Course Server Software For Online Teaching

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Abstract

Course server software is a general term for server capabilities enabling online teaching functions, including presentation of content, discussion groups, class management and related services. Some providers of education and training purchase a course server software package, for example WebCT, TopClass, Learning Space or others, whilst some develop their own, equivalent packages. Some organisations "outsource" the course server function, for example TechWorks, The Training Precinct and other companies provide this and related services. New kinds of relationships are emerging between owners of course servers, educational organisations and industry. This article reviews the use of these options in Australia, with special reference to technical features and how these interact with staff development, curriculum development, provision of network access and other elements in an integrated approach to online delivery.

Course server software

Amongst the technical services required for online learning, "course server software" is possibly the most specific, the most critical and the most "mysterious". Although the teaching functions required - presentation of content, formative and summative assessment, discussion groups, class management and related services - may be very familiar to lecturers and trainers, questions about "which technology" and "how to make it work" are likely to be mysterious "black box" matters for most people. However, several circumstances combine to give a degree of orderly structure to the question of "which" course server software:

1. The popularity and extraordinary growth of the world wide web. This has developed to the extent that "web delivery" or "Internet delivery" are almost synonymous with online learning. The near universal expectation is that the student's interface to online learning is Netscape or Internet Explorer, which anchors the "which technology" question to the solutions enabled by the Internet and related protocols for hypertext transfer ("http"), hypertext markup language ("html") and others. Therefore course server software is essentially world wide web server software, with "add ons" such as discussion groups and class management services, and integration with existing services such as email delivery.

2. In many cases it may be relatively easy to initiate low cost, low risk experimental or pilot developments with an in house server, using free trial copies from one or more of the major providers of course server software. If an in house server is not available or if the organisation is used to engaging contractors for conducting training, an alternative approach based on outsourcing to obtain course server software is also readily available.

3. The world wide web provides a remarkably effective way to present and manage a student's interactions with computer based resources - computer assisted learning, computer managed learning, interactive multimedia - any use of computers in teaching and learning, in addition to the role of substituting for printed materials. For flexible delivery, open learning and distance education, online learning via the web offers a new medium for which existing text, multimedia and other resources may be "re-published" rather...
Developing or purchasing a web course server

Kaplan [1] summarises developments towards a web course server:

There are basically two choices when it comes to software for developing Web courses: (1) component, off-the-shelf software that allows for the creation of audio slide lectures, course materials, discussion forums, animations, synchronous chat groups, quiz creators, e-mail, and so forth, or (2) integrated packages that contain a number of the same features but are lacking in other significant areas.

Experimental or pilot developments are relatively easy if an organisation has an in house web server and it gives lecturers or trainers facilities and encouragement to put up web files relating to their teaching. In educational institutions this has been characterised as an "anarchic" stage of development [2,3], but for many practitioners it has been a stage of successive refinements towards an integrated suite of capabilities in an organisational web course server. Start with simple web pages on a standard web server, for example NCSA or Apache servers, add some functionality via email discussion lists or web based bulletin boards, add further functionality via web server scripts ("cgi scripts", usually drawn from the freeware domain), java script applets and other techniques, and so on.

Typically, further development then diverges - some institutions have continued to develop their own "in house" web course server, whilst others have changed over to a purchased, "off the shelf" integrated product. For example, here is a brief listing of current directions for some Australian TAFE authorities and universities. It indicates that diversity is the trend [4,5]:

<table>
<thead>
<tr>
<th>In house</th>
<th>TAFE</th>
<th>New South Wales, Griffith, Edith Cowan, Deakin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased</td>
<td>TAFE</td>
<td>South Australia (WebCT), Western Australia (WebCT or TopClass), Swinburne (The Learning Manager), Canberra Inst Technology (TechWorks)</td>
</tr>
<tr>
<td>Universities</td>
<td></td>
<td>Murdoch (WebCT), Curtin (WebCT), U Technology Sydney (Top Class), Flinders (WebCT), New England (WebCT), Canberra (WebCT), U Western Sydney Nepean (TopClass), Wollongong (WebCT)</td>
</tr>
</tbody>
</table>

A large number of "off the shelf" integrated products are available [6]. In most cases the producers facilitate low cost, low risk experiments, by permitting free download of demonstration copies for "no obligation", "try before you buy" installations on an organisation's own server. This kind of service, and attractive prices, may be the most critical factor, together with shortages of specialised programmers, in tipping the balance towards purchase instead of in house development, especially for organisations with small to medium sized information technology services units.

Typically, these products are under continuous development, including incorporation of any new features or improvements implemented by their competitors. Differences between products tend to be relatively minor, "like choosing between flying with Ansett or Qantas". This leads to a re-assuring indication that the question of "which package?" is not a critically significant matter. In our own case at Murdoch University, where WebCT became the in-house standard during second semester 1998 [7], we did not conduct a highly detailed review of products. The analysis was limited to broad scale factors, principally:

1. Price (particularly for large numbers of enrolments).
2. Ease of assimilation into Murdoch's predominant environment, Sun's Solaris Unix.
3. Number of customers, particularly in Australia.
4. Ease of starting up and expanding the number of online units rapidly.
5. Estimates about future enhancements to add or improve functionality.
6. Previous familiarity developed by key staff.

However, prior to adoption of WebCT we had several semesters of experience with development of an "in
"Outsourcing" to obtain a web course server

This is an alternative to "in house" development of web course servers. Availability and kinds of services in Australia may be illustrated by two examples. In the first, TechWorks has developed its own web course environment, whilst in the second, TTP has adopted WebCT as its web course server. Example: TechWorks [10]

".... Through the use of new and emerging technologies associated with the Internet, TechWorks' online learning system can deliver customised learning programs on demand, administer individual assessment, manage learner progress, manage corporate learning programs, provide learning support for a range of learning models and provide access to learning resources of unprecedented magnitude"[11]. TechWorks describes its relationships with customers such as Qantas, BHP, Centrelink, Air Services Australia (TechWorks, 1999) and a range of vocational training providers as "partnerships". As TechWorks manages the server and server applications for online training (the TechWorks Learning System), there is little impact on the day to day operations of IT personnel. An outsourced online learning system is represented as an opportunity to add value to and enhance productive use of corporate networks which are already in place. The production of online resources, involving a content specialist, writer, instructional designer, programmer and graphic designer, is supported by a TechWorks production team[11].

Example: The Training Precinct [12]

The Training Precinct (Australia) Pty Ltd develops online courses for organisations, and provides a course hosting facility using WebCT. TTP describes its services in two categories, technical hosting and content development. Hosting services include "TTP Incubator", enabling clients to trial their own courses on TTP's server, "TTP Integrator" delivering courses from TTP's servers, and "TTP Independent" which is setting up courses on a client's own server. Content development comprises educational, graphic and web page design services for clients [12].

Features in the activities of these companies include the willingness to supply a flexible range of services, from web server space to training for the client's lecturers or training personnel, as required, and the emergence of both competitive and partnership relationships with existing institutions.

A wide range of interesting examples of new services may be found around the world [4,5]. Amongst publishers, Harcourt Brace WebCT enables free access to a WebCT site for new adopters of any Harcourt Brace College text. Web services include online multiple choice quizzes for specific text books [13]. McGraw-Hill Learning Architecture offers "...a web-based learning system that combines trusted McGraw-Hill content with innovative Top Class software from WBT Systems." McGraw-Hill's site includes PageOut, providing web space and services which are free for adopters of McGraw-Hill texts [14].

Many of the world's large corporations are involved in online education and training for staff and customers, for example in information technology these include Microsoft [15], Sun Microsystems[16], Cisco Systems[17], etc. Some have "outsourced" delivery and other services to educational institutions or other partners, especially in cases where "certification" by the corporation is a highly marketable qualification [18].

Concluding comments

The examples of outsourcing cited above give a brief indication of the scope for new kinds of relationships to emerge between owners of course servers, education and training organisations, and business and industry. Owners of course servers can look towards new markets and providing improved services to existing markets. Organisations which purchase training services are likely to enjoy competitive diversity of supply as new companies and existing colleges and universities become fully functional as owners of course servers - with their entry facilitated by the ready availability of good "off the shelf" course server software.
References


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