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## THE WEB AS A TEACHING TOOL

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### WHY USE THE WEB?

'The World-Wide Web represents a new concept in technology, the library on your desktop, the dictionary at your fingertips, the sound at your ear. There is nothing that we hear or see that will not be available through WWW'.  
Sangster (1995)

In the original version of this report we opened with this quotation, and it is still relevant today. The Web is one of the most accessible tools available for academics to use. It allows an easy means of publishing material the majority of browsers are graphical and user-friendly, and above all it is free to most people in higher education.

### RESOURCE-BASED LEARNING

'Resource-based learning' or 'RBL'. Simply put, this focuses on the concept of giving the learner greater access to resources (and thus more control of their learning experience). Because of the multimedia and easy to access advantages of the Internet, the use of on-line teaching has led many to advocate the policy of marrying the two together.

According to Gibbs *et al* (1994) RBL can be described as:

- Enhancements to conventional courses
- Lecture substitutes
- Distance learning on campus; self-contained 'tutorials in print'
- Self-pacing; alternatives to the lecture programme which allow the student to progress at his or her own pace
- Substitutes for specific learning activities e.g. computer simulations of experiments
- Support for learning activities, e.g. study guides, field guides etc.
- Hybrids. i.e. systems which emphasise class contact and learning resources in varying degrees

The premise being that students need access to greater resources to draw upon for their learning, or research, and that technology can achieve this goal. The Web can be viewed as one enormous resource that is interlinked, but ever expanding

### NAVIGATING THE WEB

Web works under a hypertext metaphor, i.e. it operates via a series of nodes and links. A user can be browsing a piece of information (or node) and when they see a link they can simply activate it (by clicking on it) and some other node of information (e.g. a

document) will be retrieved. Hypertext, as a teaching tool, has long been viewed as potentially useful:

'A book, being essentially serial, does not help provide cross pathway (or indeed, cross curriculum) movement. If a lecturer tries this in class there is a tendency that all but the brightest student will come confused. The Web provides a way which can be both student motivated (following pathways at whim, like browsing an encyclopaedia) or teacher directed (by indicating pathways), or indeed both'.  
Whalley (1995)

Yet there are problems with this:

'By browsing through the multimedia, incidental learning is potentially greater than if the learner were just reading a text or listening to a tape. However, there is the danger that the very richness and variety of the choice may lead to cognitive overload.'  
(King and Honeybone, 1996)

Nielsen, in his comprehensive study of multimedia and hypertext theories remarked:

'When users move around a large information space as much as they do in hypertext, there is a real risk that they may become disorientated or have trouble finding the information they need...Even in [a] small document, which could be read in one hour, users experienced the 'lost in hyperspace' phenomenon as exemplified by the following user comment: 'I soon realized that if I did not read something when I stumbled across it, then I would not be able to find it later'.  
(Nielsen, 1995)

Therefore, when using the Web for instructive purposes the academic has to focus the student on the specific area of learning. It is not a simple matter of presenting the student with a browser and telling them to get on with it. Serendipity is wonderful, but confusion is damaging. Nevertheless the Web, or more accurately Web browsers, do come complete with good navigational aids. There are standard navigational buttons, History lists, Backtrack facilities, and Bookmarks.

#### SOME IDEAS FOR WEB PAGES

The Web offers various opportunities for the academic who wishes to mount pedagogical material via the Internet or using a VLE. The following lists the type of things that have been done but should in no way be seen as a definitive list.

- 1) Create a course home page — This will act as a focal point for students to come to, detailing course times and changes, reading lists, and so on.
- 2) Publish lecture notes and handouts — The question arises as to the most appropriate timing for publishing, e.g. putting up handouts before the lecture increases the risk of students not attending your class but may assist in better note taking or annotation of diagrams.

3) Design courseware unique to web (involving interaction/feedback) - In many ways this presents the most exciting use of the Web. It is of course possible to create Web pages that provide feedback and interaction, or you can use tools offered in a VLE.

### CREATING WEB PAGES

When creating Web pages it is useful to obey the following rules:

#### IDENTIFY YOUR TEACHING GOALS

A simple way of doing this would be to write down the various courses you presently teach and the methods you use (e.g. lecture, tutorial, seminar, workshop); then focus on what you are trying to teach in each class, e.g. the subject matter, the particular skill, and so on. Once you have done this you can look at which sections you are unhappy with, and/or which sections you think could be improved.

#### PLAN A SITE OVERVIEW ON PAPER

In Lee and Groves (1998) this process is described as:

'The first stages of web design are very similar to designing any hypertext system. Start with the first 'node' of information (e.g. in the Web think of this as your opening page) and then consider what that should link to. If you are designing a site to *teach a skill* so that the student enters with an assumed knowledge base and exits having completed all of the tasks and having reached the teaching goal, you may favour a more linear design. If instead you wish to encourage exploration and research, you may wish to develop a much more complicated hypertext system. In any event, draw your site out on paper, with some indication of the linking, assemble your source material in electronic form, and then begin to sit down and encode the HTML.'

#### THINK ABOUT YOUR LINKS

There are already a wealth of resources on the web which are relevant for academic study and the ability to link easily to them is one of the most useful features of having a web based learning environment . It is relatively easy to insert hypertext links into web text and time spent planning will bring dividends.

Some users will scan through pages looking for links and then click on them without actually reading the text on your page, this will take them away from the information you think is important. You may want to group links together at the bottom of the page under a new heading rather than risk losing your reader in mid sentence.

You can make links in your text go to other parts of your own information, or to a glossary page which will explain a term. Make sure the structure of your pages is clear so that they can get back again though.

As well as giving access to new or rare resources, include web links which allow students to 'drill down' into areas of interest. Some academics find it useful to provide both links which include background information on a subject for the student who may be unclear, as well as links to more advanced and detailed information for those who are hungry for more.

Bombarding students with long lists of relevant links rarely results in effective learning. They simply will not read them any more than they will read 50 books on a reading list. It is much better that you select key resources which are integrated into the work they are doing.

#### EVALUATE THE RESOURCE

Remember that when you link a site for your students you are giving it your stamp of approval as a learning resource. Carefully evaluate a website before linking to it from your site. Select sites that are reputable and will help your students throughout the course. With the wealth of information available it can be difficult to find reliable sources of information. You may choose to assign students to critically evaluate web sites or set tasks which involve them in identifying web resources which can be added to your resource base. If the website becomes a key part of your teaching you should also check that it is disability accessible.

#### ACKNOWLEDGE THE SOURCE

It is good practice to acknowledge the source of the link on your own page by including it in a sentence e.g. 'You can find more information about moon landings at the NASA website' or 'Read more background information about moonrock at this site developed by University of Rhode Island', rather than just 'Click here'.

#### AVOID AMBIGUITY

It is good practice when using someone else's site as a resource in a virtual learning environment to have the link open in a new browser window. In order to be clear that you are not claiming that page as your own you must show its URL (unique resource locator) or 'address'. This will appear in the address bar of a new browser window when it opens. URLs are an important key to establishing the provenance of a website.

#### LET STUDENTS KNOW WHAT THE LINKED TEXT DOES

If following this link will take students out of your site to an external one, you should let them know. You can do this either in the text or by using the 'title' tag in HTML.

#### KEEP DISABLED USERS IN MIND

Don't require users to be able to click on a small link or moving target in order to proceed to another page, because people with mobility difficulties may not be able to move the mouse with precision.

#### DON'T BE TEMPTED

Sometimes it is tempting to copy images from other people's web pages to make your own look more interesting. If you want to use a picture or cartoon from someone else's site drop them an email asking if you may copy it. They will either give permission, ask you to credit them or, in some cases charge you for the privilege. If you are just looking for buttons or icons to brighten up your page, check out any one of the many free clip art sites where you can download images as much as you like.

Remember, just because it is on the web doesn't mean it is copyright free. If copyright information is available it will say so on the site. Password protecting it doesn't bypass copyright restrictions. Including a copyrighted image from the Web in a PowerPoint presentation or on a photocopied handout, without permission, is just as illegal as putting it on your course website. Adapting or manipulating an image is a restricted act just like copying. Getting permission to copy from a copyright owner is not the same as getting permission to manipulate the image.

#### UPDATE REGULARLY

The Web is a fluid medium: Update pages as time goes by to reflect all changes. Statistics, numbers, and examples all need to be recent or credibility suffers. Ensure that the main page of the web site has a date of creation or of last update. You might like to think about including a date of creation or of last date on other pages as well. A visitor will gain an idea of whether a page is actively maintained or long abandoned.

Linkrot is the tendency of hypertext links from one website to another site to become useless as other sites cease to exist or remove or reorganise their Web pages. When this happens you will see messages such as '404 Not found' when you try to follow the link. There is no way of entirely preventing linkrot but there are some things you can do to minimise it. Check your links regularly. Avoid linking to sites which are likely to rot. Personal pages created by one individual are the most likely to move or fall into disrepair. The web pages of large organisations, companies and publishers are most likely to stay put.

Don't link deep. Deep links are those which go directly to one page of a site rather than to the homepage of the site. If the owner of the site reorganises the pages your link may break. It is always best to link to the homepage of a large site and give students direction as to what they are looking for.

Use your students as link checkers. If you recommend a site to your students and the link is broken they will be sure to tell you. If the link is broken and no-one tells you, either they ignored your recommendation or they found an alternative resource.

#### USEFUL RESOURCES:

Intute: The best of the web. <http://www.intute.ac.uk/>

Intute is a free online service providing you with a database of hand selected Web resources for education and research. Helping students and staff to make more intelligent use of the Web.

LTG guides for creating websites.

LTG guides for effective use of WebLearn.

Sangster, A. 'World-Wide Web - What Can it Do for Education?', *Active Learning 2* (July, 1995), pp. 3-8.

Whalley, W. 'Teaching and Learning on the Internet', *Active Learning 2* (July 1995), pp. 25-29.

King, A. and Honeybone, A. 'Needs Before Means: The Dialectics of Learning and Technology', *ALT-J* 4.2 (1996), pp. 4–16.

Nielsen, J. *Multimedia and Hypertext: The Internet and Beyond* (Mountainview, CA, 1995), p. 247.