

Case study

Traditional and electronic study packs: a case study of the production process

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Abstract

This paper reports on research undertaken at University College London (UCL) for two projects funded by Higher Education Funding Council for England's (HEFCE's) Teaching Quality Enhancement Fund (TQEF). This paper documents the production processes, costs and resources for both traditional (printed) and electronic study (course) packs. We concentrate on a comparison of in-house and outsourced copyright clearance and digitisation services for electronic study packs. UCL's use of the HERON service is evaluated. The paper concludes electronic study packs would provide a valuable addition to teaching support services, but there are implications for equipment and staff which are discussed. Although this paper is based on a case study from UCL, we hope that other academic libraries considering introducing an electronic course pack service or electronic reserve will find some useful evidence of the integration of electronic and traditional library activities.

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1. Introduction

Recently there has been an increased interest in developing electronic library materials which exploit existing subscriptions to database services (Edwards and Jones, 2000) or digitise printed collections (Endicott and Hampson, 2000). However there are few up to date case studies directly comparing the production process, costs and implications for staff and other resources with those of traditional services. Here we report on research undertaken at University College London (UCL) for two projects funded by the Higher Education Funding Council for England's (HEFCE's) Teaching Quality Enhancement Fund (TQEF) (<http://www.hefce.ac.uk>). We compare the production of printed study or course packs with their electronic equivalent.

Previous work in this field was undertaken in the 1990s under the auspices of the Electronic Libraries (eLib) programme (<http://www.jisc.ac.uk/elib/>). A series of Electronic Short Loan Projects were funded such as ACORN (Access to COre Readings via Networks) and ERCOMS (Electronic Reserves Copyright Management Systems). Meanwhile projects such as SCOPE (Scottish Collaborative On-demand Publishing Enterprise) and HERON (Higher Education Resource ON-demand) investigated the area of on-demand publishing and electronic reserves (Halliday, 1997). These relatively small scale projects increased the interest in the potential of this area, but concluded that there were blockages in copyright clearance and the high costs of digitisation. It was concluded that economies would only be gained from a shared service and thus the HERON service was launched. Since 1999 HERON has offered a national service to the UK higher education community for copyright clearance, digitisation and delivery of book extracts and journal articles (Curry, 2001, see also <http://www.heron.ac.uk/home.html>).

This paper documents the production processes, costs and resources associated with electronic study packs and considers, at a

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local level, how these could be integrated into a printed service. We concentrate on a comparison of in-house and outsourced copyright clearance and digitisation services for electronic study packs, to investigate the effectiveness of the HERON service in meeting the needs of one academic institution. The wider implications for staff training, support infrastructure and access to equipment are also discussed. Studies show that the use of staff time is a key issue in the development of electronic learning materials (Chiddick *et al.*, 1997).

Although this paper is based on a case study from UCL, we hope that other academic libraries considering introducing an electronic study pack service will find some useful evidence of the integration of electronic and traditional library activities. It does assume that a printed service is in operation and that library staff already have some knowledge of copyright law. It is acknowledged that this may not always be the case. Furthermore, the recent ruling of the Copyright Tribunal which means that course pack production is now within the terms of the Higher Education License (CLA, 2002) may mean that some libraries are questioning their need to provide a printed study pack service. The findings from this study are therefore particularly pertinent for libraries considering the future of their printed study pack service, and may help them consider a new direction for traditional teaching support services.

The term “electronic study pack” as it is used in this paper needs some explanation as it may be unfamiliar to some readers. Printed course packs (or study packs as they are called at UCL) were previously excluded from the CLA’s (2002) Higher Education License and referred to a set of readings. In a print environment the distinction between a printed course pack and an off-print collection or short loan collection is clear. However, in the electronic environment this distinction becomes blurred. This has meant that previous UK research has been undertaken under a variety of headings such as “Electronic short loan” and “On-demand publishing”. Increasingly the US term, “Electronic reserve”, is becoming more common and while there is much written on this subject from North America (Pearce, 2001), differences in the copyright law mean that they are not comparable with the UK situation. The term electronic study pack as

we use it refers to a set of core readings in digital format that are specific to one particular course. A series of electronic study packs could form the basis of an electronic reserve. However, copyright clearance for digital texts is usually obtained using the “Bookshop substitution model” (Halliday and Oppenheim, 2001) where material is cleared on a per student, per page basis.

2. Background

“Access to core course materials” was an 18-month project (Secker, 2002a) to investigate the feasibility of extending the UCL Library’s traditional teaching support services, to include a variety of electronic course materials, including electronic study packs. It was completed in November 2001 and the full report is available from the project Web site (Secker, 2002b). Another project, “Understanding the development of teaching and learning resources”, is exploring the structure of the production process for both traditional and new electronic learning resources and the implications for academic staff time, training and support infrastructure associated with a future shift towards increased use of electronic learning resources (Plewes, 2002). The production of printed and electronic study packs is therefore a common area of interest for the two projects.

UCL Library Services have provided a printed study pack service to academic departments for the past five years (UCL, Library Services, 2001a). The work is undertaken by the Subject Support Unit (SSU) which also manages the printed reserve at UCL (UCL Library Service, 2001b). Copyright clearance is usually obtained using the Copyright Licensing Agency (CLA) Rapid Clearance Service (CLARCS). Where the CLA does not hold a mandate for a particular item, clearance is obtained directly from publishers and the SSU has built up a substantial number of contacts with publishers. Departments are required to supply copies of the material for inclusion in the pack; however, the SSU arranges for printing work to be undertaken and delivers completed study packs. In the future, this service may be extended to include an electronic study pack service.

Several electronic study packs were produced to identify the stages in this process,

the associated costs and resources and how this compared to the traditional printed service. It was particularly useful to examine whether electronic study packs could be produced in-house, and how this compared to using the HERON service. In particular, the cost of obtaining clearance, time taken and quality of the digitised material was compared.

3. Traditional study pack production

Since most librarians will be familiar with the production of printed study packs we provide only a brief account here and concentrate mainly on a detailed description of the production process for electronic study packs. Additionally, the recent Copyright Tribunal ruling means that copyright charges are no longer applicable for course packs. However, even without copyright fees, the production cost of study packs depends on three main factors:

- (1) The number of articles.
- (2) The length of the articles.
- (3) The number of copies required (student numbers).

The following model briefly summarises the production process for the traditional printed study packs.

- (1) *Stage 1.* Academic compiles list of required articles and submits it to library (Academic).
- (2) *Stage 2.* List checked and bibliographic details completed where necessary (SSU staff).
- (3) *Stage 3.* Library contacts individual publishers and/or CLARCS for copyright clearance (SSU staff).
- (4) *Stage 4.* Follow up letters sent where necessary (SSU staff).
- (5) *Stage 5.* Library prepares estimate of the total cost of the pack and submits this to the academic department for approval (SSU staff).
- (6) *Stage 6.* Department approves quote and sends photocopies of contents to the library (Academic).
- (7) *Stage 7.* Production of front cover, contents page and copyright declaration (SSU staff).
- (8) *Stage 8.* Pack printed at UCL reprographics (Reprographics staff).

- (9) *Stage 9.* Department invoiced for cost of copyright clearance (SSU staff).
- (10) *Stage 10.* Sale of pack to students and payment of invoice (departmental administration staff).

The member of staff involved at each stage is indicated in brackets. These stages have been set out to show the similarities between the production processes of printed and electronic study packs. It also clearly identifies the staff involved at each stage and attempts to identify costs which may otherwise be hidden, as previous studies have shown these to be significant (Bacsich *et al.*, 1999). Hidden costs in this instance might include the time taken for library staff to check bibliographic references, negotiations with rights holders and preparation of cover sheets for the study pack.

4. Electronic study pack production

Two electronic study packs were produced for the Department of Economics at UCL to investigate the processes and costs associated with these resources and to find out whether this work could be undertaken in-house or whether it should be out-sourced to the HERON service. The comparison also explored the feasibility and implications of extending the existing printed study pack service to include digital copies. In the following sections, the two approaches will be described and key issues discussed.

Before electronic study packs can be produced an institution must sign the CLA Higher Education Digitisation Licence (CLA, 2002). The factors determining the cost of electronic study packs are similar to traditional study packs, and although only one copy of the pack is scanned copyright fees are still based on a per page, per student basis. Consequently, digital permissions are usually issued for one year for a particular course with a specified number of students.

4.1 Liaising with academic staff

The first phase in the production process for both in-house and outsourced production involved liaising with academic staff to determine the desired content of the pack, the course for which it is required and the number of students. The in-house produced pack contained ten items that were required

reading for an undergraduate economics course with 150 students. A separate pack with 12 items was sent to the HERON service for a separate economics course also with 150 students. The choice of material was determined by the lecturer, who selected materials that students generally found difficult to obtain.

4.2 In-house copyright clearance

In-house copyright clearance work was carried out with advice from SSU staff who have expertise in this area. Details about all the publishers except for one were obtained from the SSU 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, the duration of the permission and the number of students on the course.

4.3 In-house digitisation

Given that this project had not been allocated a budget for equipment, it was necessary to undertake in-house digitisation work using existing equipment and resources available in Library Services. A Hewlett Packard Scanjet scanner was available with the Adobe Acrobat Suite of software and an image manipulator, Adobe PhotoShop. However, this equipment was used by other staff and so access had to be negotiated.

Technical advice was extracted from the reports of projects such as ACORN, SCOPE and HERON. The Association of Research Libraries (ARL) e-reserves mailing list (ARL, 2002) also contained valuable technical information about scanning materials, setting up electronic reserves systems and other aspects of delivering this type of material.

Several possible methods were identified to scan material, including:

- Scanning straight to portable document format (PDF) – this method resulted in very large files which could not be manipulated, e.g. to remove black edges and marks on the page.
- Scanning each page to individual Tagged Image File Format (TIFF) files, editing to remove edges/marks, assembling in

Acrobat and converting to PDF – this still resulted in large files which were sometimes skewed on the page.

- Scanning each page to individual TIFF files, editing to remove edges/marks, assembling in Acrobat and using Capture to Optical Character Recognition (OCR) text – the produced high quality text files, however the documents needed to be corrected to remove “Capture Suspects”.

The final method was the most time consuming, however it was chosen because it allowed the images to be edited to produce a higher quality end product. The total time required to scan one page using this method was 15 minutes per page. If OCR work was not undertaken the time taken was 7.5 minutes per page, however it meant that files were larger and images that were skewed on the page could not be straightened. These times were based on our experiences at UCL, and projects such as SCOPE and ACORN found that OCR work took longer. However, software improvements may account for these faster times.

4.4 Required equipment and resources

In addition to staff time, in-house digitisation requires the purchase of a scanner with appropriate software, Adobe Acrobat Suite and image manipulation software. It is also necessary to have adequate file store space for the digitised files, which may require the purchase of a new server.

4.5 In-house production model

A summary of the in-house production process for the electronic study pack is as follows:

- (1) *Stage 1.* Academic compiles list of required articles (Academic).
- (2) *Stage 2.* List checked and bibliographic details completed where necessary (Project Officer).
- (3) *Stage 3.* Individual publishers contacted and CLA for clearance (Project Officer).
- (4) *Stage 4.* Follow up letter sent where necessary (Project Officer).
- (5) *Stage 5.* Quotes received and passed to department for approval (Academic).
- (6) *Stage 6.* Begin in-house digitisation of required files – scanning to image files (Project Office).
- (7) *Stage 7.* Image manipulation to reduce the size of the files (Project Officer).

- (8) *Stage 8.* Convert images to PDF (Project Officer).
- (9) *Stage 9.* Add copyright notices and header sheet (Project Officer).
- (10) *Stage 10.* Transfer files to storage area (Project Officer/IT staff).
- (11) *Stage 11.* Distribute files via secure network (IT staff).

As in the previous use of stages, all the stages in the production are clearly identified to highlight hidden costs. Bibliographic details again need to be checked by library staff and copyright notices need to be added to digitised files to comply with the Digitisation License.

4.6 Outsourced production

The second pack was submitted to the HERON service and contained 12 readings. 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. This took two days, after which 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 accept or reject the quote.

4.7 Outsourced production model

The outsourced production model is less complex than in-house, however the stages generally took longer to complete:

- (1) *Stage 1.* Academic compiles list of required articles (Academic).
- (2) *Stage 2.* List checked and bibliographic details completed where necessary (Project Officer).
- (3) *Stage 3.* Pack built using HERON interface and submitted for clearance (Project Officer).
- (4) *Stage 4.* Quotes received from HERON. (2 weeks +) (HERON).
- (5) *Stage 5.* Departmental approval of costs (Academic).
- (6) *Stage 6.* HERON supplies PDF files of required articles (HERON).
- (7) *Stage 7.* Transfer files to storage area (It Staff/Project Officer).
- (8) *Stage 8.* Distribute files via secure network (IT Staff).

It is particularly important to check the bibliographic details before they are submitted to HERON and this stage may take longer to ensure all details are correct. The references also need to be submitted via HERONweb and the time taken to get clearances can be significant. This is discussed in more detail in Section 6.1.

4.8 Required equipment and resources

HERON provide digitised files which must be stored locally, therefore file storage space for documents is required and the purchase of a new server may be necessary. In terms of recurrent costs, the HERON subscription fee must be paid annually, and amounted to £800 in 2000/2001 and £1,000 in 2001/2002. HERON copyright and digitisation fees per article must also be paid.

5. Cost comparison

A comparison of the price difference between in-house copyright clearance and digitisation work and using the HERON service was undertaken. The costs are outlined below.

5.1 In-house copyright clearance costs

The total cost for copyright clearance for the ten item pack, when sought in-house, was £1,621.53. Five items cleared in-house were granted permission by the publishers free of charge. This price does not include digitisation work, and the cost of this work is included in Section 5.3.

5.2 HERON costs

A second pack was cleared through HERON, using different materials and the total cost, including copyright clearance and digitisation, was £1,143.85 for 12 articles. 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 holds a subscription to the journal from which the article was taken.

Given that two packs were prepared containing different reading material, HERON agreed to roughly estimate the price they would charge for the first pack being produced in-house. This enabled a direct cost comparison to be made. The total cost for copyright clearance and digitisation for the same items when provided by the HERON service was estimated at: £3,015. In contrast to the in-house clearances, where five items were granted free of charge, HERON only received two items free of charge.

5.3 In-house digitisation costs

Although copyright 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. In-house digitisation was undertaken using existing equipment available in library services. However, if large amounts of digitisation are undertaken in-house the experiment suggests it will be necessary to purchase new equipment.

5.4 Total costs to produce study pack in-house compared to HERON service

Table I shows the full costs for each article comparing the in-house process with outsourcing to HERON. Separate quotes are included depending if OCR work is undertaken. It shows that the staff costs required to digitise in-house are significant, especially if OCR work is undertaken. The total cost for the pack from HERON would be £3,015, in contrast to £2,921.53 for in-house production with OCR work and £2,271.56 without OCR work.

It should be noted that the in-house costs do not, however, include staff time to get the copyright clearances. Halliday and Oppenheim (2001, p. 438) estimate that the total cost in terms of staff time for ten

permissions is £151, assuming that nine out of ten permissions can be secured through the reprographic rights organization and one will require negotiation with the publisher. In addition to these costs, in-house digitisation would ideally need designated hardware and software, available office space to house the set-up, and appropriate training and support for the staff operating it. The costs from HERON were also estimated and, as the experiment shows, the invoiced amounts may well be reduced. Furthermore, in two instances where permission charges did not have to be paid, the HERON digitisation fee was only £30. The in-house costs for digitisation were dependant on the length of the article, however in all instances apart from one the in-house digitisation costs worked out more expensive than using the HERON service. These findings therefore suggest that, while copyright clearance through HERON may be sometimes be more expensive, the digitisation service is cost effective.

6. Clearance times

The study was particularly interested in the length of time taken to obtain copyright permission for the required articles and to compare the in-house process with the HERON service. The permission time taken can be essential to the running of an effective service, given that academics frequently require material to be available with very little notice. The process of obtaining copyright clearance in-house is not time-consuming in itself, but there may be delays and reminders may need to be sent out. It will also require staff with appropriate knowledge of copyright law and the process of obtaining permissions. Digital permissions can be granted by the CLA, where they hold a mandate, or publishers can be contacted directly. Currently not all publishers will grant permission for digital copies. However, the method is identical to that used for traditional study packs and requests are sent to the CLARCS.

6.1 HERON

The HERON pack was submitted for clearance on 22/03/01 and contained 12 readings. At the time of creating the pack, packs could not be submitted until the bibliographic details had been checked by

Table I Chart showing total costs for in-house study pack production compared to the HERON service

Publisher	Length of article (pages)	In-house copyright cost (£)	In-house digitisation costs ^a (£)		Total in-house costs (£)		Total HERON costs (£) (copyright/digitisation)
			OCR	Not OCR	OCR	Not OCR	
University of Chicago							
Press	36	0	117.00	58.50	117.00	58.50	30
MIT Press	35	0	113.75	56.88	113.75	56.88	420
Brookings Institution							
Press	70	509.55	227.50	113.75	737.05	623.30	600
Sage Publications	17	127.50	55.25	27.63	182.75	155.13	185
OECD	33	0	107.25	53.63	107.25	53.63	285
Blackwells	45	0	146.25	73.13	146.25	73.13	30
Edward Elgar	28	135.00	91.00	45.50	226.00	180.50	250
Sage Publications	20	0	65.00	32.50	65.00	32.50	215
Macmillan	23	172.50	74.75	37.38	247.25	209.88	205
Brookings Institution							
Press	93	676.98	302.25	151.13	979.23	828.11	795
Total cost		1,621.53	1,300.00	650.03	2,921.53	2,271.56	3,015

Note: ^aStaff costs based on staff time for digitisation in hours and UCL's salary scale for clerical related staff at £13 per hour

HERON staff. Since the launch of HERONweb in May 2001, this process is now not necessary. However, HERON asks that at least 12 weeks' notice is given to obtain clearance for any reference.

Three quotes were received on 30/03/01 (eight days after the request was submitted) and a further three were received on 03/04/01 (12 days later). 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 (40 days) and a further four were received on 17/05/01 (56 days). 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 grants permissions free of charge where a current journal subscription is held, however it will not deal with HERON and sends the permissions to the subscribing institution which then needs 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 course commences. The HERON files were sent in early September.

6.2 In-house clearance

UCL had no experience of obtaining permission for digital copies, although it was recommended that at least six weeks' notice was given for any paper copies requiring copyright 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. After one month follow up letters 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. From other requests sent out from the SSU it was clear that these permissions had all been received relatively quickly and that the speed of clearance could not always be guaranteed. However, digitisation work could go ahead from this date, although the files would not be made available to students until the course commenced. This meant that all the in-house produced files were digitised and ready for distribution in early July.

The discrepancy between the time it took to obtain permission in-house and the time permissions were received from HERON was significant. Further evidence would need to be gathered to generalise about this further, however the results suggested that where speed of clearance was important it might be problematic to rely on the HERON service.

7. Distribution of the study packs

Distribution of digital files is significantly different to the distribution process for printed materials. Due to copyright restrictions, the files ideally need to be held by the library, where they can be removed once the permission duration had expired. It is also necessary to password control access to the files so they can only be viewed by UCL staff or students. Over the Summer 2001 a pilot electronic course materials service was launched as part of the Access to Core Course Materials Project. The service provided an electronic study pack and digitisation service, and a secure Web site for distributing electronic course materials. The Web site was linked from the library site and pages of resources were created for each of the participating departments. The economics study packs were hosted on this site.

8. Issues arising from the work

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

8.1 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 would be reluctant to pay for online readings and a charging mechanism would need to be devised by the institution. The JISC/Publisher's Association study (Bide *et al.*, 1997) raised this issue several years ago, but few universities are happy with the idea of charging for access to electronic resources, or have found an appropriate way of doing this. 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 a digitised article.

8.2 File sizes and quality of images

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. This was a particular problem at UCL because of the software available and the capabilities of the computing network. For many universities which are primarily distributing materials to on-campus students file size may not be a significant problem, however when distributing material to distant learners who are accessing resources via a modem it may be necessary to reduce file sizes.

By converting the files to PDF text where possible, file sizes were substantially reduced. This process involves running the OCR software (called Capture) within the Adobe program. This not only reduces the file size, but also can improve the quality of the resulting image by correcting problems such as skew. Conversely, the Capture process can mean that errors appear in the document if words are read incorrectly by the software. HERON provides files in PDF Image format and is not prepared to undertake OCR work for this reason. Although the CLA Digital Licence 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.

Table II 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 the Acrobat Capture function. This substantially reduces the size of the files as can be seen. However, at the time of writing this paper the

Table II Comparison of file sizes of in-house digitised files and HERON files

Article number	Length of article	
	(pages)	File size (KB)
Article 1 (in-house – OCR)	36	277
Article 5 (in-house – OCR)	33	396
Article 8 (in-house – OCR)	20	303
Article 2 (in-house – non-OCR)	30	4,234
Article 6 (in-house – non-OCR)	25	3,821
Article 2 (HERON)	32	1,592
Article 5 (HERON)	14	1,064
Article 7 (HERON)	54	3,032

evaluation work had not been undertaken and UCL was unsure if the larger file sizes provided by HERON would cause a problem when the material is viewed and printed out by students. Again it should be stressed that file sizes may not be a problem for other institutions, particularly if resources will mainly be accessed on campus.

8.3 Relations with HERON

The project staff were generally impressed with the HERON staff and the principle behind the service. Staff were approachable and friendly and queries about particular extracts were dealt with quickly. However, two particular difficulties were experienced during this experiment. One problem was caused by transition from the earlier version of the HERON request system to HERONWeb, which was easier to use and generally more effective. However, the copyright clearance quotes that appeared on the new 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 for copyright reasons the service cannot release files until 30 days before the course commences. UCL expected to receive the files at the end of August, which would ensure that staff had sufficient time to make the material available for the start of term. Unfortunately the files did not arrive by this time and it transpired that the files could also not be released until the new HERON Licence had been signed by UCL. Licences 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. If a greater number of files were being received from the HERON service, library staff would need to be available throughout September to ensure that the files could be made available to students.

8.4 Distributing the files

Devising a mechanism to distribute the files to students took longer than anticipated, largely because it required liaising with other departments at UCL. The library does not have a designated server to store the files, therefore it was decided the material would be held in a new departmental Web account. Setting up this new account took a number of weeks. Additionally, because access to the Web site needed to be restricted to UCL staff and students, it required obtaining a particular script from the IT department. It was important to ensure that the files could be accessed on and off campus, so a script which prompted users to authenticate using their UCL login and password was devised. Fortunately, both the new Web account and the script were obtained before the start of term and this meant that the site could go live as planned.

9. Advice for libraries considering an electronic service

Based on our experiences at UCL, we have highlighted a number of issues that may be relevant to libraries considering the development of an electronic study pack service. The feasibility of the service is partly dependant on the type of services the library is already providing. However, related to this is whether to outsource copyright clearance and/or digitisation work for the service. These issues are outlined below:

(1) *Copyright clearance:*

- Do existing staff have knowledge of copyright law to provide this service? If staff already provide a print service they will be familiar with the process, however additional staff may need to be recruited to undertake this extra work.
- If staff do not have knowledge of copyright law it might be appropriate to use the HERON service to get copyright permissions.
- Bear in mind that at least 12 weeks' notice will be required if the HERON service is used for clearances.

(2) *Digitisation:*

- What existing equipment is available and what might need to be purchased? The minimum requirement for in-house digitisation

will be a robust scanner, Adobe Acrobat software and image manipulation software.

- How much staff time is available for digitisation? Digital readings will need to be prepared to a standard adequate to allow on screen reading and printing.
 - Should OCR work be undertaken? If extra staff time is available to do this work it might be worthwhile, particularly if large file sizes could be a problem.
 - Staff will require training to operate the scanner and image manipulation software.
 - If no equipment or appropriately skilled staff are available it will be more cost effective to use the HERON service for digitisation.
- (3) *Storage, distribution and file management:*
- The digitised materials will need to be stored on a server. The required file space will vary depending on file space and the number of files, however it may be necessary to purchase a designated server depending on existing equipment.
 - Files will need to be distributed from a secure Web site and an authentication mechanism may need to be devised if off campus access will also be required.
 - If the electronic service grows considerably it may be necessary to use some form of database to organise the files.
- (4) *Funding and wider implications:*
- The new service is likely to require additional staff members depending on the extent of out-sourcing and in-house work.
 - If academic departments are actively encouraged to use the service, an element of central funding to pay copyright and digitisation fees may be necessary.
 - The new service will have implications on IT staff and equipment. For example, viewing large files in college computer rooms may affect the network performance. Students may also print a greater amount of materials from the site. Consultation with IT staff will be necessary.

The experiment at UCL concluded that existing library services' staff already have knowledge of copyright and valuable connections with a large number of publishers. It would therefore be a relatively simple matter to incorporate digital copyright permissions into the current activities of the SSU. This would consequently increase the workload of this unit, and additional staff would be required. However, digitisation is not an area where the library has 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. The staff time to undertake this work is, however, considerable. Therefore, out-sourcing digitisation was proposed and the HERON service proved to be cost effective. The project concluded that an electronic study pack service would be a valuable addition to the teaching support services currently available at UCL and contribute towards the institution's teaching and learning strategy.

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