

# **Accessibility issues with e learning resources and virtual learning environments.**

*Nick Middleton, Coventry School of Art and Design, Coventry University, November 2002.*

This report was produced for the "Widening access for disabled students" (Cowork) project – a collaboration between Coventry University, University of Warwick and University College Worcester.

## **Requirements for compliance**

### **Recent Legislation**

The principles of the Special Educational Needs and Disability Act SENDA (2001), which came into force in September 2002 are not new but have developed from the earlier Disability Discrimination Act DDA (1995) and have been implemented as Part 4 of that Act.

What is new is that the principles of the more recent Act directly apply to the provision of education services, which includes traditional activities such as lectures and also the provision of e-learning materials.

The Act makes it an offence to discriminate against a disabled person by treating him or her less favourably than others for a reason relating to their disability. The Act covers all aspects of an institution's student services.

I will focus on the provision of web based e-learning resources and course content and management through virtual learning environments.

A recent report by Jakob Nielsen [www.useit.com](http://www.useit.com) showed that the online experience of a person with a disability can be up to six times more difficult than a person without disability. This level of difficulty can be substantially reduced by the application of accessible design rules and adherence to standards in the production of web based content.

## **Guidelines for Accessible online resources**

The Worldwide Web Consortium (W3C) [www.w3.org](http://www.w3.org) have developed a programme called the Web Accessibility Initiative (WAI). It aims to promote accessibility through the development and implementation of open technology standards. It has set out guidelines for authors of web based content to follow to achieve certain levels of accessibility.

These guidelines are becoming the basis by which institutions will measure their compliance with the DDA Part 4.

The W3C have produced a list of checkpoints for web accessibility set out in three levels of compliance. *The lowest level one is being suggested as the starting point for the development or updating of web based resources that comply with the SENDA minimum requirements.*

The three levels are:

Priority 1 (Level A): This is the minimum level of accessibility that Web content developer should be working towards. While this removes some barriers to accessing Web material, many disabled students would still be excluded from using it.

Priority 2 (Level AA): Achieving this level will remove more barriers to accessibility although some students will still be excluded from using the Web material.

Priority 3 (Level AAA): Satisfying the Priority 3 criteria will provide access to Web material for most disabled users.

## **Issues:**

One of the many problems faced by ours and other institutions in complying with even level one of the accessibility guidelines, at a local level, is the haphazard development of online resources.

- These resources often do not comply with the HTML standards as set out by the W3C .
- Many of the authoring tools used by staff to create resources do not comply with these standards and produce non valid HTML code.
- Many staff producing resources are not aware of the requirements of Part 4 of the DDA.
- If staff are using the University Virtual Learning Environment many different types of files will be used to present course material. Many of these file types are themselves not easily accessible by people with disabilities; such as Microsoft powerpoint or adobe pdf documents.
- The University Virtual Learning Environment requires, for some tasks, staff to produce their own HTML code which is not checked against W3C standards from within the software itself.

## **Web Development University Wide**

At a University-wide level the re authoring of the web site is being undertaken together with the implementation of a content management system. This re development is being carried out in the light of the requirements of the DDA Part 4.

At the moment no firm decision has been made on the level of compliance that is to be aimed for in the redevelopment of the universities online materials. A demonstration is to be arranged to show the implications upon design of the different levels of adherence to the accessibility levels as set out by the W3C.

## **Possible Ways Forward at Local Level for web resource authoring**

- Planned long term staff development programme to raise awareness of the implications of DDA Part 4.
- To show and offer support in the creation of accessible online material.
- Agreement on the priority level to work towards in producing resources.
- Strategy for developing automated resource production to comply with accessibility requirements.
- Adoption of universal web site design principles based on open standards and interoperability detailed by the W3C. The practical implementation of these standards in the creation of any web resource will benefit not only disabled people but all users of online resources.
- Adoption of browsers that support HTML and Cascading Style Sheets (CSS) standards.
- Use of code evaluation tools to test authored resources against accessibility standards.
  - W3C code validator <http://validator.w3.org/>
  - CAST's Bobby [www.cast.org/bobby](http://www.cast.org/bobby)
  - Page Valet <http://valet.webthing.com/page/>

Web authoring tools are used widely within University Schools. Macromedia Dreamweaver is the most widely used in Art and Design. *As outlined by the W3C at the moment no authoring tool conforms to the standards set out for accessibility.*

To add this functionality there are a number of plugins that work with these programmes. They work by checking and amending code in line with the W3C standards. For Macromedia Dreamweaver there is a product called Lift to be found at [www.usablenet.com](http://www.usablenet.com)

Its use was outlined in a case study by Plymouth University who were restructuring their own web resources to accord with SENDA requirements. [www.science.plym.ac.uk](http://www.science.plym.ac.uk)

## Virtual Learning Environments and Accessibility

The same W3C guidelines for designing accessible web content also apply to the production of content through a Virtual Learning Environment (VLE).

The use of VLE's present problems with regard to accessibility:

- They allow for the creation of content in a variety of formats that is not checked by the software so that it may well not accord with accessibility guidelines when uploaded.
- Some tasks within the VLE also require course managers to code HTML which again is not internally checked by the software to accord with W3C standards.

Many of the elements of course content will then possibly become difficult to access by a person with disability. In the instance of our school within the University Adobe PDF is used as a popular file format to present course content. This is used because it embeds font and image information within the document. As such it requires only one file to be uploaded by the course manager.

As noted in much research Adobe PDF at the moment presents difficulties to a range of software used by people with particular disabilities. The most recent version has been improved and Adobe now offers advice on the best use of PDF to allow accessibility. [www.access.adobe.com](http://www.access.adobe.com)

The W3C offers a list of features that Authoring tools should adhere and conform to in their Authoring tools accessibility guidelines <http://www.w3.org/TR/ATAG10/>

At the moment no Virtual Learning Environment accords with all of these standards. In the report Access All Areas by ALT, JISC, and TechDis <http://www.techdis.ac.uk/accessallareas/> some VLE vendors are making strong commitments to improving accessibility. These include both Blackboard [www.blackboard.com](http://www.blackboard.com) and WebCT [www.webct.com](http://www.webct.com)

The vendors recognize the problems within their own software. On WebCT's site they present advice for making courses within their software more accessible

<http://www.webct.com/service/ViewContent?contentID=1790151>

### **Page Organisation**

*When creating Web pages to be uploaded to the WebCT File Manager, use standardized HTML markup. Consistent course page structure and correct use*

*of HTML markup will allow content to be effectively interpreted by non-visual browsers and other alternative output methods.*

*Example: Sections and sub-sections should be introduced with the HTML header elements (H1-H6) headings:*

### **Frames**

*Frames may be problematic for students using screen reader technology. Even with the most recent versions, the complex frame structure may cause difficulties.*

### **Quizzes**

*The multiple choice, matching, and true-false quizzes may present access difficulties for some users.*

### **Whiteboard and Chat**

*WebCT has worked to make the Chat and Whiteboard tools accessible by providing an accessible interface to navigate chat applet starting and navigation. If necessary, alternate chat and whiteboard tools with additional accessibility provisions may be incorporated into the course environment. Recommended options include:*

<http://chat.naken.cc/>

<http://www.ldrc.ca/community/chat/>

<http://snow.utoronto.ca/cgi/achat/main.cgi>

The advice given presumes a in depth knowledge of HTML or simply states that there will be access difficulties in particular use of the software.

An interesting piece of research is currently underway by TechDis in collaboration with the College for the Blind in Hereford UK. They are user testing a number of VLE's with students who have a range of disabilities and learning difficulties. The findings are not yet available but a paper outlining initial findings was delivered on the 21 November 2002 and should be available soon [http://www.rnib.org.uk/techshare/vle\\_sutherland.htm](http://www.rnib.org.uk/techshare/vle_sutherland.htm)  
An outline of the paper can be found below.

## Virtual Learning Environments for Real Users

Allan Sutherland, TechDis FE Co-ordinator, TechDis  
Shirley Evans, ICT/ILT Task Force Coordinator, Royal National  
College for the Blind (RNC)

This virtual learning environment user testing project was commissioned by Techdis and carried out by the Royal National College for the Blind in Hereford. The purpose of this two-part study was to increase understanding of how to make a VLE accessible to students with disabilities. E-learning has the potential to enable learners with particular needs to engage in learning on a level playing field. Nielsen's usability study (2001) found that it was six times more difficult for someone using a screen reader to use the Internet than someone using no assistive technology. A virtual learning environment is more multi-dimensional than a web-site which indicates that it may be more difficult to use than a web-site. Additional cognitive overload caused by accessibility and usability issues may impinge on the learning process. The qualitative study looked at an existing course where transitional skills have been delivered via a virtual learning environment (Blackboard). Learners transferred part-way through the course to a different virtual learning environment (WebCT). The quantitative study explored responses of new users to WebCT and Blackboard using an agreed set of five tasks.

### **Resources:**

W3C Web Accessibility Initiative:

[www.w3.org/WAI](http://www.w3.org/WAI)

W3C Authoring Tool Accessibility Guidelines, available from:

[www.w3.org/TR/ATAG10](http://www.w3.org/TR/ATAG10)

WebCT Accessibility

[http://www.webct.com/products/viewpage?name=products\\_accessibility](http://www.webct.com/products/viewpage?name=products_accessibility)

TechDis [www.techdis.ac.uk](http://www.techdis.ac.uk)

RNIB <http://www.rnib.org.uk/>