Library Services / Education and Professional Development

Access to Core Course Materials Project

Teaching Collection Experiment Report

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1 Introduction

This report documents the third phase in the Access to Core Course Material 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 report 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 5 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 a separate report.

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.

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.

3 Production Processes

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.

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.

3.2.1 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.

3.2.2 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.

3.2.3 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.

3.2.4 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.

3.2.5 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)

3.2.6 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 per page

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

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)

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.

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

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.

4.2.1 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.

4.2.2 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.

4.2.3 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[1]

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

4.3.4 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

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

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 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.

5 Clearance times

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.

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.

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. A full report about the DigiCOMS pilot service is also available.

7 Problems

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

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.

7.2 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

7.3 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.

7.4 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.

7.5 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.

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.

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.

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:

$(10 \times 30)\ 300 \times 0.05 = 15$ 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

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.