

On-line Course Resources

Matthew Simpson; Benjamin Chen, MD; David Holland, MD

Medical Education Technology Unit and Undergraduate Medical Education Office - Queen's University

MedTech

Kingston, Ontario, Canada

Description of Project

In 2003, Queen's School of Medicine identified the need for a simpler and more effective solution to distribute and manage lecture materials.

There were several requirements for the application, such as:

- More user-friendliness than currently available course management systems.
- Cleaner and easier navigation through the interface.
- Lower click ratio for accessing information.
- Application portability with a modular structure.

Out of these requirements, an internally developed solution named "On-line Course Resources" was created and has quickly become the standard for the School of Medicine to distribute and manage lecture resources on-line.

In building this system the Medical Education Technology ("MedTech") Unit not only achieved the set forth requirements, but has also met many other requests by both the students and faculty during our extensive beta testing and release process.

Some Current Application Features

- Three "group" levels of application access: Student level (read only), Faculty level (complete read / write personal data) and Administration level (complete read / write).
- The ability for students to easily login and quickly access any lecture information in the system.
- The ability for students to very quickly sort displayed lectures by date, by level, by teacher, or by lecture title.
- The ability for teachers to easily login and add, modify and remove lecture notes and lecture-specific messages to an existing lecture in the system. Lecture notes can be in the form of file attachments as well as hyperlinks to external resources or websites.
- The ability for administrators to add, modify or remove entire lectures, lecture-specific messages or lecture notes from the system.
- The ability for administrators to set time-released lectures and even time-released lecture notes or links.
- The ability for administrators to identify a list of lectures covering specific learning aims or objectives.
- An automated feedback agent, which allows the end-user to easily submit feedback about the system for review by developers.
- An embedded privacy policy that takes advantage of integrated privacy features in some modern web-browsers. This system also produces page specific data (session, cookie, etc) for the developers to review.
- "Remember me" display preferences that are stored in cookies on the user's machine so pages always look the same.



Screenshots

Student Application View

By default, students are shown lectures applicable to them during that calendar week; but with one click they can move forwards or backwards in time or change the "week" view to a "day", "month" or "any" view. Students can also modify the pre-defined filters to see lectures from other years, other courses, and more. This "filter enhanced" style of system is much more powerful and robust than the standard "search engine" system because it displays only the desired records without having to input extra criteria. Lecture information includes scheduling data, aims and objectives, and self-study resources and links.

Centralized Authentication Model

When building the On-line Course Resources application the MedTech unit wanted to use a centralized authentication model so we could introduce a "single sign-on" system with the rest of the University. While a University-wide system still in development, we have developed a custom system so students and faculty can use a single username and password to log into any of the MedTech developed applications or resources.

Technical Details

- System Requirements:**
- Any machine running Unix, Linux or Windows.
 - PHP 4.3+
 - Apache 1.3+
 - One of the following databases servers: MySQL, PostgreSQL, Interbase, Informix, Oracle, MS SQL 7, Foxpro, Access, ADO, SAP DB, SQLite, Sybase, DB2 and generic ODBC.
- Our Development System:**
- Apple GS running Mac OS X 10.3.3
 - PHP 4.3.4
 - Apache 1.3.29
 - MySQL Max 4.0.18
- Our Production System:**
- Sun Enterprise 250 running SunOS 5.8
 - PHP 4.3.4
 - Apache 1.3.29
 - MySQL 3.23.58

Several programming level highlights include the use of PHP classes that will become more developed with PHP5's new handling of objects. The On-line Course Resources application also makes use of the powerful ADOdb database abstraction library, which is a robust set of classes that allow the use of 14 different database types while adding query caching and database session management support. In doing this we ensure one of the key project requirements set forth; portability.

Future Development Plans




As with any software, there are continuous requests for enhancements and increased functionality to the program and the MedTech unit has planned for a long period of continual development and support.

Development of a quiz management and scoring system is under way and direct integration with the University-wide Central Authentication System is planned for the near future. There are also plans to incorporate the capability for course websites to pull data directly to their pages through the use of XML and application level authentication.

Faculty development will be critical to enable teachers to enhance their lectures by adding interactive, multimedia resources online for self-study by students.

Application Demonstration Systems

We have three machines setup at this booth to demonstrate the abilities of our Online Course Resources application. All stations are running different operating system, web-browsers and application views to show you the different abilities of the application.

- | | | |
|---|--|--|
| <p>Station 1 </p> <p>This station is setup with Mac OS X 10.3 and Apple Safari 1.2.</p> | <p>Station 2 </p> <p>This station is setup with Microsoft Windows XP tablet and Internet Explorer 6.</p> | <p>Station 3 </p> <p>This station is setup with Fedora Linux and Mozilla 1.7b.</p> |
|---|--|--|

Student View Professor View Administrator View



Teacher Application View

When a teacher logs into the system they are, by default, shown only lectures in which they are involved. They can then choose modify the pre-set "Primary Teacher" filter or add more filters such as "Phase" or "Graduating Year".

Uploading lecture resources and links to a specific lecture can be done with only a few clicks. This ability greatly reduces the learning curve required of teachers. They can also add a personalized "Professor's Message" to the lecture by typing the note using a familiar Word-like rich text editor.