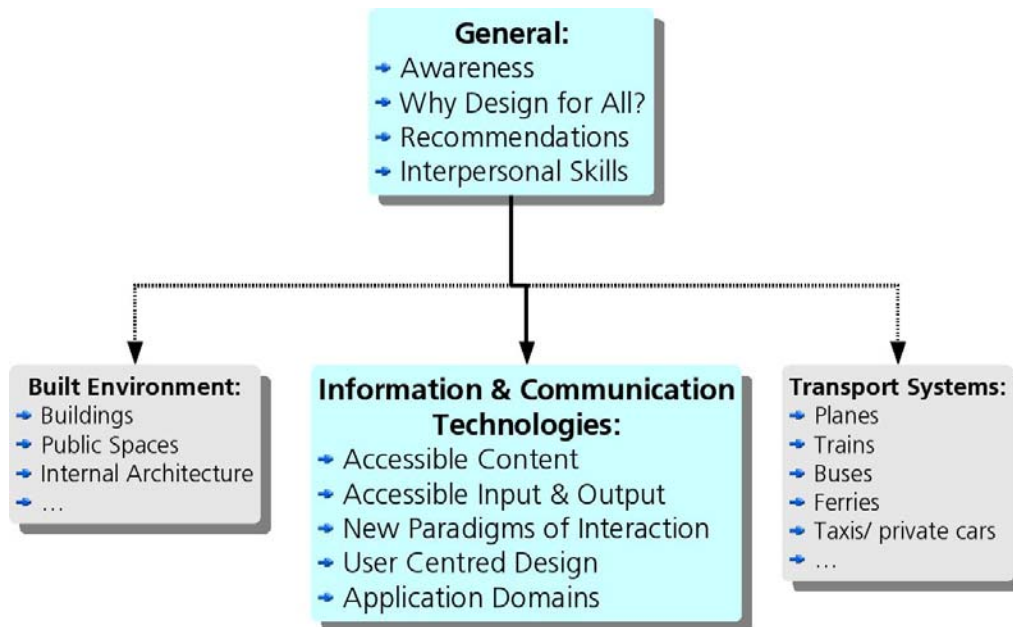

Figure 1
Taxonomy of Core Knowledge and Skills

The taxonomy is meant to be descriptive, rather than prescriptive, and does not in any way mandate the form that a specific course content might take in terms of emphasis, topics and depth/breadth of knowledge and skills.

3.   Teaching pilots and sample material

3.1   Teaching pilots

The teaching pilots, conducted by "champion" members of the network, helped to validate the taxonomy for its usefulness and completeness. The pilots ranged from specific modules or courses to one-off sessions (Darzentas, ed., 2004b), and had several interesting positive results. For example, it was reported that the taxonomy helped lecturers to plan their courses, in terms of thematic content, and to enrich existing courses with knowledge from other categories. It was also considered useful as a classification system for researchers in the area and others involved in classifying resources, such as librarians.

3.2   Sample teaching material and resources

Throughout IDCnet, the "what" and "why" teach inclusive design had been widely accepted in the form of the taxonomy. However, it was evident that experts wish to share experiences on "how" to go about teaching each category. There is interest in sharing

specific materials and practical exercises, rather than "re-inventing the wheel", in both issues related to Design for All in general, and also specific areas related to ICT. Therefore, the project provided specific sample topics for each category of the taxonomy (see appendix in Velasco, ed., 2004) which illustrate how each category can be implemented in practice. For example, the category "User Centred Design" can include topics such as user requirements and evaluation methods and tools in the context of inclusive design, with case studies in their appropriate and successful usage.

Examples of specific materials used to teach a particular topic have also been collated (for example, detailed workshop methodologies), again classified under a category of the taxonomy. IDCnet contributors to these materials were asked to be aware of copyright issues and either seek authority to make this material available to IDCnet and EDeAN, or state that the material can be used with their own permission. Recommendations for core resources and Web sites are also provided to support each part of the taxonomy, although it is clear that such a list must be updated regularly as the field progresses.

4.   Thoughts on an optimal graduate profile

Trying to develop an optimal graduate profile for Design for All that would be based on the needs of industry proved to be a difficult task. Unfortunately, the input from industry was very limited over the course of the project, and it is clear that awareness of industry on DfA needs to be deepened, and more relevant tools to implement DfA by industry need to be developed.

It was beyond the scope of the project to draw exhaustive curriculum recommendations and compare them to existing profiles in European universities. However, the project did try to outline employee profiles (based on actual job postings available on the Web), and suggest necessary additions that can complement existing exemplary curricula to provide a generation of graduates with knowledge about DfA in different fields. IDCnet would recommend, however, that the curricula of the European universities in the field of ICT should be updated more frequently than is currently the case. This is critical for DfA, because accessibility is very strongly linked with leading-edge technologies.

The Lambert Review of Business–Industry Collaboration (HM Treasury, 2003) contained a number of general but relevant observations, which were taken into account in some of IDCnet's recommendations below on Design for All related higher education and research policies.

5.   Recommendations for policy and strategy

Approaches to higher education and research policies and strategies can be distinguished as being bottom-up or top-down. The bottom-up approach would promote inclusive design from educators themselves, who through their teaching and research work would try to influence peers, future colleagues and research students. Examples of models of good practice would range from the Universal Design Education Project, to universities in Spain in their move to collaborate nationally to introduce Design for All as compulsory in Computer Science courses. However, dealing with these issues from a

bottom-up approach only is not sufficient, and to be effective some collaboration with policy and strategy decision-making bodies is required. In the case of IDCnet, the endorsement given by the European Commission in the form of project funding was certainly a powerful incentive.

   Initial recommendations were based on the results from a desk survey on the state-of-the-art of Design for All related education and research strategies and policies, the experiences from the situation in the US, and the information gleaned from a questionnaire sent out to Design for All experts primarily in higher education, but also in the relevant ministries in the European Union member countries and experts at the EU level. These recommendations are very briefly described below, and the project now welcomes further discussions and suggestions:

Recommendation 1: Be sensitive to diversity in cultures

The IDCnet pilots indicated that although teaching was not interchangeable, academic staff were quite able to communicate at the level of core knowledge and skills sets, as given in the taxonomy, and this taxonomy should be more widely promulgated.

Recommendation 2: Develop Design for All related legislation

It is suggested that guidelines based upon the form of the taxonomy might be used to recommend, and later mandate, that all higher education institutions provide instruction in the general areas of Design for All (e.g., Awareness, etc.), and that courses related to ICT include the specific categories according to their interests.

Recommendation 3: Encourage knowledge transfer between industry and education

As identified in the UK Lambert Review (HM Treasury, 2003), Sector Skills Councils (SSCs) encourage employers to take action collectively to meet their skill needs at a sector level. The Review also emphasises that employers from the creative media and IT sectors are particularly concerned that many courses do not equip students with the intellectual, specialist or transferable skills that they require to undertake a career in those industries, and that students, particularly science students, need to develop entrepreneurial skills. We recommend that such SSCs should be encouraged on a pan-European basis, that policies and strategies need to be in place to ensure that SSCs have real influence over university courses and curricula, and that government should facilitate this process.

Recommendation 4: Support individual champions

This can be done via supporting the champions through allocation of funding and using success in the Design for All approach as a quality criterion. This needs to be justified and seen by all to be not just "added value" but critical expenditure, perhaps on the basis of the legislation as in Recommendation 2.

Recommendation 5: Train the trainers

Higher education institutions are encouraged to deepen the Design for All knowledge base of their whole staff, not only teachers. The European Commission could support

and promote "esteem" (as seen by the UK's Research Assessment Exercise) by including another category, "Academic contribution to Design for All Curricula" in its Design for All and Assistive Technology Awards scheme (www.dfa-at-awards.org).

Recommendation 6: Strengthen Design for All research

Normal channels are bottom-up, in this case where researcher and academics push Design for All onto the agenda of conferences, or hold specialised conferences (e.g., Include, AAATE conferences). Promotion of the EU Design for All awards should also be disseminated more widely and not just to the already "converted" audiences.

Recommendation 7: Use a cross-disciplinary approach

Courses with a specific focus on developing Design for All are reasonable when the knowledge and research base needs be further deepened. Further development of topics in each of the categories of the taxonomy, with indications from topic owners of the disciplines that make use of the topics, will help to provide concrete and practical aspects to the multi-disciplinarity of DfA.

Recommendation 8: Make Design for All visible

Higher education institutions are encouraged to document their Design for All related developments, both to share the experiences with other actors and to support the long-term strategy development on DfA related education. Dissemination of these documents should be supported by the DfA related networks, e.g., the EDeAN Curriculum Special Interest Group.

Recommendation 9: Include Design for All in the quality criteria

The Design for All approach needs to be discussed as a holistic concept in higher education: it is related to the content of education, but it is also part of access to the built environment, access to communication and equal access to education in higher education institutions. Teaching DfA and practising it within the educational environment are both practical measures to endorse inclusion strategies.

Recommendation 10: Support interaction of top-down and bottom-up approaches

This essentially requires efficient networking and efficient knowledge transfer. A good example of support is, for example, the national network of EDeAN, composed of more than 100 organisations across 15 European countries, actively working with Design for All, e-Accessibility and Assistive Technology issues. The European Commission, via the DG on Information Society, retains an active advisory role in helping EDeAN fulfil the eEurope Action Plan.

6.   Conclusions and ways forward after IDCnet

The IDCnet community plans to continue its activities using the infrastructure provided by the D4ALLnet project, within the EDeAN Curricula SIG (http://www.d4allnet.gr/). The majority of IDCnet members belong to their national EDeAN associations or are National

Contact Centres. Further existing infrastructures, with individuals having a dual (or even triple) role in EDeAN, IDCnet and IFIP WG13.3 on HCI and Disability (www.ifip-hci.org), can also be used to promulgate the work on Design for All curricula. Although the funding of IDCnet is officially at an end, materials and recommendations can be found on the IDCnet website and are feeding into the EDeAN SIG on Curricula. Your comments and contributions would be very welcome, either today or in the future!

7. Acknowledgements

8. References

Darzentas, J (editor) (2003). What constitutes DfA knowledge? IDCnet Deliverable D3.1

Darzentas, J (editor) (2004a). Identifying core knowledge and skill sets for model curricula: update, IDCnet Deliverable D3.2

Darzentas, J (editor), (2004b). Teaching DfA core knowledge and skills sets: Experiences in including inclusive design, IDCnet Deliverable D3.3

Nicolle, C, Rundle, C and Graupp, H (2003). Towards curricula in design for all for information and communication products, systems and services. In Proceedings of INCLUDE 2003, 26-28 March 2003, London: Royal College of Art

HM Treasury (2003). Lambert Review of Business–University Collaboration. Final Report. Norwich: HMSO (www.lambertreview.org.uk)

Velasco, CA (editor) (2004). Summary of key findings from IDCnet, IDCnet Deliverable D1.4a