# Teaching and learning with the Web

*creating an interactive learning environment on the Web*

## Introduction

The World Wide Web has arguably had the biggest impact of any learning technology on higher education teaching in the last ten years. The network of HyperText Markup Language (HTML) files, which make up the Web allows a high degree of cross-platform compatibility opening up many new opportunities for teaching and learning. The new developments in the Web make it possible to have many types of learning technology available online, including simulations, assessment and computer-based communication.

Although the Web does not provide any novel pedagogic strategies it allows people to assemble coherent sets of media rich resources very easily. The educational implications of using the Web are that students are no longer tied to the campus network, and therefore can conduct their studies at a time and place convenient to them. Meanwhile the role of the academic evolves from being a deliverer of knowledge to being a facilitator of learning. The development of Java, Javascript and Dynamic HTML has increased the interactivity of the Web, making it an even richer learning environment. Furthermore, standardisation of administrative and course management systems under initiatives such as the Instructional Management System (IMS) project will soon provide all the components for registering students, running courses, and charging fees online, forming a completely integrated learning and teaching environment.

## Use in Teaching and Learning

The WWW can be used for teaching and learning in the three main ways listed below:

### 1) Resource-based learning

A vast amount of information already exists on the Web, therefore there is great potential for using the information like a library resource. Various starting points exist for locating subject-specific material on the Web including search engines and subject-specific indices and gateways. Many search engines return results ranked according to the relevance of the site to your search topic. In contrast to Web indices, subject gateways contain information on the content and quality of the sites they catalogue. The drawback with this approach is that you will recover too many sites to evaluate thoroughly before including them in your reference list. Therefore it is a good idea to build up your list slowly to make sure you only include relevant, quality sites. In addition, consider including additional notes with the reference list to relate the sites to the context of your course, enabling students to make informed choices on the sites they visit. The referenced sites should be checked periodically to ensure that the address is still valid, as Web pages may be frequently removed or change location. Finally, making the resource-based learning part of an assessed task discourages students from surfing randomly.

### 2) Web-based courseware

Another approach is to create pages to present course information or for delivery of lecture notes or simulations. One advantage of the WWW is that it was designed to make authoring as easy as possible. Basic HTML authoring is no more complex than using a word processor, and capacity for inclusion of images and animations makes it ideally suited for the presentation of tutorial courseware in an interesting and stimulating way.

Furthermore, the development of programming languages such as Java and Javascript as well as plug-in software for Web Browsers means that the types of courseware now being delivered on the WWW are approaching the range of applications found in stand-alone courseware. Examples of Web-based courseware already being used in courses include database and simulation-based applications, and assessment tools. Many Institutions now offer whole courses on the Web for distance learners, by combining lecture notes, reading material, and assessment information with computer conferencing facilities enabling students to contact their lecturer and others in the class.

### 3) Student project work

The Web is an excellent medium for students to organise and publish their own work. Linking a set of files together will require students to provide a logical framework for their work and to relate to the different aspects of the subject. This will result in a deeper conceptual understanding of the subject than by following the structure imposed by the author of an existing Web site. The types of learning activities which can be set for students could include:

- critique of existing Web sites
- build a collection of links for a particular topic
- write a Web-essay, linked to relevant sites
- design and create a tutorial for learning on the Web.

## Examples of Interactivity

### Web-assisted assessment

The Web offers new opportunities for the delivery of both formative and summative assessments, on and off campus. Indeed many institutions have recently developed their own Web-based assessment. The CASTLE engine was developed to deliver simple multiple choice tests for formative assessment purposes and is freely available to UK HE (http://www.le.ac.uk/cc/ltg/castle/). More information on Web-based assessments can be found via the mailbase email list: web-assisted-assessment@mailbase.ac.uk.

### Web conferencing

Web conferencing tools are now widely used to support student-tutor and student-student interactions. Asynchronous conferencing enables discussions to occur without participants having to meet overcoming time-tabling problems. Tutors can use bulletin board systems to inform all students of new course information, without having to answer individual emails. In addition, messages can be threaded so that the progress of the discussion is maintained over time. As with email lists, restricted groups can be set up to support different projects and tutorial groups. Prices and functionality of Web conferencing systems vary from simple, free bulletin boards to integrated course management systems with integrated document sharing functionality.

### Plug-ins

Plug-ins are small helper applications that display a particular file type within a browser window thus increasing the capability of the browser. Common plug-ins such as Shockwave (http://www.macromedia.com/) allow the display of stand-alone applications (in this case Authorware) on the Web. Other useful accessories include the Acrobat PDF reader from Adobe (http://www.adobe.com/prodindex/acrobat/readstep.html) and a decompression utility such as WinZip (http://www.winzip.com/) or PKZip (http://www.pkware.com/).

### Java applets

It is increasingly possible to convert existing stand-alone material into Java for delivery on the Web. Although this is a time consuming exercise which requires Java programming skills, the benefits for increased delivery are obvious. A large number of Educational applets are available at Apple's Educational Objects Economy site (http://eoe.apple.com).

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# Resources for business education

**Evaluating Web resources for student use**
Internet Detective at the University of Bristol: http://sosig.ac.uk/desire/internet-detective.html
Assessing Net Worth http://cee.indiana.edu/interact/
Evaluation criteria rating system for Web sites http://www.ala.org/ICONN/rating.html

**BizEd** provides links to evaluated business sites and sources of teaching and learning materials for business education.

http://bizednet.bris.ac.uk/

**Using the World Wide Web for teaching and learning:**
The STILE project: http://indigo.stile.le.ac.uk/
The World Lecture Hall: http://www.utexas.edu/world/lecture/index.html
Teaching and Learning on the WWW: http://www.mcli.dist.maricopa.edu/tl/

**Access to journal abstracts and articles** is available through NISS/Ebsco. The service is free to UK HE though a username and password are required. This can be obtained from your institution's ATHENS officer (a BIDS name and password can be used). A list of names and contact details is also on the NISS website. Business and Economics resources are available.

http://www.niss.ac.uk/ebsco and

http://www.niss.ac.uk/subscription.html

**The CTI Accounting Finance and Managament** website http://www.mgt.uea.ac.uk/cti/on-line/ has links to subject related on-line resources. These include the Centres publications, the journal ACCOUNT and the conference proceedings spanning the 10 years of CTI. The papers for the 1997 and 1998 conference are available as PDF files and can be downloaded. Papers from previous years can be obtained from CTI Accounting Finance and Management. Some case studies on the use of the internet in teaching are listed below.

**Internet Column and NetExtracts from ACCOUNT** - Andy Lymer, University of Birmingham

http://sun1.bham.ac.uk/a.m.lymer/articles/index.html

**ECCH Case On-line Information System** http://www.ecch.cranfield.ac.uk/

The European Case Clearing House now has a new system called COLIS. It allows users to search more than 14,000 cases and order then on-line. Some multimedia cases are available.

**British Accounting Association** and the BAA-SIG British Accounting Association Special Interest Group on Accounting Education

http://www.bham.ac.uk/BAA/

**A-Net** - **an International Accounting Network**. http://www.csu.edu.au

**American Accounting Association**

http://www.aaa-edu.org/

**Harvard Business School** http://www.hbs.harvard.edu/ and Harvard Business School Publishing http://www.hbsp.harvard.edu/ are sites worth visiting if you are interested in post graduate or post-experience education.

An extensive list of resources for business and management is held at the **UEA School of Management.**

http://www.mgt.uea.ac.uk/studentlinks.htm

**The Marketing Learning Centre** at the University of Ulster is well worth a visit. Here there are on-line exercises and MCQs based on Pride & Ferrall's marketing text book.

http://www.busmgt.ulst.ac.uk/h_mifflin/

**Human Resouces Management on the Internet**.  A good site for HRM links is held at Nottingham Business School

http://www.nbs.ntu.ac.uk/staff/lyerj/hrm_link.htm


# Case studies: using the Internet for learning & teaching in Accounting Finance & Management

### *Papers presented at the 9th CTI-AFM Conference 1998*

http://www.mgt.uea.ac.uk/cti/conference/conf98/paper98.html

Student Centred Learning - An INTRANET Approach  *Bob Morgan, University of Sheffield*

Can an Internet Glossary Improve Access and Flexibility of Learning?  *Jayne Smith, Staffordshire University Business School*

The Finesse Portfolio Management *Facility  D. Power & R. Michaelson, University of Dundee & C. Allison, University of St. Andrew*

### *Papers presented at the 8th CTI-AFM Conference 1997*

http://www.mgt.uea.ac.uk/cti/publications/abstracts.html

Accounting Education on the Internet - Extending the scope of Tutoring Tools. *Ashok Patel & David Russell Leicester Business School*

Supporting Distance Learning Managers: A Multimedia WWW System for Learning Support and Communication  *Mohammad Dastbaz & John Eldred, Joseph Rodrigues Kingston Business School, Kingston University*

Accounting and Finance Education and the World Wide Web: Possibilities for Teaching Innovation  *Andrew Lymer University of Birmingham &Alan Sangster, Queen's University, Belfast*

### *Papers presented at the 7th CTI-AFM Conference 1996*

The Integration of World Wide Web into an Accounting Systems Course *Alan Sangster & Christina Mulligan, University of Aberdeen*

The Internet as a Teaching Tool: Experiences in Studying Banking Risk Management *Andy Lymer and John Cadle, University of Birmingham*

### *Papers presented at the 6th Annual Conference 1995*

World Wide Web - What can it do for Accounting Education? *Alan Sangster, Aberdeen University*

Internet and World Wide Web  *Andy Lymer, University of Birmingham*

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