

Promotion of new educational delivery technologies

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The continual increase of low-cost functionality available in desktop computing, the enhanced features offered by new and emerging educational delivery technologies and the introduction of powerful information retrieval environments have opened up a new possibility in teaching and learning within a wider educational framework. During the last few years, support for multimedia and information technology based projects by universities and CAUT/CUTSD funding has resulted in a significant boost in the application of computers in tertiary education across the country. In this respect, the University of Wollongong has made substantial contributions in developing ideas and implementing computer-based modules to support teaching and learning. The Educational Strategies Development Fund (ESDF) is one of the supporting mechanisms which provides funds for educational development initiatives.

This paper briefly outlines the aim, objectives and outcomes of an ESDF project carried out in 1997. The project was an 'exploration' of different applications of Web technology when used to support tertiary teaching and learning. Unlike many other ESDF projects, this project did not develop and/or implement a teaching and learning strategy for a specific subject. It aimed to make interested Faculty members aware of new possibilities in educational technologies, and help those who wish to adopt them in their teaching practices.

New educational delivery technologies: hopes and fears

New educational delivery tools in general and the World Wide Web technology in particular provide flexible access to a wide variety of information by incorporating the notions of 'navigation' and 'tailored presentation'. They allow for courseware to be available on different platforms, different operating systems, and they allow the choice of stand-alone, Internet, or combined mode of operation. These educational technologies have already fulfilled promises in:

- making the Web a dynamic environment with a reasonable level of interactivity;
- providing real-time communications;
- delivering streamed audio and video files; and
- providing faster, more user friendly and more powerful means of delivering educational materials.

Many tertiary educators may feel trepidation with the process of immersing themselves in new computer and information technologies, and in developing new computer and information skills required to work with different platforms and different application programs for stand-alone and networked computers. This has caused some reluctance among tertiary educators to adopt new educational technologies, including the Web, as part of their professional development. There is a need to support educators as they become involved with the technology and learn about services which might be useful to them with a reasonable amount of time invested.

Options such as providing a readily accessible 'Resource Person' in each Faculty and providing support through local and regional interest groups were suggested in the submission for the ESDF project. These options may supplement the extensive career development short courses and workshops that are currently in place at the University of Wollongong.

Project aim and target audience

The project identified some problems in using new educational delivery technologies to support conventional on-campus education, and made an attempt to offer a practical solution at a Faculty level. The project aimed to introduce interested Faculty members to new and emerging educational delivery tools and methods by providing support materials to be used in small group presentations and training courses. It was envisaged that the outcome of the project would benefit those who:

- had used or intended to use computers and the World Wide Web in the process of teaching and learning; and
- had entered, or intended to enter the exciting world of multimedia and hypermedia for educational purposes.

The first presentation was conducted late last year in the Faculty of Informatics, and there will be two more similar presentations in 1998. The feedback received from the participants of the first small group presentation was very promising. The material developed in this project was integrated into the 1998 University of Wollongong Staff Development plan in part, and uploaded on the author's 'Educational Delivery Technologies Laboratory' Web server in part. The final outcome of this project also illustrated the type of work expected from a Faculty 'Resource Person' when such a position becomes available.

Project deliverables

The project used a package containing a number of locally developed hypermedia modules. The modules covered aspects of Web technology such as:

- supporting the design and implementation of 'problem-based' and 'computer-simulation' teaching approaches;
- publishing tool for teaching resources;
- distributing teaching material in large classes;
- teaching laboratory classes;
- a presentation tool; and
- postgraduate and final year thesis subjects.

The package also contains a collection of relevant support resources such as computer programs, tutorial modules, drivers, utilities and help pages. The resulting modules and other resource materials were packaged using the Web interface, and the same technology was used to deliver the package to participants of the first presentation.

To provide in-house support and immediate assistance to staff members, who may not have time to attend the formal sessions, a Homepage was set up. This Homepage contains about a third of the original material, excluding audio and video files and tutorials. It, however, provides links to some widely used and

inexpensive shareware programs that are needed for the development of Web-based teaching and learning materials. Moreover, a CD-ROM version of the package was created so that more experienced staff members can use the information contained in the full version. The CD-ROM is available from the Centre for Educational Development and Interactive Resources (CEDIR) reception desk.

The package: a guided tour

The package is labeled 'Promotion of New Educational Delivery Technologies'. It consists of two main sessions (sub-pages). Each session was originally designed to support a three-hour in-class presentation. The CD-ROM version of the package has additional media files, tutorial modules and helper, utility and winsock (network clients for MS-Windows) programs. It is worthwhile noting that the final CD-ROM version of the project contains about 500Mb of computer files including a variety of file formats such as postscript, portable document format, audio and video, images and animations.

To make sure the user has all relevant programs on his/her desktop, the cover page contains the following message:

'Please check the availability of the following helper, plug-in, shockwave and utility programs before browsing the SDF97 Project materials. This CD contains all supporting programs you need to install on a Win95 platform as well as some programs for UNIX and Macintosh computers'.

- Portable Document Format (PDF) Reader;
- Postscript (ps) and Encapsulated Postscript (eps) Viewer;
- QuickTime Movie Player and the Browser Plug-in;
- Real Media Player (Audio and Video);

- Real-Player Plug-in and Real-Audio Xtra (Shockwave plug-ins);
- Cosmo player (VRML Plug-in); and
- Microsoft Active Movie and Microsoft DirectX files.

'Other interesting programs and files available on this CD-ROM include; tutorials for Web and multimedia development packages and samples of Web-based courseware, streamed audio and video files, on-line educational materials, and multimedia modules'.

Session one

Session one of the package consists of three sub pages. The first contains some background information on operating systems currently used in the Faculty (for example, Microsoft Windows 95 and NT, MacOS, and UNIX). This is followed by an overview of almost all relevant application programs including graphics, helpers, utility, sound and video drivers on MS-Windows 3.1 and Win95.

This session also reviews the Internet tools, the World Wide Web technology and concept. Also included in this session is an introductory coverage of available tools, methods and programming languages that make Web pages more dynamic. The application of plug-ins and shockwave programs along with sample scripting languages such as java and perl are explored in some detail. The most interesting part of this session is a collection of java scripts and applets as well as some cgi (common gateway interface) applications with Perl. This collection illustrates the inclusion of dynamic information into the Web document, interactive graphics, html forms and many other examples.

Session two

Session two of the package consists of three sub pages. It uses the information provided in Session one and looks at files and directory structures as well as programs that are used for creating teaching and learning environments for stand-alone and networked

computers. Some widely used commercial multimedia development packages are discussed and some locally developed samples are demonstrated. The concept of a computational hypermedia environment where different media files, including computer simulation programs, are integrated into the Web environment is discussed and samples are demonstrated.

Other main topics are covered in session two include:

- methods and tools for incorporating interactive richness into the Web environment; and
- courseware delivery using synchronised and streamed audio and video files.

This session also delivers extensive information on current Web development programs at selected teaching institutions. Samples are provided demonstrating the extent to which Web technology can incorporate interactive richness into courseware, and answers the question of the significance of streamed audio and video files in Web-based courseware. The RealSystem family of products is introduced and a variety of locally developed streamed audio and video pages is demonstrated.

Final remarks

The project, 'Promotion of New Educational Delivery Technologies', offered some locally developed modules and files to be used for demonstration and in-house training of staff members who wish to incorporate new educational delivery tools and resources into their teaching activities. The outcome of this project provides information for Faculty staff members and the wider University community to become familiar with locally worked out Web-based delivery technologies. It also shows how far the educational delivery technologies have advanced in the last few years.

References

- Doulai, P. and Mandel, M. 1996, Computer and Information Literacy Skills for Professional Engineering Educators, In the proceedings of 'Australasian Universities Power Engineering Conference, Melbourne.
- Staff Development Handbook 1998, The University of Wollongong.
- Strategic Development Fund Project, Promotion of New Educational Delivery Technologies Homepage.
- Doulai, P. 1997, Computational Hypermedia Teaching and Learning Environment in Engineering Education, Overview.