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D3.1. What constitutes DfA Knowledge?

Identification of a range of work that contributes to DfA. Baseline Document for attendees of the IDCnet Helsinki Workshop: "Design for All Curriculum: Towards a synergy of the needs of ICT industry and education."

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Abstract:

This document acts as a baseline for the participants of the Helsinki Workshop. In order to situate the tasks to be carried out during and after the workshop, this document describes other efforts at curriculum design for higher education in related subjects, thereby setting the stage for the methodology adopted by IDCnet. This is followed by a brief description of some of the current trends with regard to the teaching of design for all, in terms of learner background, targeted audiences, etc. This section also notes the connection between on line learning and DfA.

Abstract:

The next part of the document attempts a taxonomy of types of knowledge and skills identified in taught courses, and indicates useful sources of material. It also lists two examples of curricula plans that influenced this section. The final section summarises the main points of the document and describes the next steps. An annex provides some terminology related to Design for All, as well as definitions of terms used in curricula.

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∗ e.g. Accept, Develop, Modify, Rework, Update

Table of Contents

1 Executive Summary

The aim of this document is to provide some baseline material for participants to the IDCnet Helsinki Workshop entitled: *Design for All Curriculum: Towards a synergy of the needs of ICT industry and education.* It attempts to describe what constitutes DfA knowledge and identify a range of work that contributes to DfA. One of the aims of the workshop is to build on this description, enlarging and enriching it, in order to create the report: *Identifying Core Knowledge and Skill sets for DfA curricula. (Deliverable 3.2).*

The structure of this document is as follows. In order to situate the tasks to be carried out in the workshop, it describes other efforts at curriculum design for higher education in related subjects, thereby setting the stage for the methodology adopted by IDCnet (Section 3). This is followed by a brief description of some of the current trends with regard to the teaching of design for all, in terms of learner background, targeted audiences. This section also notes the connection between on line learning and DfA (Section 4). The next part of the document (Section 5) attempts a taxonomy of types of knowledge and skills identified in taught courses. It also lists two examples of curricula plans that influenced this section. The final section (Section 6) summarises the main points of the document and describes the next steps.

2 Introduction

IDCnet is committed to organising two 2-day workshops with the intention of securing active participation of experts in the field. The strategy for the Helsinki workshop is that experts in DfA-aware industries and professional organizations will be invited to discuss and suggest what they would expect from the future graduates they would employ. Experts from the academic world, with teaching or research interests in DfA, will take the descriptions provided by the experts from industry, and combined with their own experience of the field, help to compile a list of core knowledge sets and skills that would be necessary for curricula in this area.

The report resulting from this workshop will stand as a reference point both for the second IDCnet workshop, as well as for other initiatives working in this area.

The results of the workshops, in terms of written reports, will be freely available to interested parties and actively disseminated to related initiatives

The IDCnet members hope that the impetus given by these two workshops, might lead to future workshops or even a series of workshops and that these will form important focus point for efforts to develop and maintain curricula in the area of DfA.

This document does not pretend to be exhaustive, but rather hopes to provide some basis to fruitful discussion and outcome of the workshop.

3 Curriculum Design

Creating DfA curricula is necessary in order to educate the next generation of ICT designers. However, the impetus to do this on a European-wide scale, comes also from the spirit of the Bologna declaration and the Bologna process.[1] Within Europe the increasing mobility of students, as well as the workforce, underlines the importance of accreditation becoming more standardised across Europe, and in turn, of curricula that are easily identifiable in terms of their content and teaching practice. This will also aid the organisation of joint degrees offered for modules, courses and degree curricula offered in partnership by institutions from different countries.

Several undertakings in curriculum design have been studied. Four of the most relevant initiatives that provide the essence of the methodology adopted by IDCnet are briefly described in the sections below.

3.1 Career Space

Career Space was a EU supported industry led initiative to try to deal with the shortage of skilled ICT personnel. It had a two-step approach. The first step was to develop generic skills profiles relevant to key jobs in ICT. The generic skills profiles cover the main job areas for which the ICT industry is experiencing skills shortages. These core profiles described these job areas, setting out the vision, role and lifestyle associated with them. The specific technology areas and tasks associated with each job are also outlined, as well as the level of behavioural and technical skills required to carry out the profiled jobs. The second step was to work with over twenty universities and educational institutions across Europe to develop new ICT curriculum guidelines. These guidelines are intended to assist the design of courses to match the skills profiles and needs of Europe's ICT industry and eEurope.

http://www.career-space.com/project_desc/

3.2 ACM Curricula Recommendations

The ACM (Association for Computing Machinery) has developed a reputation for its curricula recommendations. Typically it gathers together a task force, which works over a period of two years approximately, and they pool knowledge about the rationale for teaching a subject, identify content areas and their associated topics and sometimes draft detailed performance objectives for those topics thus providing a uniform basis for curriculum design, in terms of program goals, course design and sequencing, integration of laboratory work, in some cases, going as

[1] http://europa.eu.int/comm/education/bologna_en.html

detailed as to list courses, and semester by semester plans of study. A model for curricula recommendations takes the following format.

- Program Considerations: discusses general issues including the relevance and beneficiaries of implementations of the guidelines, qualifications expected of graduates, representative job titles, necessary resources for implementations, articulation, industry certification, keeping a program current, and auxiliary skills such as those provided by general education and other discipline-specific courses.
- Program Topics and Objectives: identifies an extensive collection of content areas, topics, and performance objectives. It provides a scoped for each objective. This is achieved by using a specific verb (e.g., identify, evaluate, and analyze) that identifies the expected depth of coverage.

An actual model curriculum might provide knowledge elements organized into a set of courses and source materials and teaching guidelines. http://www.acm.org/education/curricula.html

3.3 Syros Workshop: Profile and Curriculum Content of University level studies in Product and Systems Design

On a smaller scale, the Department of Product and Systems Design of the University of the Aegean, held a workshop in order to align its curriculum with design schools worldwide, while at the same time, provide for the innovative aspects of its profile. It seeks to turn out graduates who will be able to use –creatively- new technologies, sciences and arts for the design of solutions that are usable and functional for various applications from varying areas covered by the Graphic and Applied Arts, Product Design and Industrial Design.

The workshop brought together representatives from industry, both ICT industries and industries that used ICT in their design, and academics from a wide range of design and arts schools, computer and engineering, HCI (human computer interaction) and Psychology departments. After presentations of each representative's viewpoint, the workshop worked in a brainstorming mode to discuss the linkages between the actual and future perceived needs for graduates, and knowledge needed by these graduates. Further discussion yielded the identification of subjects that were felt to be essential for the curriculum, agreement of the interdependencies of the subjects, and the sequencing of these subjects. http://syros.aegean.gr/en/department.htm

3.4 The GENIE experience

The GENIE (Gerontechnology Education Network in Europe) project aimed to promote the acceptance of gerontechnology as a part of regular higher

education, as well improve the quality of gerontechnology education. http://www.gerontechnology.info/genie/

4 DfA education in the world today

Rather than be a list of design for all education centres organized by country, this section tries to group the types of DfA teaching identified by disciplines, learners, method of delivery, etc.

4.1 Universal Design for products that are not specifically ICT

Although IDCnet has a brief for design for all curricula for ICT, the work that has been done for the built environment and products is included here for two reasons. One is that there can be some similarities in the approach although the outcomes are serving different disciplines. For instance, the awareness of the problems faced by sections of the population, the realization design for all means designing for human diversity, rather than for 'the disabled', that users should be consulted, can be common to all DfA curricula. Again, the principles of Universal Design, although originally for the built environment and products, are general enough to be applied to the ICT environment, while the maxim, 'know thy user', i.e. include users at all stages of the design process, is part of all human centred design.

The second reason for including Universal Design for the built environment is that on 15th February 2001, the Council of Europe adopted a resolution on the introduction of the principles of universal design into the curricula of all occupations working on the built environment. In the text of the resolution, several points are made which could also be made for occupations working in ICT. These are:

- that new inclusive perspectives of universal design should become a compulsory part of the education and training for everyone working on the built environment (in our case, in the ICT industry)
- that examples of good practice should be shared,
- that member states revise curricula in different educational and training institutions

http://www.fortec.tuwien.ac.at/bk/BK-DOK-UnivDes.htm

Some useful work that IDCnet could learn from are:

4.1.1 Special Topics in Universal Design

This is an online course offered by Molly Story at NC. It concentrates on understanding of the concepts and Principles of Universal Design, and the benefits of the approach for people with disabilities and for all individuals. Students are introduced to the history of universal design, the broad

range of human abilities, and numerous real-world examples of designs that satisfy the Principles.

http://www.udeducation.org/teach/course_outlines/courses_focus/story.asp

The course is accompanied by a text: *The Universal Design File: Designing for People of All Ages and Abilities*

http://www.design.ncsu.edu:8120/cud/pubs/center/books/ud_file/toc3b14.htm.

4.1.2 The AAOutils Design for All project

This project is about teaching DfA in the built environment, and is studying models of teaching in schools of design and architecture around the world. Within this project, a document entitled Building and sustaining a learning environment for inclusive design- A Framework for teaching inclusive design with built environment courses in the UK. It is envisaged that much work that has been done will significantly overlap with curriculum work of IDCnet.

http://anlh.be/aaoutils/

4.2 Examples of courses for the ICT sector

With this description of courses for the ICT sector, it becomes immediately obvious that many of these courses are not for higher education university audiences, but rather continuing professional education, short courses, or highly specific topics. They are included here to give a flavour of the type of courses that IDCnet should consider.

4.2.1 Designing for Usability, Flexibility & Accessibility Course Information (USA based course)

This is a 4 day course, for technology Product/System Developers, Human Factors/Interface Specialists, Accessibility Program Managers, Consultants.

http://trace.wisc.edu/dufa/

4.2.2 ITTATC Web Accessibility Course (Online but USA originated)

This course is written for web developers to teach techniques for creating accessible web sites, in particular, web sites that comply with the Section 508 standards for accessible web content, Paragraph 1194.22 (a) through (p). Familiarity with HTML and some knowledge of JavaScript and Cascading Style Sheets expected.

http://www.ittatc.org/training/webcourse/

4.2.3 Designing Universally Accessible WWW Resources for People with Disabilities

The course provides a foundation on how people with disabilities access information on the web using mainstream browsers and specialized assistive technologies like speech renderings. Participants learn about the two main standards for web accessibility, the W3C Web Content Accessibility Standards and the Section 508 requirements for web materials. The strengths and weaknesses of different evaluation and repair tools are presented to help participants understand how to use the available tools to evaluate and repair their web resources. Participants learn about common HTML accessibility problems, and HTML and CSS techniques that can be used to improve accessibility. Captioning of multimedia materials is also covered for Microsoft Media Player, Real Player and Quicktime, and the accessibility of non-W3C technologies like PDF and Flash are discussed. This is a 20 hour course offered online.

http://cita.rehab.uiuc.edu

4.3 The learners

Existing courses target a variety of learners, both in terms of learner background, and in terms of the depth and breadth of educational objectives.

4.3.1 From what disciplines are the learners?

In terms of background, a large group of learners are architects, engineers, town planners, and others specializing in the built environment.

Besides this area, there are those involved in product design, in which the product they work on can range from something as small as a bottle opener, to as vast as the multifaceted products that are part of complex systems, such as transport systems, where it is not just the car, or car component that must be designed, but such things as signage and signals in the road network.

There is also a category of learners whose background is in ergonomics and rehabilitation engineering. Examples of courses include that at the Department of Human Sciences, at Loughborough University, where a module called Ergonomics of Disability and Aging 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. At the University of Surrey, in an MSc in Heath Ergonomics and Occupational Health, one of eleven modules offered is called Ergonomics and Inclusive Design.

Product design can also merge into products specifically designed for ICT systems and services. In the age of the disappearing computer, and advent of wearable and embedded computing, product design will probably be as much about ergonomics of a handheld device, as about the

accessibility of Internet based information. The concept of 'ambient intelligence', referring to the seamless delivery of services and applications without complicated interfaces or software, means that an interdisciplinary approach to design for ICT must be taken. For instance, at the UK's Royal College of Art, the Helen Hamlyn Research Centre address the Inclusive Design challenge, and students come up with products that can cross the borders between consumer products and ICT, http://www.hhrc.rca.ac.uk

4.3.2 What depth and breadth of DfA knowledge is taught

In terms of how learners are taught, if we look at some examples of university teaching in the UK, the predominant model is of DfA related information being taught as distinct modules and courses within a degree course. There are a few examples just taking shape of where DfA being diffused throughout the whole degree course, however once again these initiatives concern teaching DfA for the built environment, e.g.

- the Bachelor of Arts (Hons) Architecture and Planning, University of the West of England, Bristol

  http://www.udeducation.org/teach/program_overview/program_infused/manley.asp,

- the Salford University Research Focus on Accessible Environments (SURFACE) programme in Accessibility and Inclusive Design.

  http://www.scpm.salford.ac.uk/surface

Probably more typical is the example of Loughborough University's Department of Design and Technology, where a module in inclusive design is offered as a year three option to both final year undergraduates and MSc students, which builds upon second year modules in product design, and enables students to investigate usability issues for elderly and disabled.

Using the web as a primary tool to search for DfA educational information reveals most courses are designed as short courses, aimed at professional development. This being said, the caveat is that, being commercial ventures, these have more prominence on the Internet. One might also speculate that the proliferation of such courses may be a response to a perception for the need to acquire staff knowledgeable enough to guide an organisation to compliance with legal obligations for accessibility. This might also explain why most of these courses originate in the USA, where legal mandates on accessibility are older than in Europe. However, they are also very visible, given that many are online, while teaching that goes on in University, can be hidden as modules within courses within degree courses, and can be optional.

4.3.3 Online learning

At the forefront of much experience on designing accessible material for the web are learning institutions. Education that can be delivered online is an opportunity to include students whose special needs can be met by, for instance, not having to travel to universities, and being able to some extent to study when it suits them. However, if the materials delivered on line are not designed to be accessible, then some of the very students who need the opportunities offered by online learning are the ones who are blocked out.

In the UK, the Special Educational Needs and Disability Act will have an impact here, in online learning as well as in traditional settings. From September 2002 it is necessary to ensure that students who have a disability are able to access all aspects of the curriculum and that reasonable adjustments are made to enable them to do this. http://www.drc-gb.org/drc/Campaigns/Page431.asp

For IDCnet, the whole online learning is a very interesting source of information, since it is here that one finds courses built around web technologies, making content accessible and making interaction accessible. Typically the development of accessible instructional materials is a distributed process, where course materials are a combination of instructor created materials - including evaluation materials (tests and quizzes); existing materials that an instructor links to; and the organisational and evaluation capabilities of a course management tool. Thus, besides the provision of information, the students on this course take part in activities such as collaborative forums, chat, and assessments, -all activities where if due attention is not paid to accessibility concerns, some students can be put at a severe disadvantage.

Three examples serve to illustrate the activity in the area,

4.3.3.1 IMS (Instructional Management Systems) Global Learning Consortium

This international consortium that counts among its members most of the important players in this arena, is developing and promoting open specifications for facilitating online distributed learning activities. It has a group specializing on Accessibility, which has produced guidelines IMS Guidelines for Developing Accessible Learning Applications. http://www.imsproject.org/accessibility/accessiblevers/index.html

4.3.3.2 EASI (Equal Access to Software and Information)

EASI provides on Online Training on Accessible Information Technology. It also provides consulting to colleges, universities and public libraries on how to make their computer and information systems accessible to students, faculty and staff with disabilities.

http://www.rit.edu/~easi/index.htm#top

4.3.3.3 National Center for Accessible Media

This body has just released "Making Educational Software and Web Sites Accessible: Design Guidelines Including Math and Science Solutions" http://ncam.wgbh.org/cdrom/guideline/.

5 Content of courses

This section attempts to classify the material that goes to make up modules and courses in DfA in higher education. The classification is arbitrary and as with all such attempts, there is no clear-cut distinction between the categories listed below, nor are they exhaustive. They are based on desktop research of courses advertised and on experience of the network members. It is precisely this content that we hope to sharpen during the workshop discussions.

5.1 Awareness raising exercises

Often part of the introduction to courses on DfA, this kind of content demonstrates to students the difficulties faced by users with disabilities, using non-standard equipment, or in handicapping situations.

Examples of this are the teaching at Loughborough University, where students are made to wear various devices, weights to the feet, spectacles smeared with petroleum jelly, etc, to give them a sense of what it feels like to be disabled. This leads students, amongst other things, to understand the need to ascertain user requirements and not make *a priori* assumptions.

Another example is the type of lecture where users are introduced to universal design, not as a special branch of design catering to disabilities, but rather as the need to cater for lack of abilities. They emphasise that the reason a user cannot see a screen, i.e. whether it is because he is blind, (disability) or because he left his glasses in the other room (temporary disability), or because he is driving a car, and cannot divert his attention (handicapping situation) does not necessarily constrain the solution to the problem. Instead, solutions to cover all manifestations of this problem should be sought. An interesting set of slides, given to software scientists in a department of computer science is at http://members.aol.com/criptrip/berkeley-universal-design.ppt A further awareness exercise in the same vein, centres on the message that DfA is also about “designing for our future selves.”[2]

[2] This was the title used for conferences organized Roger Coleman of the Helen Hamlyn Research Centre, Royal College of Art, UK

5.2 Why Design for All?

This type of content often concentrates on legal and ethical responsibilities of the designer, and the business case for design for all.

5.2.1 Legal

European Directives, The legislation in member states, Germany, United Kingdom, Italy, etc. could be used, the example of the legislation in the United States, Canada, Australia, etc. could also be invoked.

5.2.2 Ethical

Underpinning DfA, is the ethical belief in equal status to participate in different areas of life, to the greatest extent possible, and not be confined to special solutions and measures, that is, integration into all areas of socio-economic life.

5.2.3 The business case

The various points include:

Design for All is not catering to a niche market. The ageing population means that a larger and larger percentage of the population will have special needs associated with the elderly, including various types of disability.

Design for All also includes designing for those who face other types of barriers, social and economic.

Including design for all at the initial design stage does not add vast amounts to the production costs.

Understanding what is involved in making products accessible, and having clear guidance is important to industry.

Design for All means exactly that, some products which are meant to be especially useful for some special needs, actually turn out to be beneficial to the population as a whole, e.g. the biro (see DASDA website at http://www.design-for-all.info) .

Also, some companies like Microsoft, are producing materials to highlight the business value of providing accessible technology. See “Accessible Technology in Today's Business” in:

http://www.microsoft.com/enable/news/book.htm

5.3 Recommendations

There are many, for the purpose of illustration, some of the best known and up-to-date are listed below

- The principles of Universal Design, http://www.trace.wisc.edu/world/gen_ud.html

- Standards, specifications and guidelines of the Web Accessibility Initiative of the World Wide Web Consortium, http://www.w3.org/WAI/
- Also CEN/ISSS DfA Workshop: Design for All and Assistive Technologies in ICT

  http://www.tiresias.org/guidelines/cenisss/

5.4 Accessible content - documents and multimedia

This type of content is by far the most technical. Some topics will require background knowledge, such as programming knowledge.

Such topics might include:

- Authoring documents: XML vocabularies (e.g. xHTML), transformation languages.
- Document processing: document models, documents manipulation, etc.
- Creating multimedia: captioning and text descriptions; streaming; (SMIL, SAMI), etc.
- Evaluating / repairing content: code validation.
- Etc.

This type of work might be in the form of small assignments to be undertaken by the students.

5.5 Accessible interaction: knowledge of assistive and adaptive software and hardware

Describing and identifying devices that enable alternative input and output, e.g. speech synthesizers, screen reader software, screen magnifiers, alternative keyboards, etc., as well as different types of browsers and operating systems that allow different manipulation of the content.

5.6 New paradigms of interaction

Technology convergence means that a whole host of devices are able theoretically to be connected to one another. At the same time, new devices are being experimented with, mobile phones that are camera, or GIS enabled, a variety of networked home devices and wearable computing, sensors and smart cards. The content industry is also working to enable cross media delivery of content, meaning that what is delivered to the PC may also be adapted to the mobile, the WebTV, etc. Add to the mix technologies such as touch screens, voice recognition, and there are many new paradigms of interaction to consider.

Some awareness of this wider interaction scenario would be useful for students, and here case studies from relevant industries might offer some

very useful information: for instance, the mobile phone industry offering products and services that are hugely popular, but at the same time having serious problems of both accessibility and usability.

5.7 HCI and usability studies, user centred design and evaluation methods

The whole area of DfA is underpinned by the need to involve the users, thus, topics from Human Factors, User Centred Design, Participatory Design, will be need to be taught to students. A good source is the USER*fit* handbook (most of which can be downloaded from the INCLUDE website at http://www.stakes.fi/include see Methodologies and Tools).

In addition, research results from user modeling, user and device profiles, customisation, personalisation, adaptivity, emotions, adaptable interfaces and accessible metadata could be included.

5.8 Application areas

Education and Health are probably the two areas that take the lion's share of the application interest. As already mentioned, the online learning is an interesting source of ICT DfA. Health applications, on the other hand, range from having doctors and carers online, to exploitations of the longstanding connection between remedial rehabilitation engineering and assistive technology. The Assistive Technology sector is also contingent with DfA. From the point of view of teaching DfA for ICT systems and services, it is important to have an understanding of where the DfA and AT merge. The position paper from the AAATE[3] makes clear that DfA and AT should be seen as a continuum, no where is this more clear than in ICT, where the devices a user has at his disposal to access the web, and the web content are interdependent.

Other areas of application might be classified loosely under eGovernment and eCommerce applications: shopping, banking and so on.

5.9 Useful sources of material: case studies, new information, teaching material and teaching aids

5.9.1 Case Studies:

While case studies for built environment and products abound, there are no collections of case studies for ICT products and services. The examples that exist need to be researched and collected. The examples from the GENIE project are a start. http://www.gerontechnology.info/genie/

[3] http://www.fernuni-hagen.de/FTB/aaate/position2.htm

5.9.2 Research projects:

Research projects, as every academic knows, open up windows onto areas of emerging concern that may eventually become part of teaching content. However, some projects results can actually provide immediate take-up results. Two such tools are USER*fit* and the IRIS Design Support Environment, that provide tools for teaching and learning, while the conceptual model from the I~Design project, provides a useful framework in which to visualize the management process of including DfA within Design.

5.9.2.1 USER*fit*

This project produced a handbook and a methodology. The handbook offers a comprehensive guide to user centred design. It describes different design techniques for data capture and evaluation, and contains a collection of design prescriptions drawn from literature. In addition it describes the USER*fit* methodology. This is a set of summary tools to collate, analyse, evaluate and develop information to build a specification. This is done on the basis of form filling and an automated tool to provide support for the collation of this information has been carried out as part of the IRIS project and is available from the IRIS project website, see next section.

5.9.2.2 IRIS Design Support Environment:

This is an accessible environment that supports designers to make author accessible content, by giving them online support as they design, by evaluating and repairing their code, and by referring them to reference materials, and tutorials on aspects of DfA when and if desired. http://www.iris-design4all.org

5.9.2.3 Inclusive Design Cube:

On a more conceptual level, this model, from the I~Design project can be used to map out an inclusive design approach, for product design managers. http://rehab-www.eng.cam.ac.uk/projects/include

5.9.3 Networks, Special Interest Groups, Centers, Online discussions

5.9.3.1 European Networks:

IDCnet, EDeAN, D4All.net.

5.9.3.2 International Special Interest Groups:

- Development of Accessible Design Curricula and Materials: http://ece.eng.wayne.edu/etl/access_design/PCWSU&ref.html
- Access Design Education – Task Group 7 of the AAES: http://www.access-aaes.org/;

- WAI Education and Outreach Working Group http://www.w3.org/WAI/EO/
- UDEP-S Universal Design Education Project – Sweden. In 1996 the Swedish EIDD (European Institute for Design and Disability) association started with four working groups focusing on 'Communication', 'Education', 'Environmental Design' and 'Industrial Design'. In July 1998 the 'Education Group' proposed a programme for a Universal Design Education Project – Sweden. Cornerstones for this programme are the UN concepts of "Equalization of opportunities and participation" as well as the continuous WHO work with the ICIDH/ICF conceptual schemas. Among the basics are different concepts from the universal design movement such as the "Seven Principles" and the "User Pyramid". The project is not only about design knowledge and skills. It has to deal with the fact that different generations have different perspectives as well as embark on problems connected to professional cultures and design cultures. The main point is that UD approaches, perspectives and competences shall be comprehensive, natural and sustainable in the design professions in the future. http://www.universaldesign-sweden.com/index.phtml?refid=46&navid=48

5.9.3.3 Online Discussions:

Universal Design Education Online http://www.udeducation.org/

5.9.4 Conferences and Workshops

- IDCnet Workshops: Helsinki Feb 2003, St Augustin, Bonn, 2004
- HCI International 2003, jointly with 2nd International Conference on Universal Access in Human - Computer Interaction **-** Session on DfA in the University Curriculum
- INTERACT 2003 - Workshop on DfA and Education

5.9.5 Textbooks

- *User Interfaces for All: Concepts, Methods and Tools* (Ed. C. Stephanidis) Lawrence Erlbaum 2001
- *Strategies for Teaching Universal Design* (Ed. P Welch) 2002 http://www.adaptiveenvironments.org/universal/strategies.php
- Christophersen, J. *Universal Design:17 Ways of Thinking and Teaching*, Husbanken, Norway, 2002
- *Inclusive Design Guidelines for HCI*, (Eds. Nicolle, C. and Abascal, J.), Taylor and Francis, London. 2001

5.9.6 Examples of Accessible Curricula

This section references two examples of accessible curricula, which have been influential in researching this text.

5.9.6.1 Curricula for Web Accessibility Training from WAI (W3C)

This gives examples for instructing various types of audiences from developers to management, and varies learning objectives accordingly. It gives sample curricula, and sample modules.

http://www.w3.org/WAI/training/cr

5.9.6.2 Development of Accessible Design Curricula and Materials

This proposal for developing curricula suggests a process that will allow accessible design issues, principles, and resources to be naturally integrated into existing courses or used as stand alone modules. The educational material would be developed in a hierarchical format starting with a basic awareness of the issues, principles and resources and move toward more detailed presentations of principles and issues leading to the acquisition of skills necessary for a design practitioner. A template for modules is suggested.

http://ece.eng.wayne.edu/etl/access_design/PCWSU&ref.html

6 Conclusions-Next Steps

As part of its work on curriculum design, IDCnet is attempting to ascertain the needs of curriculum along two main axes: the needs of industry and the knowledge areas that need to be taught as part of a curriculum.

This document is concerned with that second axis, the knowledge areas that need to be taught. It set out a range of existing body of DfA teaching, classifying it according to disciplines addressed, audiences targeted, and methods of delivery. It then went on to concentrate on content of courses, again attempting to classify the types of knowledge taught, and pinpoint possible sources of new material.

The next immediate step is to ‘brainstorm” during the Helsinki workshop in conjunction with the invited experts and to document the results in two separate reports.

1. The needs of industry and future technologies landscapes and the resultant requirement for graduate profiles (Deliverable 2.1)
2. Identifying Core Knowledge and Skill sets for DfA curricula. (Deliverable 3.2)

IDCnet will concentrate on policy and strategies in the area of DfA Education and Research in its next phase of work.

7 Appendix 1: Terminology and Vocabulary

7.1 Some Design for all terminology:

Barrier-Free Design: This term is used to emphasise the nature of universal design or DfA, that it does not want to erect barriers which don't need to be there. It is used to take away the emphasis from design for all which sounds too unrealistic.

Design for All (DfA): see a debate on terminology in http://www.gerontechnology.info/genie/

Note as well the EU definition of DfA strategies:

- Design of IST products, services and applications which are demonstrably suitable for most of the potential users without any modifications.
- Design of products which are easily adaptable to different users (e.g. by incorporating adaptable or customisable user interfaces).
- Design of products which have standardised interfaces, capable of being accessed by specialised user interaction devices.

eAccessibility: eAccessibility is closely associated with the eEurope programme. Knowledge of user requirements will be utilised to guide the exploration of leading-edge ICTs, advanced materials, robotics, nanosciences, knowledge-management and complex systems in order to create and develop new systems which may be applied in all areas of life. This means every existing and evolving domain: eGovernment, eBusiness, eLearning, work, entertainment, transport, leisure, etc will be made accessible to all citizens http://www.tiresias.org/guidelines/inclusive.htm

eInclusion: to be understood as the opposite of info-exclusion (EU speak)

Inclusive Design: In Europe the term "design for all" has a similar meaning to universal design. However the term "inclusive design" also includes the concept of "reasonable" in the definition. The most commonly used definition for inclusive design is "The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible on a global basis, in a wide variety of situations and to the greatest extent possible without the need for special adaptation or specialised design". http://www.tiresias.org/guidelines/inclusive.htm

Lifespan design: designing for the whole of the life from cradle to grave, a popular notion for built environment where public facilities such as parks and gardens should be enjoyed by children and elderly.

Universal Design: Universal Design is the design of products and environments to be usable by all people, to the greatest possible extent, without the need for adaptation or specialized design. The intent of the Universal Design concept is to simplify life for everyone by making

products, communications, and the built environment more usable by more people at little or no extra cost. The universal design concept targets all people of all ages, sizes and abilities.

7.2 Educational terminology

Module: part of a course consisting of lectures and practical work.

Course: series of modules on a subject.

Degree course: series of courses leading to a degree.