

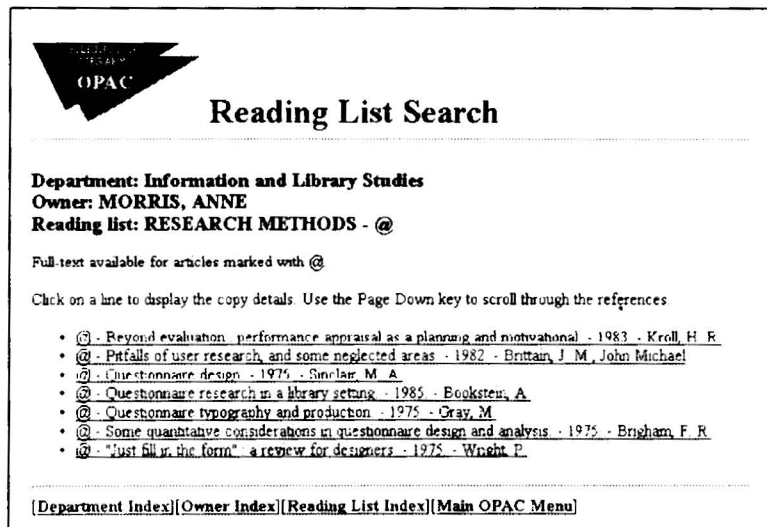
# MANAGING THE TRANSITION FROM PAPER TO ELECTRONIC TEXT: IMPLICATIONS FOR LIBRARIES AND PUBLISHERS

**Paula Kingston**

Paper presented at the UKSG/NAG Conference, Spiders or Flies: Managing electronic information in libraries, Oxfordshire, May 1997

*This paper outlines the system developed at Loughborough University, through the ACORN Project (Access to Course Readings via Networks). It examines the development process, including the technical infrastructure, and also considers the economic and managerial implications and the potential impact on teaching and learning.*

Looking firstly at the system itself, its key features are the integration of access to printed and electronic recommended readings via the reading list module of the TalisWeb OPAC. This offers the user a list of academic departments from which they can navigate to a list of tutors, then to a list of their modules, and finally to a list of recommended readings for the chosen module. We have chosen the '@' symbol to indicate modules which have some full-text articles, and the same symbol in the list of readings to indicate that the full-text is available. (see Figure 1)



**OPAC**

## Reading List Search

**Department: Information and Library Studies**  
**Owner: MORRIS, ANNE**  
**Reading list: RESEARCH METHODS - @**

Full-text available for articles marked with @

Click on a line to display the copy details. Use the Page Down key to scroll through the references.

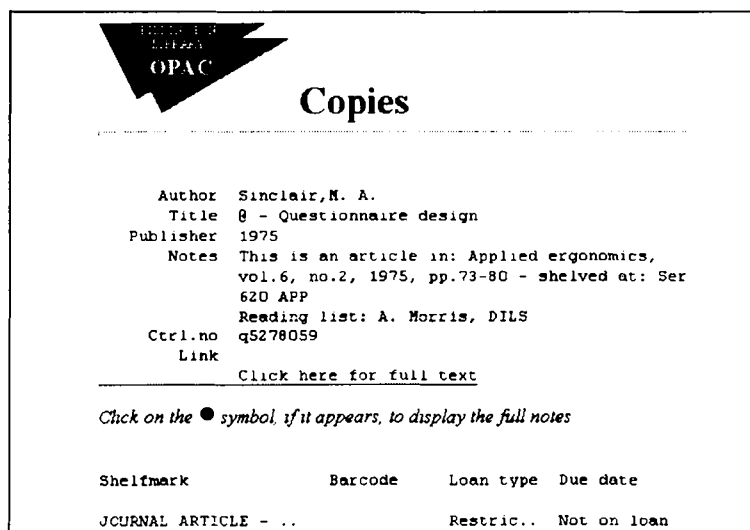
- @ - Beyond evaluation: performance appraisal as a planning and motivational - 1983 - Kroll, H. R.
- @ - Pitfalls of user research, and some neglected areas - 1982 - Brittain, J. M., John Michael
- @ - Questionnaire design - 1975 - Sinclair, M. A.
- @ - Questionnaire research in a library setting - 1985 - Bookstein, A.
- @ - Questionnaire typography and production - 1975 - Gray, M.
- @ - Some quantitative considerations in questionnaire design and analysis - 1975 - Brigham, F. R.
- @ - "Just fill in the form": a review for designers - 1975 - Wright, P.

[Department Index] [Owner Index] [Reading List Index] [Main OPAC Menu]

Figure 1

Paula Kingston is Project Manager of ACORN, Pilkington Library, Loughborough University, Leicestershire LE11 3TU  
 E-mail: Acorn@lboro.ac.uk

Seamless access to the full text is provided on the copy screen by the simple instruction 'Click here for full text' (see Figure 2). Having clicked, the user is prompted for their user ID and password. This is the one which they use for accessing their e-mail, so is not a new password to remember just for ACORN



**OPAC**

## Copies

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Author Sinclair, M. A.  
 Title Q - Questionnaire design  
 Publisher 1975  
 Notes This is an article in: Applied ergonomics, vol.6, no.2, 1975, pp.73-80 - shelved at: Ser 620 APP  
 Reading list: A. Morris, DILS  
 Ctrl.no q5278059  
 Link [Click here for full text](#)

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Click on the ● symbol, if it appears, to display the full notes

Shelfmark	Barcode	Loan type	Due date
JOURNAL ARTICLE - ..		Restric..	Not on loan

Figure 2

articles. Having entered this information, there are options to view or print the article, to access the ACORN user guide, or to exit the ACORN system. (see Figure 3) If the viewing option is selected, the Acrobat Reader is launched (a reader which is commonly found on campus networks) and the article is displayed to the user. (see Figure 4). The Acrobat reader enables the user to navigate around the articles quite easily. A major advantage of using Acrobat's Portable Document Format is that it allows the appearance of the original printed article to be retained, and handles within one file the text and any associated diagrams, tables and photographs.

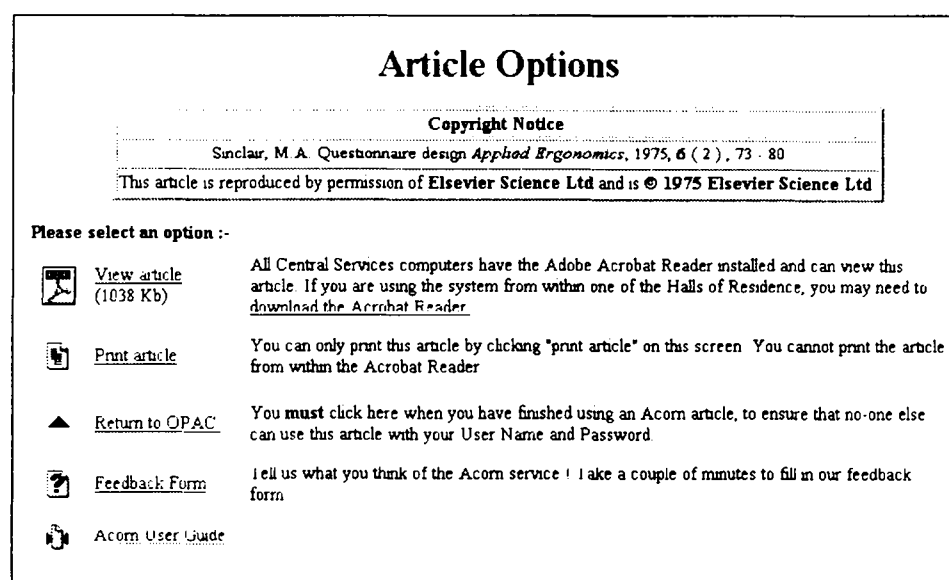
The ACORN service is available via the TalisWeb OPAC and the library's Web pages. It enables documents to be accessed on a multi-user, twenty-four hour basis, across the campus, from any networked computer. The service was launched to students very recently, on April 21st 1997, and early indications are that it is being well-used, although it is too soon to provide any reliable usage data.

So, how were we able to develop such a system? Funding was made available for Project ACORN via the eLib (Electronic Libraries) Programme funded by the JISC (Joint Information Systems

Committee). Project ACORN is a partnership between Loughborough University, Swets & Zeitlinger B.V. and Leicester University Library. The Pilkington Library at Loughborough University is the lead partner, and Computing Services and the Department of Information and Library Studies at Loughborough are also closely involved. The unique features of this project, as distinct from others in eLib's short loan strand, are the involvement of Swets & Zeitlinger and the project's sole focus on journal articles.

The project's aims are:-

- to develop a transferable model of the process of establishing and managing an



## Article Options

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**Copyright Notice**  
 Sinclair, M. A. Questionnaire design *Applied Ergonomics*, 1975, 6 ( 2 ), 73 - 80  
 This article is reproduced by permission of Elsevier Science Ltd and is © 1975 Elsevier Science Ltd

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**Please select an option :-**






 <a href="#">View article</a> (1038 Kb)	All Central Services computers have the Adobe Acrobat Reader installed and can view this article. If you are using the system from within one of the Halls of Residence, you may need to <a href="#">download the Acrobat Reader</a>
 <a href="#">Print article</a>	You can only print this article by clicking "print article" on this screen. You cannot print the article from within the Acrobat Reader
 <a href="#">Return to OPAC</a>	You <b>must</b> click here when you have finished using an Acorn article, to ensure that no-one else can use this article with your User Name and Password
 <a href="#">Feedback Form</a>	Tell us what you think of the Acorn service ! Take a couple of minutes to fill in our feedback form
 <a href="#">Acorn User Guide</a>	

Figure 3

**QUESTIONNAIRES:** This is the first of four papers in this issue dealing with aspects of questionnaire design, including data collection, typography and production, quantitative consideration and assessment.

*Applied Ergonomics* 1973, 6.2, 73-80

## Questionnaire design

M.A. Sinclair

Department of Human Sciences, University of Technology, Loughborough, UK.

This paper is intended to provide an overview of the problems involved in the generation of information by means of questionnaires. It is divided into two parts: the first is concerned with data collection methods in general, and the second with questionnaires in particular. The subject is not covered exhaustively, as this is an overview of the topic. A bibliography has been included for further reading if desired.

Figure 4

- electronic short loan collection;
- to demonstrate the role of a third party agent in copyright clearance and digitisation;
- to link the electronic articles to the TalisWeb OPAC;
- to develop an online demonstrator system;
- to monitor user reactions to the electronic texts and assess their use and usability;
- to assess library procedures for managing the electronic delivery of course materials;
- to test the portability of the model.

### Identifying key high-demand articles

Starting with the identification of high-demand materials, Project Acorn's experience has been similar to that of many academic libraries trying to obtain reading lists from departments. We are working with the reading lists of three departments who were approached in September 1996 for their reading lists for modules beginning in February 1997. Two of the three departments responded well, while one department, despite repeated encouragement, only managed to produce reading lists for five second semester modules.

A survey of academic staff in the three departments revealed that 54% of staff prepared or updated their reading lists immediately before the start of the course, whilst a further 6% updated them about a month before the start

of the course. Reasons given included the need for highly topical material to be included and the tendency to produce lists on a weekly basis. 10% of respondents indicated that they did not generally send their reading lists to the library. A further 3% acknowledged that they did not always send their lists to the library. Reasons given included lack of time, not remembering, and lack of awareness of an easy (electronic) mechanism for sending lists to the library.

The survey revealed that modularisation has affected the frequency and regularity with which reading lists are produced. A number of lecturers organise their reading lists on particular themes and link them to a specific lecture, which means that they may be producing several reading lists during a course, and may give them out to students on a week by week basis.

This approach poses difficulties for a traditional short loan collection, but sufficient lead-in times are even more important in developing an electronic collection. A substantial amount of time is needed firstly to gain copyright clearance and then to make an electronic copy of the article. Each of these two processes can be complex and time-consuming for the library.

The survey also identified that some lecturers were referring students to Web based material, in some cases instead of the library's short loan collection, as they felt that it was more

accessible to large numbers of students and of appropriate quality.

The need for much closer liaison between academic and library staff in order to increase mutual understanding of the constraints within which each are working, was apparent from comments made on survey questionnaires. This would, of course, help with the communication of information on the time scales required for identification and provision of electronic materials. The whole area of library liaison with academic staff needs careful examination with a view to developing a more structured and systematic approach which encourages academic staff to recognise their responsibility in facilitating student access to material. Service level agreements for example, may help to provide such a facilitative structure.

In addition, more information is needed on the rate of change of items on reading lists from year to year. Preliminary information from Project ACORN has indicated that about 60% of material remains on the lists from year to year, unless there is a change of lecturer and a substantial course revision, but further investigation and information is needed in this area.

### Permissions information

It is important to highlight that Project ACORN is working solely with journal articles, as this has been a key factor in its success rate in gaining copyright clearance for electronic copies. Universities' subscriptions to journals are determined by research rather than teaching requirements, so making available electronic short loan articles for undergraduates poses no threat to publishers' income from current subscriptions.

316 high-demand articles from 89 publishers were identified through liaison with academic staff in the three departments at Loughborough University with which the project has been working - Geography, Human Sciences and Information and Library Studies. The total number of journal articles on their reading lists was well over 1500, but our emphasis on the need to focus on the key high-demand ones reduced this figure substantially. The 316 articles mentioned above are recommended

reading for 24 second semester modules, in the academic year 1996/7. The Geography Department returned 11 marked-up reading lists, Human Sciences returned five (the lowest response), and Information and Library Studies returned eight lists.

The date spread of the articles is from 1955 to 1996, with the majority of articles (62%) falling between the years 1989 and 1995. The average number of pages is 16 per article and the numbers of articles requested per publisher ranges from one at the lowest, to 37 at the highest. None of the articles was in colour in the original, and although text predominates, many articles contain diagrams, tables, formulae and some contain photographs.

Our first rough estimates of the costs of requesting permissions for these 316 articles from 89 publishers are as follows:-

- 15 hours of library staff time was devoted to academic liaison;
- 120 hours were spent in obtaining permissions or refusals from publishers;
- direct costs (including telephone, fax, postage, etc.) amounted to £630.

In order to manage the process of obtaining permissions from such a wide range of sources, we have developed a relational database, held on a PC, using Microsoft's Access software. The database has been appropriately named CLEAR (Copyright Licensed Electronic Access to Readings), and enables us to record course details (modules and tutors), article and publisher details (with chaser fields for progress tracking), payment information (level and type) and usage data (downloaded from the ACORN system). We are still extending its capabilities as the project progresses and new or changing needs emerge.

The following two tables show the types and nationalities of publishers approached for permissions.

<i>Type of publisher</i>	<i>Number</i>
Commercial	50
Learned and Professional Society	26
University Press	8

*Table 1: Type of publisher*

Country of publisher	Number
UK	41
USA	33
Germany	3
Holland	3
Canada	3
South Africa	1

Table 2: Country of publisher

Publishers responded as follows:-

Contacted	Agreement	Refusal	Undecided
84	58	9	17
100%	69%	11%	20%

Table 3: Publishers' responses

The number of positive responses to participation in Project ACORN is very pleasing, as is the small number of refusals, while the high number publishers who are undecided is disappointing. The following table shows the numbers of articles for which permission was received, denied, or on which no decision was made.

Requested	Received	Denied	Undecided
316	237	45	34
100%	75%	15%	10%

Table 4: Article permissions

In terms of publisher type, learned and professional society publishers have responded most positively to date

Type of publisher	Numbers participating
Commercial	27 (50)
Learned and Professional Society	25 (26)
University Press	6 (8)

Table 5: Responses

The time scale for acquiring electronic permissions is illustrated in Table 6.

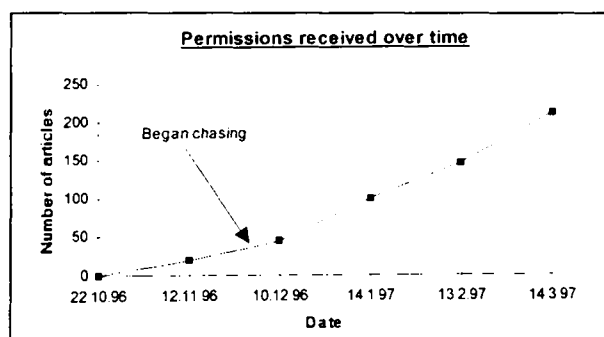


Table 6: Permissions received over time

Initial letters to publishers were dispatched on 22nd October 1996, and responses were very slow in coming. The project used a number of methods of chasing, including letter, telephone, e-mail and fax, and this led to a steady increase in responses. The rate of response clearly underlines the need for advance planning and identification of articles on the part of libraries. Permissions were still being received in April 1997, nearly six months after the initial request. However, if some of these delays are due to a lack of policy on electrocopying, then further requests may be handled more speedily in the future. The next phase of the project, which will request articles for the 1997/98 academic year, will be able to test this hypothesis.

Reasons for the high number of permissions received by the project seem to be linked to a number of factors. The involvement of Swets & Zeitlinger has had a very positive effect in that they are known and trusted by publishers and have been able to discuss issues of concern with them. They have a detailed knowledge of publisher contacts and were able to alert us to changes in personnel, and the need to re-direct a letter to a different section or person. They also provided us with an initial list of publisher contacts, in electronic form, from their in-house database.

Other factors contributing to our success rate are:

- the sole focus on journal articles, which poses no threat to publishers' income;
- the project's emphasis on working in partnership with publishers through a Heads of Agreement approach;
- the undertaking to provide information back to publishers on usage and users' behaviour;

- the time-limited nature of the project.

Reasons given for refusing permission were often that the publisher had no policy on electronic copying. This may also be one of the reasons for the numbers of undecided publishers. The average number of days to obtain a permission is currently 66.5 and the average number of chases per publisher is 2.5, although some have been chased up to 7 times. Of those publishers supplying permissions, only 17 responded without chasing, while 35 needed to be followed up.

The majority of publishers participating in the project signed the Heads of Agreement we provided, mostly without amendment. A small number provided us with a copyright statement to appear on the first page of the document, and a small number asked us to approach authors for secondary permissions, or did this themselves.

### **Publishers' charges**

The majority of publishers agreed to participate in the project without making a charge for their articles, whilst a small number (six in all) asked for payment. The range and types of payments requested clearly indicate the lack of consensus among publishers on what constitutes a reasonable charge for this type of service. Payments requested were as follows:-

- 20c per page printed
- \$1 per article printed
- \$25 per page to mount the article
- 2.5p (4c) per page printed
- 5p (8c) per page with advance payment for ten printed articles and 5p (8c) per page for printing in excess of this
- £5.00 (\$8) per page to mount the articles for a period of two years

Needless to say, the project was not able to agree to all of the above requests for payment. Interestingly, in two cases where charges were requested for articles written by staff working at Loughborough University, these were waived when this was indicated to the publisher.

### **Digitisation**

The process of digitisation has proved problematic for a number of reasons. The

project opted for Portable Document Format text files, rather than image files. The advantage of an image file is that it is precisely that - an image of the page in question. It therefore requires little checking and no proof reading. However, the disadvantages of image files are that they are far larger, they take up more space, and are slower to move around the network. In particular, printing from image files can be very slow, and the rate at which they appear on-screen for viewing can also be off-putting. Text files are superior in terms of their speed of display and printing across the network, but ensuring the accuracy of the electronic copy is extremely time-consuming.

The first hurdle in the process of digitisation is to obtain a 'clean' original to work from. As only 25% of the material identified was held by Swets, we began by using photocopies from Loughborough's stock. Unfortunately, as these were high-demand articles, they were not in good condition, having been in heavy use for some years. Despite taking great care in photocopying, they were not suitable for scanning, and inter-library loans had to be obtained from the British Library instead. Where scanning from bound issues and volumes was possible, this however required the purchase of a book scanner to compensate for curvature in the text.

Digitisation is a complex, multi-staged process including the following steps:-

- checking the paper copy for suitability;
- removing the dark edges around the photocopy;
- scanning each page;
- de-skewing the pages and centering them;
- leaving them to be OCR'd overnight;
- reviewing and editing the article in electronic form;
- proof reading the article;
- correcting any errors;
- combining the individual electronic page files into one PDF file;
- cropping the pages as required.

One unanticipated difficulty has been the 'intelligence' in the Adobe Capture OCR software, which can think it has given the right word (eg. modem) when in fact the word it has

scanned is 'modern'. Its dictionary has enabled it to 'recognise' the word, though in reality it has not been properly scanned.

Our most recent estimates for the whole process of digitisation are that it requires at least 35 minutes per page to produce electronic copies with an accuracy of 99.9%. However, this level of accuracy still leaves five errors per page based on a page of 5,000 characters.

### **Project ACORN's technical approach**

The guiding principles for our approach have been portability and integration. The electronic articles are held on a local SUN unix-based server within a relational database management system, in this case Sybase. They are accessible from the TalisWeb OPAC and the library's Web pages, and are retrieved using Netscape. CGI (Common Gateway Interface) scripts link the documents to Netscape and the Acrobat reader. The advantage of this approach is that the software used is widely available, thus making the model potentially portable to other sites. This will be tested later in the project at Leicester University library.

A number of security features have been put in place in order to reassure publishers that their electronic copies are secure from unauthorised use or onward transmission.

- the articles are only accessible from machines on Loughborough University's campus
- access is restricted by ID and password to students registered on the particular module for which the reading has been recommended
- certain features within the Adobe reader have been disabled - users cannot 'cut' or 'paste' from the documents, nor download an electronic copy
- a copyright statement has been added to the footer of each page, both for on-screen and printed copies, and the user's ID appears on any print-outs

### **Costs for libraries**

The costs to libraries of establishing electronic collections include:

- time spent on liaison with academic staff
- time and costs of obtaining permissions
- student training in the use of electronic documents
- handling enquiries
- provision of an appropriate IT infrastructure for document access
- technical support for managing the electronic system
- digitisation of articles
- usage logging and analysis
- payments to publishers

Offering a traditional short loan service has many costs elements, including:

- identifying items for short loan from reading lists
- acquiring inter-library loans if required
- processing items for short loan
- issuing and returning short loan items
- re-shelving items
- removing and re-processing items no longer needed

If the collection is open-access, then staff time is also needed for:

- tidying the collection
- searching for missing items
- replacing damaged or missing items

### **Potential market size**

The size of the short loan collection at Loughborough, in December 1996, was 6,500 books and 5,500 articles, whilst at Leicester University Library in the same month, the collection consisted of 5,000 book and 8,800 articles. We see that the numbers of articles in short loan collections can run into the thousands, but it is likely that the time and costs involved in providing electronic access will mean that a smaller more targeted subset of articles will be identified for this type of approach.

Factors inhibiting the development of electronic short loan collections are:

- publishers' charges
- copyright clearance procedures
- digitisation costs

- amount of material/which material

Facilitating factors include the benefits to students of a value-added service, the potential increased focus on electronic readings in terms of use by students, and the potential market size for publishers. There are about 190 individual institutions of higher education in the UK, most of which are likely to have some type of short loan function. Taking into account the quantity of universities world-wide, then the market size could be considered significant.

However, if publishers charge a rate for electronic copies beyond the reach of most library budgets, and beyond the means of students, then, in effect, there is no market for this type of activity. If charges for an electronic service need to be passed on to users, libraries may feel obliged to continue offering the traditional free service in addition to the electronic one, thus increasing their costs overall.

In order to set a fair price which the market can bear, a number of elements need to be taken into account. For example:-

- did the library subscribe to or purchase the original paper copy?
- is digitisation required?
- does the author work in the institution?
- for how long is the article needed?
- how many students are on the course?
- how much can the library and its users afford to pay?

The overall cost to the library of providing an electronic copy compared with a paper copy will need to be assessed.

## Conclusion

At present economic issues are crucial in determining the future of electronic short loan collections. Economic and practical viability depends on easier procedures for obtaining

clearance and reasonable charges from publishers. The Joint Information Systems Committee of the Higher Education Funding Councils has established a working group with the Publishers Association which is due to report shortly. It appears that a lengthy standard license agreement will emerge, containing a very wide range of clauses from which publishers will be able to select those they wish to apply in their particular circumstances. This may go some way to smoothing the process of obtaining permissions, but still leaves outstanding the issue of charges.

The role of an intermediary in this process could still be attractive for libraries, as the contacts and experience they bring will probably provide a speedier and more efficient approach to clearance. Project ACORN will be able to provide some evidence in this area when it has requested permissions for the next academic year and can judge the benefit of prior knowledge and contacts.

Other issues which electronic short loan collections raise are educational ones, in that once this type of service is available, it is likely to have an impact on or interact with, other IT-based developments in teaching and learning. It could have a major impact on the planning of teaching and learning, as well as its delivery. Technical issues include the effect on universities' IT infrastructure of the extra network traffic such developments imply.

But firstly we need to know how students react to electronic readings, whether they use them or not, and whether they see real benefits in being able to access this type of service. Once this information has been gathered and analysed then libraries and publishers can together explore a realistic pricing structure which can provide benefits to each.

*Further information on Project ACORN is available on their Web site at*  
<http://acorn.lboro.ac.uk/>