



# Inclusive Training for Disability Care Worker – Educational Assistant

## e-learning for people with disabilities

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**Leonardo da Vinci**

Project partner



European Association of Service providers  
for Persons with Disabilities



## Einleitung

### Entwicklung eines e-learning-Programms als weiteres Medium der Unterrichtsgestaltung

In Phase 3 kristallisierte sich bereits heraus, dass e-learning als Unterrichtsmethode in allen involvierten Partnerschulen bislang keine Verwendung findet, d.h. weder eine ausreichende technische noch eine personelle / fachliche Infrastruktur vorhanden waren.

Dadurch gestaltete es sich äußerst schwierig, ein entsprechendes e-learning-Programm, das für den konkreten Unterricht verwendbar ist, zu erarbeiten. Zusätzlich stellte sich heraus, dass die Zielgruppe (Menschen mit Lernschwierigkeiten) in der Regel über so gut wie keine Computer-Kenntnisse verfügt und damit kaum Voraussetzungen für den Umgang mit e-learning mitbringt. Die ursprünglich im Rahmen des Projektes geplante Entwicklung einer Unterrichtssoftware wurde daraufhin entsprechend adaptiert, es wurde ein **e-learning-tool zum Erlernen von Computergrundkenntnissen** entwickelt.

Dieses Programm wurde von Menschen mit Lernschwierigkeiten in Spanien und Österreich getestet, diese Rückmeldungen wurden dann in die Endversion eingearbeitet. Das tool kann von der Website heruntergeladen werden. Mittlerweile liegen Anfragen auch außerhalb der Projektpartnerschaft (Südamerika und Österreich) vor, die den bestehenden e-learning-Grundkurs nutzen möchten.

## 1. E-Learning for People with an Intellectual Disability

When one examines the area of ICT and e-learning, it is fair to say that they have been largely underdeveloped regarding people with an intellectual disability. It remains a fact that people with an intellectual disability are denied access to parts of the education and training network of a country.

An element of this project is to look at e-learning for people with an intellectual disability. Initially, we examined the area of e-learning standards and their importance for people with a disability.

The Web Accessibility Initiative of the World Wide Web consortium (founded 1997) has developed general guidelines regarding the accessibility of the web as a tool to distribute information to a wider audience.

These guidelines were drawn up in order to make the web an inclusive medium for all to use – they do not exclusively relate to intellectual disability. The general consensus is that it is possible to make web content accessible to people with a physical disability but little consideration has been put into the area of intellectual disability. This is, in part, due to a lack of understanding or knowledge on the part of web developers about the needs of people with an intellectual disability.

Certain guidelines have been put forward as recommendations from several organisations; one of these was the WAI NOT European project which attempted to make web content accessible for people with an intellectual disability.

Their recommendations regarding making the web accessible for people with cognitive disabilities:

- Create contents variable in language and tailored to the needs of the readers
- Transformability – allow fonts to be enlarged; use real text or vector-based text to allow higher quality enlargement without pixilation. Provide option of speech synthesizers so that text can be read to users.
- Multi-modality – illustrate concepts with drawings, diagrams, photos, audio files, video clips, animations, and other non-textual media.
- Provide synchronized captions and transcripts for the audio portion of time-based media, add captions to video files and provide links to text transcripts.

In general it was decided that in order to focus the user's attention, one has to take into consideration the following four elements:

### Appearance

- Use soft colors (e.g. pastels) to contrast graphical elements
- Limit the types of font faces in a document.  
Use only one font, or a very small number of fonts in any single document.
- Eliminate the use of *italics* or ALL CAPS to improve readability.
- Avoid background sounds that distract user's attention (e.g. background music).

- Include "white space" – non-content space – around the content, between paragraphs, and between headings. Don't crowd the design visually.
- Avoid complex or "busy" visual backgrounds – don't create extraneous visual information that distracts from the main content.

### **Content**

- Place the important parts of a paragraph (key points) in the first sentence.
- Organize content into well-defined groups or chunks, using headings, bulleted lists, and other visual-semantic organizing schemes.
- Highlight text as it is being read out loud (or allow users to activate this option).

### **Interaction**

- Provide multi-modal navigational cues (e.g. text + graphical/visual highlight + auditory instructions + animated demonstration).
- Give feedback on a user's actions (e.g. confirm correct choices, alert users to errors or possible errors).
- Provide instructions for unfamiliar interfaces.

### **Designing a consistent environment**

- Ensure that similar interface elements and similar interactions produce predictably similar results.
- Create a consistent navigational scheme within a site.
- Allow the user sufficient time to access and interact with content.
- Allow users to recover from accidental and erroneous interactions.
- Ask users to confirm choices.
- Use shorter, multi-step forms for complex interactions, rather than lengthy, all-in-one forms.

The implementation of these standards for web content development is very much in its infancy throughout Europe – more developments are being made in North America where they are discussing these issues on a continuous basis. However, it is through trial and error that most developments can be made.

## **Principles of Accessibility for Web Content for people with an Intellectual Disability**

*By Deirdre Goggin and Gearóid Ó Suilleabháin , DEIS , Cork Institute of Technology*

A discussion of e-learning technology would be very deficient if it did not address the heated issue of e-learning standards. This is however a highly complex and still emerging area and one which an entire thesis could be devoted (and which several undoubtedly have). A very quick overview is offered here in an effort to distinguish between the different types of standards currently being debated and the most popular standards within each of these three categories<sup>1</sup>:

- **Packaging Standards:** as the name implies packaging standards are standards that prescribe ways to package and transport the various objects that go into making an e-learning course (or other learning units). Several similar packaging standards have evolved to date and include the complex AICC standards and the simpler and more popular IMS Content and Packaging Specification. Version 1.2 of SCORM adopts the IMS standard but the next version may go further
- **Communication standards:** define a language for management systems to communicate with e-learning courses (or, aging, other learning units). Typically such a standard will specify a protocol and data model: the former to specify rules for communications, the second the defines a common vocabulary. Current standards include the AGRs (AICC Guidelines and Recommendations) and again the SCORM specifications includes these AGRs, as well as a runtime environment specification.
- **Metadata standards:** metadata is data about data, e-learning metadata is data about e-learning courses/units and their components. Three metadata specifications have some current implementation, these are: the IEEE 1484.12 Learning Object Metadata (LOM) Standard; the IMS Learning Resources Meta-data Specification, the Dublin Core recent extensions and the meta-data standards included as part of SCORM. The IEEE, IMS and Dublin have now

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<sup>1</sup> The following is based closely on Horton. 471-501. Horton also includes quality standards as one of an overall list of four types of e-learning standards.

signed a 'Memorandum of Understanding' agreeing to converge their ongoing efforts.<sup>2</sup>

### ***The Promise and Importance of E-Learning Standards***

The reason that e-learning standards have received so much attention is because of what they promise: interoperability and re-usability. True interoperability would mean they would no longer be any dependence or enforced reliance on proprietary software or its vendors: content created with one tool could be combined with content from another source, in an LMS-type environment which could, for instance, then, in turn, be replaced by another LMS without any need for re-development or even re-assembly of content. Currently this is not the case and much time is lost re-developing, re-formatting or migration cost to new LMSs. Reusability is based around the idea of the learning object, a self-contained "chunk" of learning that can be re-used again and again in different contexts and drawn together 'on the fly' as required.<sup>3</sup> The achievement of interoperability and re-usability could mean a "learning economy", with reusable resources the new currency of exchange. Dr. Littlejohn elaborates on this vision of the future in which :

Learning objects, produced by publishers, teachers, support staff and students themselves, would be stored in digital repositories, where they could be easily accessed, recombined and reused within online courses. In an ideal world these resources would be designed so that they could be adapted to fit different educational models, subject disciplines and levels of study.<sup>4</sup>

As Weller and his team in the Institute of Educational Technology in the UKOU have noted however "there is very little available practice-based advice on what it actually means for an educator to work with learning objects and how this affects the type of education material they produce."<sup>5</sup> Weller's own experiences using learning objects as part of a Masters level course suggest a number of important effects the learning objects approach may have in terms of:

- Narrative: what may be termed the "educational narrative" is lost as learning objects cannot refer to each other – otherwise re-usability is lost. Weller and his team suggest the creation of "narrative objects" as a possible solution here,

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<sup>2</sup> Oliver and Liber 1491-150

<sup>3</sup> Based on Weller et al.

<sup>4</sup> Littlejohn 2.

<sup>5</sup> Weller et al.

restricting these rule-contravening objects to single objects which themselves will never be re-used.

- Working Practice and Time issues: the learning object approach seemed to offer a number of advantages in this department and to work well within the changing academic environment of increased demand on staff time, the need for wider participation in course development
- Teaching Design: as each unit was independent of the others and many units were produced by different authors each learning object was able to have its own pedagogy and to range in character from that of an instructional text to a collaborative student activity. In point of fact however a commonality of approach developed between authors and certain features (externally authored material, activity-based approach and “companion” activities”) were used in “a number of the learning objects”.

The envisaged learning object economy seems likely to bring significant changes to the day-to-day activities of higher education institutes. Teaching faculty may spend less time creating course resources and more in re-contextualising, re-assembling and describing these resources as well as tutoring/facilitating students and designing learning activities. Again however it may be found that the way forwards particularly at higher education level is not without barriers and resistance. In higher education, content, for example, is traditionally produced in the form of largely monolithic modules that are too much of one piece or simply too inflexible to meet the teaching and learning needs of many difference users and cannot be easily re-purposed and re-adapted. In addition “although colleagues may state with certainty that they are willing to reuse and share resources, in practice institutional culture may offer little incentive or support for them to actively do so.”<sup>6</sup> Finally as was pointed out in chapter two e-learning is evolving all the time due, in not small part to ongoing changes in the underlying technology and despite best efforts of the initiative described above backwards compatibility and interoperability of the various proprietary systems are not yet guaranteed.<sup>7</sup>

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<sup>6</sup> Cambell 36

<sup>7</sup> Ibid 36

As already outlined accessibility guidelines have been developed by the Web Accessibility Initiative of the World Wide Web consortium who were founded in 1997.<sup>8</sup> They have drawn up general guidelines regarding the accessibility of the web as a tool to distribute information to a wider audience.

These guidelines relate to making the web an inclusive medium for all to use, but do not relate exclusively to intellectual disability. In one sense the general consensus is that it is possible to make web content accessible to those with a physical disability but there has been little consideration put into the area of intellectual disability. This in part is down to a lack of understanding or knowledge on the part of web developers to produce a site which caters for those with an intellectual disability. There is also the issue of the diversity of intellectual disability and creating a site which caters for all.

Agreed standards do not exist for intellectual disability web development. There are certain guidelines that have been put forward as recommendations from several organisations; one of these was the WAI NOT European project which looked at making web content accessible for people with an intellectual disability.

Their recommendations regarding making the web accessibility to people with cognitive disabilities include the following;<sup>9</sup>

- Create transformable, rich, multi-modal content
- Transformable- allow fonts to be enlarged; use real text or vector-based text, rather than text within raster- based images , to allow for higher quality enlargement, without pixilation. Provide all content in a text format so that it can be read aloud by text to speech synthesizers.
- Multi-modal – illustrate concepts with drawings, diagrams, photos, audio files, video clips, animations, and other non textual media.

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<sup>8</sup> <http://www.w3.org/>

<sup>9</sup> [www.wai-not.be](http://www.wai-not.be)

- Provide synchronized captions and transcripts for the audio portion of time-based media, add captions to video files and provide a link to a text transcript.

### ***Focus the attention of the user***

#### ***Sensory focus***

- Use softer colors (e.g. pastels) for graphical elements, rather than sharply contrasting colors. (Note: this is not widely accepted)  
When using background colors to differentiate sections of the same page, choose softer colors, rather than high contrast colors.
- Limit the types of font faces in a document.  
Use only one font, or a very small number of fonts in any single document.
- Limit or eliminate the use of italics or ALL CAPS.  
Avoid italics and all caps to the extent possible, to improve readability.
- Avoid background sounds that distract the user's attention (e.g. background music).  
Allow the user to focus on the main content without audio distractions.
- Use sounds to focus the user's attention (e.g. give instructions, alert the user to errors, etc.).  
Provide audible cues that help the user to focus on the main content.
- Include "white space"—non-content space—around the content, between paragraphs, and between headings.  
Don't crowd the design visually.
- Avoid complex or "busy" visual backgrounds.  
Don't create extraneous visual information that distracts from the main content.

#### ***Content focus***

- Place the important parts of a paragraph (key points) in the first sentence.
- Organize content into well-defined groups or chunks, using headings, bulleted lists, and other visual-semantic organizing schemes.  
Highlight text as it's being read out loud (or allow users to activate this option).  
Emphasize important text—or the headings to sections of text—with bold font faces or larger text size.

**Interaction focus**

- Provide multi-modal navigational cues (e.g. text + graphical/visual highlight + auditory instructions + animated demonstration).
- Give feedback on a user's actions (e.g. confirm correct choices, alert users to errors or possible errors).
- Provide instructions for unfamiliar interfaces.

**Design a consistent environment.**

- Ensure that similar interface elements and similar interactions produce predictably similar results.
- Create a navigational scheme that is consistent across pages within a site or within related sections of a site.
- Allow the user sufficient time to access and interact with content.
- Don't set short "expiration" times on content.
- If expiration times are necessary allow the user to request more time.
- Allow users to recover from accidental and erroneous interactions.
- Ask users to confirm choices.
- Use shorter, multi-step forms for complex interactions, rather than lengthy, all-in-one forms.

The use of these standards for web content development is very much in its infancy throughout Europe with more developments being made in North America where they are addressing these issues on a continuous basis. However, it is through trial and error that most developments can be made.

Examples of sites which have been specifically designed for people with intellectual disability are [www.wai-not.be](http://www.wai-not.be) and [www.ckglasgow.org.uk](http://www.ckglasgow.org.uk). They do follow the above guidelines to a certain extent but they both have different approaches to how the website is laid out and how it should be presented to appeal to the person with an intellectual disability. The wai-not website divides those with intellectual disabilities into 3 groupings of mild, moderate and extreme intellectual disability, they classify them as Digispecials, Clickies and Plussies respectively. The website is also fine tuned to the abilities of each of these groupings. Therefore for those with profound intellectual disability there is very simple symbols and audio which will discuss a certain topic. The individual is able to access the same information as those with mild

intellectual disability who may be able to follow text and require less graphical representation to understand the message. Audio is also used on the ckglasgow site<sup>10</sup> and the text can be modified depending on the visual capabilities of the viewer.

The above sites are examples of e-learning for those with an intellectual disability. Other sites or courses have been developed for those with an intellectual disability however they tend to be more distance education in nature where the student follows the course assisted by a manual of instructions.

In order for a course to be effective through e-learning it would be a requirement that the individuals involved would have some basic IT skills and would be familiar with the interface that they interact with on the computer. This would ensure that students could move through a course with great effectiveness without difficulties and would benefit from what they could learn from the e-learning course.

Though e-learning and creating web content for those with an intellectual disability is in its infancy there have been considerable attempts to make the internet an accessible learning tool for those with an intellectual disability. The possibility of this will be addressed later in this project.

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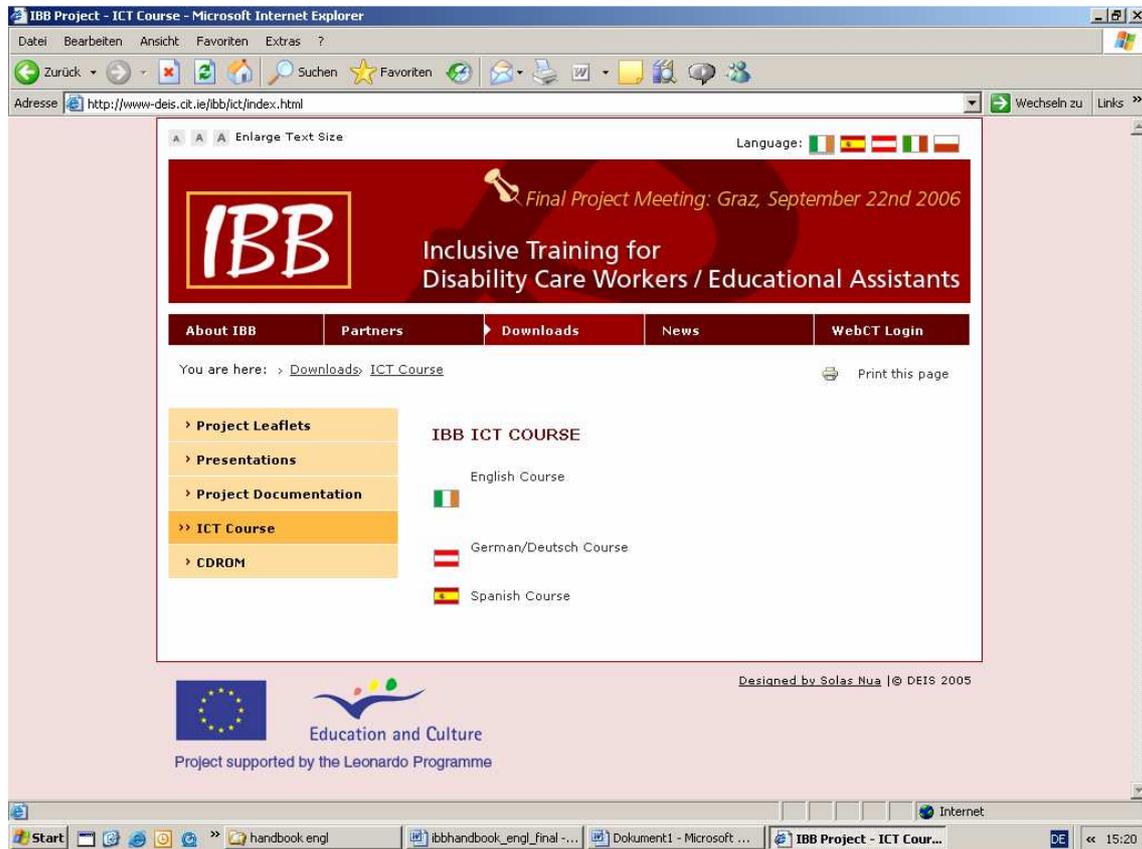
<sup>10</sup> [www.ckglasgow.org.uk](http://www.ckglasgow.org.uk)

<sup>4</sup> <http://joelclark.org/book/sashay/serialization/Chaper 03.html>

<sup>5</sup> Access All Areas: disability, technology and learning ; TechDis Edited by Lawrie Phipps, Allan Sutherland and Jane Seale

## IBB ICT Course

The developed ICT course for learning basic computer knowledge is on the IBB Website ([www-deis.cit.ie/ibb/ict](http://www-deis.cit.ie/ibb/ict))



IBB Project - ICT Course - Microsoft Internet Explorer

Adresse <http://www-deis.cit.ie/ibb/ict/index.html>

Language: 

**IBB** Final Project Meeting: Graz, September 22nd 2006

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