

Library Services / Education and Professional Development

Access to Core Course Materials Project

Case Study Final Report

(final version)

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Introduction

As part of the Access to Core Course Materials Project a questionnaire was distributed to all academic departments at UCL to investigate their attitudes towards and requirements for electronic course materials. This research revealed that a number of departments had already undertaken work in this area and provide access to a range of electronic resources. It was therefore decided to undertake case studies of four innovative departments to compare the set-up and organisation of these systems, the attitudes of staff and students towards them and any problems or considerations that they had encountered. This information would be used to develop a series of models of course materials systems. It would also contribute towards the design of a pilot service that the Project would subsequently launch.

The case study approach

Case Studies form part of the qualitative approach to research and have been defined as:

An in-depth investigation of a discrete entity (which may be a single setting, subject, collection or event) in the assumption that it is possible to derive knowledge of wider phenomenon from intensive investigation of a specific instance or case.¹

By employing what Yin describes as ‘multiple-case designs²’, a variety of cases were chosen. Case studies are not selected to be representative of a population however, it is possible to make generalisations based on a cross-case analysis. Yin describes this as an attempt “...to build a general explanation that fits each of the individual cases, even though the cases will vary in their details” and “generalising from case studies is not a matter of statistical generalisation (generalising from a sample to a universe) but a matter of analytic generalisation (using single or multiple cases to illustrate, represent, or generalise to a theory³”. Meanwhile, Stake describes the generalisability of case studies as “naturalistic,” and in harmony with a reader’s experience. Case study findings can be described as *resonating* with readers and thus facilitating a greater understanding of the phenomenon in question.⁴

The data was collected through two main methods: interviews with key members of staff in the department and 'document review'. The latter stage involved evaluating the four systems by exploring their features and design in some detail. The researcher had no previous knowledge of the four cases and therefore spent some time examining each site to see how a student might use them. Associated literature was also examined, for example, several EPD secondment reports were available.

¹ Based on the definition found in H.S. Becker, *Sociological Work: method and substance*, (Chicago: Aldine, 1970), p.75, quoted in G.E. Gorman and P. Clayton, *Qualitative research for the information professional : a practical handbook* (London : Library Association Publishing , 1997) p.50.

² Robert K Yin, *Case study research and design* (London : Sage Publications , 1994) p.44.

³ Robert E Stake, *The Art of Case Study Research* (London : Sage , 1995) p.4.

⁴ D. A. Snow, and L. Anderson, “Researching the Homeless: The Characteristic Features and Virtues of the Case Study.” In J. R. Feagin, A. M. Orum, and G. Sjoberg (eds.), *A Case for the Case Study* (Chapel Hill, NC: The University of North Carolina Press, 1991)

The Cases

Four case studies include different approaches towards the definition and delivery of electronic course materials, including:

- A simple web-site for an MSc course taught by a UCL Postgraduate Institute;
- Five web-based courses developed by a department in the Faculty of Social and Historical Sciences;
- A electronic personalised timetable developed for undergraduates in the Faculty of Clinical Sciences;
- Electronic self-assessment and learning materials developed by a department in the Faculty of Social and Historical Sciences.

Three of the four cases were happy to be identified, however one department preferred to remain anonymous, and is consequently referred to as Case Two throughout this report.

Case One: Institute of Neurology

This is a simple system that is based around a course outline. It has been created by the Librarian at the Institute of Neurology using HTML and is mounted on the Institute's Library web site, although it is only accessible within UCL. Hypertext links to materials such as lecturers' notes, PowerPoint presentations and reading lists are available.

Case Two: Web-based course materials

This department received funding from EPD, including a secondment for a member of staff, to develop web-based courses. The Department now has five courses available, four of which have been created directly in HTML; the fifth uses WebCT to structure the site. The sites are used for distributing essential course information. A communication feature, weekly readings, essay titles and a large variety of other types of material are available from the site.

Case Three: The Medical School Electronic Curriculum Map (ECM)

The ECM has been created by CHIME for the Medical School to provide personalised timetable information on the new medical curriculum. It is accessible via the Medical School Intranet and has the facility to link to readings and other course materials, although this is currently under-exploited. The system is driven by databases, and the pages are dynamically created.

Case Four: The Department of Anthropology

The Department of Anthropology created three computer assisted learning packages. The lecturer involved received a EPD secondment to devote time to this work, which was undertaken in partnership with a commercial company. The packages are sophisticated and include graphical material and problem based questions with online assessment.

Areas of Investigation

In each case study a number of key areas were investigated. These included:

- The background to each department and the reasons the project was undertaken;
- The set-up and maintenance of the site / material;
- Staff and student attitudes;

- Problems with the site / material;
- Conclusions and the future of the site / materials.

Key Findings

Background and set-up of the sites

The four cases represent two medical departments and two departments in the Faculty of Social and Historical Sciences. Three of the sites/materials were designed for undergraduate students. The Neurology site was developed for postgraduate masters and diploma students.

Three of the four initiatives came from staff within academic departments, who recognised the increasing importance of creating and distributing materials in electronic format. In two instances the initiatives were led by members of academic staff who were particularly interested in integrating C&IT into their teaching. One lecturer found students experienced problems accessing library materials held on short loan. He felt that electronic access would solve these problems and launched this initiative partly for this reason. Case One was also initiated by a member of academic staff, in this case one of the Heads of Department who was keen to exploit innovative ways of delivering information for a new course.

The ECM is the exception to this, as the work was initiated by CHIME, a research centre who were set up to develop and integrate initiatives in informatics, education and health service research. They designed the ECM on behalf of the Medical School, to reflect the new medical curriculum. It seeks to provide a means of communication and integrating activities across campuses.

The four developments were funded in different ways. Both initiatives within the Faculty of Social and Historical Sciences were largely facilitated by EPD secondments, which released staff from their regular activities and allowed them to concentrate on the particular initiative. The main cost in setting up the Neurology site was the librarian's time. Design and maintenance of the site was incorporated into her regular activities. The development of the ECM also formed part of the regular activities of CHIME.

Each initiative required varying degrees of technical knowledge to set up and staff time to undertake the work. The Anthropology material and the ECM were the most technically sophisticated, requiring staff with considerable knowledge of computer programming. They also both took considerable staff hours during the development phase. The web sites in Case Two were also time consuming to set-up because of the range of resources that were available, although they did not require programming knowledge. The Neurology site was least difficult to create, although staff required web-authoring skills and general knowledge about file formats and scanning materials.

The nature of the material

The four initiatives were different in design and in their objectives. Cases One and Two were the most similar, both being designed as websites relating to particular courses, that a range of resources could be 'hung' from. Case Two was more complex and included a greater variety of resources, but both cases were designed to support

particular courses. Both were available via the Internet, although Case One has been restricted for use only at UCL, whereas Case Two is freely available. A timetable was the central feature of Case One and one aspect of Case Two. Both these sites also included reading materials and lecturers' notes.

A timetable was the key component of Case Three, which allowed students to view the sessions they were attending and related resources on a week by week basis. The system provides information about the aims and objectives of each session and where it is being held. Although the ECM system has the ability to link to a wide range of resources, this information is not currently being collected by the Medical School and consequently is not available. The ECM has been made available via the Medical School Intranet, which makes it a secure environment to distribute course materials.

Case Four was quite different in nature, consisting a series of self-contained computer assisted learning and assessment packages. They included course materials, and replaced lab-based teaching that relied on printed workbooks. The material was designed to be used as part of a course during scheduled computer practicals. It was available on CD-ROM and also via the UCL network.

Maintenance issues

One of the main drawbacks of a timetable-based site is the need for regular maintenance to ensure material is kept up to date. The degree of expertise required to undertake this maintenance varied between cases. The maintenance of the Neurology site was largely undertaken by administrative staff, whereas Case Two required considerable input from the academic staff running the course. Generally maintenance activities took between one and four hours a week. However, the ECM was designed using databases specifically to avoid the need for routine maintenance. Changes to the databases are automatically reflected in the system and the program has not been altered for almost six months.

The Anthropology materials are again quite different and do not require systematic maintenance. Although the material will have a finite life-span, the materials were specifically chosen because they were unlikely to change within the foreseeable future. Revisions would require input from both academic staff and computer programmers, however the material has an estimated life-span of least a decade.

Attitudes of Staff

Attitudes of staff towards these initiatives were mixed. The projects in Cases Two and Four were largely led by particular members of academic staff. However, two departments reported that their initiative has not been fully supported by all members of the department. In the case of the ECM the initiative came from CHIME rather than the academic staff and this may explain the reluctance of certain members of the department to become involved. It also seems that where the electronic initiative has not required staff to alter the way in which they work, their responses have been far more positive. The success of the Neurology site is a good example of where staff have embraced new technology, and it is perhaps no coincidence that the site is relatively simple in nature.

There is evidence to suggest that an incremental development process, both technologically and pedagogically, meets a more positive response from academic

staff. This means that new initiatives do not take academic staff outside their 'comfort zone' and that change takes place gradually rather than in one dramatic step. Case Two and Three are examples of relatively sophisticated approaches to course management that require staff to restructure the way in which they teach. The ECM, in particular, has also been introduced within a relatively short space of time. Obtaining support from staff within a department is crucial to the success of such initiatives, therefore it is important that initiatives are introduced carefully.

Attitudes of students

All of the case studies had collected some feedback from students to evaluate the success of their projects and Case Two undertook formal evaluation as part of a secondment report. However, because of the relatively recent introduction of the ECM, formal evaluation has not yet been gathered. Student feedback has been in general, highly positive across the disciplines. Students were happy to access material electronically, and found the systems effective. Anthropology students reported that they found the CAL packages fun to use and more stimulating than undertaking paper exercises.

Technical Difficulties

Three projects out of the four experienced technical problems which they partly attributed to the College network. Negotiations with Information Systems were important in these projects. The websites in Case Two were located on Information Systems' servers which caused problems when a communications function was added. This site also included audio material which could not be accessed on-campus. CHIME meanwhile have their own server to give them a greater degree of control. This does however, mean that the project was more costly and required a particular level of expertise to manage the server. The project also falls outside the remit of central helpdesk support, which means that problems with the server and the software must be resolved by staff at CHIME.

Anthropology developed their material on CD-ROM but also installed the material on the College network. They experienced problems in initial trials due to the processing speed of managed PCs, but on UCL's more up to date computers reported no problems. Neurology did not experience technical difficulties, as the site is relatively simple in design. The staff also had greater control of the site as the Institute is semi-autonomous, has its own server and is not reliant on managed IS machines.

Copyright issues

One of the websites in Case Two included some digitised excerpts from text books, for which copyright permission was obtained from the publishers free of charge. However, the other departments only included lecturers' notes and other materials produced in-house, to avoid copyright issues. The Neurology site were particularly keen to include full text articles, however they had not explored this area and thought this should be pursued on a UCL-wide basis.

Funding

Electronic initiatives can be expensive and for this reason caused problems. Both Case Two and Four managed to acquire secondment money from EPD to undertake the work, however, they found that their initiatives required a considerable investment of personal time on behalf of the staff involved. The member of staff from

Anthropology reported working long hours, often into the night to complete the material. Two hundred hours of time were reported to be required to develop one hour of computer-assisted learning material. Similarly Case Two required the lecturer to invest a considerable amount of personal time during the developmental phase.

Support Problems

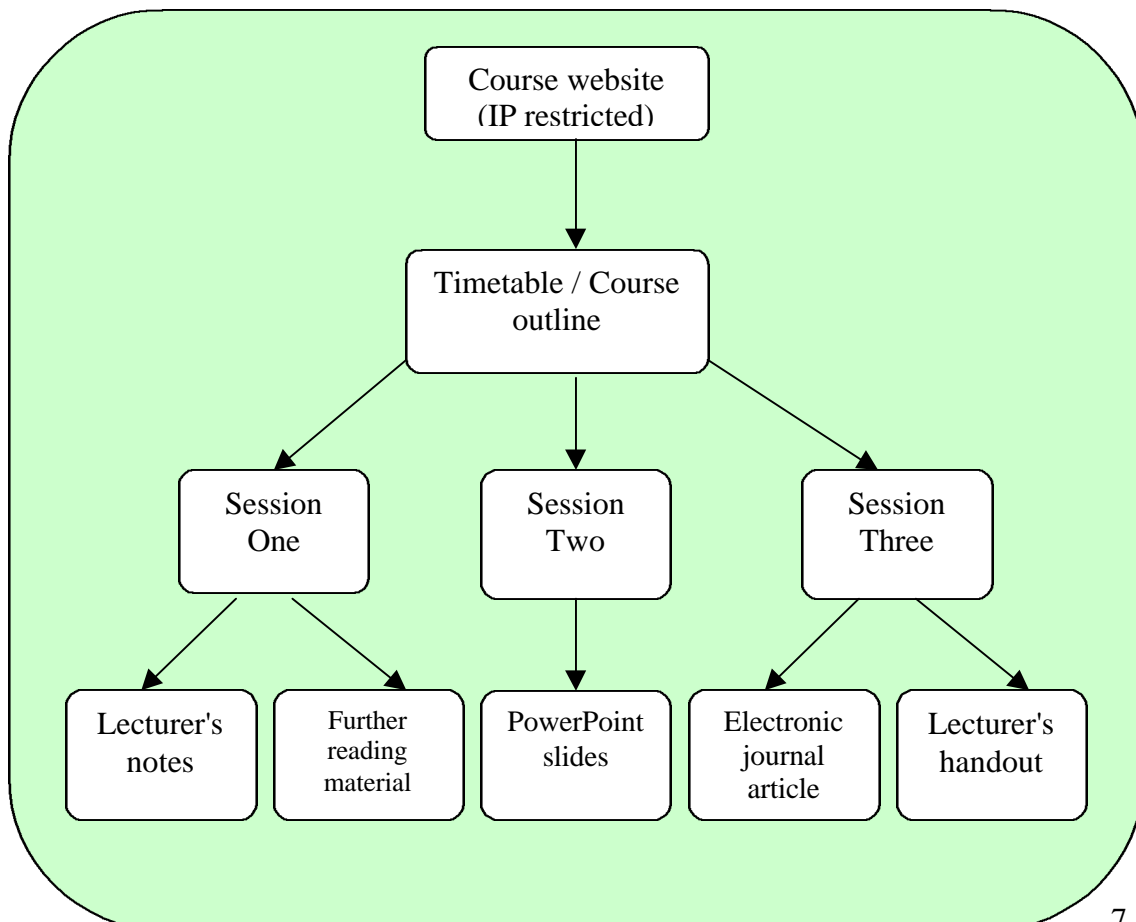
Two of the projects experienced a lack of support from other members of the department. In one instance this jeopardised the future of the work and demoralised the staff who had launched the initiative. The case studies suggest that these types of initiatives require considerable support from within a department in order to be successful. Support could take the form of having protected time to work on the project. It could also be a recognition of the value of this type of initiative. In Case Four, the departmental teaching quality assessment undertaken several years previously, had recognised the need to integrate communication and information technologies into the curriculum. Consequently initiatives of this type were generally supported by other members of academic staff.

Models of course material systems

Based on the four cases, models of course materials systems have been developed. The models provide simple representations of the operation of the systems. The technical specifications are excluded.

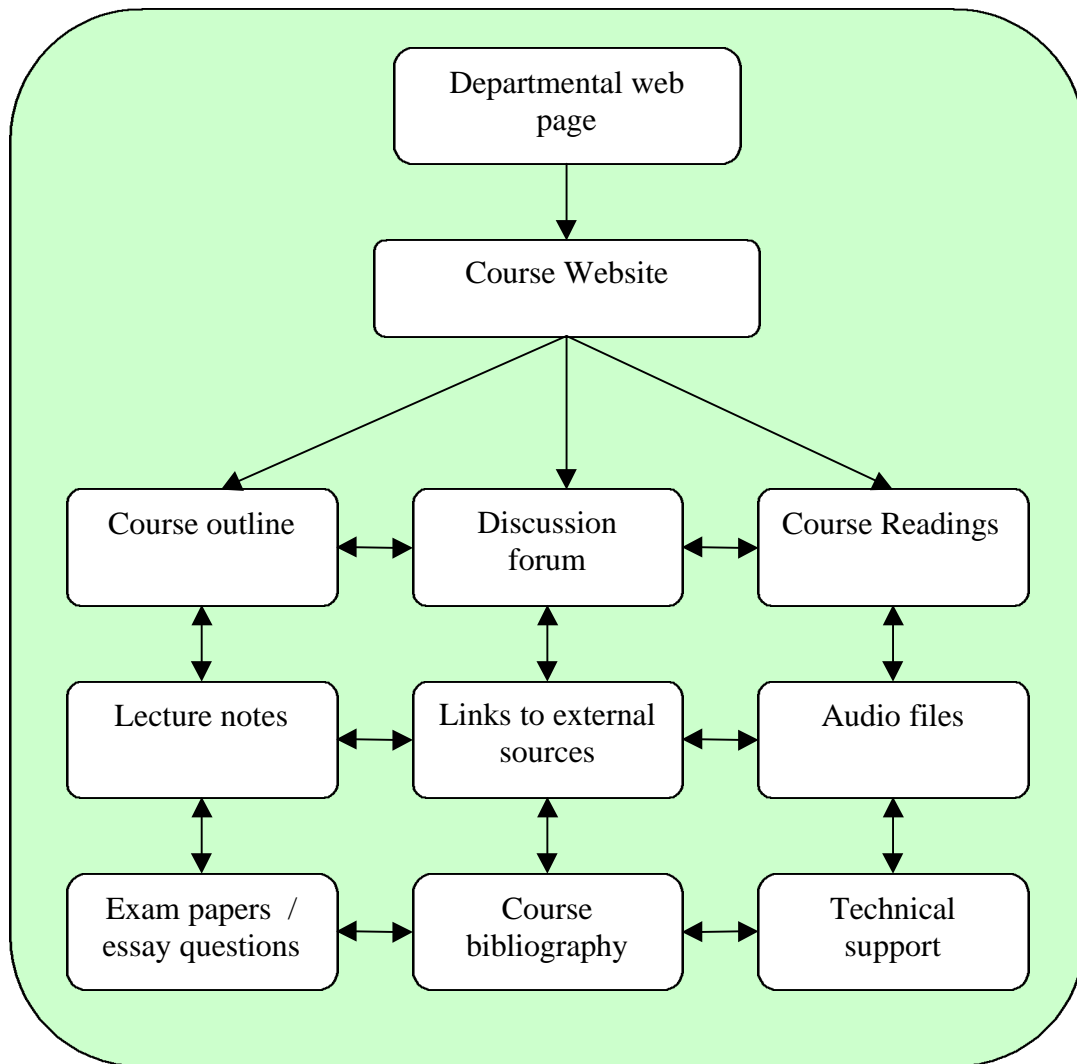
Model A: Simple Course Materials System (Case One)

This first model links course materials from a timetable. A variety of different types of resources are available. The course website is only available from UCL machines as it has been restricted by IP address. Students access resources relevant to the curriculum and the material is delivered in a timely way.



Model B: Course Materials System (Case Two)

This course materials system is not designed around a timetable like Models A and C, although it incorporates a timetable function. Students can access a range of different resources from one course site. The site is less hierarchical than other models, and there is a greater range of resources available. A course outline is part of this site and users can link to readings from this point; however the site is more complex than the previous two models. The site is also more complex than can be illustrated by a two dimensional model. There are many other links between resources than can be shown in this model.

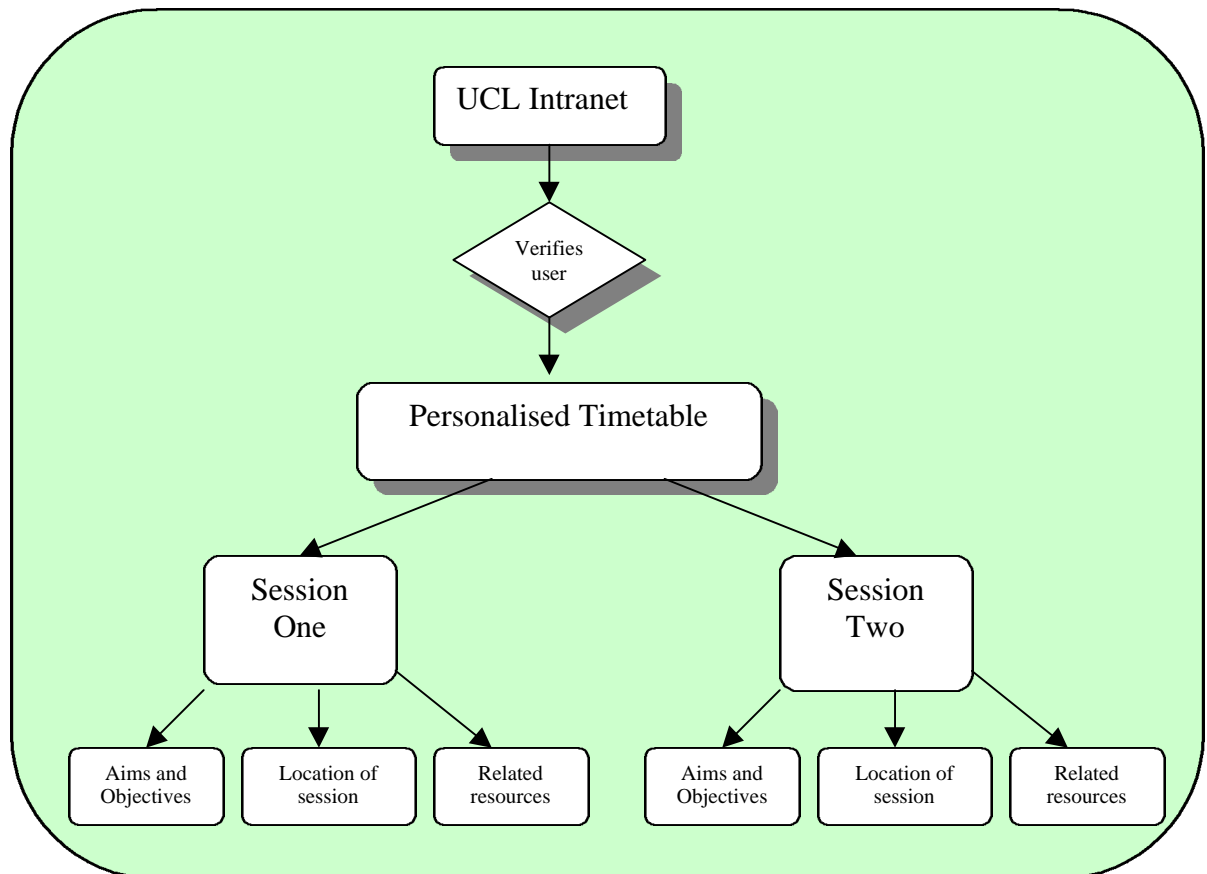


Model C: Intranet-based Course Materials System (Case Three)

This model also provides access to timetable-based course materials with the information being personalised depending on the user. For example, an undergraduate student will access their timetable for the week, whereas a lecturer will see the sessions in which they are involved. Although in reality this system is technically more sophisticated than Model A, the model demonstrates that pedagogically, the two systems are similar.

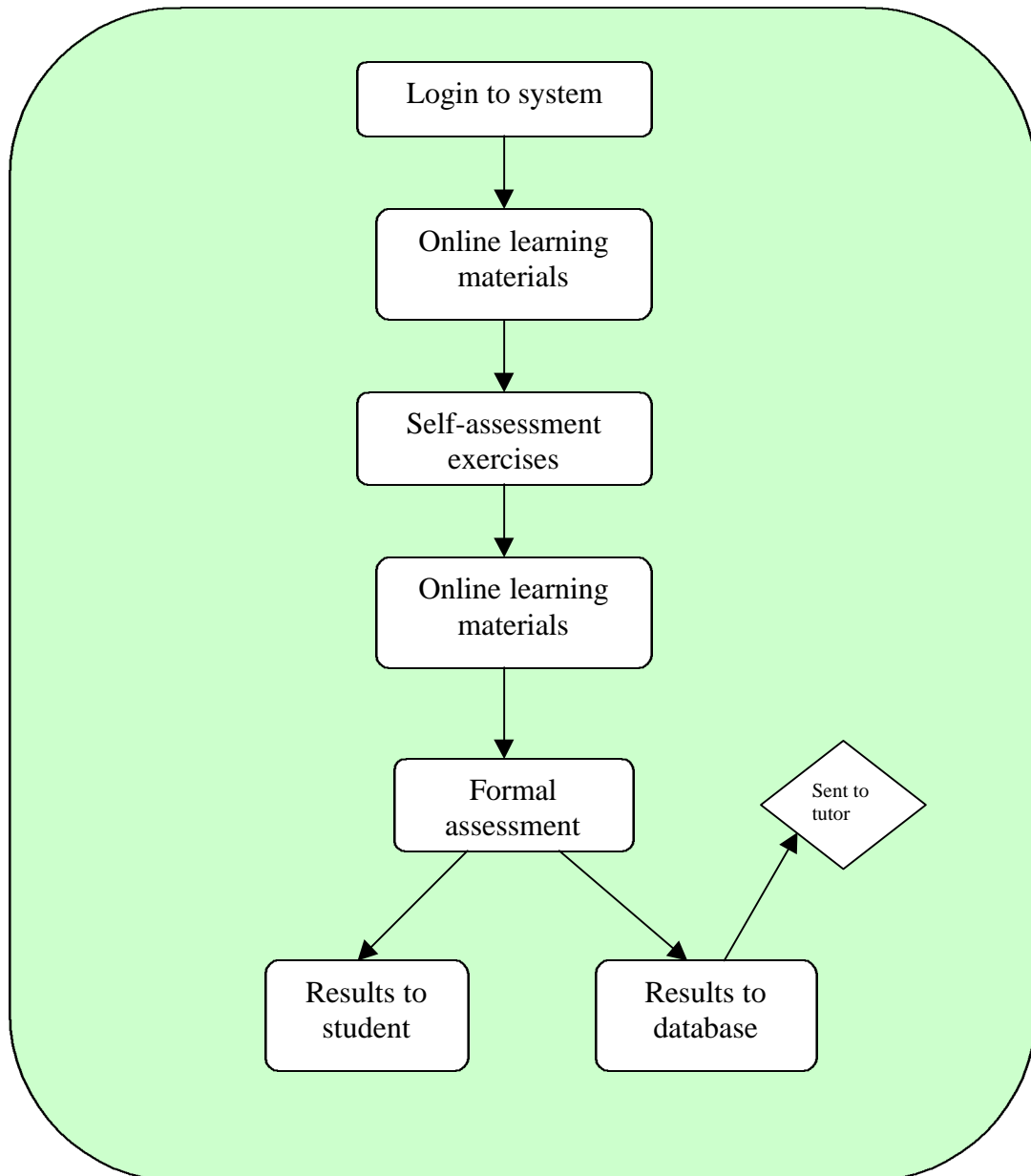
The obvious difference between the two cases is the use of an intranet to restrict access to the materials rather than restricting the site by IP address. Using an intranet

means that off-campus access is possible and it also makes the system more secure as users have to enter a user name and password. The ECM also requires a sophisticated database driven back-end to provide the personalised aspect to the timetable. It means the ECM is more versatile than the first model and changes to the central database are reflected across the curriculum avoiding the need to re-type information. The ECM by default presents users with personal information, however it is possible to view the entire curriculum.



Model D: Course Materials System (Case Four)

This model is quite different to the previous three being a self contained pack that students use for specific course materials and assessment. The model is essentially the same as the CAL package which was designed for the Dutch department as an interactive study pack. This type of model could be hung from one of the other models as a self-contained electronic resource.



Conclusion

The four case studies and models demonstrate ways in which course material systems have been organised by other departments at UCL. They identify particular problems associated with developments of this type and approaches that have been successful. The cases also indicate that students have generally had positive reactions to these systems and welcome more innovative ways of teaching and learning.

All of the four initiatives are on-going projects which in itself demonstrates a certain level of success. Neurology hope to include a greater range of resources on their system and are looking to the Access to Core Course Materials Project for support to incorporate digitised readings. The ECM is still in a relatively early stage and it is anticipated that a greater range of resources will be available and students and staff will begin using it more regularly as the new Medical Curriculum develops.

Anthropology are still completing one of their packages, and this initiative has brought considerable publicity for the department. Other members of staff are now also interested in similar developments. Similarly despite support problems, Case Two which began as an initiative by one member of staff has now been adopted by two other lecturers who are using this method of delivery for course materials.

The findings from the case studies inform the design of the pilot electronic course materials service and the type of system that might be used to deliver it. In particular it is recommended that the pilot service takes into consideration the following factors:

- The different needs and approaches of different departments and a system which can be customised;
- The importance of a timetable feature in systems (but not necessity);
- The ability to incorporate a range of different resources;
- The need for financial support for the project;
- The need for committed members of academic staff and moral support from rest of department;
- Probable need to control access to the site;
- The need for an incremental developmental process to ensure academic staff realise the benefits of such initiatives and are not expected to embrace wholesale changes to their teaching;
- The need to gather feedback from students and evaluate the system thoroughly.

By considering the above factors this will help ensure that a pilot service meets the needs of departments. It will also ensure the service or system is well-designed and builds on previous experience of projects of this type at UCL.