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Joseph Luca
Edith Cowan University

Arshad Omari
Edith Cowan University

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Implementing Courseware Management: Off-the-Shelf Purchase or In-House Development?

Joe Luca, Edith Cowan University, School of Communications & Multimedia, Australia
j.luca@ecu.edu.au

Arshad Omari, Edith Cowan University, School of Communications & Multimedia, Australia
a.omari@ecu.edu.au

Abstract: In the past decade there has been a proliferation of courseware management systems developed and promoted as a means of promoting effective and efficient flexible learning systems across tertiary institutions. Deciding on which systems to implement, and what budgets to allocate against these can be difficult to ascertain, as many infrastructure, licensing, training and maintenance issues must be considered. However, with the proliferation of open source and freeware products on the market, are there other options available? This paper considers an alternative approach to purchasing commercial courseware management systems, and describes the design and development of an in-house system developed according to academic requirements.

Introduction

The potential of courseware management systems being successfully implemented is dependent upon many factors, including the ease with which the course can be developed and administered within the application, the quality of the interface for end users, as well as the extent to which the product provides flexibility in the development of on-line learning strategies. The following should be carefully considered before committing to a courseware management system (McMahon & Luca, 2000):

- Will the courseware management system be implemented across the whole university?
- Have the courseware tools been carefully considered for their instructional relevance?
- How easy is it to add customised features if needed?
- Has a budget been allocated for training lectures and students in how to access and use the new environment?
- Has a budget been allocated for central technical support and help desk?
- Will an instructional design advisory group be set up for to advise lecturers?
- Do all the levels of management support its implementation?

After experimenting with some of these systems at Edith Cowan University (ECU), and calculating the cost of implementation, as well as the lack of required features, we decided to create our own courseware management system. We hoped that this would give us greater flexibility and enable us to easily and cheaply develop pedagogical tools that suited individual's teaching styles and needs, without being handicapped by the structure of a commercial courseware management system.

However, even though the idea of developing a customised online courseware management system sounds attractive, careful planning and consideration is required. This paper discusses the strategic factors and issues involved in deciding how a courseware management system was developed in the School of Communications and Multimedia at ECU. The main objective was to develop an online

courseware management system for making content available to students that was cost effective, easy to maintain and provided flexibility.

System Description

The School of Communications and Multimedia at Edith Cowan University approached the issue of online unit support (aka. courseware management) by looking at the requirements of our evolving web presence, identifying the following basic requirements as important to an academic discipline within our setting:

- Support for course information such as programme structure and information for prospective and existing students;
- Support for online communication and unit-related resource management;
- Provision of basic communication tools which could support the delivery of courseware materials;
- Support for students accessing course materials in a password authenticated environment with some basic portal functionality;
- Support for staff of varying levels of IT proficiency in the creation of online unit web sites; and
- Integration of the above into a holistic system with some level of information re-use between different functions.

To meet the above requirements, a custom-built environment (scamOnline: <http://www.scam.ecu.edu.au>) has been developed which supports the activities of SC+M. Our experiences here are informing the next generation system, currently in development, which enhances the above with a suite of pedagogical tools to further support online teaching and learning. The structure of the system is based about its two essential functions:

- Delivery of course/school information; and
- Delivery of courseware resources.

The course information function involves the dissemination of details of the programmes offered by SC+M and includes reference to programme structure, unit details and general information about SC+M. This involved the development of a database-driven system that included information at award, programme and unit level, as well as a staff/tutor database containing contact information and research profiles.

Courseware management is linked into the above function and essentially provides an automatically generated template for each and every unit into which teaching staff can add material resources for student access as well as providing communication tools for use by students. The aim is to provide a functional interface to course resources such as unit outline and assessment details, a weekly schedule incorporating resources and activities for each week of a semester. Staff have the ability to upload content for student download, post unit messages, provides links to online resources as well as providing categorised message boards and url-posting facilities. The primary goals with the development of this system was to integrate with the course information and to provide a simple interface which is a 'snapshot' of a unit schedule to be run during any given semester.

These tools are available for every unit registered with the system and provide a simple management and access model for use by staff and student users. Feedback from both types of user has been generally positive, although academic staff still needs some level of training in order to make materials available via the system. This training is generally related more to the development of resources than using the system. Difficulties arise from:

- Dealing with the tools required to create resources for upload such as PDF development tools;
- Understanding the workflow from resource (on paper or electronic) through to some electronic format to web; and
- The mental model of a unit being broken into a schedule with weekly modules each containing a series of deconstructed resources (readings, lecture notes, activities) presented in a meaningful way i.e. the instructional design aspects.

As a result of using in-house expertise to develop customised solutions for our own courseware management system, a range of online applications have been developed at SCAM to help satisfy the requirements of academic staff. These include:

- SCAM content manager (<http://www.scam.ecu.edu.au/>);
- Online learning environment for project management - JoePM (<http://joepm.scam.ecu.edu.au/>);
- Mathematics Education On the Web - MEOW (<http://www.scam.ecu.edu.au/meow/>);
- Students projects and E-portfolios (<http://studentprojects.scam.ecu.edu.au/>); and
- Careers Web Site (<http://careers.scam.ecu.edu.au/>).

The process of designing and developing these applications has helped the School of Communications and Multimedia form a strategy to provide a range of resources to help students within their academic courses, and as well as providing career opportunities (Figure 1). The courseware management system provides students with the opportunities to create on-line portfolios, which consist of documentation, web sites and other work. These are then integrated into a careers web site that is promoted to the industry (as a free service) to help students obtain employment opportunities. The ideas and creativity used to develop these sites was a direct result of having the opportunity to design web sites using customised solutions and in-house production.

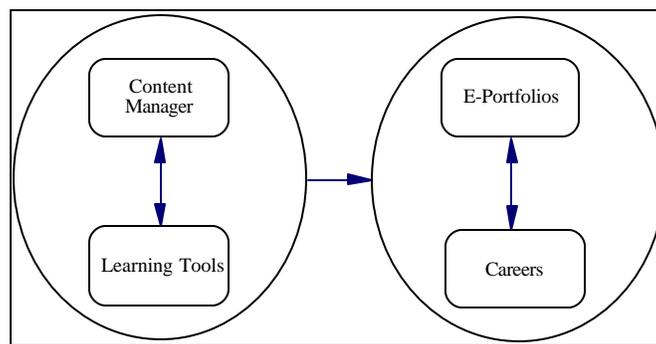


Figure 1: Overview of online applications at SCAM

Summary

Based on the experiences of the academic staff in this case study, it would seem that the option of institutions developing their own customised courseware management system should be carefully considered. This approach allows the development of customised solutions that can provide simpler, cheaper and more efficient use of server and infrastructure resources. Even though they still require teacher training, instructional support and technical support, they can provide greater flexibility in design when creating learning environments for a range of different disciplines. Customised design and development also encourages the creation of solutions that help meet exact pedagogical needs, rather than having teachers trying to manipulate content to support the tools made available in the off-the-shelf courseware management.

Our experience has been that the process of designing and developing our own courseware management system has not only led to a cost effective and simple solution, but also has generated many ideas for the development of other creative and useful applications that have contributed to more robust teaching and learning scenarios.

References

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