Library Services
Education and Professional Development

Access to Core Course Materials Project

Final Report

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Chapter One: Introduction

This document is the final report of the Access to Core Course Materials Project and incorporates all previous reports, to provide a comprehensive account of the completed project. Separate reports are available documenting each stage of the project from the project web site at http://www.ucl.ac.uk/epd/tqef/core/. The report includes recommendations relating to the future of the project and electronic course materials at UCL. The recommendations are being presented to the UCL body SCILTA (Sub-Committee on Innovation in Learning and Teaching), in order to fulfil one of the project's key objectives. They will also be presented to various other College committees and are of relevance to other organisations considering implementing a similar service.

1.1 Project Background

The Access to Core Course Materials was launched in July 2000 and ran until November 2001. The Project's initial aim was to explore the possibility of providing an electronic study pack service at UCL. Research, in particular for the needs analysis, led to the remit of the project being widened to include a service to improve access to all types of electronic course materials. The research-led nature of the project was largely driven by its funding source, for it was part of a programme of research at UCL funded by the Higher Education Funding Council for England (HEFCE) as part of the Teaching Quality Enhancement Fund (TQEF). TQEF is a nation-wide scheme designed to further UK Higher Education Institute's Teaching and Learning Strategies.[1]

It was decided that the Access to Core Course Materials Project was an ideal joint collaboration between Library Services and EPD. UCL Library Services, in common with other leading UK universities, were already considering how they might extend their services to include an increased provision of electronic materials. The College had signed the Copyright Licensing Agency's Higher Education Digital License and was considering using the HERON (Higher Education Resources ON-demand) Service to provide digital core readings. At the time the project was launched, the Library was already involved in providing teaching support services through the

[1] Gibbs, G, Habeshaw, T and Yorke, M (2000) 'Institutional Learning and teaching Strategies in English Higher Education' Higher Education 40, 351-372

Subject Support Unit (SSU). This unit deal with copyright permissions and preparing material for printed study packs and the printed reserve collection, known as the teaching collection. For this reason it was decided the Project Officer would be based partly within this Unit in the Library to draw on their expertise. However, because the project funding had come via EPD and the project officer also worked closely with this department, a wider range of perspectives was brought to bear on the project than might otherwise have been the case. Specifically, EPD's research interests in Higher Education cultures, academic roles and teaching strategies complemented the Library's focus on service provision and resource management.

1.2 Aims and Objectives

The project aimed to develop UCL's use of electronic course materials, including traditional and electronic study packs. This was achieved via the following objectives:

1. To review UCL's existing teaching support services;
2. To review national developments in the area of electronic reserves and study packs;
3. To implement a pilot electronic course materials service;
4. To produce a report on the feasibility of implementing a full-scale electronic course materials service, including a costed model for the provision of the enhanced study pack service and the digitisation service.

The project involved liaison across the Education and Information Support Division (EISD), with academic departments, students and other groups as appropriate.

1.3 Project Staff

The implementation of the project was undertaken by the project officer, Jane Secker, who was based in the Subject Support Unit of Library Services. Martin Reid, the Head of the Subject Support Unit, undertook the day-to-day management of the project, and supported the implementation of phases of work. Martin Oliver, based in Education and Professional Development, provided support and guidance on the teaching and learning aspects of the project. Meetings were held regularly between the project team. Strategic input came from Toni Griffiths, Director of Education and Professional Development, and Paul Ayris, Director of Library Services. The project also reported to a steering group for all the Teaching Quality Enhancement Programme projects and collaborated with other TQEF staff where relevant.

1.4 Project Methodology

The Project undertook a number of data collection exercises and used a variety of research methods. These are discussed in detail throughout this report, but included:

- A literature review of previous research in the field to provide a context for the work;
- A needs analysis of academic departments at UCL, including case studies of academic departments;
- Practical experiments to develop two different types of model 'study packs';
- The set-up of a pilot electronic course materials service, to provide further evidence of how a real service might operate, including a supplementary project to set-up a course website using virtual learning environment (VLE) software.

The needs analysis in particular used largely qualitative methods from the social sciences such as depth interviews, focus groups and case studies, and drew on the project officer's experience in this field. Each piece of research drew conclusions about the type of service that could be offered at UCL, how it might operate and the associated resources and costs. Following on from this, the findings were analysed and the salient points were developed into the final recommendations.

1.5 Structure of the report

The final report documents each phase of the project and is structured accordingly:

- Chapter Two provides evidence from the external review conducted at the start of the project.
- Chapters Three and Four discuss the questionnaire and interviews conducted for the needs analysis.
- Chapter Five reports on the case studies of innovative departments at UCL.
- Chapters Six and Seven describe the experimental study packs developed for the Dutch department and the Economics Department at UCL.
- Chapter Eight is a report on the pilot electronic course materials service (DigiCOMS), launched at UCL in Summer 2001.
- Chapter Nine is the recommendations and final conclusions from the project.

Chapter Two: External review

At the outset of the project it was important to undertake a review of the literature, to identify previous and current related work. This provided a context to the research, but also helped the project officer gain valuable experience from other researchers and practitioners. The review concentrated mainly on UK literature as the copyright environment largely dictates what is and is not possible. The literature search revealed that almost all previous UK research in the field had been funded under the Electronic Libraries Programme (eLib). Aside from this, there were very few articles available in refereed journals. This was believed to be partly because projects in the field are largely service-based initiatives, and do not report in this manner. It is also because developments such as licensing agreements for digital texts are very recent, and many UK university libraries have only started to consider this issue. Consequently, information for the external review was also obtained from newsletters, mailing lists and informal contacts at other universities.

A number of initiatives in the library world have been undertaken that are of relevance to this project. Similarly, developments using information and communication technologies in teaching and learning are also pertinent. This review covers a range of topics, including: eLib projects focusing on electronic reserves and study packs (e.g. ACORN, HERON); JISC DNER projects focusing on portals; electronic course materials/digitisation services in operation in other institutions and developments such as Virtual Learning Environments (VLEs), hybrid library initiatives and eBooks.

2.1 JISC funded initiatives / eLib projects

Previous research examining the issue of digitisation of short loan collections or course readings in UK Higher Education Institutes (HEIs) has been undertaken largely by the Joint Information Systems Committee (JISC), under the auspices of the Electronic Libraries Programme (eLib). An brief summary of this work has been undertaken with a discussion of the relevant projects.

2.1.1 The Electronic Libraries Programme (eLib)

The first phase of the Electronic Libraries Programme (eLib) was launched in 1994 by the JISC as a direct response to the 1993 Libraries Review by the UK Higher Education Funding Councils, known as the Follett report. The programme had a budget of 15 million pounds over 3 years to fund projects in a variety of programme areas. The main aim of the eLib programme, through its projects, was to engage the Higher Education community in developing and shaping the implementation of the electronic library. In phase one and two, eLib funded a series of projects examining on-demand publishing that are relevant to this work. Several electronic reserves projects were also launched at the same time and this research also provides a valuable background. Phase three of eLib was launched in 1997 and projects examining hybrid libraries are particularly relevant to this Project.

2.1.2 Previous on-demand publishing / electronic reserves projects

Phases I and II of the eLib programme launched a range of projects examining on-demand publishing (OD) and electronic reserves (ER). Seven projects examined on-demand publishing, including: EDBANK, eOn, ERIMS, EUROTEXT, On-Demand Publishing in the Humanities, Project Phoenix and SCOPE. Five projects examined the area of electronic reserves, including: ACORN, ERCOMS, PATRON, QUIPS and ResIDe. Many of the issues highlighted by these projects were summarised in an eLib supporting study undertaken in July 1997 to examine the impact of on-demand publishing and electronic reserves.[2] Traditional short loan collections have been an attempt to deal with the need to provide learning resources to an increasingly diverse student population with limited funding. However, on the whole they have been unsuccessful with *…ample evidence of unsatisfied demand and indications of hiding, theft, and vandalism.*[3] The projects suggested that Portable Document Format (PDF) was becoming the standard format for delivering material. Aside from copyright, they concluded the greatest challenges in implementing systems were, obtaining reading lists and in-housed produced materials from academics, a lack of available electronic copies of required texts and the time spent scanning, running OCR software and proof reading documents.

[2] Leah Halliday (Editor), *The impact of on-demand publishing and electronic reserve on student teaching and libraries in the Uk: a supporting study in the JISC Electronic Libraries (eLib) Programme.* London*:* LITC South Bank University, 1997.

Copyright was an important issue in each of the projects. Securing permission to use material for the projects was often relatively unproblematic; however, publishers were clear that in a real world situation charges would be levied. Most publishers based their fees on usage. The SCOPE Project proposed a 2.5 pence per page fee, which was accepted by a large group of publishers. In general the fees varied between 2.5 and 5 pence. The major problem concerned the time delay in getting permission to use the material. There is no clear consensus as to whether copyright charges should be passed onto students within a digital system. Although some departments pass on the cost of producing printed study packs to students, others are fully aware of the hardships students face and believe core materials should be freely available. A variety of other issues were also raised by the projects, including whether the system spoonfeeds students by removing the need to learn how to use library collections, and the need for lecturer support to make the system viable. The advantages of online delivery over course packs were examined, including their importance in distance learning. Issues such as whether material is designed to be read on screen and the impact this will have on computing facilities were also considered.

A number of recommendations for JISC came out of Halliday's report including the need to continue funding a OD/ER service. Consequently, Project HERON was launched in Phase III of the eLib Programme. HERON is jointly funded by JISC and Blackwell's Retail Ltd and is building a service for those institutions who wish to progress with on-demand publishing and use electronic text to support learning and teaching in libraries and academic departments. HERON has always described itself as a 'project into service' and this service is currently being piloted. This allows HE to experiment with both the costs and practicalities of the service in a subsidised environment. HERON offers HEIs a copyright clearance and digitisation service and is developing a resource bank of digitised materials for HE use. It also provides a united voice for HE in negotiations with publishers and other rightsholders. HERON is also working to establish a database of texts authored and owned by academics and universities and to offer them the opportunity to market these materials in the wider HE community. A start-up service began at the end of May 1999 with initial

[3] Halliday, 1997, p.125.

subscribers offered the options of printed course packs or files for online delivery within HEIs. There are currently over 30 institutes taking part in piloting the HERON service and it is an important initiative for this project.

2.1.3 Hybrid Library Initiatives

Part of eLib phase III launched in 1998 is examined hybrid libraries; five projects were launched within this remit. They included BUILDER, AGORA, HyLife, Headline and MALIBU. Rusbridge described the hybrid library as being:

> … designed to bring a range of technologies from different sources together in the context of a working library, and also to begin to explore integrated systems and services in both the electronic and print environments. The hybrid library should integrate access to all four different kinds of resources identified above, using different technologies from the digital library world, and across different media..[4]

Each project has developed a model of the hybrid library using different technical specifications, although often incorporating Z39.50 protocols[5]. The idea has been to provide users with 'seamless' access to both electronic and print resources. Access to resources such as electronic journals, library catalogues, and networked CD-ROMs is often provided. Some projects have also made course materials available in this way. They are relevant to the Access Project for this reason, and also because they demonstrate the wider context of library developments. The BUILDER project is an example of a service that provides access to an electronic short loan collection within the hybrid library environment.[6] Meanwhile the Headline Project has the facility to include course materials, such as lecture notes.

The hybrid library projects recognise that different groups of users will have different needs, and this has been important in the Access Project. HyLife, for example, has developed six implementation interfaces for a range of users, including full and part-time students, researchers, users in distributed environments and various subject groupings.[7] Similarly the Headline Project enables users to set up their Personal

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[4]Chris Rusbridge. Towards the Hybrid Library. *D-Lib Magazine* (July/August 1998), Available at: http://mirrored.ukoln.ac.uk/lis-journals/dlib/dlib/dlib/july98/rusbridge/07rusbridge.html

[5] "Z39.50" refers to the International Standard, ISO 23950: "Information Retrieval (Z39.50): Application Service Definition and Protocol Specification", and to ANSI/NISO Z39.50. It specifies a client/server-based protocol for searching and retrieving information from remote databases.

[6] The BUILDER project (Birmingham University Integrated Library Development and Electronic Resource) See http://builder.bham.ac.uk/main.asp

[7] More details available at: http://hylife.unn.ac.uk/

Information Environment (PIE) and include a range of different resources within it.[8] MALIBU also focuses on the needs of users, in particular within the humanities disciplines, and seeks to develop *innovative and cost-effective ways to meet the ever-increasing information requirements of staff and students through co-operative resource-sharing.*[9]

The final hybrid library project, AGORA, is developing a hybrid library management system (HLMS) to provide integrated access to distributed information services. In parallel with this it is also developing library skills and experience in the management of hybrid resources. AGORA aims to increase awareness and understanding of the benefits of a standards-based management framework; and therefore dissemination activities are an important part of the project.

2.1.4 JISC DNER projects focusing on portals

In 1999 JISC launched the DNER (Distributed National Electronic Resource), which aims to provide:

> …a managed environment for accessing quality assured information resources on the Internet which are available from many sources. These resources include scholarly journals, monographs, textbooks, abstracts, manuscripts, maps, music scores, still images, geospatial images and other kinds of vector and numeric data, as well as moving picture and sound collections.[10]

It is envisaged that the DNER will be accessed through a range of different access points, which have been termed 'portals'. A number of different portal types exist and the approach to DNER interfaces will be distributed, in addition to the distributed nature of the target resources. The main portal types include: the JISC or central portal, subject-oriented portals, local portals, media-specific portals, data centre portals, curatorial tradition portals and enriched interface portals.[11]

The JISC or central portal is aimed at users without specific subject or media alliances and linked to the JISC web site. This portal also provides a searchable catalogue of collection-level descriptions of datasets (similar to UKOLN's ROADS-based pilot),

[8] More details available at: http://www.headline.ac.uk/
[9] Taken from Project Malibu homepage Available at: http://www.kcl.ac.uk/humanities/cch/malibu/background/intro.htm (November 2000)
[10] JISC web site. http://www.jisc.ac.uk/dner/ October 2000.

and can transfer the user to a Data Centre (or third party dataset host) service for in-depth searching. Other portals would be targeted at specific audiences or provide access to particular types of information. Local portals are essentially hybrid library developments, allowing tailored access to a selection of datasets of importance to an institution, plus integration with other locally licensed datasets and local products. Systems should be set up in most cases to consult local resources first, e.g. the local OPAC or local CD-ROMs before external or charged services. There should also be good links to local resources, e.g. electronic short loan collections.

2.1.5 Higher Education Digitisation Service (HEDS)

Another relevant organisation funded by JISC is HEDS (Higher Education Digitisation Service), run by the University of Hertfordshire.[12] HEDS was initially established in September 1996 as part of the Electronic Libraries Programme (eLib), and following a successful period as a project, HEDS became a JISC Service in August 1998. The Service provides advice, consultancy and a complete production service for digitisation and digital library development. HEDS supports project development from feasibility assessment to final delivery of digitised materials. They serve not only the education sector, but also provide services to public libraries, museums, archives and other non-profit making organisations. Discussions took place with HEDS about the feasibility of using this service during a later phase in the research, however they recommended that the HERON Service was more appropriate (See Chapter Seven).

2.2 Virtual Learning Environments

The increasing use of virtual learning environment (VLE) software in higher education was relevant to the project. These are defined as:

> …learning management software systems that synthesise the functionality of computer-mediated communications software (e-mail, bulletin boards, newsgroups) and on-line methods of delivering course materials (e.g. the WWW).[13]

Many universities have begun using packages such as WebCT and Blackboard to provide a range of resources to support student learning. Other VLEs include:

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[11] More details available at: http://www.jisc.ac.uk/dner/

[12] For more information see http://heds.herts.ac.uk/about.html

FirstClass Classrooms, TopClass and Virtual-U. At UCL a pilot project was underway to evaluate WebCT, and a number of academic departments were using the package to support their courses. These packages provide a framework to distribute a variety of resources, and electronic course materials could easily be incorporated into the software. Throughout the duration of the Access project it was important to consider this type of software. A key consideration when launching the pilot service would be whether to build a separate system in-house, or if electronic course materials should be placed directly into VLE software. If a separate system was built it should have the facility to be integrated into VLE software, so that the systems were not incompatible.

2.3 Electronic Course Materials at Other Universities

A growing number of academic libraries provide electronic access to course materials and in the US in particular, electronic reserves services have been running for a number of years. However it is still an area where very little research is undertaken and almost no literature is available. The Association of Research Libraries (ARL) have run a mailing list on the topic since 1994 and this list has seen a steady increase in postings. From monitoring this list, and also by developing contacts at UK universities, an overview of the current situation was prepared.

2.3.1 Electronic reserves in academic libraries

Universities adopt a variety of approaches towards providing access to electronic course materials. Some universities have developed their own in-house electronic reserve system. In-house systems have the obvious advantage that they can be tailored to meet the needs of individual organisations and can be as sophisticated or as simple as the budget allows. Electronic reserves can also be developed using features within library management systems, for example the 'reserves' module within the Voyager Library management system. Software developers have also realised the growth in interest in this area and a number of ready-made electronic reserves systems are also available, such as ERes. A seemingly unlimited combination of these approaches are also possible, such as linking ERes to WebCT, or the Voyager reserve module to Blackboard.

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[13] Sandy Britain and Oleg Liber *A Framework for Pedagogical Evaluation of Virtual Learning Environments* JTAP report. 1999. Available at: http://www.jtap.ac.uk/reports/htm/jtap-041.html

Of the software that is available, Docutek Information Systems' ERes package (which recently launched version 4) is the most popular in the US. It is designed to allow academic libraries to establish Electronic Reserves and to manage copyright-protected documents online.[14] Together with other modules in the DocuLib suite, libraries can compile and manage collections of Internet Resources, post time-sensitive information, and create and administer surveys online. DocuLib and ERes can also be used to create course Web sites, course-specific discussion boards, and live Internet chat rooms.

Electronic reserves system are increasingly being established in US academic libraries, for example, in Illinois, North Western University Library have an Electronic Reserve System.[15] The Library has integrated its short loan collection, known as 'reserved readings,' into their library catalogue, which uses the Voyager Library System. A combination of lecture notes, articles and readings for courses are also included on the system. Access is limited to members of the university using an authentication system to prevent external users from gaining access to copyright controlled material in the collection. Similarly San Diego State University operate an Electronic Course Reserves (ECR) system using the ERes software, which provides a ready-made electronic reserve delivery system.[16] As well as the electronic reserves system ERes contains lists of useful web sites and chat areas for staff and students. Lecturers are able to add material by e-mailing the ECR co-ordinator. Care is taken to operate within the copyright legislation and the system is only available to members of the University. Within these systems, files are usually stored in Portable Document Format (PDF) and accessed using browser software such as Netscape with Adobe Acrobat Reader. An example of this approach is Duke University, where the Electronic Reserves system provides access to supplementary course reading materials required in support of the curriculum.[17] In order to obtain a copy of scanned documents, printing must be undertaken using a system supporting Adobe Acrobat. Although a number of these systems have managed to resolve copyright difficulties, this remains a problem and at Adeilade University where the Electronic Reserve

[14] See Http://www.docutek.com/
[15] See http://www.library.nwu.edu/ERS/
[16] See http://ecr.sdsu.edu/
[17] See http://www.lib.duke.edu/access/reserves/

System is currently restricted to past exam papers due to unresolved Copyright issues.[18]

2.3.2 Electronic reserves in the UK

Developments in UK academic libraries were considered to be particularly relevant to this study and a number of electronic reserves project undertaken outside the eLib projects were considered. Given that local initiatives at universities might not always be reported in the formal literature, a study of a selection of university library web sites was undertaken. This study was not comprehensive, but found evidence to suggest that many academic libraries are currently considering how they might implement electronic reserves. Where these systems have been established a number of case studies of the libraries were undertaken. The nature of the service was investigated and several of the universities were contacted for more details about the work they were undertaking. This research revealed that electronic reserves is an area that UK universities are investigating and that the Access Project at UCL is timely.

The University of Durham

In 1999 the University of Durham launched their electronic reserve system, as a trial project that was:

> …aimed at supplementing the existing print reserves with electronic copies accessible via the WWW. The Project was funded by a special university grant to promote initiatives in teaching and learning.[19]

The Library was contacted to gain more information about their experiences of setting up an electronic reserves project, and detailed responses were received from their Sub-Librarian. They currently use two different systems to provide course materials; the first is a module of the INNOPAC library system which is used for exam papers. It is not available outside the university, and it is an easy to use, basic system. Project staff create bibliographic records and scan in and attach images of the exam papers (or links to PDF files or URLS can be inserted). The main benefit of this approach is the speed of scanning, and the security aspect it offers - users have to enter their patron record number to access the database. The downside of this is that printing is difficult from this system, so it was decided to take a different approach for the pilot project to digitise journal articles and book chapters.

[18] See http://www.library.adelaide.edu.au/eres/

Durham introduced electronic reserves after eLib had highlighted the problems with access to core reading list materials. The library recognise the changing nature of library services, with an increasing demand for electronic information, increasing numbers of students and a growth in distance learning. Their education department, are currently comparing the cost of electronic reserves with the cost of CLARCS cleared course packs for their distance learners. The project was small, and initially employed a half-time project officer, although ongoing maintenance of the project is now undertaken by the Sub Librarian. Durham experimented with three main options, including: direct clearance from publishers with scanning in-house, CLA clearance and local scanning, and using the HERON Service. The first two options had several problems, such as some publishers refusing to deal directly with the university. The CLA were not that successful in obtaining clearance either. Therefore, currently Durham are using HERON as it is convenient to get the clearance, and scanning is done for them, minimising the local staff time needed.

Durham have experienced a number of problems with HERON including delays in clearance and scanning. The time to get clearance really is a problem, as a critical mass of readings for the start of a course is very important to users. Although users are willing, staff perceive the project to be generally under-resourced. Initially the project used the a US commercial package ERes however, users reported they did not like the software, and it was expensive to purchase. Therefore, Durham now use the Triffid software which is a system based on an Access database and Active Server Pages which was developed by Project HERON. Access to the system is only possible via the Durham network and they currently have material available for four courses.

Staff involved in the project have some reservations about the future of the electronic reserves system. The University recently purchased Blackboard and set up Durham University Online (DUO). At the time of this study two departments included the digitised copyright material alongside lecture notes, the course outline, chatroom and other resources available for each course, rather than placing the material in the library system. Digitized articles or chapters are also linked from OPAC records in case people come upon them that way.

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[19] Margaret Turner, 'The Durham Electronic Reserves Project' SCONUL Newsletter 18 (Winter 1999),

Durham experienced a number of problems with their system. In particular, obtaining copyright clearance could be a problem with some courses, such a Haematology module, where almost a third of the core reading list has been refused clearance. This meant the university could not develop a totally online system. Durham also found the cost of obtaining clearance a problem. The Library paid for the pilot service. However, scaling up the costs suggests that £2,500 per annum for courses with a modest size of reading list is likely. The Library anticipated charging departments for this service in the future, which was likely to decrease participation levels. Durham also reported that they have found it difficult to get students to use the system before there is a critical mass of material available. Both library staff and lecturers needed to be involved in promotion to encourage students to use the system. Durham found another problem was liasing and communicating with departments, who often did not appreciate the need to provide reading lists well in advance and with pagination, to stand any chance of getting copyright clearance.

London Business School

The London Business School have taken a different approach to delivering course materials, incorporating material available through electronic subscriptions within its course support environment.[20] The School have developed a database driven intranet, known as The Forum, with dynamically generated 'course rooms' for each course. Course rooms contain a variety of information including course outlines, class lists, discussion areas and links to material in the course resources database. The library has then created a course resources database, which makes full text articles available to students by exploiting subscriptions to electronic journals. The resources are held within a secure environment, which students log into, therefore where possible the library have worked with the IT department to provide seamless access to resources. Both library staff and lecturers are able to add resources to the database, however this has caused problems when staff have added digitised material for which they do not have copyright permission. This has necessitated library staff checking all the resources, and removing those which have been entered illegally. The impetus to use electronic course readings was less significant at London Business School, because

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[20] Helen Edwards and Lindsay Jones 'Electronic Course Packs at London Business School: making the most of full text database subscriptions' SCONUL Newsletter 20 (Autumn 2000) 11-14.

the faculties still produce printed course packs for students. However, this approach demonstrated that a substantial amount of core readings are often available using existing subscriptions to electronic journals and databases.

Other examples

Several universities have developed some form of electronic course materials, for example, the University of Edinburgh has an electronic reserves system. Sheffield University Library has reading lists for certain departments mounted on the library web site. These are then linked to the University catalogue, which uses Talis software. John Rylands University Library of Manchester also has reading lists linked to their library catalogue, again using the Talis software. At John Rylands a wide range of departments have provided reading lists for many different courses. Course material is also available, such as essay questions, although this varies depending on individual lecturers. Where material is available as a website this is linked directly from the reading list. Electronic journals are also linked from the OPAC, so users can access some course material directly. A different approach is taken at Aberdeen University which has what is known as a 'course handbook library.' It is an electronic library of student handbooks and other course material provided by teaching departments. It is intended to be used for backup and reference purposes, as most of the documents included in the library are handed out or offered for sale within the relevant courses. Some of the material in this database is only open to members of Aberdeen University and access is controlled by password. Not all course material is available via the library and it is down to individual lecturers to tell students when material is held on the departmental web site. Finally Imperial College have an experimental system with electronic reading lists for a variety of subjects and courses. This is linked to their library catalogue which uses the Unicorn software. The system only includes recommended textbooks for the courses in question and access to full-text articles is not currently available.

2.4 eBooks, and commercial course material providers

Finally the review considered the increasing number of commercial companies who are making electronic textbooks available and either offering services to libraries or directly to students, bypassing the library altogether. Often companies have deals with numerous academic and commercial publishers to make reading material available.

Users are required to register with the service, which vary in price. Four services are briefly discussed including Questia, Ebrary, NetLibrary and 24x7.

NetLibrary was the first such service available and it aims to mimic a traditional library service.[21] Academic institutions purchase a collection of titles in a similar way to printed titles; however, the electronic collection is hosted with netLibrary on their servers. Library users can then find eBooks through MARC records in the library catalogue. As with printed books, only one user at a time may access each copy of an eBook and the library determines the loan period. Approximately 19,000 e-books are available from publishers such as McGraw-Hill, MIT Press and OUP

Meanwhile Questia is being marketed at students, with librarians employed on collection-building.[22] It has been called "The world's largest digitization project" and the company aim to have 250,000 volumes available by 2003. They have over 100 publishers involved, including Pearson and several university presses, and their goal is 'to provide a service that will transform how academic research is done.' The Questia service will be live in early 2001 with at least 50,000 of the most valued volumes in the liberal arts from the 20th and 21st centuries (not including textbooks). Anyone can search Questia at no cost to locate books and journals, but to view full text online and access the research tools of the Questia service, users must subscribe.

Ebrary is a joint investment by Random House Inc., Pearson and The McGraw-Hill Companies.[23] The company state:

> "Why should copyrighted content on the Internet be hidden? Currently, Internet users access content of value on the web in one of two ways: through paid subscriptions or by purchasing sight-unseen. Both methods restrict content exposure. Ebrary's proprietary technology maximizes content exposure by allowing unrestricted viewing access while prohibiting unpaid reproduction (pasting, printing, and downloading)."

The cost of this service is 15 cents per page to print, with 5% of income returned to the library. They hope to have 100,000 documents by the time the service is launched, including many technical reports.

[21] For more details see http://www.netlibrary.com/
[22] For more details see http://www.questia.com/

Finally 24X7 focuses primarily on the corporate IT market, with product adapted for academic libraries.[24] The company are working with 22 publishers and 33 imprints. There are currently 2500 titles under license, 700 are up on the service now, 1,000 will be up by the end of 2001. The cost of access to all these titles is $6,000 per simultaneous user and the system allows fair-use printing. Many UK universities are currently considering signing up to commercial eBooks suppliers and studying reading lists to see how many core textbooks would be available. At the moment, most of the companies are still geared towards the US market, however, eBooks is an area that should be considered when planning any new electronic service.

2.5 Summary

The developments outlined above provided an important context for the Access to Core Course Materials Project. They also highlighted a range of issues that needed to be considered throughout the research. These include:

- The importance of previous eLib research, specifically HERON. It was agreed that the project should gain experience of using the HERON service, from talking to other institutions and also from practical experiments.
- The need to monitor developments in the UK and particularly in the United States, where electronic reserves have been set up in academic libraries. Although the copyright law differs in the US, the project officer gathered valuable information about the practicalities of providing such a service, from monitoring messages on the US electronic reserves mailing list.
- It was also important to consider how electronic course materials could be integrated into the library management system or into VLE software such as WebCT.
- Finally the research suggested developments such as eBooks may become increasingly important in academic libraries and should monitored.

[23] More information is available at: http://www.ebrary.com/
[24] More information is available at: http://www.books24x7.com/

Chapter Three: Needs Analysis of academic departments at UCL: results of the questionnaire

3.1 Introduction to the questionnaire

This section presents the results from a survey sent to all departmental administrators at UCL. The survey formed part of a needs analysis, which was an important initial stage in the Project. The needs analysis sought to investigate departmental requirements for core course materials and their current practices and attitudes towards providing material in electronic format. It was decided to combine qualitative and quantitative research methods and conduct a postal survey, which would be followed up with semi-structured interviews.

3.2 Aims and Objectives

The postal survey formed one element of the needs analysis and was intended to collect mainly quantitative data. It sought to establish patterns of use of Library Services and to gauge the level of interest in the Project. The survey had the following aims:

- To inform departments about the nature of the Project and invite them to participate in the pilot phase;
- To identify which departments were currently using the services provided by the Library to produce core course materials;
- To identify which departments were not using the services provided by the Library and begins to explore why this might be;
- To identify areas that could be explored in greater detail in the interview situation.

3.3 Methodology

Although postal surveys generally attract a low response rate, this method was regarded as the most straightforward initial way of contacting departments. The College provides a list of departmental administrators on their Intranet, so by sending the survey to a named individual, an increased response rate was anticipated. Furthermore, departmental administrators often work across the summer vacation and so the survey was more likely to receive attention than if it was sent to a member of the academic staff. An introductory letter that accompanied the survey provided additional information about the Project and formed an important piece of publicity

material. From the outset, the intention was to combine the survey technique with semi-structured interviews for triangulation purposes.

3.3.1 Design of the survey

The survey was designed by the Project Officer, in consultation with staff in Library Services and EPD. Where possible closed questions were used to further encourage respondents to complete the survey. A copy of the survey appears in Appendix 1.

Although the survey sought to gauge the level of interest in the project, it was decided that the Head of Department should be sent an official invitation to participate in the Project, separate to the survey. He/she was also asked to nominate an individual who would be willing to be interviewed as the second part of the needs analysis. This would provide additional publicity for the Project and ensure that appropriate channels were used.

3.4 Response rate

Each department at UCL was sent a copy of the survey and consequently 94 copies were despatched, of which 18 had been returned by the closing date. This constitutes a response rate of 19 %, which is not atypical for a postal survey. However, given that copies were sent to named individuals, it was hoped that responses would continue to be received after the closing date. A further 8 responses were received after a follow-up request was sent to departmental administrators. This took the number of responses up to 26, which was a response rate of 28 %.

A large number of medical school departments have become part of UCL over the past few years. These departments tend to still retain a high degree of autonomy, with some of them retaining their own library and information services. Consequently these departments tend to use the centralised Library Services less frequently than other departments might. Approximately half of the results were received from such departments and thus the results may demonstrate a lower than expected level of use for Library Services.

3.5 Results

The results have been divided into several themes around which the questions were organised. Statistical analysis was not possible given the low number of responses. For the same reason it was not felt necessary to establish percentage responses to individual questions.

3.5.1 The role of the library in providing access to core course materials

Library Services in the form of the Subject Support Unit (SSU) offer two key services to academic departments: the production of printed study packs and administration of the teaching collection. Study packs are bound booklets of course readings, which are produced at cost on behalf of departments. Obtaining copyright clearance forms a large part of the work in compiling study packs. The Teaching Collection comprises photocopies of journal articles or chapters from books that lecturers regard as core to a particular course. Copies of this material are kept behind the issue desk at the library for students to borrow. This material often requires copyright permission, which the SSU also secures.

The survey investigated whether departments had made use of the SSU services in the last two years. Departments were also asked whether they were providing core course material themselves to determine the importance of Library Services in provision of this type of material. The survey revealed that 15 of the 26 departments who responded used the services provided by the SSU, and 11 did not. The majority of departments (11) placed material into the teaching collection. Only four departments had used the services to produce a study pack.

When asked if they provide core course material independently, 23 departments stated that they did and only three did not. Of the three who did not provide students with course materials themselves, they were all research departments who do not teach undergraduate students. These three departments also did not use the SSU services. The results showed that the remaining eight departments who did not use the SSU services were providing course materials themselves. Five of these departments were medical departments. These results confirmed the notion that the Library often plays a supplementary role in providing access to core course materials, and in the case of

some departments, particular medical departments, course materials are provided independently.

3.5.2 Why departments choose to provide core course material themselves

The survey asked departments who provided course material themselves (whether in addition to Library Services or in place of) why they did this. It is important to identify the reasons why departments are not currently using the services offered by the library, as it might reveal any shortcomings in the services. It will also help determine the nature of the pilot electronic service, by highlighting features which a new service should incorporate. A variety of reasons were put forward by departments, including:

- convenience;
- to allow monitoring;
- lack of awareness of services offered by library;
- lack of awareness of copyright legislation;
- suitability of materials;
- cost.

Departments often provide course materials themselves because it is convenient to do so, in terms of convenience to staff and also to students. This is particularly true for departments that are located away from the main Library sites. Departments that only became part of UCL recently often feel it is more convenient to continue providing course material themselves. Staff clearly felt that students could access material more easily if it was provided by the department, rather than the library. Academics also felt that it was easier to update information that was held in their department and it was much quicker to get material to students without having to go through the library.

Several departments believed that it was easier to monitor student's reading material if they produced it themselves. They felt students would be more likely to read material if it is handed to them directly by the lecturer. It is also easier to ensure there is an appropriate sharing of resources if the department produces the material.

The results suggested that some departments are not fully aware of the services offered by the Library. Several respondents stated this explicitly, but it was implicit in

some of the comments from other departments. For example, several departments said that they provided materials themselves, because they were not available in the library. Both Study Packs and the Teaching Collection can be used to deposit material that is not held in the library, although copyright clearance must be obtained.

Also arising out of this was another more worrying trend, that departments seemed to have a limited knowledge of the copyright legislation. This factor became apparent when they were asked about the type of materials that they provided to their students. Many departments provide photocopies of journal articles and book chapters and it seems unlikely that copyright clearance is granted for them to use this material. This irregularity may be partly due to a lack of knowledge about the copyright legislation, rather than a genuine desire to avoid the charges. One department seemed to be under the mistaken belief that if they produced photocopies of journal articles and book chapters themselves, rather than involving the library, they would avoid copyright problems.

Some departments provide course materials to students themselves, rather than using the library collection, because they feel the information is not suitable for the library. The material is often ephemeral in nature; for example, it might be a lecturer's notes or handouts. These types of materials could be placed in the Teaching Collection. However, it is perhaps more appropriately distributed at the time of a particular lecture, and this is not an area that the library should be involved in.

Cost was almost certainly an issue that affected the decision by departments to produce core course materials themselves, although it was only mentioned directly by two departments. There seemed to be a perception that using a centralised service would result in higher production costs, than if the department photocopied material themselves. The SSU does not operate at a profit and charges are only levied for copyright permission fees and production costs. Certainly copyright permission charges would be avoided completely if departments were not seeking permission to produce copies of journal articles and book chapters. However, they should be aware that in doing this they were infringing the law.

3.5.3 What is core "course material"?

Departments were asked what types of materials they were providing to their students. Despite the copyright implications, photocopies of journal articles and book chapters were the most frequently cited responses. Lecturers' notes and handouts formed another important category, as did reading lists, course handbooks and guides. This section of the survey was important, as it has helped to establish a clearer definition of core course materials, which can be used for the project.

3.5.4 Current use of electronic materials

Departments were asked whether staff currently produce any core materials in electronic formats and to specify in which format these materials were available. Eleven of the 26 departments did not produce any electronic material for their students. Web pages were the most common type of material and were mentioned by a further eleven departments. However, there was some uncertainty as to whether departments were referring to the general purpose web pages produced as publicity for the department, or whether additional course material was made available in this way. This issue will be followed-up in the interviews. Of the other formats available, six departments stated that they produced a software package for their students and three said that they produced audio or video material.

3.5.5 Future use of electronic materials

The survey asked departments whether in the future they were interested in producing core course materials in electronic format and in which format they were interested. It was suspected that some respondents did not fully understand this question, as 12 of the 26 respondents checked the "Unsure" box. (Similarly, when asked if they would participate in the pilot phase of the Project half the departments said they were unsure.) Given this, it might not be wise to draw too many conclusions from the results from this section of the survey and to explore this issue more fully in the interviews.

Despite the reservations about the validity of the responses from this section, some relevant points were made. The results suggested that developing material on web pages seems to be an area of interest, with 12 departments stating they would be interested in producing course materials in this format. In some instances this work

would be an extension of work they have already begun, given that eight of the 12 respondents already said they produced course materials in web page format. There was a more limited interest in developing software packages and audio and video material, with positive responses from one and two departments respectively. Additionally, in the further comments section several departments stated that they were either interested in or currently investigating the potential of providing materials in electronic format. This will provide some useful pointers for the interview stage of the research.

3.6 Conclusions

It is would be unwise to draw too many conclusions from the results from this survey alone, as ideally they should be viewed in conjunction with the findings from the interviews that will follow them. However, several conclusions could be reached, including:

- It has been possible to establish a working definition of "core" materials;
- Indicative levels of interest and priorities have been highlighted (particularly for web based materials);
- Some (mis)conceptions about services offered by the Library have been identified.

The survey also highlighted a number of areas that need to be explored in more detail during the interviews, including:

- Departments' perception of the role of the library in producing core course materials - which services do departments prefer to provide in-house and which are more suitable to be undertaken centrally?
- The level of understanding surrounding the copyright legislation - are departments producing core course materials themselves to avoid paying copyright fees, or are they truly unaware of the legislation?
- The level of awareness about digital initiatives - how much awareness is there about what can be done digitally at the current time?
- The issue of student access to material - do departments believe digitising material and making it available over the Internet can solve a lot of these problems?

- The implications for teaching staff and students of making material available in electronic format - what level of computer literacy is there amongst students and staff in different departments?

Twenty Heads of Department responded to the invitation to participate in the Access to Core Course Materials project, of which 18 were prepared to take part, nominating a member of their academic staff to be interviewed. The interviews were scheduled for October, when it was hoped that more academic staff would be available. The issues arising from the survey would be incorporated into an interview guide, to be used in the data collection exercise.

Chapter Four: Needs Analysis of academic departments at UCL: results of the interviews

4.1 Introduction and methodology

This section outlines the findings of the needs analysis interviews, which were conducted with academics in thirteen departments at UCL (including one pilot interview) following the postal survey. Individuals were asked to identify core materials in their subject, the specific needs of their department, their use of and attitudes towards the current teaching support services and their requirements for a future electronic service.

4.2 Participating Departments

The interviews sought to cover a range of different departments and partly to reflect the diversity of subjects taught at UCL. Therefore departments from the arts and humanities, sciences, social sciences and medical school were included in the study. The departments also varied in size, to investigate whether a large department might have different needs to a smaller one. The table below indicates the number of departments from each faculty who participated in the study. It also indicates the codes used to ensure departments remain anonymous when direct quotes are included in this report. Departments are coded according to their faculty, using letters to distinguish between them.

Faculties at UCL	No. of depts	Codes
Faculty of Arts and Humanities	5	1A-E
Faculty of Clinical Sciences	4	2A-D
Faculty of Life Sciences	1	3A
Faculty of Mathematical and Physical Sciences	2	4A-B
Faculty of Social and Historical Sciences	1	5A
Faculty of Laws	0	
Faculty of the Built Environment	0	

Departments were essentially self selecting and therefore the results reflect the attitudes of those departments who chose to be interviewed and who might be particularly interested in electronic initiatives. However, the needs analysis will help ensure that when the service is launched it will meet the needs of the departments

most likely to make use of it in the first instance. It is anticipated that the service will evolve if more departments later decide to take part.

4.3 Core Materials in different departments

The questionnaire indicated that different types of course materials were used by different departments. This issue was followed up in the interviews to provide establish a consensual definition of the term, while recognising the different needs of academic departments.

4.3.1 Definition of core course materials

An important part of the needs analysis involved formulating a definition of core course materials and to compare how this might differ between subject disciplines. A rough definition was developed using the questionnaire data and this has been refined following the interviews. The following types of materials can therefore be identified as core course materials:

- Core readings
  - Journal articles
  - Book chapters
  - Reports
  - Textbooks
  - Newspaper articles
  - Ephemeral material
- Study packs
- Photocopies of articles / chapters
- Course booklets
- Lecture notes and handouts
- Still images
  - Diagrams
  - Photographs / slides
- Audio material
- Video material
- Electronic sources
  - Web sites
  - Databases
  - CD-ROMs
  - CAL packages
  - Electronic journals

4.3.2 Importance of different materials

Clearly not all the different types of materials mentioned above are relevant to every subject discipline and the importance of different materials varies considerably. For example, within some subjects, journal articles were rarely used at undergraduate

level, with the emphasis being on core textbooks or lecturers notes. This finding was more common in subjects that deal with learning particular 'facts' such as medicine and mathematics, as one lecturer said when asked if journal articles were important:

> Not for undergraduates. For postgraduates more, for a project they are doing [but] not for undergraduates… The mathematics that we teach them is very old so journals are not so relevant. (4A)

In contrast, other subjects such as languages and social sciences find it is often not possible to identify one core textbook and students are directed to use a range of different sources that could be defined as 'core readings'. However, it would be inaccurate to perceive this difference as being a straightforward split between the sciences and non sciences. For example in subjects such as chemistry and biochemistry the importance of journal articles and wider reading was apparent. As one member of staff said:

> I don't think science varies tremendously to a physicist, they only need two or three years worth of journals, but for a chemist we need a good back run of materials readily available. (4B)

For some courses it was more difficult to identify a set of core readings. This could be related to the level at which a subject was being taught, rather than the subject discipline. For example a first year course that sought to teach basic principles would commonly specify essential readings, whereas a fourth year course may encourage wider reading outside a standard bibliography. In more advanced courses identifying 'core' material can be more difficult as one lecturer explained:

> With first year students essentially what we do is say read the materials, here are a few articles about it, now write an essay. So basically, here are all the building blocks, now we want you to make a little tower. … So it does make a difference with the more advanced courses and the first year. (1C)

The importance of audio-visual material varied tremendously across subject disciplines. Unsurprisingly, both video and audio materials were often highly important in language departments, where special provision is often made to allow students access to these materials. Medical departments also sometimes required access to video. Staff felt this type of material was likely to become increasingly important, in particular with the launch of a new inter-disciplinary film studies

masters course. Still images were also particularly useful in subjects such as medicine, biochemistry, chemistry and maths, where lecturers frequently used overhead projectors to display diagrams or photographs.

Almost all subjects recognised the importance of course materials that were created in-house, such as course handbooks, lecturers handouts, and notes relating to particular sessions. In some subjects these formed the basis of what they defined as 'core materials.' These type of materials could often be the most problematic to manage, particularly when students missed sessions or required additional copies of materials. Many departments recognised the immediate advantages of making this material available electronically, so that students could print off copies themselves if they needed replacements.

Departments were increasingly beginning to use electronic course materials, such as CD-ROMs, web sites and databases. Electronic journals were also a particularly important source and their use was widespread across the disciplines. As one arts lecturer said:

> We have been getting students to use JSTOR and Ingenta. The five or six important philosophy journals are on JSTOR. Although you don't get the last 4 or 5 years it works rather well. (1D)

Many staff were concerned about providing access to electronic course materials, because they felt there were often not enough PCs within their department. Concerns more generally about the College network are discussed in Section 7.6.

4.3.3 Creating/Updating course materials

The importance of updating course materials was recognised by almost all departments, although invariably this was done less frequently than was desirable. Most academics were extremely busy and finding the time to update course materials was difficult. One department who produce a large number of course materials in electronic format explained:

> We put a proposal into the Vice-Provost that we should be able to appoint an AR member of staff to co-ordinate, generate and maintain this type of material, a teaching materials co-ordinator or whatever it was. (4B)

Most departments felt that it was necessary to update materials on a yearly basis. However, within subjects where rapid developments can take place, for example medicine, it is important to give students up to date material and updating annually may not be adequate:

> If there is a change you need to be able to reflect that fairly quickly. If there was something that happens that you need to make the students aware of, you would want to pass that on to the students. So it would need to be updated quickly. (2A)

Other subjects were identified as being more static, in particular maths, where certain principles would not change in the way opinions about a particular event in history might.

4.3.4 Current problems accessing materials

Although the interviews were held with academic staff, they highlighted a range of problems that their students experience when accessing course materials. There were some criticisms of Library Services, with the main difficulty being meeting the need to have multiple copies of particular texts available at certain times, as this member of staff said:

> There will never be enough books in the library and the minute you start to teach specialised courses where there are three or four books that are absolutely essential and twenty people… it becomes first come first served. (1C)

While some lecturers requested second or third copies of a textbook, expecting the library to be provide more than this was not realistic. Furthermore, some staff felt that putting material on short loan also was not entirely satisfactory as it restricted the time students could spend consulting a book. It was recognised that electronic access would have obvious benefits in this area, allowing simultaneous access to multiple copies of core readings. One department was concerned that students sometimes spent more time searching for material they required in the Library compared to actually using it:

> I noticed on some of the evaluation forms that one of the students said it would be better if we could spend more time reading than hunting for readings. There is this perennial problem in the library with people hiding the journals and books and putting it somewhere so only they know where it is. (5A)

One department had particular problems with the Library's periodical collection. For this subject it was important to have access to journal back runs and therefore the Library's policy of placing this material into storage caused obvious difficulties. The same lecturer also found the periodical collection was not adequate in terms of the range of titles.

Access to course materials produced in-house could sometimes be problematic to students, particularly when they required additional or replacement copies of materials distributed during teaching sessions. Again electronic access was recognised as having an obvious application here. Some departments had their own library or an area where course materials were stored. Departments were however often concerned about the cost of providing these materials in printed format. One small humanities department regarding photocopying to be their single biggest expense, and any system that might reduce this was welcomed.

Finally those departments who produce course materials in electronic format have found access to this material to be problematic at the present time. This is largely attributed to the speed and capabilities of the College network and the number of public-access PCs available throughout UCL. This issue will be discussed further in Section 7.6.

4.4 Use of current teaching support services

The interviews investigated whether departments had used the teaching support services currently provided by the Library and their attitudes towards them. Library Services aims to offer one service on a large number of sites, however this investigation suggested that with regard to teaching support the services are still not fully centralised. The Study Pack service has been publicised to all departments as UCL, although it was more commonly used by departments based on or around the Gower Street site. However the Subject Support Unit (SSU) manage the teaching collection service for only the Main and Science Library and the departments which use them. The Institute of Archaeology and Environmental Sciences manage their own teaching collection, but get advice and assistance from the SSU. Other departments, such as the Medical School are dependent upon services offered by their library.

Initially departments were asked whether they were aware of the services provided. The majority of departments based on the main UCL site were aware of these services, although some had not used them, others had used one or other of the services and a few had used both. The results do not suggest that departments who currently use teaching collection services were more likely to be interested in electronic initiatives in this area.

4.4.1 Use of study pack / teaching collection service

Departments who had used the study pack or teaching collection services were asked to comment on the positive and negatives aspects of these services.

4.1.1 Advantages

Both the study pack and teaching collection were recognised as providing a valuable service to allow large numbers of students to access core reading materials. In particular the study pack service makes it easier for students to access readings, being organised into one bound volume that is purchased from the department. As one academic said:

> I was very, very satisfied with the pack to meet a very specific need which was that many of the texts in that course that we teach are very hard to get hold of. What would happen is we have only one copy here and one at Senate House and when you have a course with 30 students on it, once one person has taken it out, it has gone. (1E)

Departments who used study packs found that they were good publicity for a course, giving the impression of a well organised and structured programme. They also avoid the need to undertake large amounts of photocopying within the department as the production was dealt with by the library. One lecturer said:

> Course study packs are quite handy because the students come from all over the world and some of them are not used to using libraries and finding materials, so to have it all available for them in one pack is quite good. …I don't know if it has made a difference for recruitment, but it certainly comes across well when you can say there is a study pack available. (1A)

The teaching collection had similar advantages and was often seen as a relatively quick way putting material into the library collection that frequently didn't necessitate copyright charges if UCL already held the publication.

4.1.2 Disadvantages

Difficulties were identified with these services, in particular the copyright permission charges that had to be met by departments using the study pack service. Many departments had been dissuaded from using the service, finding it too expensive. One department had attempted to create a study pack several years previously and said:

> We spent three or four months planning to do a study pack and then it all ended in tears. We had wasted all this time, because … there wasn't the kind of recognition of the difficulties and it think it was never explained to the department how expensive it would be. (1C)

Some departments also had reservations about passing the costs onto students. Difficulties obtaining copyright permission also hampered both the study pack and teaching collection service at times. Sometimes permission for particular articles would be refused by the publishers, or the fee could be excessive so that a department would not feel it was worth including. This occasionally led to certain readings being omitted from the pack and substituted with another reading. Obtaining copyright permission also increased the production time for these services which could be problematic unless a lecturer was sufficiently well organised.

Some departments found the process of assembling a study pack too time consuming, because they could not predict in advance the necessary readings. Study packs were recognised as being particularly useful for introductory courses, or for courses where there was an easily identifiable body of core literature. The format can be less suitable for more advanced level courses where wider reading is more encouraged. Finally some departments were concerned that in providing teaching support services students were not being encouraged to learn how to use the library effectively, but also to undertake wider reading. They had reservations about producing packs for these reasons.

4.4.2 Use of EPD/HERDU services

In addition to the teaching support services provided by Library Services, The Higher Education Research and Development Unit (HERDU) offer services to departments, for example secondments to teachers who need the time and support to develop a particular aspect of their teaching. The Unit also supports the development of teaching related policy, and is involved in a wide range of projects concerning aspects of teaching and learning. The level of awareness of HERDU activities was investigated during the interviews. The majority of departments were aware of the Unit, although only one of the departments interviewed had obtained secondment money. The Teaching and Learning Event 2000 (TILT), organised by the Education and Information Support Division and held in March, was mentioned by approximately half the interviewees. This suggests that this event raised the profile of initiatives of this type. Many departments were interested in the work of HERDU and because they have little time or expertise in this area, they were interested in exploring how they might use this service themselves.

4.4.3 Attitudes towards central service model

In general the interviews reflected a positive attitude towards centrally provided teaching support services. Departments often do not have the time or the expertise to develop more innovative methods of teaching and learning. Both the Library and EPD were recognised as being specialists, the Library in terms of copyright and dealing with publishers and EPD in terms of creating and delivering teaching materials more effectively.

> I think it is appropriate for the library to be involved, because my ideal is to do the printed study pack and then to think about the next stage. I was thinking that a good next stage would be to have some of this work on the net. (1E)

Some departments felt that certain services were provided more effectively within their department, however they would still welcome advice from a centrally supported service.

Departments enthusiasm for a central service was partly driven by a belief that it could save themselves money. This attitude means that careful consideration will have to be given to the funding of such a service. If departments are expected to pay for a

service, they may prefer to provide the material themselves. Similarly, if the service diverts funds away from core library activities, for example the money is top-sliced from the book fund, this may be an unpopular decision. The current level of use of the study pack service is generally low compared to the teaching collection. The results suggest that the cost of producing study packs was largely the reason for this.

4.4.4 Provision of course materials within department

The questionnaire indicated that many departments create course materials internally, in addition to or in place of using central services. Departmental libraries or a collection of materials available for students to borrow are also relatively common.

4.4.1 Departmental Libraries / collections

These collections supplement those held by Library Services and being held within the department they are geographically more accessible to students. The collections vary in size, depending upon the level of funding a department receives. For example, the Philosophy Department are fortunate enough to have received a donation that enables them to spend several thousand pounds a year on their collection. However, most departments find they generally have less money to spend on maintaining these collections than they might have in the past and consequently they are now more reliant on central services.

4.4.2 In-house production of course materials

Course materials are created in house for a variety of reasons. For many staff course materials such as handouts, lecture notes and course booklets were produced more conveniently and cost effectively in-house. They can also be distributed in teaching sessions more easily and are frequently used for short pieces of information that students need to see at a particular time. In subjects such as biology, chemistry and medicine detailed course booklets are often produced, containing information such as bibliographies, diagrams and lecturers notes. Students are usually required to bring these booklets to lectures and refer to them, for example to annotate diagrams. It is particularly useful to reproduce diagrams in this way as it saves students redrawing these in class. In many of these cases it was not appropriate to involve central services in the production of the materials.

It was clear in other instances that some departments avoided using central services, because of the time it could take to produce this material and the copyright fees that might be imposed. The Subject Support Unit stick to clear guidance from the Copyright Licensing Agency about what is deemed to be 'fair use,' although this clause is open to interpretation. While evidence does not suggest there are widespread attempts to flout the law, it is clear that departments are interpreting the 'fair use' clause differently. This is discussed in greater detail in Section 6.1.

4.5 Electronic course materials

Some departments were beginning to provide access to materials in electronic format themselves. Particularly interesting examples were examined in the case studies, but this was also explored in the interviews. There was a tremendous variety between the different departments, but in general, departments of the Medical School and the Sciences seemed to have made the most progress in this area. One department in the Medical School was using a departmental intranet to distribute course materials. Others were increasingly using their departmental web pages to make information available and lecturers in some departments were providing lecture notes in electronic form which could be downloaded from their personal web pages. As one academic in an arts department said:

> There are half a dozen other publications that are all on our web site … there are various PDF files and the study guide is there as a PDF file. There is a careers guide, a guide to using the facilities and various others. So you will probably find this with other departments as well, that we are taking our own initiatives with electronic things. (1D)

Most recognised that this did not provide a long term solution and ideally this material would be distributed in a secure environment, rather than posted on publicly accessible web sites.

Most departments who were not currently providing course materials in electronic format were starting to consider how they might achieve this. Within several developments this was being pursued at a committee level. Most academics believed that students increasingly have the skills required to access electronic information and that computer literacy was the norm across college:

> There is the odd one who is terrified of computers but I heard the other day that this year for the first time they have every student with IT skills before they come and I think that is probably true of our students. There are the odd one or two who are a bit wary, but they all know how to use Netscape, the learn at school. (4A)

4.5.1 Attitudes towards electronic course materials

Academic staff were asked about their attitudes towards electronic course materials and to consider the advantages and disadvantages they felt they might offer.

5.1.1 Advantages

A number of advantages were identified during the interviews. In particular, academic staff liked the fact that information on websites is accessible from any PC, meaning that students can get access on and off campus, 24 hours a day. As this member of staff said, speaking in particular of electronic access for medical students:

> It's cheap and accessible and it means that [students] don't have to carry everything round with them. They can just look it up. With such a big subject, you can't carry all your textbooks with you all the time. (2C)

They believed that electronic course materials are more accessible to non-traditional students, who may be unable to get to the Library during opening hours. They also believed that it would make it easier to support distance learning education. Staff thought it was beneficial that students can work on electronic course materials at their own pace, and so thoughts they were particularly good for remedial work, or for revision purposes as one said:

> One of the reasons we are interested in it is it will provide us with remedial material for teaching and learning, material for remedial teaching, so if a student has a problem they can work on it in their own time and it saves time all round. (1A)

Several academics also felt that in developing electronic course materials they demonstrated to prospective students that the department was up to date with current initiatives. They also felt that increasingly students would come to expect this type of service and that universities would increasingly move towards this type of delivery.

5.1.2 Disadvantages

In particular staff were concerned about the computer facilities that would be required to support an electronic service, in terms of the available bandwidth and processing

speed of managed PCs. Accessing large documents particularly when using a modem might be slow and time consuming. Staff also recognised there might be an increased demand for networked PCs and printers within the College and for machines that could be accessed 24 hours a day. Staff felt that printing facilities would need to be improved as many students would want to print material rather than reading on the screen. Computers facilities would also ideally accommodate departments with specialist needs, such as using non-standard alphabets or needing to input chemical or mathematical formula. Related to this issue staff were concerned that students were equipped with the required computer literacy skills to access electronic materials and that support and training ought to be provided.

There was some concern amongst academics about the time consuming nature of producing electronic course materials.

> The only other disadvantage is you need someone to put the information on the system and maintain it. It is not really a disadvantage but it is necessary to make it work. (2C)

Some departments were also concerned that it might require them to restructure the way in which their course was taught and to undertake further work, for example to link readings to specific weeks in the course. Unsurprisingly, there was an element of resistance observed during the interviews towards introducing changes in current teaching practices, especially if the change involved introducing new technology. Some staff felt that colleagues with established teaching methods, particularly older members of staff, might display an element of technophobia which would be difficult to overcome. Many department also felt that personal contact was highly important and that within small departments electronic initiatives were less important.

Opinion varied about whether creating electronic course materials was classed as 'spoon-feeding' students. One academic said:

> I think that is a slight problem with packaging everything in terms of spoon-fed lumps so they say right this is it. There is tremendous satisfaction that they have this lump, but they don't read any wider. (5A)

Other staff were less concerned:

> Q I know some lecturers are a little concerned that students might not go to lectures if they could get all this material.

A But does it matter, if they learn? (2B)

4.6 Copyright issues

Copyright was an issue that affected departments in two main ways. Many departments were anxious to abide by the 'fair use' guidelines for printed works, while making reading materials more accessible to their students. There was also some concern about the copyright of lecturer's own teaching materials and clearly some misapprehensions over whether this was owned by an individual or by UCL.

4.6.1 The 'Fair Use' Clause

As part of the Library Services, the Subject Support Unit must adhere rigidly to the terms of the CLA Higher Education license. This means that the need for copyright permission would be established before using any published work in a study pack or placing it into the teaching collection. Meanwhile, departments often take a more flexible interpretation of the 'fair use' guidelines and frequently undertake copying that the SSU would not. As one department said:

> Often you would like to take diagrams and text out of books into your notes directly. I am sure people do that but they shouldn't, but to be able to paste that in electronic format where someone could find you have done it, obviously one shouldn't do it. (4B)

One department made photocopies of articles available in their library for students, taking a liberal approach to the 'Fair Use' clause:

> Fair use says I can make one copy and put them [in the departmental library], so we tell the students you can check them out and if you take it away for 15 minutes and it comes back we don't ask where it has been for that 15 minutes. And of course what happens is the student has taken it off and photocopied it, but as I say we are not in violation of the copyright law then. (1C)

Other lecturers gave out copies of materials, but asked for them back at the end of a session. Two lecturers were not prepared to comment on the record about photocopying that might take place in their department. Most departments did not deal with copyright clearance in-house, seeing this as an area where the Library would have more expertise, although one lecturer had approached publishers personally for permission to distribute a particular journal article.

Some departments claimed they did not receive enough guidance in this area, while others believed that a central service could bring a 'policing' role. Those departments with experience of using the study pack service or the teaching collection felt that copyright permission fees could sometimes be unreasonably high. Rather than paying these fees, department might find alternative ways of providing students with the materials. For example, one department maintained a collection of photocopied journal articles in their departmental library which were available for reference purposes. Another department produced copies of particular articles for seminar purposes, although these were retained by the lecturer.

4.6.2 Copyright of teaching materials

Personal copyright was an issue that some academic staff were concerned about, because of the length of time it took them to produce teaching materials. This meant some staff had reservations about making course materials available electronically, believing it would increase the chances of the material being copied by people outside UCL. Some lecturers were concerned about academics at other universities being able to 'pirate' their teaching material, while others wanted to ensure that only their students could access the material.

Many academics were unaware that UCL owned the copyright of any teaching materials they produced in the course of their employment. Staff were anxious to safeguard their own copyright so that they might exploit their teaching materials for publication purposes.

4.7 Considerations for a future service

This section focuses on the important features of any future service or system that might provide access to course materials electronically. Academics had a wide variety of different needs and certain functions were particularly important for specific subject disciplines. It also highlights areas for consideration when developing any future service, so that it might meet those needs.

4.7.1 Timing

Many departments were starting to create electronic course materials and considering ways of distributing this information to students. It was therefore recognised that there was a relatively short window of opportunity in which a central service could be

launched in order to ensure a reasonable level of participation. As one department said:

> I do know there are strategic plans in the department, it is looking at the development of some form of distance learning material. Simply because I think the plan is to sell ourselves as a high quality department … It is an opportunity that the department is very interested in. (4A)

It is estimated that the service would need to be launched within the next year to 18 months to maximise it success. Several departments cited the example of the College template for departmental websites. Many departments were not currently using this template because it had taken too long to be made available and they had developed their own web site independently in the intervening period.

4.7.2 Security

Academic staff were clearly concerned about the security of any planned electronic service providing access to course materials. The Copyright Licensing Agency digital copyright license that UCL has recently signed means that access to any journal articles or book chapters must be restricted to registered students. However, some lecturers were also anxious to guard against plagiarism and ensure their notes and handouts could not be copied by non-UCL staff or students. Placing the material on an Intranet was also recognised as an effective way of controlling access to the materials. One medical school lecturer who used a departmental intranet to distribute materials was not concerned about plagiarism, but said:

> We were a bit anxious about other medical schools and the general public having access to it, because it is very much a home grown ad-hoc thing. If a tutor has done some work they can make it available and we try to have quality standards, but it is not terribly rigorous criteria. We try to check everything that goes on but it would be awkward if there were mistakes in the material and somebody else could pick it up. (2C)

The system would ideally require a form of user authentication. Many staff suggested using their Information Systems login and password to avoid the need for additional logins and passwords.

4.7.3 Accessibility

Many lecturers stressed that in order to truly enhance current levels of access the system would have to be accessible both on and off campus. A key problem cited by

users of the Institute of Neurology site is the lack of off campus access. The Neurology site is restricted by IP address, rather than password controlled, which makes it easier to set up in the short term, but precludes off campus access. Any future service would ideally be accessible from all UCL sites would also be accessible remotely to registered users. Electronic provision of would also mean that materials are available 24 hours a day. However, it might mean that students would increasingly demand 24 hour access to cluster rooms.

4.7.4 Cost and funding

The cost of any future service was a key consideration amongst all departments, with some academic staff assuming that a central service would save departments money. Others were concerned about how such a service would be funded, and whether the money would be top-sliced from the College grant, or if departmental book funds would be used. One academic said:

> Well I just think it is silly to say all these things if the money isn't there and so now bruised and bitter so to speak, I say who is going to pay for all this? After that we will see, this is why I am trying to cost everything because it really is the way we live now. (1C)

There was a feeling that departments might not welcome a service that detracted from what were seen as core activities of Library Services.

Academics who had used the study pack service were aware that copyright permission charges could be substantial. The printed service passed these charges onto departments, who in turn passed these on to students by charging for the packs. There were some concerns among this group about whether students would be charged for an electronic service and how this might be managed. Smaller departments were particularly concerned about the cost of the service as they often have modest budgets.

4.7.5 Functionality

A variety of functions that an electronic course materials system might need were discussed during the interviews. This functionality has implications for the specification and equipment that such a service would need to support it. This is discussed in the following section

All interviewees recognised the need for the system to have a print function so that hardcopies of materials could be obtained and students did not have to read lengthy journal articles on screen. While academic staff recognised that most students were computer literate, the system must be designed to be user friendly and intuitive, so that students could use it with minimal training.

The ability to display a variety of different types of fonts, special characters and to include chemical or mathematical formula was stressed by several departments. Not all departments create course materials using Microsoft Office. For example, the Department of Hebrew and Jewish studies currently have problems acquiring computer support for word-processing in Hebrew, because of the specialist nature of the software needed. Meanwhile, Mathematics use a specialist software package called LaTEX to enter mathematical formula. In order for the system to be relevant to Maths it would need to be able to cope with this file format. Other departments such as Chemistry, Biochemistry and the Medical School also require specialist software to display chemical structures.

Many departments currently use materials in video or audio form and would be interested in making this material available electronically. Video and audio are particularly useful for language courses and this lecturer had a number of ideas of how he might use them:

> My ideal is to take images and video and put them on web pages, so students can click on and see what a close up looks like, what a long shot looks like and have explanations about it. On the web you could instruct students, set work. At the moment I give material out to students on a piece of paper. (1E)

Video was also an important type of course material for other departments, including parts of the medical school and departments who are planning on teaching part of a new Film Studies Masters Course.

Many departments, even those who have begun to create and manage electronic course materials themselves, would welcome the provision of a service to offer advice in this area. Using communications and information technology to enhance learning and teaching is a relatively new area in which many academics feel unconfident. They

also rarely have the time or resources to develop this type of material as one lecturer explained:

> We don't have the resources to do this … We have employed teaching assistants to do our web pages, graduate students, but we have to pay them. But if somehow there was some service with an expert in this that would be great. (1D)

Academics were also often uncertain of the facilities available with the EISD division and which department should be contacted for help in specific areas. As part of the service academics felt that an advice centre should be established to deal with queries and refer lecturers to units with expertise in specific areas.

4.7.6 Support and equipment

This future service will have implications for all departments in EISD, but particularly Information Systems and Library Services. The increasing importance of electronic course material presupposes that a certain level of computer support and equipment will be available across the College. As well as the increased demand for the number of public access machines, the network will need to be able to cope with an increase in demand. There was some concern about the number of PCs currently available, as one lecturer said:

> It might cause problems accessing it. If there was some space I would like a resource centre, because there aren't enough computers in the department. (2A)

Transfer times will be relatively unproblematic for text files, however if image files, or possibly audio or video files are involved[25], transfer times become much slower. Another lecturer was concerned about the computer facilities available, saying:

> Well the problem we have of course at the moment is the age of the computer systems we have, with the slow system and the limited time students can have access to them, since they have to use cluster rooms and there are only so many hours they can book a week. (1A)

Many electronic reserves projects are using PDF Image files which are typically 1-2MB in size. If large numbers of students are wanting access to these files

[25] The current policy of IS to disable sound cards in all managed machines means that it is not possible to play sound files. There are also not facilities to view video files within College at the present time. The library might consider making facilities available where sound and video files can be accessed, Alternatively IS could reviewed their current policy to see if these services could be offered in some cluster rooms.

simultaneously, the network needs to be able to cope with this demand and many staff felt that upgrading might be necessary.

Where possible course materials could be supplied in electronic format, avoiding the need for scanning. However, in some instances it might be necessary to scan documents to include on the system, in particular if lecturer's notes are going to be made available. Additionally if foreign language material, or documents containing chemical or mathematical formula are included, then a high quality scanner will be required to ensure the copy is legible. This type of material will also ideally be displayed using PDF Image files, which will need to be created. The software to convert files to PDF will therefore be required and the service will need a designated server on which to store the files.

Many lecturers believe that the current computing facilities at UCL are such that it is not feasible to replace any printed services with electronic access, as one member of staff said:

> I think at this stage it would be quite unrealistic to have them just available electronically … I think the facilities aren't good enough to say we don't have to bother with paper anymore. Because you know printing off 100 pages is not a joke, it is not a joke for us, so it is very appealing to think you can have everything electronically, but translating that into a usable form is not so easy. (5A)

Certainly in a pilot stage students would also need to be able to access readings in printed format, while technical hitches are ironed out. Staff have concerns that there is an insufficient number of public access machines to support this system, with cluster rooms already being heavily used. This service will place an additional burden on public access machines. Furthermore, some lecturers believed that students might require training and further support they are to access their readings in this way. They suggested that this could be incorporated into Library induction programmes.

4.7.7 Level of sophistication required

During the interviews staff were shown two course materials systems that have been developed at UCL by two departments. Some members of staff were unsure about what such a system might look like, so providing them with two models helped to

stimulate the discussion. The first site is more sophisticated and integrated far more into the course structure. The site was developed by a particularly keen member of academic staff who obtained secondment money from HERDU. Students log into the site which uses WebCT. Numerous functions such as a bulletin board for communication and a wide range of resources are available.

In contrast the second site is far simpler. The pages are designed in HTML and are structured around a timetable. Links to notes, references and sometimes PowerPoint presentations are available, although it is down to individual lecturers discretion about what they include. The site is maintained by a Librarian and the material is collected by the Institute's Students' Office. This ensures there is regular maintenance and a standard format. More details about these two models are available in the Case Study Report.

Most academic staff preferred the second more simple web site. Although it did not have the additional features of the first site, such as communication and authentication, they found it far more appealing. They could immediately see the relevance this model might have for their own course. There was also a feeling that staff who were less confident with IT regarded this site as something that was achievable because of its simple structure. Lecturers notes and handouts are currently available from this site, which students find highly valuable if they miss sessions, or want to follow up references in the notes. If this model could also include full text readings linked from the references many lecturers felt this would be highly useful. Access to the site by IP address was also recognised as not being ideal, as many staff thought that students would require off campus access. The week by week lecture outline was not a useful arrangement for all the departments, however it did provide a useful model.

Academic staff often felt that electronic course materials would be time consuming to construct and maintain. For some, seeing the huge amount of information on the first website confirmed their belief, as one said:

> I like the [first] one, so there might be some interest in pursuing it. But obviously what it will come down to is time, because we have got to publish our books and the rest of it.

> There is that problem isn't there? You can't sit there all day doing web pages. (1E)

Many lecturers were also reluctant to use a piece of software that they believed would require them to restructure their course. The value of functions such as communication was recognised, although it was seen as an added bonus rather than an essential feature given that all staff and students have access to e-mail. The second site by contrast demonstrated that creating electronic course materials was not necessarily time consuming. It also did not require staff to alter their teaching methods significantly. Given these reactions, the project is considering an incremental development process for the service. A system such as the second site provides a framework from which various electronic course materials can be hung. As and when departments require, these resources can become increasingly sophisticated, both technically and pedagogically. This will allow staff to become accustomed to using electronic resources and will develop their confidence of working with new technology incrementally. Using this approach the interviews suggest that the service will ensure a greater level of take-up and meet the needs of departments more successfully.

4.8 Conclusion

The needs analysis interviews provided valuable data for the Access Project and informed the way in which the electronic course materials develop at UCL. The findings highlight the way in which current teaching support services are used and considers the important features and considerations when launching a pilot service. This data was used along with the case studies, two experimental studies and the external review to identify a model of a future service.

4.8.1 Recommendations for the service providers:

- Departments have different definitions of what constitutes core course materials and any future service would need to be customisable to incorporate a range of different resources in different formats.
- Departments have a positive attitude towards centrally provided teaching support services. EISD is an appropriate provider of such services and has relevant expertise that academic departments might not.

- Cost is a key factor determining take-up levels of any service. The service needs to consider the available funding departments would have for this type of service.
- The system needs to consider the computer facilities available at UCL and will need to be able to run effectively without assuming there will be significant changes.
- Print functions will be an important aspect of the service and must be available.
- Departments often require guidance and advice when setting up and maintaining electronic resources. A 'helpdesk' function would be an important feature of this service.
- Course materials should only be provided in a secure environment for staff and students at UCL. The system will also need restrict access to students on a particular course.
- Departments prefer a simple framework from which they can hang a variety of resources. Increasingly sophisticated resources could be developed over time, but might not be required by all departments, particularly in the first instance.

4.8.2 Wider Recommendations for college:

- An effective electronic service requires adequate computer support and there is considerable concern amongst academic staff about the computer facilities currently available at UCL. In light of the operation of a pilot service, IS policies in the following areas may need to be revised: support for audio and video, speed of network connections, opening hours of cluster rooms, print facilities.
- Copyright fees for can be significant and departments often pass these costs on to students. Managing this problem in a digital environment may requiring a method of charging students to download material.
- Departments will find it difficult to meet the costs associated with this service and central college funding for this service should be considered.
- The service has staffing implications and will require additional members of staff to run and maintain the service, either based within Library Services or another part of EISD.

Chapter Five: Case Studies of electronic course materials systems at UCL

5.1 Introduction

The needs analysis revealed that a number of departments had already undertaken initiatives to make course materials available in electronic format. Therefore, case studies of four of these innovative departments were undertaken 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 was used to develop a series of models of electronic course materials systems. It also contributed towards the design of the pilot service that the Project subsequently launched.

5.2 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.[26]

By employing what Yin describes as 'multiple-case designs[27]', 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 theory[28]". Meanwhile, Stake describes the generalisability of case studies as "naturalistic," and in harmony with a reader's experience. Case

[26] 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.
[27] Robert K Yin, *Case study research and design* (London : Sage Publications , 1994) p.44.
[28] Robert E Stake, *The Art of Case Study Research* (London : Sage , 1995) p.4.

study findings can be described as *resonating* with readers and thus facilitating a greater understanding of the phenomenon in question.[29]

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.

5.3 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.

[29] 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)

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.

5.4 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.

5.5 Key Findings

5.5.1 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.

5.5.2 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.

5.5.3 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 undertaken 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.

5.5.4 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.

5.5.5 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 that undertaking paper exercises.

5.5.6 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.

5.5.7 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.

5.5.8 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.

5.5.9 Support Problems

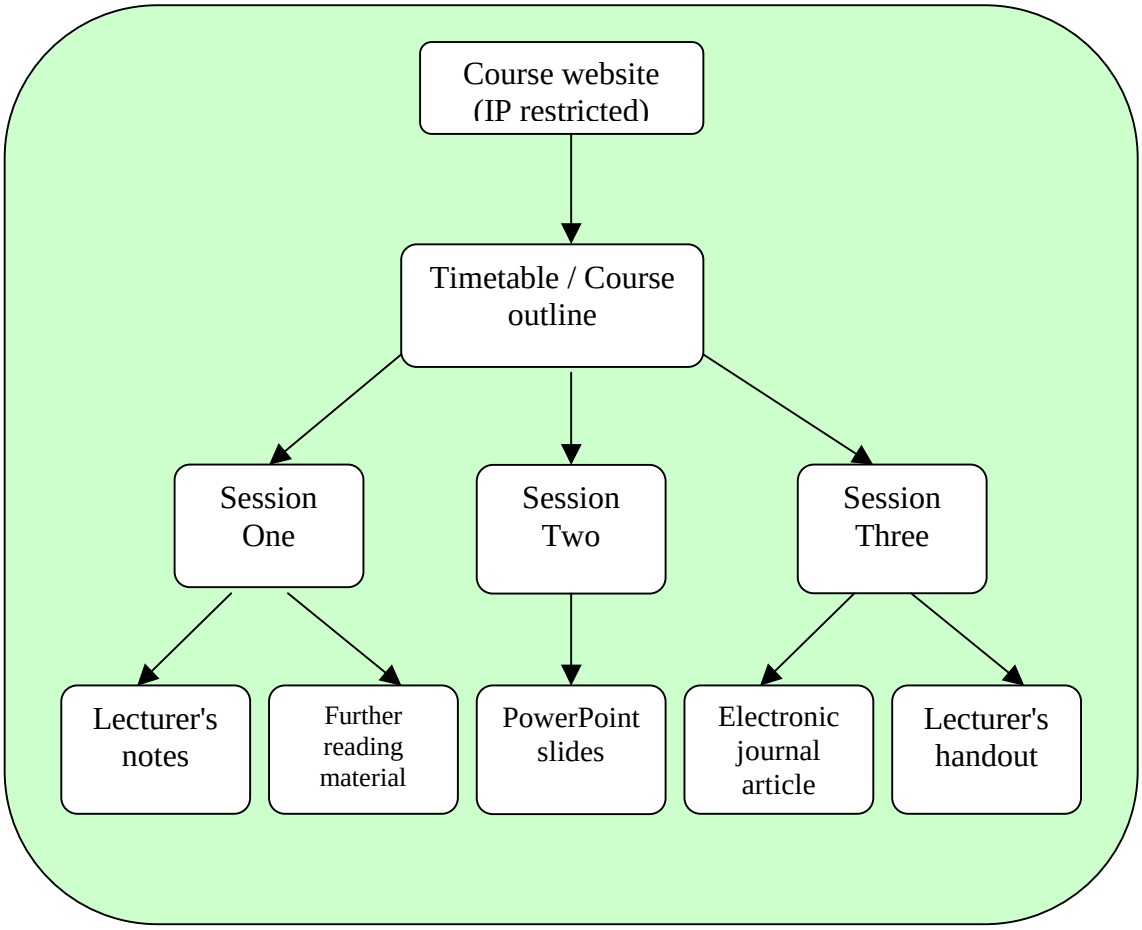
Two of the projects experienced a lack of support from other members of the department. It one instance this jeopardising the future of the work and demoralised the staff who had launched the initiative. The case studies suggest that these types of initiatives require considerable support from the within 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 previous, 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.

5.6 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.

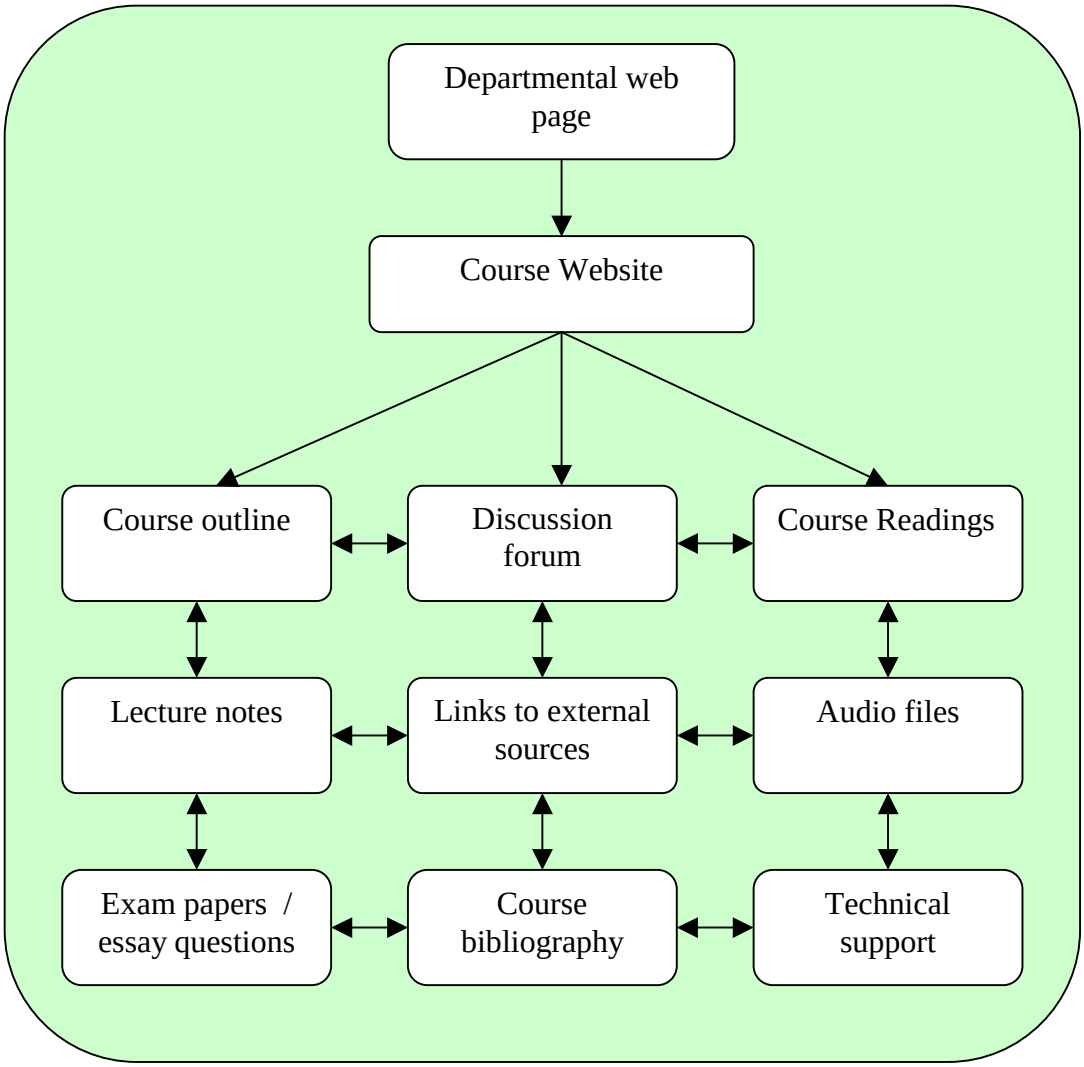
Model A: Simple Course Materials System (Case One)

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 in 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.

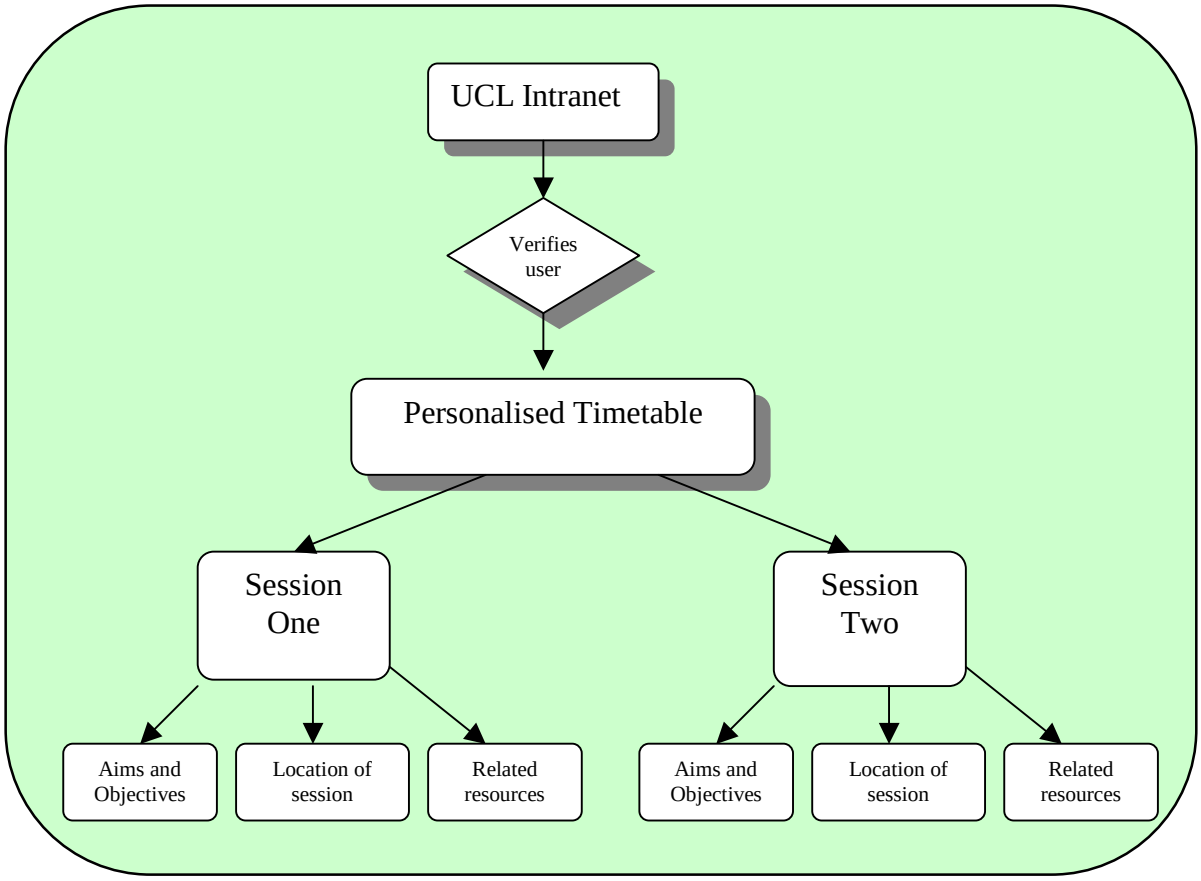


Model C: Intranet-based Course Materials System (Case Three)

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 that Model A, the model demonstrates that pedagogically, the two systems are similar.

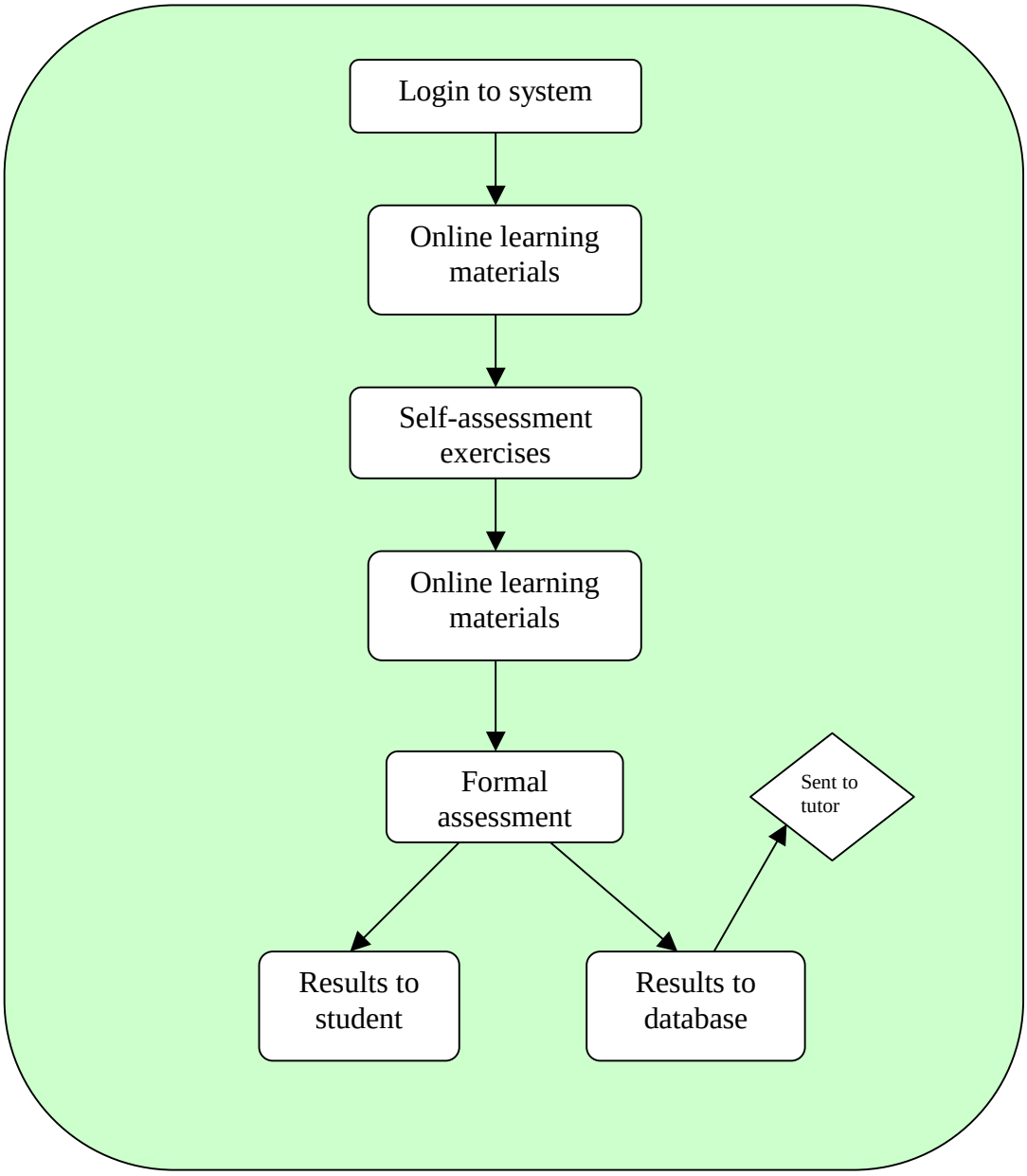
The obvious difference between the two cases is the use of an intranet to restrict access to the materials rather than restricting the site by IP address. Using an intranet means that off-campus access is possible and it also makes the system more secure as users have to enter a user name and password. 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.



5.7 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.

Chapter Six: Experimental study packs 1: Dutch multimedia study pack

6.1 Introduction and background

Prior to the launch of the Access to Core Course Materials Project, the Dutch Department approached Education and Professional Development (EPD) and asked for assistance to develop an interactive study pack for their students. Dutch were in the process of compiling a bid for funding from the Language Union based in The Hague to develop interactive learning material. In developing a pilot version of the study pack, they hoped to strengthen their chances of obtaining funding. The call for proposals closed on 1st October 2000 and Dutch wanted students to be able to test the pilot pack during the Autumn Term of 2000. These two factors led to a very tight deadline for the work which eventually had to be extended.

The Project was interested in any additional features that electronic materials could include, such as multimedia. The pack envisaged by the Dutch department fell into the more sophisticated end of the spectrum of what the Access Project was hoping to achieve and ideally a less sophisticated model would have be pursued first. However, given the overlap of interest and the enthusiasm from the Dutch department; the experiment was incorporated into the Project. The work was undertaken over the summer of 2000 given the Dutch department's deadline of 1st October and it was decided the less sophisticated model could be developed afterwards.

"The Dutch experiment", as it was referred to, was intended to be exploratory work to demonstrate full potential of providing course materials in a digital format. The second, less sophisticated experiment would digitise a selection of readings from the teaching collection and make this available to students for a trial period. This work, known as Teaching Collection Experiment involved a second department. Staff and students in the selected departments will test both experimental systems and evaluation work will be undertaken. The pilot service launched as part of the Access Project was then designed using the real-life experiences of these two experimental systems, in conjunction with the results from the needs analysis of departments across UCL. It was envisaged that the service offered to departments during 2001 was likely

to incorporate elements from both the Dutch Experiment and the Teaching Collection Experiment.

6.2 Aims and Objectives

The Dutch department required a working interactive study pack to demonstrate the type of system they hoped to develop if further funding could be obtained. It was decided to base the pack around a 17th century poem, avoiding the need for copyright permission for the material. From the Project's perspective the experiment sought to explore the potentials benefits and problems associated with developing multimedia material. Therefore the Dutch Experiment had the following aims:

- To enable Project staff to learn more about the issues involved in developing interactive, multi-media material;
- To explore the resources currently available within the different departments of EISD, to establish where work might be most successfully undertaken;
- To act as a model for further work that the Dutch department might undertake if their bid for funding is successful;
- To act as a model for the pilot system that the Project would establish.

The aims of the Experiment would be achieved through the following objectives:

- To develop a self-contained study pack that would enable students to improve their understanding of the poem without requiring any further readings, or any guidance from the tutor;
- To incorporate material in different formats, such as text, image and sound;
- To make the pack available to students and staff within the Dutch department and undertake an evaluation of its success.

6.3 Devising the pack

The Access Project sought to explore the possibilities of co-operation between the four departments that make up Education and Information Support Division (EISD). Therefore, both Information Systems and Media Resources were invited to participate in the Dutch experiment and asked for advice. Before the pack could be devised several key decisions had to be made, most importantly about the format of the material. Consultations with key individuals were undertaken and a meeting arranged with an academic at The School of Library, Archive and Information Studies (SLAIS)

at UCL, who had developed a similar system. Given the timescale of this work, which coincided with the start of term, Information Systems were unable to provide any assistance at this stage. The short time scale in which to complete the work also meant that only a limited amount of assistance was available from other departments and most of the work was undertaken by the Project Officer.

A web-based system that could be viewed through browser software appeared to be the most suitable format in which to produce the pack. This would be the most straightforward to develop, particularly as the Project Officer had some experience of HTML. Using a web-based system it would also be relatively easy to mount the pages on the university web site and allow UCL staff and students to view the pages. Given the pilot nature of this service it would also be useful to allow individuals outside the College to view the material, to provide feedback. It was however, recognised that a future service might have to be password controlled. HTML would allow material to be updated as required. CD-ROM was the alternative method suggested, although this would have been more expensive to develop and less easy to update. Given the time and the level of resources available, it was decided this approach would not be pursued.

Media Resources provided invaluable assistance in the design of the site. They also have facilities to produce digital images and sound recordings, which the Dutch department were particularly keen to include in the pack. In the event, it was not possible to produce the sound file in time for the launch of the pilot pack, although space was made available, so it could be subsequently added. The Project Officer liased with the Dutch department over the organisation and navigation of the site. The files were then passed to a web-page designer in Media Resources who improved the appearance of the site. Media Resources agreed to undertake this work as a good will gesture, although their funding structure is such that any further work would have to be paid for.

The following stages were undertaken to devise the study pack:

1. Proposal from Dutch department submitted to project staff and meeting held to discuss feasibility.

2. Text files created by Dutch department and map of the pack devised to show how files relate to each other.
3. Consultation with key individuals over format and design of site (Media Resources and SLAIS)
4. Media Resources digitise image (and sound file if time)
5. Basic web-page design undertaken by JS
6. Consultation with library IT staff to create an interactive image and improve site
7. Consultation with EPD web-page designer to learn new web-page design skills to improve site. Evaluation form included to obtain feedback when site is launched
8. Web searching to locate free images and clip art to make site more attractive
9. Consultation with Dutch and reworking of pack following suggestions
10. Media Resources improve overall appearance of pack
11. Consultation with Information Systems about CGI for evaluation form
12. Site launched from Dutch Department web site
13. Evaluation work undertaken

6.4 The Pack: an overview

The study pack is based around a 17th century poem entitled "Sonnet", written by the famous Dutch poet and author, PC Hooft. The idea is that students begin by reading the poem in its original form. They can then link to other versions of the poem, for example the poem in modern Dutch, in prose paraphrase and various English translations. A working version of the poem is also available, where each word of the poem is linked to a dictionary. There are also links to the author's biography and a bibliography of further readings. The poem's structure is examined and students can view an interactive visual representation of time that is similar to the poem. The pack aims to improve the students' understanding of the poem, by allowing them to read different translations of the poem and other related material. By including multimedia material, it seeks to make the learning process more enjoyable and effective.

6.5 Costs: staff time

Each of the stages outlined above has been costed in terms of staff time used. The following chart shows the cost of each stage and an estimated overall cost in terms of staff time. Resources are not included in this analysis:

Stage of Research	Details	Staff involved	Estimated staff time	Total time
1	Idea from Dutch dept and preliminary meeting with project staff	TH, MR, MO, JS	1.5 hours (x4)	6 hours
2	Text files and map of site created by Dutch	TH	10 hours	16 hours
3	Basic web-page construction from text files and map	JS	10 hours	26 hours
4	Consultation over site and digitisation of image	Media Resources	1 hour	27 hours
5	Creation of interactive image	JS / RD	3 hours (x2)	33 hours
6	More complex web-page design undertaken	JS	10 hours	43 hours
7	Clip art and other features added to pack	JS	2 hours	45 hours
8	Meeting with Dutch for feedback on current version of site	JS / TH	1 hour (x2)	47 hours
9	Revisions to pack undertaken	Media Resources	24 hours	71 hours
10	Copyright clearance for images / any text	JS	1 day*	
11	Proof reading of pack	JS	1 hour	72 hours
12	Pack launched on Dutch web site	JS / Dutch Administr-ator	1 hour	73 hours
13	Evaluation of the Dutch study pack	JS / TH	2 hours	75
Total staff time				**75 hours**

* It took a day to receive a response from the two web sites owners who granted permission for the images to be used free of charge. However, it would be very difficult to generalise about the time taken to obtain copyright permissions for any future service. It would also be unwise to assume that copyright owners would always grant permission free of charge.

Total cost in staff time to develop the Dutch study pack is estimated at 75 hours. This figure does not include the time taken for copyright clearance. However, it gives an indication of the amount of work involved in developing interactive materials.

6.6 Problems developing the pack

The pack was scheduled to be completed on 1st October 2000 given the funding application deadline. It was finally completed in mid November due to a number of unforeseen difficulties. This section outlines the problems that were encountered and considerations for developing any similar study packs.

The pack was passed to Media Resources in mid-September where a web page designer was assigned to work on it. He estimated that the work required would take approximately 4 hours of his time. In the event, 24 hours of his time were taken and the pack was delayed by over a month. This section attempts to catalogue the problems that were experienced and assess the likelihood of these problems being inherent in the production of any future electronic resources.

6.6.1 The Audio File

Placing a sound file of a reading of the poem in the pack was likely to be problematic, because sound cards are disabled in all College Managed PCs and students would have to use the file outside College. There are also no facilities available in college to make sound recordings and so this part of the work was undertaken by a Dutch lecturer using his home PC and software downloaded from the internet. Producing the file was relatively unproblematic, however the file was extremely large in size. It therefore proved problematic transferring the file onto the web site. In the event the study pack was launched without the sound file being available and it was decided this would be resolved at a later date. Attempts were being made to compress the file. Once the file was linked to the study pack it also needed to have full instructions for using explaining they could not use in on a College machine and that it would take a considerable amount of time to download.

6.6.2 Time available to Media Resources staff to work on project

The developmental work for the Dutch study pack was not a high priority for Media Resources, given that they were working on the pack as a goodwill gesture. Consequently, this meant that when other deadlines approached, the pack was side-lined and the other work took precedence. Throughout the period that Media Resources were working on the pack the designer frequently could not complete the work he had agreed before the next meeting due to commitments for other projects. This was problematic for the Project Officer and the Dutch department, as it often

meant they would attend a meeting to find the work they expected had not been completed. The problem was partly caused by the funding structure in Media Resources, which meant the designer was partly paid on a commission basis. It was also caused by the fact the work was being undertaken as a goodwill gesture and the Project Officer could not really use any leverage to speed up the work. If a formal agreement with Media Resources to undertake developmental work for study packs was costed into a future service these delays could be avoided. Therefore, delays of this nature were not an indication of an inherent problem in developing electronic resources.

6.6.3 Liasing with academic to edit material

Liasing with the lecturer from Dutch was an important part of the developmental work for the pack. It was also very time-consuming and a constant revision process. Meetings were scheduled where the pack was viewed by the academic and suggestions for changes made. A further meeting was then organised to view the changes. The subsequent meeting often resulted in further amendments. Throughout these meetings the Project Officer was present so that problems could be documented and she could adopt an arbitration role if required.

During the course of the meetings to discuss the content of the site, several points of interest were noted by the Project Officer. For instance, although the web page designer had the skills to produce the site from a technical point of view, close consultation with the Academic was required, primarily because of the need for subject knowledge. This was further complicated given that the pack was in both English and Dutch. The poem that was the focus of the pack had a very specific layout which needed to be maintained and special characters were needed to add accents and other punctuation to the text. Many of these problems were specific to designing material for a language course, and they demonstrated the importance of constant liaison between the Academic and the pack designer.

The editing process also revealed another problem with the design of complex learning materials. The designer included several sophisticated features into the site, such as a 'roll-over banner', to navigate through the site and various pieces of text incorporated images. This meant that when, at a relatively late stage, the academic

suggested what he considered to be minor changes to the navigation banner, these could not be completed. Certain features took a considerable amount of time to develop and changes to the text in a roll-over banner was not something that could be changed simply. At this stage the Project Officer acted as an arbiter between the academic and the designer, and it was agreed that certain amendments could not be made at such a late stage, without requiring an inordinate amount of effort. This indicated that certain decisions about navigational features and page headings need to be made fairly early on in the design stage. It stresses the importance of having a well thought out conceptual map for a study pack for it may not be possible to make changes of this nature at a later date.

6.6.4 Publishing the pages on the Dutch department site

Publishing the study pack on the Dutch department web site proved to be more difficult than anticipated. It was decided the pages would be linked to the departmental pages. However, this revealed that the UCL policy for maintaining web sites is not conducive to a number of people working on the site. Within a department only one person is given the web account and password. In the case of Dutch, this was the administrator, who left during the period of the project. This meant that a new password and account had to be acquired for the new administrator. It also meant that the web page designer could not put material on the web site himself and the work had to be done by the departmental administrator. Web-Support, a section of Information Systems, were contacted for assistance in this area and publishing the pages on a departmental site proved to be a learning process for both the web page designer and the Project Officer. A new link on the departmental pages was created to access the study pack. This process took slightly longer than anticipated because the departmental pages had been created by the former administrator and the new administrator was not familiar with the process.

6.6.5 Display problems

Once the pack was linked to the Dutch department web site a number of problems were noted when it was viewed under different platforms. The College is currently operating on Windows 3.1, although it is also possible to access a Windows NT environment if an individual has a special account. Although Media Resources had taken every care to ensure the site was compatible with a variety of different browsers within different platforms, the layout of the site was altered under Windows NT. To

rectify this problem it was necessary to decrease the font size twice and to refresh the pages. Certain small headings were still displaying incorrectly though. Students would be recommended to view the site using College Managed PCs in a Windows 3.1 environment to avoid these problems. It was decided some advice should be included in the pack to optimise its appearance.

6.7 Evaluation of the study pack

Evaluation formed a key stage in this experiment. The attitudes of staff who had developed the pack and students who had used it were gathered to assess the effectiveness of the pack in meeting it's objectives. Given the small number of students in the Dutch department, a focus group interview was arranged to explore student's attitudes towards the pack and its success or otherwise as a learning package. To collect information from a wider sample of users an online evaluation form was placed at the end of the study pack. Responses would be e-mailed to the Project Officer for the period when the pack was live. Unfortunately the form proved to be an ineffective evaluation method and yielded a low number of responses. Therefore, all the information from students was gathered during the focus group. An evaluation meeting was also held for all staff who had been involved in the developmental process for the pack.

6.7.1 The Student's response

The focus group was held with a small group of fourth year students in the Dutch Department. Students were given a brief demonstration of the study pack to refresh their memories and then they were asked to discuss the various features of the study pack. The interview was guided by the Project Officer who compiled a series of questions as prompts.

General Impressions

The group conclusively stated that they liked the study pack. They found the lay-out lucid and the structure of the pack well guided. Features such as the working version of the poem and the sound file were commented on as being particularly impressive. The students were however, curious about why a poem by PC Hooft had been chosen for the pack. It was pointed out this poem is part of a Renaissance Literature Course which is currently not available. Students felt that the pack would be particularly useful when viewed in context and offered in conjunction with the relevant course and

perhaps other electronic study packs. Given that they had not taken the relevant course, they did not feel it was possible to compare the pack with a similar paper-based exercise.

Two of the students had used the pack in college cluster rooms. The third student had used the pack from home and consequently had been able to listen to the audio file. The students reported at having spent 15-45 minutes using the pack, although they thought to study it thoroughly you would need to spend a greater amount of time.

Design of the pack

All the students felt that the pack was suitable for self-study. They found the design to be simple and comprehensive and the banner down the left hand side of the screen made it easy to navigate. The structure of the pack helped them to understand the poem, although one student felt that the three prose translation section and the prose paraphrase were rather repetitive.

The earlier design for the pack that guided the user through the pack by a specific route were discussed with the students. Although a more prescribed route might clarify the relationship between the different versions of the poem, the students thought it would make the pack more hierarchical and less flexible. This would also increase the time it would take to load the pack and also make it more difficult to locate particular pages. The flatter structure that the pack designers had chosen was agreed to be the most suitable.

The level of graphics and text was thought to be appropriate. The students stated that given the intellectual nature of the exercise it was important not to overload the pack with graphics. These would also make the site slower to download. One student suggested that a graphic-free option might be offered to speed up the transfer time. It was agreed that some of the fonts are a little small, but that font size could be altered depending on the settings of a browser.

Students particularly liked the way they could follow up areas of interest within the pack or just dip into areas they found less interesting. They thought this made the pack more versatile and suitable for a wider audience. The group felt there could be more links to other web sites outside the pack as these allowed students to go off at a

tangent and explore issues that interested them. For example, one student was particularly interested in learning more details about the poet's wife whom the poem was written about.

Criticisms of the pack

There were relatively few criticisms of the design of the pack, although students did comment that the font size made it difficult to read some of the text. They also felt that the pack could be made more interactive, so they were not simply consuming information. It was also suggested that the links to external websites should open in a new window to make navigation more straightforward.

Students commented that at several points in the pack they were unclear as to whether they were supposed to undertake specific exercises. For example after the three verse translation it is suggested that students might like to try to translate the poem themselves. They felt these sections should either be part of a more formal assessment process or not included at all.

Comments on particular areas of the pack

Two of the three students had not been able to hear the sound file as they were using college PCs. However one student used the pack at home and had been able to listen to the reading of the poem. He thought it was an excellent feature aside from the slight echo on the recording which was slightly distracting.

All the students agreed that the working version of the poem was well designed but also a valuable learning experience. Similarly the visual representation was felt to be attractive and helped their understanding of poem. They particularly liked the 'roll over' function in both these pages that allowed the relevant text to be displayed as the cursor was moved over the screen.

The students found that having the poem available in several different versions, for example in modern Dutch and with an English translation was particularly useful. The three verse translation was slightly confusing, as students were not sure if one definition was supposed to be better than the others, given that they were numbered from one to three.

Suggestions for the future

Students suggested several areas where they thought the pack could be developed. One suggestion would be to link full-text articles in the bibliography to the study pack so they could be read alongside the poem. The students felt this would be useful and would offer further scope for exploration if someone was particularly interested. The Project Officer was particularly heartened to hear this point, given the wider remit of the Access project.

Students were keen for the pack to include an element of assessment and possibly some tasks that they had to undertake. The inclusion of some multiple choice questions at the end of a section was suggested. However, in addition to more formal assessment, one student thought that it would be useful to have a narrative, rather like the lecturer's voice, that would guide the reader through the pack. This narrative could also be used to alert the reader to specific ideas and focus attention on particular aspects of the pack. The student thought this would make the pack more similar to a lesson where a lecturer wouldn't simply give you a presentation on Hooft, but would ask questions and draw out the right answers at the start.

Finally students thought it would be useful to link the pack to a greater range of resources on external websites, such as additional information about the poet or the genre. A link to resources in the UCL electronic library would also be useful, but they recognised that this might not be technically feasible, given the current set up of this system. Students pointed out that in creating a greater number of hypertext links, the pack would need to be updated more regularly to ensure the links still worked. Linking to the websites of other academic departments and similarly reputable sites was therefore suggested.

Conclusion

It was difficult for students compare the study pack to a paper based exercise that might be undertaken given that they had not taken the Renaissance Literature course. However, students felt there was an added novelty to having an electronic pack which grasped their interest initially. They also agreed that the pack had been well designed and included a number of interesting features. They had a number of useful suggestions as to how the pack could be improved and developed further, including

making it more interactive and have a greater element of narrative. It was agreed that the evaluation session had been useful for all the project staff.

6.7.2 Staff evaluation

Project staff also held an evaluation session where all members of the team provided feedback about their experiences of developing the study pack. Comments from the web page designer in Media Resources the Dutch lecturer and the Project Officer were particularly useful.

The Web-Page Designer

The web-page designer recognised that many of the technical problems he encountered were related to being relatively new to web-page design; his background is actually print design. Nevertheless, both personally and for Media Resources he had found it useful to be involved in the project because it broadened their range of experiences. For example, it was the first time the Department had created audio files and made them available from a site to download. The designer felt that scaling up the project would require a member/s of staff with a broad range of technical skills, including web page design, knowledge about databases on the web, knowledge about different file formats and creating audio files. It was also clear that the person would need to have a set amount of time to work on such projects. It emerged from the discussions that a team in Media Resources had been working on the website, supporting the designer.

Media Resources were keen to build on this project and the new skills they acquired. The designer estimated that this type of work would take approximately 25 hours of his time. During this time a template of a site with banners and some functionality could be created. Extra time would be needed to include additional features, such as the audio file in the Dutch study pack. If websites for different departments were created these would need to be developed individually. It would be necessary to ensure the material was tested on different browsers and platforms to avoid the display problems that arose with the Dutch site. However, there might be problems if this service was scaled up due to a shortage of people with web page design skills. Additionally there is a conflict in Media Resources in terms of staff time between the bureau work (producing slides, posters etc) and project work such as this. Bureau work often means working to tight deadlines and this means that project work often

has to take a back seat. To scale up the service there would need to be more staff available and they would need protected time for web development. It was estimated that if another member of staff was also employed it would be possible to cope with 15-20 of this type of projects every year. This would assume that demand was spread out throughout the year, which might require ensuring departments gave a certain length of notice to manage work-flows at Media Resources.

The Academic

The academic was on whole very happy with the development of the study pack. He thought the site looked professional, although he was concerned it was too text-based He had found it difficult to visualise what the pack would look like during the development process and whether it was pitched at the right level. The evaluation work with students helped to settle some of these concerns. However, the lecturer would have preferred the pack to be tested with a small number of people before it was made available on the Dutch department web site.

Another problem that the academic cited was caused by the work being undertaken on a goodwill basis. He was unsure what was reasonable to ask of both the web page designer and the Project Officer and was aware of the pressures they were under from other areas of their work. It was suggested that a future service might need some form of 'Service level agreement' so that each side had an indication of what was expected of them.

The development process meant the lecturer now has a better idea of what is feasible and the technical problems associated with developing this type of material. He thought ideally the study packs would be developed by a team of people based jointly in academic departments and centrally supported services. There would need to be some overall co-ordination to ensure materials looked similar and were linked to each other. The lecturer felt this should be done by someone within a department, given the intellectual content of the packs. However, he also felt that it would be appropriate for central services to have some kind of management role in the process.

The Project Officer

The experiment revealed that the project officer had an important role as a facilitator particularly at the start of the work and also at the evaluation stage. It was nevertheless agreed that too many meetings had taken place during the developmental

stage of the work. Instead of this it might have been better to have a large meeting involving all interested parties at the outset and then to review the development after a set period of time. Additionally the project officer felt that during the middle stage of the work she could contribute very little to editorial decisions. However, it was agreed that this was a learning process and could not have been anticipated beforehand. Other members of the team found it was particularly useful to have the project officer facilitating and co-ordinating their work. The web page designer found it useful because he had someone to bounce ideas off without going directly to the academic. The Project Officer's initial work on the site also meant that he had a rough draft of the pack to work with.

In conclusion, all the staff felt they had benefited from developing the study pack. It enabled them to document the stages of development, the expertise and resources required and the likely problems associated with this type of work. Additionally, the end result was a working interactive study pack which could be tested with students and used for publicity purposes for the department and the Access Project.

6.8 Conclusions and challenges

This experiment was designed to explore the potential benefits and problems that are involved in developing an interactive study pack. The evaluation was an extremely valuable experience for all involved. Student feedback suggested that despite the financial and time constraints of the project, the end result produced a valuable learning resource. Staff evaluation also revealed that the project had been a useful experience and gave them an insight into the expertise and other necessary requirements for developing these types of resources. This following section considers the resource implications of launching such a service, the problems it might bring and some possible models that the Project team might adopt.

6.8.1 Resource implications and other problems

The Dutch experiment suggested that the resource implications of launching such a service might be considerable. This was because a "concept map" of the topic, provided by the participating academic, largely determined the structure of the initial pack. Consequently, the design of the pack was topic-specific, suggesting that other packs were also likely to be subject specific. It was hoped that this experiment might

provide a model, which could be applied to other departments to develop interactive material. While it might possibly be useful for other Modern Language subject, this experiment concluded that the Dutch model was less likely to be useful for other subjects such as the sciences. The need for constant liaison between the Project Officer and the academic also meant the pack was resource intensive. The experiment suggested that other study packs would have to be devised with close consultation between academic staff and the pack designer.

One area that was known to be particularly problematic was copyright clearance. The experiment sought to avoid many of the problems by using 17th century material which was out of copyright. However, it was decided to illustrate the pack with various images, several of which were within copyright as they were taken from the web sites of other organisations / individuals. E-mails were sent to the website administrators to request permission to use the images and in both instances permission was granted within 24 hours and free of charge. Nevertheless, if copyright material is included in study packs it is not always straightforward to get permission to use the material. It can take considerable time to gain copyright clearance for material such as journal articles and chapters from books. This will involve staff time to track down the copyright and will add extra time onto the production while waiting for copyright clearance. Copyright fees will also have to be costed into any future service.

During development work with Media Resources, the web-page designer altered the navigation through the web site. Prior to this the Dutch department had developed a conceptual map that identified a specific route through the pack. The model produced by Media Resources allowed the user to choose their own path through the pack. While this less hierarchical design was preferred by the students, they would welcome more narrative to accompany the pack, which has implications for the time it takes to develop the pack. It took considerably more time to develop the site with a specific route through it, as this had to be devised with close consultation from the academic.

Access to this pack was unrestricted because it did not include copyright material and also given the pilot nature of the work and the need for feedback from interested groups. However, if the service was launched properly and included copyright

materials, it would be necessary to restrict access to only registered students at UCL, and possibly only those students on the particular course that the pack related to. Password controlled access to the site would involve additional developmental time and more administration, as students would have to be allocated passwords. This issue would need to be considered.

A number of the problems outlined in Section 6 were exacerbated by College policies adopted by Information Systems. Clearly there would need to be a high level of negotiation and discussion with this department if an interactive study pack service was to be launched. Issues such as the allocation of departmental web accounts, the provision of multimedia (particularly with regard to sound files) and the Windows 3.1 and NT environments would need to be discussed. It would be important to get support from Information Systems, both in terms of practical assistance and an understanding of the requirements for such a service.

6.8.2 The Nature of the Service

The four departments that make up EISD (Library Services, Education and Professional Development (EPD), Information Systems and Media Resources) could all potentially be involved in developing electronic multi-media learning resources. At this stage it is not necessary to identify in which division the service would be based. However, this section broadly outlines the nature of the possible service and the contributions that each division might make if such a service was launched.

The Project Officer worked with various people in different departments of EISD to produce the pack, given the wide range of skills required. It would not be practical for one person to have all these skills and this Project sought to utilise the expertise currently available in the different departments. This experiment suggested that if an interactive study pack service were developed, there would need to be a dedicated member of staff to develop electronic course materials. However, given that there is existing expertise in the various departments of EISD, their role might be more that of a co-oridnator, to liaise with an established group of contacts. Aside from liasing with departments, the co-ordinator might be required to deal with a range of different departments, such as:

- The Subject Support Unit in Library Services to seek copyright permissions for required works
- Library Services for organisation of information in study packs
- Media Resources for web-page design and digitisation of images / sound
- Information Systems to provide password access and advise on other technical matters
- EPD for advice on pedagogical issues of electronic resources

The Dutch experiment demonstrated that by utilising existing resources and skills available across EISD it would be possible to develop interactive study packs. However, the level of resources required for this type of service would undoubtedly be greater than that required to develop non-interactive material. This type of service would also require a dedicated member of staff to work with departments to develop the study packs and to co-ordinate assistance from other parts of EISD. Introducing copyright material in the packs would lead to additional costs, and the problems this might bring are discussed in the following section.

The level of demand for this type of material is unclear, although the needs analysis suggested it might be less common, given the associated costs. Despite positive student reactions to this pack, the resource implications and problems identified above, mean that there would be some reservations about offering a full-scale service to produce interactive materials.

Chapter Seven: Experimental study packs 2: The Teaching Collection Experiment

7.1 Introduction

This section documents the phase in the project known as the Teaching Collection Experiment. The work began in March 2001 and was completed in September 2001. The Teaching Collection is the name given to the printed reserve at UCL. It contains off-prints of essential course readings that are kept behind issue desks at both the Main and Science Library. Lecturers can place up to five copies of materials in the Collection, which are entered onto the library catalogue and given an unique identifying number. The Experiment investigated the feasibility of digitising a selection of this material and making it available electronically. This section documents the production process and compares the costs and quality of an in-house service with out-sourcing production. This allowed the project team to investigate the feasibility of offering a clearance and/or digitisation service in-house and the costs associated with such activities. The experiment also examined how this service related to the current activities of the Library and might be integrated into existing services. Following on from this experiment, a pilot service known as DigiCOMS was offered to a further five departments at UCL. The digitised material produced during the Teaching Collection Experiment was therefore made available through the DigiCOMS service. More details about DigiCOMS are available in the following section.

The Economics Department was selected to participate in this experiment, as they currently use the Teaching Collection to deposit a considerable number of course readings. Using a department from the social sciences also compliments the earlier work for the Dutch Department. It was also important to choose a department whose reading lists contained considerable numbers of published journal articles and chapters from books that required copyright permission from publishers. A selection of material that the department currently deposit in the Teaching Collection was identified, in addition to some material which students had found problematic to get hold of in the past.

It should be pointed out at this stage that the distinction between a printed study pack and a teaching collection item in a print environment is significant, in particular for legal reasons, because a set of readings cannot placed within the teaching collection to avoid the copyright costs associated with producing a study pack. However, this distinction is less clear cut once material is made available electronically. Therefore, although the material in the teaching collection did not form a printed study pack, the set of digitised readings are referred to as an electronic study pack. Electronic permissions are also granted by publishers along similar lines to printed study packs, in that the pricing model is based on the length of a particular extract and the number of students on the course.

7.2 Methodology

This experiment investigated the processes and costs associated with producing electronic course materials using published works, to explore the feasibility of producing these types of resources within the Library. Part of the experiment was to find out whether this work could be undertaken in-house or whether it should be out-sourced. HERON (Higher Education Resources ON-demand) provides a service for Higher Education to obtain copyright clearance; it also supplies digital copies of core readings. This type of work is not within the remit of the Higher Education Digitisation Service (HEDS) and HERON are regarded as the experts in this field, therefore they were the only outside agency considered.

The in-house production process was compared to the experience of using the HERON service. At UCL, part of the remit of the Subject Support Unit in Library Services is to obtain copyright clearance for printed study packs and short loan reprints. This experiment would therefore, also explore the feasibility and implications of extending the printed study pack service to include digital copies and the potential overlap between the teaching collection and study pack services in a digital environment. In the following sections, the two approaches will be described and key issues discussed.

7.3 Production Processes

7.3.1 Liasing with Academic Staff

The first phase in the production process for both in-house and out-sourced production involved liasing with academic staff to determine the desired content. It was decided that the in-house produced pack would contain 10 items that were required reading for an undergraduate economics course. Alongside this twelve items were selected to send to the HERON service for a separate economics course. The choice of material was determined by the lecturer, who selected materials that students generally found difficult to obtain. Several of the items were already in the teaching collection for this reason.

Both the courses will run from Monday 24th September until Friday 14th December 2001, although materials will be required until 30th June 2002 as the exams for the courses do not take place until the summer term.

7.3.2 In-house Production

Both copyright clearance and digitisation work were undertaken in-house to produce this study pack. The process has been recorded in detail in the following sections.

Copyright Clearance

Copyright clearance work was carried out with advice from staff in the Subject Support Unit who regularly apply for copyright permission for materials used in printed study packs and teaching collection items. Details about all the publishers except for one were obtained from the Subject Support Unit files and in many cases a contact person was identified.

Each publisher was contacted to request permission to use the material. Contact was made by e-mail, fax or telephone, depending on the information contained within the SSU files. A brief summary of the project and the bibliographic details about the required item were included. The letter also included details about the course for which the material was required and the duration of the permission.

Digitisation

Given that this project had not been allocated a budget for equipment, it was necessary to undertake digitisation work using existing equipment and resources

available in Library Services. This caused additional problems as access to the equipment was restricted given that other members of staff needed to use it. A scanner was available with the Adobe Acrobat Suite of software and an image manipulator, Adobe PhotoShop. The software is not available on the UCL network and had been installed on a standalone PC in Library Services. The equipment is currently used to scan exam papers and make them available from the Library website. It is also the PC that is used to design the Library Newsletter. Therefore, convenient times had to be negotiated between the member of staff who uses this machine and the Project Officer over access to the scanner and the necessary software.

Current equipment and library activities

A number of activities currently undertaken within the library were considered before digitisation was attempted. Previous exam papers are currently mounted on the Library website and made available to students. Where possible, the papers are received in electronic format; however, if hardcopies are supplied these are scanned in-house. Library Services use a Hewlett Packard Scanjet scanner for these purposes. The scanner was purchased approximately five years ago and is not designed for a heavy duty workload. Files are scanned straight to PDF and delivered via the library website. The files are kept on an Information Systems server.

Scanning of materials such as journal articles and book chapters is undertaken as part of the LAMDA project. LAMDA provide an electronic inter-library loan service for subscribing libraries. The project uses a Fujitsu M3093GX scanner and Ariel software, which is specifically designed for this type of document delivery. The scanner was purchased approximately 3 years ago and is suitable for more heavy duty activities. However this equipment is used regularly and would not be available to use for the Access Project. Similarly it would require different software installed on it to scan to a suitable file format. Various reports were obtained from the American Research Libraries (ARL) e-reserve mailing list, which provided advice about all aspects of the technical operation. Several messages indicated that using a scanner for both document delivery and electronic reserves causes difficulties as the software conflicts.

Technical advice

Technical advice was extracted from the reports of projects such as ACORN and HERON. The ARL e-reserves mailing list also contained valuable technical information about scanning materials, setting up electronic reserves system and other aspects of delivering this type of material. A considerable amount of advice was also received from a member of staff at Birkbeck College, who has undertaken similar work in-house with limited equipment in terms of software and hardware.

Production Model

The following model briefly summarises the method that was used to compile the electronic study pack in-house. The member of staff who took responsibility for the various areas is identified by the brackets:

Stage 1: Academic compiles list of required articles (Academic)

Stage 2: List checked and bibliographic details completed where necessary (Project Officer)

Stage 3: Individual publishers contacted and CLA for clearance (Project Officer)

Stage 4: Follow up letters sent where necessary (Project Officer)

Stage 5: Quotes received and passed to department for approval (Academic)

Stage 6: Begin in-house digitisation of required files - scanning to image files (Project Officer)

Stage 7: Image manipulation to reduce the size of the files (Project Officer)

Stage 8 Convert images to PDF (Project Officer)

Stage 9 Add copyright notices and header sheet (Project Officer)

Stage 10: Transfer files to storage area (Project Officer /IT staff)

Stage 11 Distribute files via secure network (IT staff)

In-house Digitisation

There were several possible methods available to scan material including:

- Scanning straight to PDF - this method resulted in very large files which could not be manipulated, e.g. to remove black edges and marks on page

- Scanning each page to individual TIFF files and assembling in Acrobat and converting to PDF - still resulted in large files which could not be manipulated
- Scanning each page to individual TIFF files, editing to remove edges/ marks, assembling in Acrobat and using Capture to OCR text.

The final method was the most time consuming, however following advice from staff at Birkbeck College, where they have built up some expertise in this field, this method was chosen. It was also chosen because it allowed the images to be edited to produce a more high quality end product than the unedited file. The scanning process is set out below.

Scanning text documents to produce 18KB PDF file per page (A 30 page article should be no more than 500KB)

1) Photocopy each article to speed up scanning time
   - Care must be taken to ensure image is as clear as possible
   - Increase contrast to improve image quality

   Time taken: 30 seconds per page

2) Scan each page using Deskscan software
   - Select black and white drawing option
   - Select Path DeskJet 500/600/800 Series
   - Change brightness - to 80
   - Preview scan page and select area for final scan
   - Scan required area excluding edges where possible to produce TIFF file
   - Save file with appropriate filename e.g. Econ2001.tif (Economics article 2, page 1)

   Time: 1 minute per page

3) Edit each TIFF file using PhotoShop
   - Open file and edit using eraser to remove black edges and marks on text

- Use Save as option to preserve original scan

Time: 2minutes - 10 minutes (dependent on quality of original image and marks on text - cleaning the text as much as possible will reduce time taken to OCR and number of errors)
Average: 6 minutes

4) Convert to PDF and OCR using Acrobat Exchange 3.0
   - Select 'Import Image' from 'File' menu and import Page 1 into Acrobat
   - Select 'Capture page' from 'Document' menu - OCR software will run
   - Highlight 'capture suspects' (words or letters that Acrobat cannot identify and therefore uses an image to signify) and correct as necessary
   - Where pages contains large images or charts it is not necessary to OCR text.
   - Save file as PDF
   - Import Page 2 and repeat capture steps
   - Import all further pages OCR-ing one page at a time
   - Close document and select 'Optimize batch' option to reduce file size further

   Time: OCR process: 2-5 minutes (depending on size of text, quality of image)
   Correcting text: 1-10 minutes (depending on number of errors)
   Average time: 7.5 minutes per page

Total time to scan 1 page: 30 seconds + 1 minute + 6 minutes + 7.5 minutes =15 minutes per page

Time taken to scan 30 page article = 15 X 30 = 7 hours 30 minutes

Prerequisites
One-off costs
- Equipment: Scanner and software, image manipulation software, Adobe Acrobat
- File storage space for files

Recurrent costs
- Staff costs for copyright clearance
- Staff costs for scanning and image manipulation
- Copyright fees

7.3.3 Out-Sourced production

The second pack was submitted to the HERON service which undertake copyright clearances and digitisation for higher education institutes. Twelve readings were chosen for submission to HERON. The material was selected by the lecturer although steps were taken to ensure both the in-house produced pack and this pack included material from some of the same publishers.

The first phase in producing a HERON pack is to enter all the required bibliographic references onto the HERON system, which is creating a database of references entered by all HERON users. There were a number of mandatory fields in the database, therefore all the references provided by the academic had to be carefully checked. In several instances the original material had to be located to obtain details such as the page numbers or title of a book chapter. Once all the required references have been entered onto the system a pack is built by creating basic details about the course to which it corresponds. References are then chosen from the database and added to the pack. Once the complete list has been compiled the pack is submitted to HERON for clearance; however, before this can take place HERON staff check all the references. It took two days for the references to be checked and it was then possible to submit the pack.

The HERON quotes for copyright clearance are sent as received from publishers. The institution is then required to make a judgement as to whether they would like to proceed with each permission given the price.

Out-sourced Production Model

The out-sourced production model is much shorter than in-house, however the stages generally took longer to complete. Again the staff who took responsibility for the various stages are identified.

Stage 1: Academic compiles list of required articles (Academic)

Stage 2: List checked and bibliographic details completed where necessary (Project Officer)

Stage 3: Pack built using HERON interface and submitted for clearance (Project Officer)

Stage 4: Quotes received from HERON. (2weeks +) (HERON)

Stage 5: Departmental approval of costs (Academic)

Stage 6: HERON supplies PDF files of required articles (HERON)

Stage 7: Transfer files to storage area (IT Staff / Project Officer)

Stage 8: Distribute files via secure network (IT Staff)

Prerequisites

One-off costs

- File storage space for documents

Recurrent costs

- Staff time to send requests to HERON and liase with academic
- HERON subscription fee (£800 2000/2001, £1000 2001/2002)
- HERON copyright and digitisation fees (per article)

7.4 Costs

The experiment was interested in the price difference between approaching individual publishers for permission to use the articles and sending the requests to the HERON service. Given that two packs were prepared containing different reading material, HERON agreed to roughly estimate the price they would charge for the pack being produced in-house. This would enable a direct comparison to be made. Using both the approaches also enabled both processes to be observed.

7.4.1 HERON costs:

The total cost for the pack cleared through HERON to include copyright clearance and digitisation fees was £1143.85 for 12 articles, although in actual fact 10 articles were purchased at £797.85. Due to a limited budget, two articles were withdrawn from HERON and did not appear in the study pack. The initial estimates were sent out as they arrived from individual publishers, however from May 2001 when HERONweb was launched, estimates were added to the system on screen. During

August HERON changed its status from a consortium to partnership which altered the way in which quotes were calculated. This caused some confusion as the quotes appeared on the system at a higher rate to the previous quote. It was not entirely clear how much the pack would cost in total until the invoice was received from HERON on 25th September 2001, by which time the files were available for students.

Five of the 12 items required copyright fees to be paid in addition to the digitisation fee. However seven publishers granted permission for the material free of charge and the costs were purely for digitisation. In some cases this was because UCL hold a subscription to the journal from which the article was taken. The breakdown of the full costs from HERON are below, including the two articles which were eventually withdrawn:

Chapter / Journal article	**Publisher**	**Length of article**	**HERON Fee**
Journal article	OECD	25	11.75
Journal article	OECD	30	11.75
Journal article	Elsevier.	48	26.67
Journal article	OECD	31	11.75
Journal article	Blackwells	48	*212* *
Chapter	Routledge	19	*134* *
Journal article	OUP	10	53.17
Chapter	Routledge	53	321.96
Chapter	Routledge	27	164.02
Report	London School of Economics and Political Science	67	11.75
Journal article	OUP	26	119.44
Journal article	OUP	13	65.59

* These two articles were rejected due to a limited budget

7.4.2 In-house costs

The in-house produced pack comprised of different references to the one sent to HERON, therefore, they agreed to roughly cost the pack to enable a direct comparison to be made. Based on this comparison the experiment suggested that by approaching publishers directly copyright fees could often be reduced. However, the time taken to undertake digitisation in-house, given the limited equipment and lack of expertise in this area, may mean that in-house production does not save a considerable amount of money overall.

Copyright charges

The total cost for copyright clearance for the ten item pack, when sought in-house was: £1621.53. This price does not include digitisation work, unlike the HERON fees. The costs for each article were as follows:

Chapter / Journal article	Publisher	Length of article	In-house copyright cost	HERON Quote
Chapter	University of Chicago Press	36	0	30
Chapter	MIT Press	35	0	420
Journal article	Brookings Institution Press	70	509.55	600
Journal article	Sage Publications	17	127.5	185
Journal article	OECD	33	0	285
Journal article	Blackwells	45	0	30
Chapter	Edward Elgar	28	135	250
Journal article	Sage Publications	20	0	215
Chapter	Macmillan	23	172.5	205
Journal article	Brookings Institution Press	93	676.98	795

The total cost for copyright clearance and digitisation when provided by the HERON service was estimated at: £3015 for the same items.

Five items cleared in-house were granted permission by the publishers free of charge. In contrast HERON were charged copyright fees for 8 of the 10 items and only 2 items were granted free of charge.

Digitisation costs

Although on first glance the costs appear to be substantially reduced when undertaking the work in-house, the digitisation process needs to be costed, as this proved to be a time consuming process that required specific skills and equipment. Using the calculations outlined in Section 3.2.6, it can be assumed that an average length article (30 pages) will take one member of staff a day's work to scan. Therefore a £30 charge for digitisation from HERON can be said to be good value.

In-house digitisation was undertaken using existing equipment available in Library Services. If large amounts of digitisation was undertaken in-house it might be assumed that new equipment would be purchased, which may somewhat reduce the estimated costs below.

Average scanning time

Assuming an article is 30 pages long - average scanning times are calculated at 7.5 hours. Given the labour intensive nature of some of this work, adequate breaks would mean each article will take at least one day of staff time to digitise in-house.

Staff costs (for clerical staff) = £91 per day

Staff costs (for AR1 staff) = £122 per day[30]

More details about average costs for digitising material are provided in the Conclusions.

Total costs to produce study pack in-house

To digitise 10 articles in-house, the above costs suggest that approximately another £1000 (£100 per article) needs to be added to the copyright charges of £1621.53. Therefore, the total cost of the in-house produced study pack would be approximately £2621.53. This is still cheaper than the estimate received from HERON for the same work of: £3015. However, in-house digitisation would ideally need designated hardware and software, available office space to house the set-up and appropriate

[30] Figures based on Staff Costs from Finance Department website. See: http://www.ucl.ac.uk/finance//secure/research/ucli/framesstuff/consultFrame-main.htm

training and support for the staff operating it. The costs from HERON were also estimates and as the experiment shows, the invoiced amounts may well be reduced. These finding suggest that while copyright clearance through HERON may be slightly more expensive, the digitisation service is cost effective.

7.5 Clearance times

7.5.1 HERON

The study was also interested in the length of time taken to obtain copyright permission for the required articles using the two different methods. The HERON pack was created on 19/03/01 and was submitted for clearance on 22/03/01. It contained 12 readings. At the time of creating the pack, they could not be submitted until the bibliographic details have been checked by HERON staff. Since the launch of HERONweb in May 2001, this process is now not necessary.

Three quotes were received on 30/03/01 and a further three were received on 03/04/01. On the 25/04/01 (the date the last of the in-house clearances were received) no further quotes had been received from HERON and six articles were still outstanding. One of these was received on 01/05/01 and a further four were received on 17/05/01. The final quote, which came from Elsevier Science, was not received until 30/07/01, over four months after the request had been submitted. Elsevier grant permissions free of charge where a current journal subscription is held, however they will not deal with HERON and send the permissions to the subscribing institution who then need to inform HERON.

Because the material was being used for a course that was commencing in September 2001, HERON's policy is not to supply the digitised file until 30 days before this date. This has implications for staff workloads at the start of an academic year. If a large number of packs are being produced, the files will not be available to transfer to the server more than 30 days before the courses commence. The HERON files were supposed to be available on 31/08/01, however they were eventually sent on 4/09/01.

7.5.2 In-house clearance

Requests were sent to individual publishers on 21/03/01 by letter, fax or e-mail. Four publishers responded within a week of receiving the request. On 20/04/01 follow-ups

were sent to the two publishers who had not responded. Permission for these two articles was received within a week of this date. The last permission was granted on 25/04/01, a little over a month after the requests had been despatched. Digitisation work could go ahead from this date, although the files would not be made available to students until the course commenced. All the in-house produced files were digitised and ready for distribution in early July.

7.6 Distribution of files

It was decided that because of the copyright restrictions, the files would be held by Library Services where they could be removed once the permission duration had expired. Given that the library would be responsible for obtaining copyright permission for the extracts and digitising material in some cases, it was logical that they should retain control of the files. This would also enable password control to be placed on the files to prevent material being accessed by non-UCL staff or students.

Over the Summer 2001 the Access Project launched a pilot electronic course materials service, known as DigiCOMS, to a small number of academic departments. The service was tailored according to the needs of participating departments, but provided a digitisation service and a secure website for distributing electronic course materials. The DigiCOMS web site was created over the summer and launched for the start of the Academic Year 2001/2002. It is hosted on the Library web site and within this site, pages of resources have been created for each of the participating departments. It was considered appropriate that the Economics reading materials should also be hosted on this site. Discussions with Information Systems took place in May 2001 to ensure that a site could be created in time for the start of next session. See Chapter 8 for a full report of the DigiCOMS pilot service.

7.7 Problems

Throughout this experiment, problems were experienced at various stages and these have been documented below.

7.7.1 Expense

The costs of obtaining copyright clearance can be prohibitively expensive. By producing printed study packs and selling them to students it is possible to recoup some of the costs. This is more difficult when providing digital access, as students

may be reluctant to pay for online readings and a charging mechanism will need to be devised. The reaction of the academic involved in this work, towards the cost of copyright clearance for digital material is also noteworthy. She was extremely shocked at the prices that publishers were charging to make material available electronically, when a printed version was already available in the library. She was also confused by the fact that some material was obtained free of charge and yet one publisher wanted over £600 for an article.

7.7.2 File sizes

One of the greatest problems experienced when undertaking in-house digitisation was the size of the resulting files. There were concerns that large files would take up file store space and may be slow to transfer across the network. By converting the files to PDF text where possible, file sizes were substantially reduced. This process involves running the Optical Character Recognition within the *Adobe* program called *Capture*. However, HERON provide files in PDF Image format and are not prepared to undertake OCR work. They believe this results in lower quality material as the software can change font sizes and read words incorrectly. Although the CLA Digital license allows OCR-ing using *Capture* it would make HERON liable for any errors that are then present in the files. However, institutions are permitted to OCR files provided by HERON in-house if the file size is a problem.

The following table shows some file sizes of articles scanned in-house in comparison to those prepared by HERON. Although all the articles are PDF documents, the in-house produced files have been OCR-ed using Acrobat Capture function. This substantially reduces the size of the files as can be seen. It will however, remain to be seen if the larger file sizes cause a problem when the material is viewed and printed out by students.

Article Number	**Length of article**	**File Size**
Article 1 (in-house)	36 pages	277KB
Article 5 (in-house)	33pages	396KB
Article 8 (in-house)	20 pages	303KB
Article 2(HERON)	32 pages	1592KB
Article 5(HERON)	14 pages	1064KB
Article 7(HERON)	54 pages	3032KB

7.7.3 Labour intensive nature of in-house scanning

The main problems with in-house scanning were caused by a lack of equipment and the labour-intensive nature of the work. In particular, editing the files before OCR-ing could take place was sometimes extremely time consuming. This was often caused by the quality of original documents used for scanning. Library copies of journals (frequently bound into volumes) were often dirty and had annotations on the text. These could be removed in PhotoShop, however the process was time consuming and tiring.

7.7.4 Relations with the academic department

This experiment demonstrated the importance of communicating with the academic department at all stages of the progress of a pack. The project had a limited budget (£1000) to pay copyright permission charges. This meant the Project Officer had to negotiate with the academic over which extracts would be included in the pack and which were considered too expensive. Two extracts were rejected by the Project Officer because of the high copyright costs they would have incurred. All extracts that were granted free of charge by the publishers and scanned in-house were automatically included. All the HERON extracts which incurred only digitisation costs and were therefore less than £100 were also included. The academic was then asked to prioritise the remaining extracts. A selection of other material was also chosen by the lecturer depending on what she considered important and what could be accommodated given the small budget.

7.7.5 Problems with HERON

While the Project staff were generally impressed with the HERON staff and the principle behind the service, this experiment revealed a number of difficulties. During the time the experiment was undertaken the HERON system transferred to HERONWeb, which was easier to use and generally more effective than their previous system. However, unfortunately there were one or two difficulties with the system, for example, the copyright clearance quotes that appeared on the system did not correlate with the quotes that had been e-mailed to the Project Officer. HERON confirmed that the original quotes were the real costs, but this caused some confusion. Similarly, a number of the quotes had to be re-calculated at various stages and it was difficult to ascertain the exact amount payable until the invoice arrived. Given that the

Project was working to a tight budget, this caused problems and meant that one extract had to be rejected towards the end of the experiment to keep within costs.

Delivery of the HERON files also caused problems because the service can not release files until 30 days before the course commences. However, due to staff leave the files ideally were required by the end of August. When the files did not arrive by this time it transpired that the files could also not be released until the new HERON Licence had been signed by UCL. Licenses had only been sent out in mid August and therefore it was necessary to arrange the signing rapidly. Subsequently, delays were experienced in receiving the files.

7.7.6 Distributing the files

The set up of the DigiCOMS Web site, which was used to distribute the files, is discussed in more detail in the report of this service. However, the process did take longer than had been anticipated, as it required a new web account to host the site. This process was time consuming and meant that although the site was ready to go live in early September, it eventually was launched on 15/09/01.

7.8 Conclusions

This experiment was highly valuable for the project. It demonstrated how copyright clearance for electronic texts is handled by a number of large and smaller publishers. It also enabled the process of digitisation to be documented and the problems associated with it to be observed.

One of the most useful aspects of this part of the project is it gave first hand experience of the HERON Service and enabled it to be compared directly to the process of obtaining clearance and scanning in-house. All the items submitted for clearance were eventually cleared, although the costs varied tremendously. A number of publishers were happy to grant permission free of charge. From the dealings with publishers charges were found to vary from 3-12 pence per page per student. Digitisation costs associated with the HERON service also varied from between £11-£30 per extract depending on its length and publication type. The HERON digitisation fees compared favourably with the staff and equipment costs that in-house digitisation suggested.

7.8.1 Average copyright costs

Copyright costs can vary considerably for printed study packs, depending on the rates set by the rights holder. Increasingly publishers are also setting standard rates for digital copyright and information about these rates can be obtained from HERON and from the CLA website. This means that approximate costs for digital clearances can now often be ascertained from reading lists where the publisher details are known.

Using the small number of extracts in this experiment, it is difficult to estimate average costs for digital copyright, as this will vary depending on the publishers involved. The Publishers Association recommend the rate of 5 pence per page, per student for digital copyright, however there is still considerable discrepancies. Some publishers will grant permission free of charge, while other may charge up to 20 pence per page. HERON also produce a list of publishers currently not granting any electronic copyright permissions.

Several large publishers, such as Blackwells MCB University Press and Elsevier have started granted permissions free of charge where a university hold an existing subscription to the required journal. It is hoped that this policy might become increasingly common, but as yet this is not certain.

Despite the discrepancies in prices, an average electronic study pack could be costed as follows:

Assuming the study pack is made up of 10 articles of 30 pages in length and the publisher charges 5 pence per page per student:

(10X30) 300 X 0.05 = 15 pounds per student on the course

The cost to make the pack available for 50 students would therefore be = £750
To make it available to 100 students the cost would be £1500

These prices do not include digitisation. If we assume that HERON would charge £20 to digitise each 30 page article and that in-house this would cost £100, the final pack for 100 students would cost as follows:

In-house digitisation: £1000 + £1500 = £2500

HERON digitisation: £200 + £1500 = £1700

7.8.2 Summary

The experiment concluded that copyright clearance could often be obtained more quickly and cheaply if sought in-house. The Subject Support Unit already have built up a bank of knowledge and valuable connections with a large number of publishers. It would be a relatively simple matter to incorporate digital copyright permissions into the current activities of Library Services. Meanwhile, digitisation is not an area where the Library have a great deal of expertise. Although this work can be undertaken in-house, it would require new equipment to be purchased and staff with additional skills to those currently available. Out-sourcing digitisation would therefore be recommended and the HERON service is the obvious choice.

The experiment also demonstrated that academics are generally unaware of the high costs that some publishers can charge to allow material to be made available electronically. Academics usually sign away their copyright for material submitted to refereed journals. This means that publishers are entitled to charge for re-use of the material. If electronic readings are increasingly required by departments one way to reduce the costs might be to encourage academics to retain their copyright where possible.

Chapter Eight: DigiCOMS: the pilot electronic course materials service

8.1 Introduction

One of the objectives of the Access to Core Course Materials Project was to set up, run and evaluate a pilot electronic study pack service. [31] The needs analysis demonstrated that the service needed to encompass a range of materials and so the service definition was broadened to include a variety of electronic course materials. It included the production of electronic study packs or core readings, but also offered a digitisation service for other types of course materials; in particular a facility to make available in-house produced publications such as course handbooks and lecture notes.

Related to this work was a separate project funded by a grant from the Sub-Committee on Innovation in Learning, Teaching and Assessment (SCILTA) in the Department of Paediatrics and Child Health. The Project Officer was involved in setting up an intranet site to distribute a range of electronic course materials. The Department were particularly keen to include online assessment and for this reason it was decided to build the site using WebCT. This gave the Access Project direct experience of using virtual learning environment software, which could be compared to the simple course material system that was devised in-house. The full report of this project is available in Appendix 3, however, the issues of relevance to the DigiCOMS service and an outline of the work is also discussed within this section.

8.2 Set-up of the Service

The first phase of this project was to devise an identity for the service and the name DigiCOMS (Digital Course Materials Service) was chosen by the Project team. An easily identifiable logo was also designed that could be used on any resulting literature and the web site. The service was then offered to 11 of the 13 departments who had taken part in the needs analysis, as these were deemed to be most interested in this type of initiative. Two departments were already involved in the service. Economics were taking part in the teaching collection experiment and Paediatrics and Child Health received a SCILTA award to set up a course intranet site using

[31] This service can be accessed by UCL staff and students from http://www.ucl.ac.uk/Library/subject-support/. You will need to enter your UCL login and password.

WebCT[32]. Therefore, the remaining departments were invited to participate in the service and a letter was sent to the Head of Department and the original contact person who had taken part in the needs analysis (in some cases this was the same person).

Departments who responded positively to the initial invitation to participate included:

- Philosophy
- Dutch (Masters in Comparative Literature course)
- Biochemistry
- Primary Care and Population Science
- French
- Histopathology

The following departments decided they could not participate in the service:

- Hebrew and Jewish Studies
- Spanish and Latin American Studies
- Chemistry
- Medical School
- Mathematics

8.3 Non-participating departments

Chemistry, the Medical School and Mathematics did not respond to the invitation to take part in the pilot service and so their motivations for this were unclear. However, both Hebrew and Jewish Studies and Spanish and Latin American Studies gave an indication of their reasons. In the latter case, the lecturer who had taken part in the needs analysis was on sabbatical for the Academic Year 2001/2002 and therefore he would not be involved in teaching. He was keen to produce an electronic study pack for the following year; however this did not fit into the time scale of the pilot service. Hebrew and Jewish Studies decided not to take part because of the many problems they had experienced in the past with computing services. They also did not have any available funding to produce an electronic study pack. Departments who did not respond were sent one reminder e-mail, however, because of the time constraints of the project and the need to work with enthusiastic departments, they were not pursued

[32] This project was part of the Access to Core Course Materials Project but additional funding allowed the Project Officer to spend more time working with this particular department.

beyond this. It was also decided that once six departments had agreed to participate, this number was more than sufficient as there was a need to ensure the work did not become unmanageable.

8.4 Outline of the Pilot Service

The DigiCOMS service included a range of electronic course materials and was largely shaped by the findings from the needs analysis. The research suggested that departments wanted to improve access to a variety of course materials, including in-house produced documents. The needs analysis also revealed that departments wanted a service that could be customised. Departments were informed that the service would be provided free of charge for in-house produced course materials, although any copyright permission fees would have to be paid. This may have affected the take up of the service and the type of material that departments wanted to include.

The first phase in the service involved scheduling a meeting with each of the departments who agreed to take part. During this meeting a more detailed breakdown of their particular requirements was drawn up and this was matched with what the Project Officer felt was possible to achieve in the limited period of time. This meant that the service offered something slightly different to each of the participants. A description of the service offered to each departments is outlined below.

8.4.1 Dutch (MA in Comparative Literature)

This was the most straightforward initiative; the department wanted to produce an electronic version of a printed course pack that the Subject Support Unit created the previous year. The Subject Support Unit provided the Project Officer with full costs of the printed course pack, including copyright clearance and print charges, and details of who the rightsholders were in each case. A direct comparison between the production of electronic and printed packs could therefore be undertaken.

8.4.2 Philosophy

Philosophy wanted to improve access to reading materials available in a printed study guide. It was believed that many of the readings were available through UCL's existing electronic journal subscriptions, in particular the JSTOR or Ingenta Service. Where possible the department wanted to link from the reading list to the full text articles.

8.4.3 Biochemistry

Biochemistry were interested in creating a course web site from which they could make available a variety of course materials produced in-house, such as lecture notes and course handbooks. They found it difficult to generate sufficient interest from teaching staff in the department and subsequently withdraw from the pilot service and decided to make the information available from their departmental web site.

8.4.4 French

French were interested in putting lecture notes and other course materials produced in-house on the DigiCOMS site. They were particularly interested in being able to add materials to the site throughout the term and did not want lecture notes to be available before the class had taken place.

8.4.5 Histopathology

Histopathology wanted to make a selection of lecture notes and images available from the DigiCOMS site. The images were available as a slide collection that belonged to the Head of Department and they thought these would be particularly useful for students.

8.4.6 Primary Care and Population Science

Primary Care initially expressed an interest in the DigiCOMS service, but due to staff being on leave it was not possible to schedule a meeting with the department and they did not manage to send any materials for inclusion on the site.

8.4.7 Paediatrics and Child Health

This department were interested in creating a course web site from which they could distribute a wide range of resources. They were particularly interested in developing online assessment and multimedia resources. It was decided that this work had considerable overlap with the Project; however, it was more ambitious than could be achieved within the scope of a pilot study. Therefore the Head of the Paediatrics and Child Health Department worked with the Project Officer to secure funding from SCILTA to undertake this work. A decision was taken at an early stage that the site would be designed using WebCT, because it includes tools to create online assessments. This would also give the project experience of using a virtual learning

environment package to distribute other types of course materials. Full details about this project are available in a separate report on the project website.[33]

8.5 The DigiCOMS website

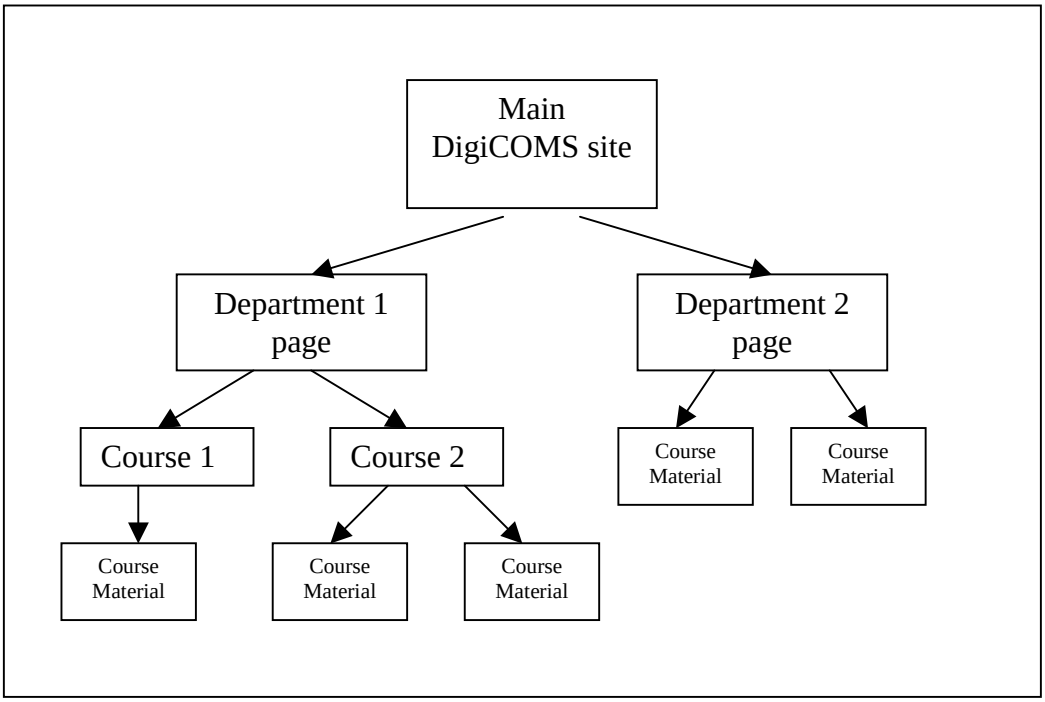
The priority for the new service was to set up a secure web site from which the electronic course materials could be delivered. It was decided that this site would be managed centrally by the library, rather that devolving responsibility to departments. This enabled the library to control access to materials that required copyright clearance and to remove them once the permissions had expired. Secure file space to host the materials was also a desirable feature of the service identified by the needs analysis and one of the main reasons some departments wanted to take part.

The design of the website was discussed in detail by the Project Team, who met with the Director of Information Services. Authorisation for extra filestore space was required and it was estimated that 200MB might be needed in the first instance, depending on uptake by departments. Ideally materials would be held in some form of database so that the system would be scalable. Some discussion took place over the information management issues associated with the site and IT staff in Library Services agreed to help design the site using dynamic HTML. However, time and resource constraints meant that these ideas were eventually abandoned and for reasons of speed and simplicity the site was designed using standard HTML pages. Where possible, documents would be available as PDF files, as this has become a common way of distributing these types of resources. It also means that the document remains identical when it is printed out.

It was decided that the site would be divided into sections according to departments, where material could then be organised on a course basis if necessary. Electronic course materials were then listed in alphabetical order within a course list. A generic model was constructed for the departmental pages that could then be customised according to individual departmental requirements. Generally one page was constructed for each department with anchors to link to sections lower down the page. It proved necessary to design several pages for the Philosophy department because of the volume of material available on the site. Each page had links to other relevant

[33] See http://www.ucl.ac.uk/epd/tqef/core/home.html

subject based resources available on the library web site. The site had the following structure:



The site was originally going to be hosted on the Library web account, as it seemed sensible to link the site from the Library web site. However, it was subsequently decided that the materials would take up too much space and needed a separate web account. The application process for a new web account took over 3 weeks and during this time work was undertaken to design the site. The software package Dreamweaver was used and the site held on the Project Officer's PC until the account was available. During this period a dummy version of the DigiCOMS site was mounted on the Project website, with links to only non-copyright materials. This site was publicly available and participating departments were invited to view the dummy site and asked for any comments about the design.

The new web account was created in early September and it was relatively straightforward to transfer all the files into the appropriate directory and make the account live. Before this was done it was necessary to restrict access to the site to UCL staff and students. The pages were designated as part of the UCL Intranet using a particular script provided by Information Services. This means that when an individual tries to access the site they are prompted to enter their UCL login and password. This allows both on and off campus access, but ensures that only UCL staff

or students can access the copyright materials. A link was included on the library web site to the new service and all participating departments were informed that the site was active.

8.6 Departmental progress

The work for each department was undertaken over the summer months and progressed at different rates. Given that all the initiatives were different it was difficult to develop a generic production model for the service. A summary of the work undertaken for each department is therefore included below:

8.6.1 Dutch (Comparative Literature)

It was decided that the reading materials would be submitted to the HERON service for copyright clearance and digitisation. This followed on from the findings from the teaching collection experiment that found that digitisation work could not be undertaken within the Library in a short space of time. It was also decided that copyright clearance would be undertaken by HERON to gather further experiences of using the service and compare it with the in-house process. The Subject Support Unit kept detailed records of the printed study pack produced the previous year. This showed that of the 13 extracts in the pack, 9 had been cleared through the Copyright Licensing Agency (CLA) and only four were cleared through the publishers. The rights to most of the material was held by some quite obscure publishers so it was interesting to see how easily HERON could get clearance.

It was subsequently decided that two extracts would be cleared directly via the rightsholders and these were withdrawn from the HERON system. This was because the course tutor knew the journal editor and author in each case and felt that better terms might be negotiated in this way. This was successful in one instance as the material was obtained free of charge and the author agreed that a digital copy produced by the lecturer could be used. In the second instance approaching the publisher directly appeared to make little difference as the copyright fee was still high.

The total cost to produce the printed study pack was: £231.18. This included £159.18 for copyright clearance fees and £72 for printing costs. In comparison, the electronic study pack total costs for copyright clearance and digitisation were far higher;

estimated at £406. This included only 11 of the 13 extracts required as one was refused permission and one was still outstanding at the time of writing this report. It should also be noted that these prices may alter as some of the prices provided were only estimates.

8.6.2 Philosophy

The Philosophy Study Guide is available from the department's website as a PDF file although all students would have a printed copy as the book is sold at the subsidised price of £1. The department were keen to preserve the document layout so that it would be familiar to students. However, they thought it would be particularly useful to link to full text articles where these were available. They consequently made the slightly unusual request of linking to the full text articles from a PDF file.

Due to the size of the Study Guide, which is over 200 pages long and includes hundreds of references, it was decided that only references available through JSTOR would be included. It was also decided to divide the document into chapters and the department were asked to prioritise chapters for linking. Seven chapters were selected and each was searched to identify those references available through JSTOR. JSTOR actively encourage initiatives such as linking to articles from reading lists, therefore they have created a facility to make this easier. The Citation Linking Tool has been created for librarians to avoid the problem caused by dynamic HTML links. Rather than searching for the article conventionally using JSTOR, the reference is entered into a form which then generates a static URL for a particular reference. The document will then be accessible on-campus and off-campus, if an ATHENS password is supplied. This Tool was extremely valuable and meant that the chapters did not need to include separate links for on and off campus access. Some clerical assistance was provided by the Subject Support Unit to undertake this work.

Linking from a PDF file is a slightly unconventional approach and it is not possible to link actual text to a URL using Acrobat. Instead an area of the document can be selected and created as a link. It was decided that links would be identified by using a red box around the relevant bibliographic reference. As links were added to each chapter these could be added to the site. It was also hoped that by dividing the study guide into chapters it would make the material more accessible to students. A links to

the full PDF Study Guide was included on the Philosophy DigiCOMS site. Links to helpful information already available on the Library website, such as ATHENS registration information and a link to the JSTOR site, were also included.

8.6.3 Histopathology

A DigiCOMS web site was constructed for the Histopathology Department who decided to concentrate on providing resources for a bone and joint course. They were particularly interested in making available some lecture notes and images, for which the department owned the copyright. In the first instance links to relevant subject based resources on the library web site were added to the Histopathology page. A link to the A-Z list of electronic journals was also added to the page.

The course material was given to the Project Officer in early September for inclusion on the site. The course aims and objectives and lecture notes were provided in Word and Word Perfect format. Histopathology arranged for a member of staff at the Royal Free to digitise a considerable number of images belonging to the Head of Department and held on 35mm slides. The images were provided in a PowerPoint presentation. As time was limited it was not possible to remove the images from PowerPoint and reorganise the material, therefore it was decided to make the file available from the site in its entirety. The lecture notes and course aims and objectives were converted into HTML format with links to Word and WordPerfect versions that the students could download. The lecture notes also included references to the images, so the appropriate slide numbers from PowerPoint were added to the notes to enable cross referencing between the documents.

8.6.4 French

The DigiCOMS site for the French department was constructed over the summer, to include links to a variety of language resources available on the library web site. However, due to delays in receiving the material from the department, the course materials section was empty when the DigiCOMS service went live. The Department eventually sent the material some time after the start of term and it was added to the site immediately. The material was all in-house produced information to support a number of courses run in the department and included material such as course outlines and reading lists.

Because the material was received after the official deadline for the DigiCOMS Service the Project Officer was only able to spend a limited amount of time organising the materials. It was therefore decided to arrange the document by course headings and to include links to Word documents. The files were all relatively small in size (less than 30KB) and so it was decided that the material would not be converted to PDF or HTML.

8.6.5 Paediatrics and Child Health

Using WebCT to distribute the materials meant that work could progress on this site immediately as UCL have already purchased a site license for this software and it is being used by other departments. The WebCT Support Officer based in EPD created a course for the department and a number of members of staff and the Project Officer was given designer status. The online assessment was the first area of the site to be developed as the department were keen to undertake a trial assessment before the final intake of students in 2000/2001 completed their course. Academic staff devised the questions and selected images to include in the test; these were then entered using WebCT's 'Quiz' function. All students must have a separate ID to access WebCT, so these details were added by the department administrator. The online assessment took place with 40 students in a College Cluster room and was regarded as successful by all who took part. Students were not familiar with WebCT before the trial, but had adequate web skills to access the materials.

Based on the successful pilot online assessment the site was developed further over the summer in time for the new intake of students. A range of other resources such as a course handbook, timetable information, web links and a chapter from a textbook were also added to the site. Media resources agreed to digitise some video tapes, that were to be made available from the site. This work was completed; however, unfortunately the files would not work if students were accessing the site from a Managed PC due to the set up of these machines.

Students were given a brief introduction to WebCT at the start of term and the facility to track students was used to ensure they could all access the site. They appeared to have few problems accessing materials. Adding new resources to the site did prove to

be time consuming however, particularly after the departmental administrator left. This meant a new member of staff had to be trained to use WebCT.

8.7 Problems

The service was run single-handedly by the Project Officer, with some limited clerical assistance and IT support. Dealing with six departments meant that the workflow was manageable, however, scaling up the service will require a significant investment of staff time and a commitment to resources. The development work for the WebCT course was particularly time consuming and it was fortunate that the extra funding had bought additional time so that the Project Officer could work on the site. A number of difficulties were also experienced while setting up and running the pilot service and these discussed are in detail below.

8.7.1 Deadline for submitting materials

The DigiCOMS service was offered over the summer in order that materials could be prepared for the start of the new academic term. However, as with similar current library activities such as the printed study pack service, many academics are away over this period and communication with them can be erratic. In order to manage the Project Officer's workload, it was important that materials from departments were submitted in sufficient time. Therefore, a deadline of the end of August was set for receiving materials. After this date they could not be included on the DigiCOMS website. It was important to maintain communication with all the participating departments over the summer months and ensure they were up to date with progress. However, despite frequent reminders, some departments did not provide materials in time to meet the deadline.

In hindsight it was felt that the deadline for receiving materials was too close to the start of term, and this caused problems getting copyright permissions for the electronic study pack prepared for the Dutch department. Consequently this material was not ready by the start of term. The printed study pack service set their deadline at the end of July to ensure they can get copyright permission and produce packs for the start of term. In order to ensure electronic study packs are ready in time, this deadline seems to be more suitable for materials requiring copyright clearance.

8.7.2 HERON and copyright clearance

The Teaching Collection Experiment suggested that copyright clearance could take longer using the HERON service than obtaining clearances in-house. This finding was confirmed while compiling the Comparative Literature study pack, for although the pack was submitted in early August 2001, only three documents had been cleared, digitised and delivered by the start of term. It was believed that the clearances would have been received far quicker if they were sought in-house and more of the readings would have been available for the start of term.

Additional problems were caused by several publishers refusing to grant permission for digital copy. Four extracts were initially refused permission, although in the case of three extracts which were from the same publication, the course tutor spoke with the publisher who agreed to allow them for one year only. Subsequently only one could not be included in the electronic study pack, which meant that it was not available to students. Furthermore, three of the extracts were not held by the British Library, therefore in order for digitisation to be undertaken, the Project Officer had to photocopy the Library copy of the requested item. The experiences of producing this study pack were quite different to the experiences during the teaching collection experiment and this was perhaps a reflection of the different nature of reading materials for undergraduate and postgraduate courses. The Comparative Literature course included readings from mainly smaller, less well known publishers and it was consequently more difficult to get copyright clearance and to have the material digitised.

8.7.3 Costs

Related to the issue of copyright clearance is the cost associated with digitising core reading materials. All the departments apart from Dutch chose to use in-house produced material rather than core readings that required copyright clearance. The material for the Masters in Comparative Literature was selected partly by considering whether publishers were likely to charge a permission fee. Similarly once the lecturer realised the costs of certain items, he decided that in future years he would look for alternative readings that might be less expensive. This experiment demonstrated that copyright clearance fees for digital copies are significantly greater than for paper copies. In this case the pack was estimated at just over £400, whereas the paper pack

had been approximately £230. The lecturer also was aware that the costs of printed study packs can be recouped by the department by selling it to students. This was not possible with the electronic readings and the Dutch department had to meet the costs themselves. Fortunately in this instance they were able to do this. However, the issue of whether copyright fees are passed on to departments or are paid for centrally is crucial when scaling up the service. It will certainly be an issue that will affect the level of take up of the service.

8.7.4 Setting up the WebSite

Setting up the DigiCOMS website was more time consuming and complicated than anticipated. Although technical advice was available, there was only a limited amount of technical assistance offered to create the site and so it was largely set up by the Project Officer, who had fairly basic web page design skills. This meant the site was designed using static HTML, rather than some form of database to organise all the documents. Given that only a small number of departments participated in the pilot service and they had a limited number of resources, information management issues were not experienced. However, the basic site design was not considered to be scalable if the service is to be offered on a College wide basis. Ideally users would be able to interrogate a database to locate the documents they required. Documents could be identified by department, course and course tutor so that students could enter these details and be taken to a list of relevant documents. Using a database would also make it possible to search for particular documents, which would be a useful feature of any service.

8.7.5 Problems with WebCT

WebCT was the obvious choice for creating online assessment materials given that UCL have a site license for this product. However, the software is not straightforward to use and at the outset of this project the department were aware that it had limitations. WebCT provides a framework for distributing course materials, however files first need to be constructed in HTML before being loaded into WebCT, adding an additional stage to the work. Staff also had to learn how to use the software package with relatively limited support available. The department had to create a student account for each user and obtain details such as student user IDs from Information Systems. All this took time to undertake and staff found there was a steep learning curve during the process.

In terms of the assessment, the question types available in WebCT were not sufficient to design the type of questions that appeared in the written exams. For example, multiple response questions that the department currently use in traditional assessments could not be included, as the negative marking scheme did not work. It was possible to create an exam with image based multiple choice questions and also to design matching questions with images. However, it was again time consuming to enter questions into the software. The department did like features such as being able to track students and identify which individuals had not accessed the site. However, throughout the project there were concerns about security and whether students could access exam material.

8.8 Conclusions

The pilot service suggested a number of conclusions about the shape of a full scale service and raised a number of issues which need further consideration, including:

(i) The value and level of use of a future service and the types of materials departments might want to include;

(ii) Required staffing levels and skills to operate a full scale service;

(iii) The time involved to prepare materials, make them available and set-up and maintain a new web site;

(iv) The type of processes that could be undertaken in-house and those which might best be out-sourced;

(v) The role of the HERON Service

(vi) Equipment required

(vii) How to integrate into current activities of the library

(viii) A comparison between building an in-house course materials system and using WebCT to design a course site;

(ix) The overall feasibility of a new service and how it might be funded.

(i) The value and level of use of a future service and the types of materials departments might include

The pilot service suggested that this type of service would be valuable to departments and if offered on a College wide basis it would be reasonable to assume that around 20 departments might take part in the first instance. Although many departments already make course materials available through their departmental website, many

were in favour of a centrally provided service for a number of reasons. Departments were concerned that many course materials ought not to be available on a public web site and the central service would provide a secure environment to distribute them. Academics also frequently do not have the time and/or the expertise to make these materials available and to maintain them. Departments also felt that materials requiring copyright permission should be dealt with by the library, who have the appropriate knowledge and skills. It was anticipated that the demand for the service would grow as more departments see its potential application of this.

The pilot service confirmed the findings from the rest of the project, that departments would want to include a range of materials in the digital course materials service, such as core readings, lecture notes and images. There was some evidence to suggest that the cost of copyright clearance fees may make departments reluctant to produce electronic study packs, but this is discussed in more detail elsewhere.

(ii) Required staffing levels and skills to operate a full scale service

The level of staffing and amount of staff time required to offer the service inevitably depends to some extent on participation by departments. However the full scale service will require at least one full time member of staff, with IT and clerical support. Staff would require a range of skills, including web page design skills to maintain the service, experience and knowledge of digitisation techniques, the skills necessary to create a web-based database, negotiation and interpersonal skills. They were also need of copyright law, in particular relating to digital copies.

(iii) The time involved to prepare materials and make them available

The service would need to operate throughout the year, as although many lecturers might want to prepare their teaching materials for the start of the new teaching session, others would want to add materials as the course progressed. Extra clerical support may be required over the summer vacation, however through the year the service would need to be maintained and updated depending on individual course requirements. At least 6 weeks notice are necessary to prepare digital core readings, longer would be needed if the HERON service was used. Moreover, to scale up the service significantly, it will need to have a database behind it, which may be an off-the shelf electronic reserves package or built in-house using dynamic HTML. This would mean time would need to be devoted to maintaining the database.

(iv) The type of processes that could be undertaken in-house and those which might best be out-sourced

From the experiences of this project it seems that digitisation work could be out-sourced to the HERON service for digital core readings. In-house produced materials could be scanned or converted to PDF in-house. Departments should be asked to provide them in electronic format wherever possible. Copyright clearance work can be undertaken in-house using the expertise built up in the Subject Support Unit, as the process of getting clearance for digital copies was identical to printed copies.

(v) Further experience of the HERON Service

Further experience of the HERON Service demonstrated the difficulties of getting digital permissions from certain publishers. In contrast to the Teaching Collection Experiment, when all permissions had been granted and all the material was obtained from the British Library, the material requested for the Comparative Literature course was problematic. Consequently, it appears that for specialist courses, it would be quicker and more effective to try and negotiate permissions in-house and to supply photocopies of material which may not be help by the British Library.

(vi) Equipment required

The equipment required to support a full scale service would depend on the extent to which digitisation work was undertaken in house. However, the minimum requirement is a designated scanner, networked PC not on the managed system, and file storage space. It may also prove necessary to purchase a server to hold the materials, which at the present time are being stored on the Project Officer's PC and in the new departmental web account. Web page design software, Adobe Acrobat suite, image manipulation software (e.g. PhotoShop) would all also be required. The estimated costs for this equipment (including a new server) would be £2000.

(vii) How the activities might be integrated into current activities of the library

Electronic teaching support services should be fully integrated into the printed services already available to avoid artificial distinctions between related activities. Copyright clearance work could be fully integrated into the current activities of the Subject Support Unit. There is essentially no difference in requesting permission for paper study packs to electronic course readings. Academic staff submitting items in the Teaching Collection or preparing paper study packs should be informed of the new services. It is recommended that the Subject Support Unit should work closely

with the Electronic Journals Administrator to see how existing subscriptions can be exploited to link reading lists to full text services. It is also recommended that Subject Librarians would play an important role in publicising the new service and fostering contacts in academic departments to generate enthusiastic participants.

(viii) How the new service might be funded

The new service would require a certain element of central funding to pay for new staff, equipment and annual fees such as the HERON subscription fee. Also consideration needs to be given to the recovery of copyright fees as it is clear that the need for Departments to meet these costs had a significant negative impact on the participation of several members of the pilot group. It was significant that most departments wanted to include materials that did not require copyright clearance charges. A variety of charging options need to be considered to continue the service, including, negotiating a central budget to pay for copyright fees as part of the new service, charging fees back to departments, or using money from existing library budgets to pay fees.

In-house system verses VLE software

The in-house built DigiCOMS website provided a secure environment to distribute a range of electronic course materials. Using a relatively simple procedure it was possible to password control the site so that only UCL staff and students could access it. This was sufficient to satisfy the term and conditions of the HERON license and users entered their UCL login and password, rather than needing and additional ID to access the site.

WebCT is the Virtual Learning Environment (VLE) for which UCL have purchased a site license. It has been made available to departments as part of a pilot project and there is a part-time support officer. At the present time it is not clear if this package will be adopted on a college-wide basis. Findings from the TQEF funded Electronic Administration Project launched in September 2001 will be significant here. The main advantage to using a VLE is that it has tools for building course web sites and supports a range of functions. For example WebCT has a chat and bulletin board facility and allows assessments to be created. VLE software has a clear overlap with the DigiCOMS service and some department may prefer to distribute their course

materials within this type of system, particularly if they want to incorporate functions such as assessment.

Given the trend in Higher Education towards online learning, it seems likely an increasing number of departments at UCL will want to use VLE software. The College has a number of current projects assessing how they might develop in this area, but a clear overlap exists between VLEs and a digital course materials service. One solution might be to combine VLE support with the electronic course materials service. However, based on the experiences of this project, departments using WebCT require a considerable amount of support, particularly when the course site is first created. Many universities have recently created Teaching and Learning Support Units that take responsibility for this type of work. UCL might consider this approach when implementing an electronic course materials service, however this would widen the remit of the service and would require additional staff posts. Traditionally at UCL, all college approved software is supported by Information Systems, therefore it might be appropriate for the support to be based here.

The overall feasibility of a new service

The pilot service has shown that electronic course materials are clearly an important resource and academic departments need advice, support and technical assistance to prepare these materials, and to deliver them to students in a secure and organised environment. Departments require a flexible service that allows them to include in-house produced documents, such as course outlines and lecture notes, as well as core readings. More information about the value of this service will be obtained through evaluation work with staff who used the service and students who access the materials. However, based on the evidence to date, this type of activity could be integrated into the library's current teaching support services and would be a valuable extension of this work.

The full scale service would only be feasible if properly resourced with at least one additional post in Library Services. The full recommendations for the continuation of the service are available in the Access to Core Course Materials Final Report and the Recommendations for SCILTA document. However, the DigiCOMS service was a

valuable exercise and demonstrated the need for this type of service, but the problems and issues that would need to be considered when scaling up.

Chapter Nine: Conclusions and recommendations

9.1 Introduction

The recommendations are based on 17 months of sustained research activity. This has included an external review, a needs analysis of academic departments at UCL, case studies of course materials systems, practical experiments to produce electronic study packs and the establishment and evaluation of a pilot service. While the operation of the pilot service, discussed in chapter nine, significantly shaped the final recommendations which follow, all phases of the research were important. Earlier stages of the project largely determined the nature of the pilot service. In particular the needs analysis identified key features that departments would consider useful, and the external review highlighted similar projects at other academic libraries. Both the practical experiments and the pilot service provided evidence of how these activities might work in practice at UCL and in particular how they might be integrated into existing structures.

Recommendation 1

It is recommended that Library Services should establish a new electronic course materials service that delivers documents to students via a secure website. This service should be integrated into the Library's existing teaching support activities to include the preparation of both print and electronic resources.

The printed study pack service and printed teaching collection should continue to exist and for the time being run in parallel to the electronic service. Whilst the electronic service will become increasingly important and may eventually require more library time than the paper service, both services will be needed for the foreseeable future.

The needs analysis demonstrated academic departments require a new service to help them improve access to electronic course materials. Academic staff increasingly find it necessary to distribute electronic course materials to students. Often, for reasons of copyright, it is necessary to distribute materials via a secure website, rather than making documents publicly available. A centrally managed service would be more

cost effective and efficient than each department setting up their own system. Furthermore, academics find it time consuming to construct and maintain electronic resources, and it is not an area in which they have expertise. Meanwhile, at other academic libraries, staff are increasingly becoming involved in managing and preparing electronic course materials, because of their expertise in areas such as copyright law. At UCL, Library Services has been involved in providing teaching support services for printed materials and have extensive knowledge of copyright law. Academic departments found teaching support services highly useful and regarded the electronic service as a valuable extension of this work. The costs and resources associated with this new service are discussed in detail in the following recommendations.

Recommendation 2

The electronic course materials service should include a copyright clearance and digitisation service for core reading materials. It is recommended that copyright clearance of digital texts is undertaken by staff in-house within the Subject Support Unit. However, digitisation work should be out-sourced to the HERON Service.

Full text digital core reading materials can be obtained utilising a combination of existing staff skills and out-sourcing work. The project found that the process of obtaining copyright clearance for digital readings is identical to that of printed materials. It is often quicker and cheaper to obtain permission in-house either by contacting the Copyright Licensing Agency (CLA) or publishers direct, rather than out-sourcing this work to HERON (Higher Education Resources ON-demand).[34] The Subject Support Unit can obtain digital clearances alongside requests for printed study packs and teaching collection items, using their existing contacts with the CLA and publishers. However, the research found that in-house digitisation of reading materials was extremely time consuming and required specialist equipment and expert technical staff. It is therefore recommended that digitisation work is out-sourced to HERON, who provide a cost effective service.

[34] HERON offer a copyright clearance and digitisation service for core readings, to subscribing higher education institutions. The service can also be used to obtain copyright clearance only, or to undertake digitisation work only.

Cost / resource implications:

In order to run this service the following costs / resources would apply:

- HERON Subscription fee: £1000 per annum
- Copyright permission charges: (Average rate of 5-10 pence per page per student)
- HERON Digitisation fees (Average £20 per item)
- File store space and back-up facility for digitised materials (purchase of designated server) estimated cost based on purchase of DELL Poweredge 1300 server, 2X 9GB Hard disk: £2000. Plus associated staff support time from Information Systems (See Recommendation 7).

Recommendation 3

The new service should also include in-house produced course materials. A limited digitisation service will be available for text and images that are only available in hardcopy; however, wherever possible, academic departments should provide these materials in electronic format. Documents can be distributed in a variety of formats, however certain file types, such as sound and moving image, cannot currently be accessed by students using the managed service.

Academic departments wanted to include in-house produced course materials in the new service, such as lecture notes, images and general course information. Academic staff are reluctant to distribute teaching materials from departmental websites, as these materials would be publicly accessible. They also may not have the required skills to do this. Furthermore, some departments would rather provide access to in-house produced materials that do not incur copyright charges. Experiments revealed that material could be distributed from a secure website in any format, or converted to PDF where appropriate. Simple scanning of material not in electronic format could also be undertaken with a relatively inexpensive good quality scanner. However, when academic departments provided materials in electronic format, the process of adding the material to the site was unproblematic and took a minimal amount of staff time.

Cost implications

In order to include in-house produced documents in the service, the following equipment would be required:

- Non-managed PC with internet access to run Microsoft Office, Adobe Acrobat Suite (Exchange, Distiller, Capture etc) and image manipulation software (e.g. Adobe PhotoShop)
- File store space and back-up facility to store in-house materials (For costs see Recommendation 2)

In addition to this, a basic in-house digitisation service would require:

- Scanner (Suggest Fujitsu scanner SP15C $995)
- Staff time to operate scanner

Alternatively dedicated staff time to enable digitisation of such item by Media Resources (See Recommendation 7)

Recommendation 4

The new service should have a range of functions including:

- **Monitoring the use of materials on the course material site, in particular to identify any problems viewing and printing large files**
- **Providing a general advice service for departments developing and using electronic course materials and developing a centre for expertise in the College;**
- **Working with appointed representatives from participating departments to meet their teaching support needs;**
- **Maintaining a list of useful contacts throughout the College and externally to whom individuals needing more specialised advice could be referred;**
- **Collecting information about copyright fees that specific publishers charge for digital copies. This information would be made available to academic staff on the electronic course materials web site.**
- **Undertaking promotion and out-reach work about the role of the Unit and the new services being offered to academic departments. For example, this might include running a workshop to examine digitisation and copyright law or good practice when creating electronic course materials.**

The research, particularly the needs analysis, found that departments required advice and support when creating electronic course materials. Academics were often unclear about copyright law, and where they could get advice about this issue. They also expressed considerable surprise at the high amount some publishers charge for digital copyright permissions. The pilot service demonstrated the importance of working closely with academics to provide access to reading materials at a reasonable cost. This sometimes involves substituting an item from one publisher for another reading which cost less, or putting an item into the printed reserve rather than incurring a high fee for digitisation.

Cost / resource implications

- See Recommendation 6 and 7.

Recommendation 5

In order to run the service it is necessary to create a new academic-related staff post at Assistant Librarian level with responsibility for electronic collections and teaching support. This post would:

- **Manage the electronic course materials service;**
- **Liase with academic staff over the most cost effective way to provide electronic course materials to support teaching and learning at UCL;**
- **Liase with staff across EISD, particularly concerning any learning technology initiatives or teaching support services;**
- **Liase with staff in Library Services (specifically Subject Librarians and the Electronic Journals Administrator) in order to exploit existing subscriptions to electronic resources;**
- **Answer any general enquiries and advise academic staff about matters relating to copyright, particularly digital copyright;**
- **Promote the electronic course materials service across UCL.**

The introduction of a new service in Library Services represents a significant increase in activity and responsibility cannot be undertaken with existing staffing levels. It is recommended that this post is created at Academic Related level because of the wide range of skills such a person would need. These would include: a high level of IT

skills, including web page and database design; practical experience of digitisation; knowledge of copyright law, in particular relating to digital texts or electronic reserves; knowledge of virtual learning environments or other courseware packages; and experience of dealing with academic staff and other senior members of staff. They would also need experience of organising workshops or giving presentations to staff to promote the new service across college.

Cost implications

1 Full-time Academic Related 1/2 Assistant Librarian Post: £28102 per annum (including on-costs)

Recommendation 6

In order to run the electronic service effectively and continue providing printed teaching support services, a new Library Assistant post should be created to work full time in the Subject Support Unit. This is a separate appointment to the Assistant Librarian and the post will provide clerical support for the electronic and printed service. Duties will include answering routine enquiries about the service, dealing with copyright permissions, and processing material submitted to the electronic service.

Experiments revealed that many of the routine clerical activities associated with providing an electronic service, such as copyright permissions and dealing with requests from academic departments, could be integrated into the existing work of the Unit. However, the Subject Support Unit is currently working to full capacity dealing with the existing printed service, and additional clerical support would require a new member of staff. Because of the specialised nature of the work in the Unit it would be important that the postholder was based here full-time to build up a working knowledge of the service and aspects such as copyright law.

Associated Costs / Resources

1 X full time Clerical Related Library Assistant: £17,112 (including on-costs)

Recommendation 7

The service would require technical support from both the IT Services section of Library Services, Information Systems and Media Resources.

- **The new member of staff would need to work closely with the IT Services staff, in particular to liase over the digitisation equipment necessary to run the service;**
- **A designated contact in Information Systems would be necessary to support the service and ensure that course materials in a variety of formats could be delivered to students in Cluster Rooms, and that an adequate file back-up was available;**
- **A contact in Media Resources would be available for advice and assistance with digitisation work, particularly concerning images.**

The project highlighted the need for designated IT support if a new service was established. It would be unrealistic to expect the new Assistant Librarian to run the new service and provide this level of support. Moreover, in order to ensure the new service integrated with existing computing systems it was important to liase with IT staff. During the pilot project is was necessary to make the electronic course materials system available from the Library web site. Further integration with library systems might also be possible, such as making electronic resources available from the library catalogue. The new Assistant Librarian would need to liase closely with Information Systems to consider the implications of the new service, such as an increased level of printing, and the availability of software in cluster rooms. The facility to play sound and video files in cluster rooms would be important, as departments increasingly wanted to make these types of files available. The costs and resources associated with this recommendation is largely staff time from Information Systems and Media Resources and will be dependant on the level of support they are willing to provide.

Recommendation 8

Within the first year of operation a full review of the new service should be undertaken by Library Services to monitor demand from academic departments and student usage. Following this review, the service should be upgraded to become a database driven web service, using either an in-house built system or designated electronic reserves software, such as ERes. Staff in Library Services, Information Systems and Management Systems Division should make the decision about

which system should be developed. However, the database should enable:

- **Sophisticated document management techniques for electronic reserves;**
- **The facility to monitor students' use of the materials;**
- **A search facility to improve access to material in the electronic reserve.**

Library Services would also investigate how electronic course materials could be integrated into the Library Management System.

During the pilot phase the service used static web pages with hypertext links to the electronic resources. This system could be developed quickly, cheaply and with relatively low technical capabilities; however, it was recognised that it was not scalable if demand for the service grew significantly. The pilot service organised resources by department and subdivided them by course titles, but essentially they were presented in an alphabetical list. Once there were around twenty resources on a page, it would become increasingly difficult for students to locate specific materials. It was also difficult to manage resources that were presented in this way, particularly when documents needed to be removed from the site by a certain date. A number of electronic reserves software packages are available to help manage such resources. Alternatively a web based database could be developed in-house; however this would require input from Management Systems Division and may be more expensive than using an off the shelf package. It would also be important to further investigate whether the service should be integrated into the library management system, and how this might be achieved given that experiments to date have found the Reading List Module of Aleph unsatisfactory.

The ERes package was investigated in some detail as this is currently the market leader in this field. It has a number of features that would be extremely valuable, including being easy to use, integrating with the library management system and offering a statistics package that enables the generation of reports on system usage, and document level and course-level passwords to control access to copyright-protected materials. There are also a number of Copyright Management functions in

ERes, so bibliographic information can be stored in the database, letters to publishers and rights holders can be generated automatically, and a powerful set of reports and tracking summaries can be created. This package is mainly targeted at US academic libraries so a full investigation of its suitability for the UK would be advised. However, it would offer a far greater number of functions than an in-house built database.

Cost / resource implications

Purchase of an electronic reserves software package (ERes)

$5,000 one time setup, customization, and installation fee
$4,700 ERes annual fee (for the student population of 15,000)
Server to run software (See Recommendation2, estimated £2000)

In-house development of a basic database:

- Staff training in database design and databases on the web: £350
- Approximately 15 days of staff time (Academic Related 1) to create a very basic Access database to manage electronic resources, and mount it on the web with static HTML. (15 X £219 = £3285)
- Additional staff time to produce a searchable database using dynamic HTML (6 X £219= £1314)
- Further advice from MSD / IS involving staff time
- Maintenance costs of database

Integration with library management system:

- Library staff time to link resources from catalogue records

Recommendation 9

The new service should be compatible with any virtual learning environment or courseware software, e.g. WebCT, that is licensed and recommended for use at UCL. However, any software package approved and licensed for use on the UCL network would require designated full time support. This support, as with all software on the managed system, comes under the remit of Information Systems and would not become the responsibility of the Subject Support Unit and the new service.

The project compared the distribution of electronic resources using the in-house built system and the VLE package, WebCT.[35] The WebCT site built for the Department of Paediatrics and Child Health distributed a range of course materials and was also used for online assessment. VLEs provide a complete course environment with tools such as communication functions, the facility to submit assignments and undertake online assessments. However, when compared to the in-house built system, it was more time consuming to add resources to WebCT, which need to be uploaded to the system before links can be created. The document management functions of WebCT are also limited and resources are added to a particular course site, rather than being placed in a generic database accessible to all users. Although using WebCT, course site design can be devolved to academic departments, it was also found that departments required a substantial level of support to do this. It was therefore concluded that the electronic course materials service should be separate to any virtual learning environment software used at UCL, although the two systems should be compatible. If UCL chooses to license a different VLE package, the facility to integrate with electronic reserves should be a consideration.

Cost / resource implications

At least one full time support officer for any VLE software licensed at UCL, to liase with the Subject Support Unit staff over course materials content.

Recommendation 10

It is recommended that the College should actively encourage departments to provide course materials in electronic format and in order to do this funds should be made available. The electronic course materials service is a valid extension of teaching support services and should be free to academic departments at the point of use.

However, to manage costs, each department who wishes to participate in the service should be allocated a budget to pay for any incurred copyright / digitisation fees up to a specified amount. Copyright costs will be kept to a minimum by working closely with academics in departments to ensure that free resources or those which fall under

[35] WebCT is currently being used at UCL as part of a pilot service and it has not been formally decided

existing electronic subscriptions are exploited, and copyright fees are only paid for essential core readings.

After one year of operation, Library Services should review the chosen charging mechanism and funding of the service and consider alternative funding mechanisms, particularly if this has had a detrimental effect on departmental participation.

Any new service will require an income stream to be associated with it. The main decision to be taken here concerns how, if at all, central resourcing should be supplemented with charges to departments. Costs such as copyright may be significant; however, it should be considered that departments may be unable to pay these, and may be reluctant to use a service that passes on such costs. Some academic libraries are setting a limit on the amount of charges that will be paid centrally for each department. If UCL want to meet the increasing demand from students for electronic course materials and encourage academic departments to produce these resources, it should be recognised that the service will need some form of central funding. It is difficult to provide average copyright costs as these vary depending on publishers, however, from the experiments suggest that £500 per department might be reasonable allocation.

The pricing of electronic texts is a important issue and will determine the feasibility of including certain types of copyright materials in the new service. Digital copyright permissions are usually granted on an annual basis; therefore any charges are recurrent. Where a publisher demands a particularly high permission charge it may be more cost effective in the long term to purchase extras copies of the textbook or journal in question, rather than pay an annual fee to provide electronic access. This study found that certain publishers were willing to grant permissions for free, particularly when UCL held an existing subscription to the journal in question. It would be important to gather more information about publishers who grant material either free of charge or at low costs, and work with academics to improve access to these resources.

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to recommend this package and use it on a College wide basis.

Associated costs

If all departments at UCL were involved estimated costs would be £42,000 per year (at £500 per department)
However, it would be assumed that 20 departments might participate in the first instance (20 X 500 = £10,000)

This costs are based on the likely copyright charges that would apply if the copyright environment remains unchanged. However, if any changes to the terms of the Higher Education Copyright License and the 1988 Copyright and Patents Act take place, these costs may be significantly reduced.

9.2 Summary Recommendations and conclusions

Establishing a new electronic course materials service would have significant resource and cost implications for UCL, including the creation of two new staff posts in Library Services, new equipment and central funding to pay for copyright and digitisation fees. The recommendations also have implications on other departments in the College, including Information Systems, Media Resources and the Management Systems Division. However, the Access to Core Course Materials has demonstrated that there is a genuine need for this service. Departments require advice and assistance to manage digital resources and ensure that copyright law is adhered to. They also need a secure website from which resources can be distributed. The demand for this service is driven by the tremendous growth in the production and use of digital resources and the use of the Internet to distribute these materials. Students require an increasing number of electronic resources to facilitate their learning. However, there is still a large amount of information only available in printed format and a need for digitisation services to prepare this material. It is important for UCL Library Services to continue providing a valuable and cost effective teaching support service. An electronic course materials service will ensure that UCL remains a centre of excellence and works towards achieving its teaching and learning strategy.

9.2.1 Summary Costs

Total one off costs: £5800

Equipment (Software, scanner, Server etc.) £3000

ERes package $5000 (£2800)

Recurrent costs: £58,714

Staffing £28,102 + £17,112

Heron Subscription fee: £1000

Copyright and digitisation fees: £10,000

ERes Annual Fee $4700 (£2500)

Appendix 1: Questionnaire design

Access to Core Course Materials:

Survey for Departmental Administrators

Name of department_____

1. Have academic staff in your department made use of the teaching support services provided by Library in the last two years? (tick as appropriate)

☐ Yes - placed material in teaching collection ☐ Yes - developed a study pack
☐ No

2. Does your department provide course readings or study packs for students independently or in addition to the services offered by the Library? (tick as appropriate)

☐ Yes - provide material independently ☐ Yes - provide material in addition to Library Services
☐ No

3. If your department provides course material independently could you please explain briefly (a) the type of material you are providing:

_____
_____
_____
_____

(b) why you provide this material independently:

_____
_____
_____
_____

4. Do teaching staff in your department produce any electronic materials for their students, and if so what format are they in? (tick as appropriate)

☐ Yes - web pages ☐ Yes - software packages
☐ Yes - video / audio files ☐ Yes - other (please specify below)
☐ No

_____
_____

5.(a) Would YOUR department be interested in providing core course materials in electronic format and which types of material would be useful? (tick as appropriate)

☐ Yes - web pages ☐ Yes - software packages
☐ Yes - video / audio files ☐ Yes - other (please specify below)
☐ Not interested ☐ Unsure

_____
_____

(c) Would your department be interested in participating in a pilot electronic service?

☐ Yes ☐ No ☐ Unsure

6. If you have any further comments about the provision of core course materials in your department or the nature of an electronic service please use the space overleaf.

Thank you for your co-operation.

Appendix 2: Needs Analysis Interview Guide

Name of department:
Name of departmental contact:
Date of interview:

Introduction to the Project: Access to Core Course Materials

- Examining the feasibility of providing core course materials in electronic format.
- Looking at the possibility of providing study packs and teaching collection material available digitally
- Undertaking a needs analysis with academic departments to find out how they provide access to these materials at the moment, problems they have in this area and their attitudes towards the use of digital materials
- Interested in the needs of YOUR department so we can tailor a service to meet these requirements.

1 Your Department

1) Could you tell me briefly about your department including the number and type of students you take (postgrad / undergrad) and the range of courses you offer?

2 Core Materials in your subject

1) Which type of materials do students in your department use that could be defined as core course materials?

2) How important are the different types of materials?

3) What about:
(Prompt with the following if not mentioned)
Entire text books
Book chapters
Journal articles
Lecturer's notes / handouts
Electronic sources
Other
How important are these types of materials?

4) Do students in your department use any other types of materials?

5) Do you consider all these types of materials to be core? If not why not?

6) How frequently do you update core course materials, such as core readings, exercises and assignments set, lecture notes?

7) Do students experience any problems when gaining access to printed core materials in your discipline? Tell me more about the problems they experience.

2 Use of current teaching support services

1. Are you aware of the teaching support services offered by the Library? (prompt with the teaching collection facility / study pack production)

2. You have / have not used the teaching support services offered by the library? Can you tell me more about why this is?

3. If you have developed a study pack, what were your experiences of this process?

4. What areas were particularly problematic? Which worked well?

5. If you have put material into the teaching collection, what were your experiences of using this services?

6. Which areas were particularly problematic? Which worked well?

7. Are you satisfied with the services offered by the library for teaching support?

8. Do you feel it is appropriate for the Library to be involved in teaching support?

9. If you provide course materials within your department can you tell me a little more about this?

10. Why do you do this in addition / instead of using the teaching support services of the library?

11. Have you ever used facilities available in Education and Professional Development / HERDU to develop teaching materials?

3 Electronic course materials

1) Do you currently provide access to any course materials in electronic format, aside from basic information on web pages?

2) Do you think it would be useful to provide materials in this format?

3) Would your students be able to access material in electronic format? Are they familiar with using the World Wide Web / downloading files / e-mail

4) Can you see any advantages to providing materials in electronic format?

5) Can you see any disadvantages of providing materials in electronic format?

4 Copyright issues

1) The survey we conducted suggested that copyright was a concern amongst some departments. Do you have any specific concerns about copyright that you would like the project to investigate?

2) How do you think the project might resolve any problems concerning copyright?

5 A future service

1) What features would be important to your department in any future service to improve access to core course materials?

2) If we take a look at the Institute of Neurology site and the web-based history courses. Do either of these systems appeal to your department?

3) Does a more or less sophisticated approach appeal to your department?

4) Could either of these services be tailored to meet the needs of your department?

Appendix 3: Paediatrics SCILTA Intranet Project report

Introduction

This document reports on the progress of the Department of Paediatrics and Child Health Intranet Project. The project was partly funded by a grant from the Sub-Committee on Innovation in Learning, Teaching and Assessment (SCILTA), however the development work was also part of a pilot service undertaken by the Project Officer of the Access to Core Course Materials Project. There was a clear overlap between the Access Project and this work, as both were concerned with making course materials available in electronic format. However, the SCILTA grant allowed the Project Officer to devote more time to the Paediatrics project than would otherwise be the case. More details are available about the overlap between these two projects in the Access to Core Course Materials Project Final Report.

Project aims and objectives

The project sought to introduce communication and information technologies into teaching and learning within the Department of Paediatrics and Child Health at UCL. The aims of the project are:

- To integrate C&IT into the Department's curriculum more systematically and to provide a sample of course materials in electronic format;
- To enhance access to course information for students based on a number of different sites;
- To further the university's teaching and learning strategy by improving the C&IT skills of students within the Department and combining both traditional and innovative methods of teaching.

These aims were to be achieved by the following objectives:

- To set up a site on the UCL Intranet which provides a secure environment to distribute course materials;
- To provide access to a range of course materials in different formats;
- To develop some simple online assessment material;
- To evaluate students' use of the site over an academic session and investigate their attitudes towards the delivery of a range of different electronic resources.

Outline Project Plan

The following plan was devised at the outset of the project. It was subject to a number of minor changes, however, generally work progressed as described below. The evaluation work has not been completed to date. This work will be undertaken at some point before the end of the academic year 2001/2.

1 Preparation / background research

This stage investigated the use of electronic course materials by other medical schools and examined the use of C &IT in paediatrics education to provide the work with a context. It assisted in the design and content of the Intranet site.

2. Pilot online assessment

Before further work was undertaken some pilot online assessment materials were prepared and tested with students.

2. Design and construction of Intranet site

The site was designed to hang a range of resources from. It included additional information about the Department, the staff and the course outline. It is only be accessible to UCL staff and students and will be linked from the Paediatrics Departmental website.

3 Design and construction of resources

A sample of resources were designed to be hung from the Paediatrics Intranet site - these included:

- Online assessment materials
- Links to relevant Paediatrics websites outside UCL
- The course outline with links to relevant readings in the UCL library and on free websites
- Digitised excerpts from textbooks / journals

This phase of the work formed the largest part of this project. It involved close liaison between The Project Officer and academic staff within the Department to determine the content of the resources.

4 Launch of site - September 2001

5 Evaluation of Site

Using focus groups with a sample of students, attitudes towards the site and the associated resources will be gathered. Suggestions for improvements will be recorded which can be incorporated into any subsequent development work.

Progress of the work

From early meetings with the Department the importance of the online assessment element of the site was apparent. In order to undertake assessment in this manner it was clear that the site needed the following features:

- To identify each student and record their responses
- Need to be secure
- Facility to allow images to be incorporated
- Need to be developed quickly. Project began May 2001. Online assessment scheduled for July 2001.

The decision to use WebCT

It became clear that some form of software package was required to devise the online assessment materials. The market leader in this field is *QuestionMark Perception*, which is currently not licensed for use at UCL. Purchasing a license was beyond the project budget, therefore it was decided that the Virtual Learning Environment (VLE) software WebCT would be used. This decision was made for the following reasons:

- WebCT is licensed for college use by all departments - therefore free!
- Students log into system and are individually identified
- WebCT has the facility to create online assessments
- It allows MCQs to be created simply
- It allows management and analysis of results
- It can incorporate images into exam function
- Online assessment is part of a larger courseware package that can be used to deliver a range of resources for the rest of the project

This final point meant that the course web site could also be built in WebCT. It was decided this would be undertaken to assess the usefulness of the package for the

Department. It was also useful for the Access to Core Course Materials Project to explore the capabilities of WebCT to distribute electronic course materials, and compare it to a system that was built in-house.

Preparation / background research

Using contacts from staff in the Department, other medical schools throughout the UK were contacted and asked whether they had a course web site and the type of information it contained. A number of responses were received and it seemed that this type of initiative was relatively common in medical education. At UCL another medical department were identified who had been using WebCT for some time. A meeting with scheduled with staff who had built this site to gather information.

Pilot Online Assessment Developmental work

Pilot online assessment materials needed to be prepared before the end of the Academic Year 2000/2001, so that a trial could be undertaken with students. An off the shelf package was favoured due to time limitations and WebCT was chosen for the reasons outlined above. Multiple Choice Questions were prepared by academic staff and work was undertaken by the Project Officer to enter them into WebCT and devise an exam, which are known as 'Quizes' in WebCT. The staff wanted to use images in the questions, for which a correct diagnosis needed to be selected. Some of the images required copyright clearance as they were taken from text books and web sites. Clearance was obtained, but this was problematic as it was needed for each image used in a question. For this reason, the department agreed to begin explore how they might build a database of digital images that could be used in the future.

There were no major problems designing the quiz in WebCT, although the process is time consuming, particularly to edit images and add them to questions. Student accounts also needed to be created in WebCT before they can undertake the assessment. It was necessary to hide the assessment within WebCT, so that if students accessed the site before the exam, they would not see it. A helpsheet also had to be devised for students, as they were not familiar with the software.

The assessment took place in July 2001 with 40 medical students. It was held in a college cluster room and seven members of staff were available to invigilate. Seven invigilators / assistants attended the session, comprising of staff from Paediatrics,

Education and Professional Development (EPD) and Library Services. The number of invigilators was greater than a session might require partly because of the nature of the room which was divided into two smaller rooms and the experimental nature of the assessment. The session also ran slightly differently to a 'real' session because students were not familiar with WebCT. Therefore, additional help was given to ensure all students successfully accessed the quiz. Progress was by a series of stages in which staff checked that all students had completed the necessary stage before the group moved onto the next stage.

No major problems were reported during the assessment and feedback gathered from students after the event was positive. All students successfully completed the quiz and the marks were incorporated into their overall marks for the course. In a future session students would be familiar with WebCT as the site would be available containing course information. Students would also have the opportunity to undertaken self-assessment exercises using WebCT so they would be familiar with the format of 'quizzes'.

Staff feedback following the assessment

The following observations were recorded by the staff immediately after the session:

- The staged login process took too long and some students were much more competent with the computers than others - although none seemed to have any real problems.
- The Project Officer had been unfamiliar with the method the students use to access the computers (i.e. using WTS rather than Windows 3.1) The instructions needed to be changed to reflect this.
- Problem logging in meant some students did not complete the quiz within the 30 minutes - they were not be penalised for this given the trial nature of the exercise.

Feedback from students

- Students felt the staged logging in procedure was unnecessary and that they could have accessed the quiz by being told to go to the appropriate URL.
- Image quality was not as good as the original images that staff provided.
- Students complained that the clock did not count down their remaining time. It seemed to update the time every time they saved an answer, but if they were

looking at the screen for a long time without saving any answers the clock remained the same.

- The students in general seemed to like the quiz and felt it was a more 'fun' way of being assessed.
- Students would like to see more questions of different types, to the one image, one questions style, so several questions could relate to the same image.

Student results

Results were accessed by staff using the WebCT Management and Analysis option. Where necessary some of the student records had to be graded manually as students had not waited until the completion screen appeared before they closed WebCT. It was agreed that it must be stressed to students that they should not close the WebCT window until they receive a message saying their quiz has been successfully submitted. Students performed well in the quiz, with almost all students scoring over 10. Most got 12 or 13. One student got 15/15. The tutors were happy with the way of accessing the grades and liked the fact that student answers to particular questions could be analysed to identify questions where students performed exceptionally well or had problems. This enabled them to identify questions that would need to be revised in a later test.

Based on the results of the experiment, the department decided to continue using WebCT. They are keen to develop a database of questions which could be used in online assessment and to have self-assessment tools available within WebCT. It was decided the course web site would be built in WebCT and it would be introduced to students at the outset of teaching in the Department. There was some concerns from academic staff about the security of the system and whether students would be more inclined to cheat using this method. These considerations were discussed throughout the project.

The WebCT course Site

Work was undertaken over the summer of 2001 to build the WebCT Course Site, of which Online Assessment formed be one aspect. Other Departmental WebCT sites were examined during the design phase. Regular meetings were also held between the project team, to determine the type of information that would be made available. The site was created by the WebCT Support Officer in the College who added designer

status accounts for all members of the team. The Project Officer customised the appearance of the site and designed a banner that was placed on the Home Page of the site. The Home Page is the page that students see when they first log into the site. The only other icon on the Home Page at this stage was a link to the pilot online assessment material.

The Department traditionally distributed all their resources to students in printed format, as a course handbook. This contained a variety of information, including general course details, information about the department and its staff, timetable information, details about students home and away attachments at one of three hospitals, a reading list and a guide to paediatrics on the intranet. It was decided that this information would form the basis of the content of the WebCT site. However, it was necessary to consider carefully how this information would be organised. Pages can be inputted into WebCT as HTML and so it was a relatively simple process to convert the Word files which had been used to create the printed course handbook into this format. It was then necessary to create tools or icons which would appear on the site Home Page, in which to organise the information. Ease of access was a key consideration as staff did not want students wasting time hunting for materials.

Home and Away Attachment details

Probably the most important information students would need to access was details about their clinical placement. Students would want to know which hospital they would be attending and further information about it. It was therefore decided to create a content module with an icon on the Home Page that linked to this information. This information was available as Word files and so it was relatively straightforward to convert it to HTML and load it into WebCT. Student allocations were listed with links to further details about each attachment.

Lecture Timetable

It was decided that the Timetable tool available in WebCT would not be used to add timetable information, as it requires details to be added to the appropriate date and the existing timetable was in Word format. Nevertheless, staff wanted timetable information available in the site, so this was added as a content module icon on the Home Page. The information was converted from a Word file to HTML and loaded into WebCT.

The Course Handbook

It was decided that a course handbook icon would be added to the Home Page to contain most of the departmental and course information that had been in the printed document. The relevant Word files were converted to HTML and added to this section. The electronic handbook included an introduction, details about staff members, the course aims and objectives, a course overview, a reading list and a guide to paediatrics on the intranet.

Course Resources

The course resources section was intended to contain a range of materials developed in-house to support learning. Negotiations with the publisher of the course textbook, which is co-authored by the Head of Department, took place and meant a chapter from this book was made available. The department also had a number of video tapes which they passed to Media Resources for digitisation. It was hoped these could be made available from the site. The reading list and guide to paediatrics on the internet were also put into this section, although this was replicating the information in the course handbook. Finally work was started to create an image database with some of the images used in the pilot online assessment.

Online Assessment

Throughout the summer work took place to add further questions to the online assessment section. A training session took place so that five of the lecturers in the department were able to add their own questions and build quizzes. Staff also worked on some self-assessment materials, so that students would be able to practice taking online exams.

Course Administration

WebCT requires that all students have an account to access the site. To simplify matters, it was decided that students should be given the same userid as their UCL computer userid. However. these details needed to acquired from Information Systems before accounts could be created for all new students. This information took a number of days to be obtained.

Paediatrics is taught in rotation to students in groups of approximately 50. Throughout the year they have six groups, or "blocks" taking the course in succession. Therefore, over the summer, accounts for the first group were created on the system and it was

decided that the next group would be added subsequently. Traditionally, the first block of students would receive their printed course handbook through the post in August. Given the pilot nature of this project, this information was still sent out in paper format, however once the WebCT site was completed, students were also e-mailed with details about the site. They were sent their userid and password and instructions about how to log into the site. To further introduce students to the site a brief demonstration was given at the first teaching session. From this date student accounts were also monitored to ensure that they were all accessing the site.

Problems with the site

WebCT was the obvious choice for creating online assessment materials given that UCL have a site license for this product. However, the software is not straightforward to use and at the outset of this project the department were informed that it had limitations. Specific problems are discussed below. However, in particular, the department liked features such as being able to track students and identify which individuals had not accessed the site.

Course organisation and management issues

WebCT provides a framework for distributing course materials, however files first need to be constructed in HTML before being loaded into WebCT, adding an additional stage to the work. Staff also had to learn how to use the software package with relatively limited support available. The department had to create a student account for each user and obtain details such as student user IDs from Information Systems. All this took time to undertake and while staff did not find WebCT difficult to use, working across the network even to make minor changes could be slow.

Assessment

In terms of the assessment, the question types available in WebCT were not sufficient to include the sort of questions that appeared in the written exams. For example, multiple response questions that the department currently use in traditional assessments, could not be included, as if a student did not answer a true/false question it was found that WebCT assumed they thought the statement was false. The negative marking scheme also did not work correctly if a student scored below zero. It was possible to create an exam with image based multiple choice questions and also to

design matching questions with images. However, it was again time consuming to enter questions into the software.

Security

Throughout the project there were concerns about security and whether students could access exam material. Quizzes were hidden from the student view and only made available to a particular group of students for a limited period of time. However, concerns continued that individuals not registered on the course might gain access to the site. This was a particular concern as the department wanted to digitise images and include them on the site. They were concerned that the patient consent forms would not allow this material to be made available in this way.

Copyright

Most of the site included in-house produced materials for which copyright clearance was not an issue. However, in order to design the online assessment, staff ideally required a database of medical images at their disposal. Although a number of free websites offering medical images are available, the range and subject matter was often not adequate for the department's needs. It proved time consuming to negotiate copyright clearance for images taken from the Internet on an individual basis because of the large number of images required so alternatives were sought. One publisher offered the Department digitised images from an illustrated textbook at the cost of £300. Investigations also revealed that images could be purchased from The Wellcome Trust or Great Ormond Street Hospital. However at the time of writing this report there was not an obvious source to supply the number digital images that might be required and the staff were using images from their own personal collections.

Support for WebCT

This project aimed to develop a course site that could be maintained by the department and so, wherever possible, the Project Officer passed on knowledge to the department and trained staff to use WebCT. Despite the fact that generally WebCT is not a difficult package to use, this project demonstrated that it still requires considerable on-going support. This support was shared where possible amongst the Project Officer and the College WebCT Support Officer based in EPD. Often the Project Officer was the first port of call when difficulties were experienced. However, certain things had to be deferred to the WebCT Support Officer who had greater

experience, and could also make changes to the WebCT Global database. Due to the staffing problems discussed below support was a concern throughout the project.

Staffing Issues

Problems were experienced due to staff resignations and absences midway through the project. Much of the initial content had been added to the site by the Department Secretary, however she unexpectedly resigned from her post in October 2001 and the experience she had built up was lost. This meant that the Departmental Administrator had to take over the site maintenance and a temporary member of staff also had to be employed. During this critical period the College WebCT Support Officer was seconded to work on another project and so was not available to give training. The Access to Core Course Materials Project Officer also resigned before the project was complete in November 2001. Fortunately in this instance staff were given sufficient notice and where possible responsibilities for work was passed to other people.

Sound and Video

Students were expected to access the site primarily through College Cluster Rooms. The Managed System is set up in such a way that sound cannot be heard and video files do not play properly. This was frustrating as Media Resources prepared a number of digital video files that were available from the site. It also meant that at the present time it would not be possible to incorporate moving images into any online assessment materials.

Conclusions

The department were generally pleased with the progress of the project and believed it met its aim by of introducing communication and information technology into departmental teaching. The staff felt there were a number of problems with using WebCT to deliver the course information and to design online assessment. However, they were generally happy with the site and felt it made a valuable contribution towards teaching and learning.

Further development of the site

At the Project meeting in October 2001 it was agreed that the WebCT site would be maintained for the duration of the academic year 2001/2 and it would be evaluated towards the end of the academic year. The future of the site, and in particular whether to continue using WebCT, would be decided before the department merged fully with

the Royal Free at the start of academic year 2002/3. Ongoing support for the project would be provided by staff in Education and Professional Development throughout the first year. The departmental staff would aim to incorporate a greater number of electronic resources into the site and they had secured funding to purchase a digital camera.

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