Setting Up a Web-supported Environment for Distance Learning - the MICCPAM Experience

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Abstract

The MICCPAM EU-project was carried out by four partner universities. A framework now including five modules for a masters course in countryside management by distance learning have been developed. The course focuses on students who have difficulties attending a course, personally, because of professional business, geographical remoteness, disability, or family commitments. The modules have been designed to be taught using the web, but still, the aim is to develop web-enhanced, not web-based courses. Thus, there are also paper-based readers. The project has used and compared two approaches for the web-supported environment: a website designed with standard software tools running on a standard web server and, on the other hand, a commercial VLE. Advantages and disadvantages are discussed. During the project, several pilots have been run to test the framework and the modules. Students and tutors have evaluated the approach. Challenges for authors and designers in such international collaborations are described.

1. Aims and Scope

MICCPAM is an acronym for “Modules for International Countryside Conservation, Protection, and Management”, a project funded by EU, DG Youth and Education, and carried out by University of the West of England, Bristol, University of Hannover, Sofia University, and Warsaw Agricultural University.

The principal project objectives have been: i) to produce a number of complete modules of distance learning materials and resources at postgraduate level, ii) to disseminate expertise in the preparation and running of distance learning programmes, iii) to maximize the use of new technology in the development and study of materials by exploring new methods of delivery (crucially educationally, not technologically driven), iv) to make countryside management available for study by groups who do not normally have access to traditional educational resources, e.g. because of geographical remoteness, disability, being professionally busy or family commitments, v)
to assist the development of professional capacity in Poland and Bulgaria pending their entry into the EU. CIT has played a crucial role in the project both in the pedagogic dimension and in project management.

The project has developed a framework and four modules for a masters course in countryside management by distance learning. A fifth module has been added. The five modules are: Applied Conservation Management, Water Resources Management, Environmental Tourism Management, Geographic Information Systems and Remote Sensing, Managing Environmental Interests and Processes. Other modules are planned to follow.

2. Methods and Techniques

2.1 Using WebCT

The focus on new methods of delivery has been at the heart of the project. A key part of this focus was to compare delivery of modules through a commercial virtual learning environment (VLE) featuring built in facilities, with delivery via a custom website.

WebCT stands for Web Course Tools. It is a package that allows the development of a VLE that, as far as possible, replicates face-to-face learning through various electronic means. These include delivery of course materials as on-screen text and graphics; utilisation of self-assessment questions and exercises to test learning of key details and concepts; provision of facilities for on-line discussions and chats; provision of quizzes which are graded to provide more formal feedback; incorporation of teaching tools such as whiteboards and links to relevant websites; provision of a bulletin board for important messages. After logging on to the server where WebCT and the course materials are held, the user is presented with a list of courses, together with advice as to whether there is any news for each course. After accessing the desired course, a series of icons direct users to different areas of the VLE. There is a high degree of freedom with the way in which this opening screen is designed. However, it is usual to have icons directing users to study tools (from where they can access their dedicated home page and monitor progress through the course); communication tools (in which they can become involved in on-line chats and discussions) and evaluation tools (containing multiple choice tests which are graded electronically, and rather more lengthy “quizzes”, which are graded by tutors).

The bulk of the learning material is to be held separately from all of these, directed through an icon that relates to “course materials” or similar. This can be split into a number of “sub-icons”, for example, relating to assessment, a welcome message and a course guide. But the designer must be careful not to make the introductory screen over-complicated and confusing. Most users will want easy and straightforward access to the course materials to commence their studies.

The course materials themselves are generally split into manageable units and presented as on-screen text and graphics. Users can incorporate hyperlinks to relevant websites, as well as self-assessment questions and exercise to monitor learning.
Through the development phase, the popularity of the different WebCT features is revealed which helps to guide the further development of applications. The important point to remember is that features are available for appropriate use and that modules will not make use of the same ones or to the same degree. The flexibility of the platform thus reflects well the flexibility of our approach to distance learning.

2.2 Using the Website

The existing project website running under Solaris was updated to the free webserver Apache 2.0. The modules were then included in the MICCPAM website. The modules are password protected using .htaccess, passwords were generated with .htpasswd.

The Hannover team has used Macromedia Dreamweaver and Homesite for the design of the site to generate HTML and JavaScript. Additionally, free tools like Hot-Potatoes were used to create special features like quizzes or pop-ups. To ensure user friendly navigation through the modules, navigation and menu elements in frames on the top and the left of the pages have been designed. The navigation in the top frame shows the hierarchy whereas the menu changes in accordance to the piece of material the user is working on. All this has to be coded but then it offers a very flexible way of meeting the needs of distance learning. Course material was generally handled much as described above: small units of material (texts and graphics), hyperlinks to relevant sites (these should open a new browser window to facilitate the return to the module), self-assessment questions with answers that are hidden from the user in the first instance but appear in a pop-up window on mouse click. Features to keep students on-line were introduced that form an added value to paper based material. Besides the hyperlinks these are pop-ups for answers to self-assessment questions and an on-line glossary that explains technical terms as required by the student without the need to leaf through a textbook. The other features of a VLE had to be implemented or found elsewhere: enrolment form, different evaluation forms, chat, mailing list.

The involvement of two staff members in setting up the website led to a clear division of responsibilities being established. Designed materials were very comfortably uploaded to the website using Dreamweaver’s FTP features.

2.3 Design Techniques

Most of the documents to be incorporated in the MICCPAM website were delivered by authors as Word documents. As bandwidth is one of the most important restrictions for using the web in learning, especially in the Eastern European countries, it is worth looking at the HTML code Word produces. Unfortunately, Microsoft has decided to embed all information in the code that is needed to restore a Word document which is far more than is needed for browsing a document. Because Macromedia knew this problem, they supplied Dreamweaver with an "Optimize Word-HTML" command which deletes all unnecessary tags. After further editing, especially deleting style and font tags and consequent use of CSS, document size decreases by 60 to 65 %.
Besides that, embedded graphics had to be worked on, i.e. resolution had to be changed and the best format had to be found so that they would load quickly, even with low bandwidth connections. Special problems arose with the formula in some modules: because browsers cannot be relied upon to show Greek characters or mathematical symbols correctly, many of them had to be converted into graphics. From the position today, we would use MathML to express and a Java applet to display.

Having designed and implemented the first module, it became obvious that many parts of the modules had a very similar structure. So it was possible to reuse parts of modules as a framework for the following ones. This was done with Dreamweaver's "Library" and "Template" options. Library elements can be used to ensure that e.g. all tables have a similar appearance. Template elements are HTML documents with placeholders. The advantage of a consistent use of these features is the ability to change the appearance of web pages when you decide to use a different font, colour etc. If you had to change every single document you would hesitate to change anything. To guarantee consistency if the modules are rearranged or copied on CD, the design allows moving them to a different site without much care for links. To conclude, heavy use was made of software features that facilitate website design and maintenance.

2.4 Piloting

The MICCPAM project may be characterised as action research. The primary purpose was the production of innovative learning materials for use in the partner universities, but the team considered it important also to do so in a reflective way so that general lessons were learned from the experience of using new methods of delivery. The concept of piloting was at the heart of this approach and two stages were identified.

Initial small scale pilots used approximately half of the learning materials from two modules. These initial pilots were principally technical exercises to field test operational systems which had not been used to deliver learning materials before in the partner universities, but also provided an opportunity for preliminary evaluation of other matters such as content design and student support arrangements.

The main pilots were conducted with four complete modules with at least one module delivered in each of the four partner countries. The majority of the students were true distance learners studying in their own time outside their work commitments, with no face-to-face contact with tutors or peers. Two modules used the commercial platform WebCT and three used the project website, enabling some comparative analysis of the platforms to be undertaken.

Evaluation was seen as a major project commitment built into the project programme from the start. A key component was evaluation at project level against MICCPAM aims and objectives – we do not have space to address this aspect. The main tools of evaluation were standard staff and student questionnaires. All staff involved with module design and delivery returned a semi-structured questionnaire assessing their experiences with web-enhanced teaching. The online student questionnaire was adjusted after trialling in the initial pilots and covered through 21, often
composite, questions in the following areas, i) information on the respondent including employment, remoteness and disability, ii) experience with individual electronic learning facilities, and iii) assessment of the medium of delivery, overall. 57% of pilot students submitted a return, a good level of response for such surveys.

3. Recommendations

3.1 Pros and Cons of Different Virtual Learning Environments

The Project Team is in a good position to compare and contrast the experiences of using the website and the VLE of WebCT, both from the points of view of authors/web designers and students following the materials.

In general, we have a positive view of the application of WebCT. The process of authoring, web styling and studying have been well received. Division of responsibilities between academic, technical and administrative staff has worked well from all points of view and the production of the multi-faceted learning environment, virtually "from a standing start" can be viewed as a success. Once completed, the VLE is easy to access and use by staff and students alike and forms a sort of "conduit" between the various parties.

However, the environment is complex and students could initially be unclear on the best ways of accessing materials due to the many links within the package. It is possible to edit these links to reduce, for example, the number of pathways through a set of materials, and staff may take this opportunity for subsequent delivery of the modules.

It is also true to say that some features of the package are more popular than others. Quizzes, self-assessment tests and discussions were popular; chat rooms, the white board facility and student home pages less so. Careful thought will need to be given to the ways in which the utility of these features is maximized in the future.

The WebCT package as well as the website allow the incorporation of hyperlinks to relevant web sites. This is a useful and well-used feature, but it must be applied judiciously. Websites are liable to change without notice and we found that this occurred in all modules. This is not satisfactory; it breaks up study, confuses students and requires technical correction work by staff. It may be appropriate to reduce the reliance on such resources, and where they are retained, build in regular checks.

If bandwidth is too restricting (Bulgaria) or on-line rates are too high (Germany) to use the modules on-line, the website version can be transferred to CD-ROM, thus enabling off-line learning. Whereas most VLEs need a server in the background the website solution uses only client-side techniques and can be used off-line. On the other hand, if there is no need to work off-line, it would be practicable to use some server based techniques like PHP and a database to improve the handling of forms and the news section of the site because many parts can be reused, once they are designed. Besides, no HTML, CSS or javascript expert is needed to edit materials.

Finally, one should not overestimate the readiness of students to study off-screen. There is evidence to suggest that students still value the use of hard copy paper materials and that they will print materials out from the screen. Hard copy or PDF module
guides, readers and introductory letters should supplement the VLE, effectively providing an alternative learning medium and concrete course materials for the file.

If we look at the evaluation results, the two platforms proved equally effective overall as delivery vehicles. In both cases more than 80% of students stated that the technology had given valuable or very valuable support. The lack of a chat facility on the website was compensated by more extensive use of e-mail which gives the tutor the chance of thinking about the question and consulting additional sources instead of having to answer spontaneously as in chat or face-to-face communication. To conclude, there are advantages and disadvantages to both means of delivery. Once properly installed, the features of a VLE save time and offer more opportunities of engagement; however, they also add to the complexity of the design process. A website is generally easier to set up but does not as closely replicate the face-to-face learning experience.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>WebCT</th>
<th>MICCPAM website</th>
</tr>
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<tbody>
<tr>
<td>Installation</td>
<td>complicated</td>
<td>usually installed out of the box with operating system, options have to be set manually</td>
</tr>
<tr>
<td>Robustness</td>
<td>industry standards assure access to support and updates</td>
<td>requires internal monitoring and support</td>
</tr>
<tr>
<td>Access and use by students</td>
<td>good, but sometimes too complex</td>
<td>good, complexity suitable for target groups</td>
</tr>
<tr>
<td>Access and use by staff</td>
<td>good, possible to monitor students’ activities</td>
<td>monitoring only through complicated log file analysis</td>
</tr>
<tr>
<td>Update of site</td>
<td>manually into the database</td>
<td>semi-automatically, supported by Dreamweaver</td>
</tr>
<tr>
<td>Additional features (chat, tests, whiteboard)</td>
<td>feature of the software</td>
<td>have to be coded provided by third parties</td>
</tr>
<tr>
<td>Flexibility, restrictions</td>
<td>no frames, no scripting</td>
<td>no restrictions</td>
</tr>
<tr>
<td>Links to other websites</td>
<td>possible, by default in new browser window</td>
<td>possible, new browser window has to be set</td>
</tr>
<tr>
<td>Navigation</td>
<td>sometimes confusing, editing requires training, direct access of pages by default not possible</td>
<td>must be coded, direct access of pages easy</td>
</tr>
<tr>
<td>Off-line use</td>
<td>cannot be transferred to off-line media</td>
<td>can easily be put on CD-ROM and disseminated</td>
</tr>
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</table>

Table 1 Comparison WebCT and MICCPAM website

3.2 **Style Guide**

A style guide was developed to introduce all staff involved to conventions in the use of the medium for learning materials, and help secure consistency in their treatment.
The guide is directed to module authors, module leaders and designers, irrespective of whether they are working for WebCT or website delivery, and provides advice on all aspects of preparing materials for web-supported learning. The style guide covers the following topics: pedagogic approach, functionality of a VLE, format, structure, and navigation of the site, writing style, visual style, technical standards, interactive behaviours, work flow, integration with support, help systems, confidentiality.

3.3 The challenge for authors in making material “web friendly”

Web-enhanced distance learning is a very different mode of delivery from "conventional" education. It demands different approaches from academics to the learning process, different skills in both study and delivery and different ways of working in groups, not just in the academic arena, but in other related areas. Embedding CIT into a distance learning course does not just mean transferring paper based material into HTML. It requires systems analysis and design for web use right from the beginning of preparing material.

This very different approach requires "up-front" organisation if it is to be successful, with all involved working to common patterns for the structure of learning materials, the use of CIT, and the detailed design of written text. The production and delivery of Web-based distance learning materials is very much at the "cutting edge" of educational development. The initial stage in the writing process involves assembling a team for the production of learning materials: a module leader, writers, educational web designers, computer technicians and administrators. Each member of the team "signs up" to the project, agrees a timetable with deliverables and clear responsibilities. The module leader takes responsibility for the delivery of the integrated learning experience: effectively, this is a strategic role for consideration of the development, assembly and appearance of the materials, with a very strong emphasis upon the student experience. This should be agreed by the team. We have found that the best way to operate is for academic staff new to this form of delivery to undertake the writing, envisaging the materials in the first instance as written product, but with the potential that CIT presents clearly in mind from the start. Policy documents on distance learning format and CIT strategy can provide a context. Web designers can then style the material as interactive learning in consultation with the authors.

3.4 The challenge for web designers in adapting and styling material

Web styling is a fairly new skill area: it demands special aptitudes and abilities, both technical and advisory. UWE and Hannover were fortunate to have skilled recent graduates available to support full-time staff. They worked closely with writing staff in a type of consultancy role, with drafts being delivered back and forth in the final evolution of a high quality product (fig. 1). Often, the web designer will suggest a new idea and seek agreement from the writer for its incorporation after demonstration. Drafts have also been discussed with authors via e-mail or by uploading an alpha
version to the web and asking the author and/or module leader for comments. In this way, good practice is transferred through engagement, minimizing the risk of rejection through the "not invented here" syndrome.

Where writers work remotely from designers, special arrangements must be made. It is important to hold an initial meeting with as many authors as possible. After this, e-mail can generally replace face-to-face communication. Invariably, there are occasional misunderstandings which consume time. Staff must be prepared for these. The Project Team produced materials in Poland and Bulgaria which were designed in Germany to be accessible from all over the world.

![Figure 1: Work flow for a module](image)

### 3.5 International Study Approach

Finally, developing and running the course internationally is a considerable challenge: different countries have different educational regulations, different copyright regulations, often different didactics, and different experience in CIT use. Especially in Eastern European countries, designers must reduce their ambitions and write code that works with small bandwidth or implement a system that can also be delivered on CD.

International aspects of MICCPAM were indeed among the most challenging and paradoxically, most rewarding. Challenges included on the one hand cultural differences in meanings between countries on such fundamental concepts as conservation, and on the other, varied practice and experience in the availability of hardware and software across both the university partnership and more widely in professional practice in the countries involved. The project team looked always to capitalise on these differences, harnessing e.g. local expertise in each of the partner institutions into module developments. The international flavour of the project involved further through a small number of pilot students in Latin America.

### 4. Outlook: Masters Programme

Pilot feedback shows that students on the one hand enjoy to study when and where they like. On the other hand, reading longer texts from the screen and the absence of personal contact with other students and tutors were confirmed as obstacles inherent
to the approach. These may be overcome by more animated material and face-to-face phases at the beginning and the end of a module. In some countries they are necessary anyway because regulations require oral assessment.

On the basis of the MICCPAM experience the partnership is looking to develop collaboratively a full masters programme of 180 credits in countryside management. Staff from the partner universities would collaborate on masters dissertation tutoring, and students who completed the full programme would receive a UWE masters award. The MICCPAM project proved to be very well timed in terms of opportunity to continue the partnership, both in relation to the evolution of technology into attractive, robust, products, but also politically, with the Bologna Declaration promoting a common masters framework for Europe.

Acknowledgement

The project has been funded by the EU-Socrates programme under financial agreement number 70976-CP-2.2000-1-UK-minerva-ODL.

References


MICCPAM Home: http://www.miccpam.uni-hannover.de
