The Impact of the Electronic Delivery of Learning Materials in UK Higher Education

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Executive summary

The findings in this report are a result of thirteen interviews held between May and August 1999. Four academic staff at the University of Birmingham, four information professionals and five publishers were asked their views about the impact of the electronic delivery of learning materials in UK higher education and how it would affect their professional environments. A full list of questions can be found in Appendix 1.

This report forms part of the BUILDER project evaluation strategy. BUILDER is a hybrid library project in phase 3 of the Electronic Libraries (eLib) Programme funded by the Joint Information Systems Committee (JISC).

Note on terminology: The term ‘electronic short loan’ is used throughout this report and refers to the electronic delivery of learning materials (journals articles and book chapters) to support specific courses or modules.

Student profile and learning styles

All the higher education institutions were being affected in varying degrees by both the changes in student profile and the increase in student numbers. This has meant a rethink of the type of service offered and the way it is delivered, both in terms of teaching and of support through library and information services. Electronic delivery of learning materials and the creation of virtual learning environments is seen as a possible solution to some of the problems that need to be overcome.

Most interviewees recognised that students were becoming more IT literate, especially in particular subject areas, but that the preference was still for print on paper and this would continue to influence how information was delivered and what sort of information was delivered electronically.

Impact on library and information services

Both information professionals and academic staff saw electronic short loan as having a number of advantages over its paper equivalent. The electronic version of material could not be lost, stolen or defaced and multiple access, twenty four hours a day, meant that large groups of students could read the same article within a short space of time. Although work was still being done on licences and authentication, access on several sites and by students away from the campus was regarded as essential.

Barriers to the effective delivery and use of electronic learning materials

Copyright
Copyright was seen as a major barrier to the scaling up of electronic short loan. The conflict between access to information and protecting authors’ rights was recognised by most interviewees. There was, however, a willingness on the part of publishers to work with academics.
to find out what they needed. At the same time they were also anxious to protect their income. Most interviewees wanted a simple, fast and standardised way of dealing with copyright requests.

Cultural change
Many interviewees spoke of the need for a cultural change, particularly amongst academic staff, if electronic delivery of materials were to take off. In some cases, information professionals had found academics wary of resource-based teaching and shy of new technology. At least one of the academics interviewed was interested in new approaches but felt under too much pressure from other work to spend time developing new material. Publishers, too, were regarded as anxious to defend their textbook market in particular. There is still a prestige attached to print that has not yet extended to electronic material. Some interviewees also felt that students still saw a lecture followed by reading about the subject in a book as the norm for teaching.

Opinions varied amongst academic staff as to whether electronic short loan would affect their teaching. One enthusiastic interviewee said he would build a course around material available on the service, where as another regarded it simply as a convenient holding medium for information which would otherwise be held in print format. All four were conscientious academics who planned their courses well in advance. They recognised, however, that not all academics worked in the same way and that some were more comfortable working with print media. A number of interviewees felt that the Quality Assurance Agency for Higher Education (QAA) academic assessment exercises were forcing academic staff to rethink their links with library and information services.

IT infrastructure
Electronic delivery also meant that the IT infrastructure and provision had to be of a very high standard and again this would increase costs. If the service were extended to distance learners or part-time students, this would mean that they would have to have their own PCs and there was a fear that this might disenfranchise some students. Levels of financial resource could also vary between different universities.

Changing roles of stakeholders involved in the electronic delivery of learning materials
A number of interviewees emphasised the need for information professionals to act in an enabling role and to provide more direct support to users. There was also a need for more liaison with academic staff to show what support library and information services could give them in their teaching. Learning support partnerships between academic Schools or Departments and library and information services were seen as essential. Some library and information services were already working to ensure that support staff had adequate training in IT. Others saw it as a major priority, especially since customers rarely saw a distinction between professional and support staff.

The role of academic staff was seen as already changing. Some of the interviewees were either currently working with other bodies to consider ways of using the Web for delivering information, or were conscious that there was great potential in electronic media. However, it was recognised that academics working in isolation could only have a limited influence. It was
suggested that incentives and reward schemes need to be developed to encourage more academic staff to invest time and energy in developing electronic learning environments. There was general agreement that the current emphasis on research output and the Research Assessment Exercise (RAE) did not encourage academic staff to invest time in developing electronic learning environments.

The publishers saw their role as remaining very similar in some respects. They would still be able to offer added value to authors in terms of peer review, editing and marketing. They all acknowledged, however, that they would have to work with academics and librarians to make the best use of electronic resources. Some considered that it was the role of publishers to work with national bodies to move forward electronic learning materials rather than individual universities.

**Economic opportunities and threats**

Financial pressures were seen as one of the main barriers to development. All higher education institutions were working under financial restrictions and were having to prioritise resources and services. Many electronic short loan services and on-demand publishing services were currently being run as part of externally funded projects and were being offered as a premium service. If they were scaled up, the current savings in staff time and money might be lost.

Publishers, too, were reluctant to move away from the current economic models and experiment in case this affected their income. All regarded the current situation as uncertain and were constantly reviewing the market. Although it was difficult to know how much investment was needed, most recognised that they would have to make decisions soon if they were to keep up with developments. A number of ideas were suggested for the sort of economic model which might be used but the views expressed were only suggestions and it is not yet clear what policies will emerge.

**Future scenarios**

Views on future developments were mixed. No one felt that the electronic delivery of materials had no future, but most felt that there would continue to be a hybrid environment for some time. Some were anxious that the full possibilities of electronic delivery of learning materials should be developed, where as others felt that it would be easy to make material too ‘clever’ and that investigations should be initiated into what could be most effectively delivered electronically. It was considered that there would continue to be a growth in the amount of material available solely in electronic format and this would be particularly true for certain disciplines within the academic community. Future developments would also be affected by the increased demand from students for improved services.

There was little concern amongst publishers that their income would be threatened by academics publishing their own material on the Web. As previously stated, there was still prestige attached to the names of certain publishers. Publishers also gave added value to the material in terms of layout, illustrations etc and many were able to promote material to a world market.
**Recommendations**

- Universities should develop strategies at an institutional level for teaching and learning using electronic formats.
- Finances should be made available to ensure that IT infrastructure in universities is adequate to support electronic learning materials (for example: networked PCs, networked laser printers, adequate bandwidth, adequate servers).
- Training on the use of electronic resources should, where necessary, be integrated into students’ learning.
- Work should continue on a copyright clearance system that, while fair to publishers, does not hinder the ability of academic staff to use the most appropriate material.
- Academics, information professional and publishers should continue to work in collaboration and develop their partnerships further.
- Adequate training should be given to both professional and support staff in library and information services to ensure that they can give support to both students and academics in their use of electronic material.
1. Introduction

This report presents an analysis of the opinions of three stakeholder groupings on the impact of the electronic delivery of learning materials in UK higher education. It forms part of the BUILDER project evaluation strategy. BUILDER is a hybrid library project in phase 3 of the Electronic Libraries (eLib) Programme funded by the Joint Information Systems Committee (JISC). The report mainly confines itself to the consideration of material produced commercially rather than in-house by academics, although some consideration is given to whether self-publishing will affect the publishers’ market. The term ‘electronic short loan’ is used throughout this report and refers to the electronic delivery of key learning materials (journal articles and book chapters) to support specific courses or modules.

Three stakeholder groupings were interviewed: academic staff, publishers and information professionals. These were considered to be three of the key stakeholder groupings in the electronic delivery of learning materials. It had originally been planned that the views of students, who form the fourth key stakeholder grouping, would be established through focus group discussions. Despite the offer of incentives, however, no interest in participating was shown by the targeted student population at the University of Birmingham. It was therefore decided to devise a printed questionnaire that would be distributed to one of the groups of students for whom material was delivered on the pilot electronic short loan service developed by BUILDER. The results of this are discussed in another BUILDER report.

Three different sets of questions were devised; a full list of which can be found in Appendix 1. Questions were grouped in themes and the main topics which were covered are as follows:

**Academic staff**

- The advantages and disadvantages of electronic short loan
- How electronic short loan fitted their teaching methods and whether these methods would change if the service were introduced on a large scale
- How they would like to see the service developed

**Information professionals**

- The advantages and disadvantages of electronic short loan
- How its wide scale introduction would affect resources
- How the role of professional and support staff would be affected

**Publishers**

- Their policies with regard to the digitisation of material for teaching purposes
- Their charging policies with regard to digitisation
- How a change in format might affect the financial planning of their organisation

The interviews were held between May and August 1999. All the interviews were conducted in person by Elizabeth Hewett of the University of Birmingham Information Services at locations throughout the UK. With the agreement of the interviewees, the discussions were taped and a
verbatim transcription produced. These were then analysed and common themes identified. The structure of the report is based around these themes and is as follows:

- Student profile and learning styles
- Impact on library and information services
- Barriers to the effective delivery and use of electronic learning materials
- Changing roles of stakeholders involved in the electronic delivery of learning materials.
- Economic opportunities and threats
- Future scenarios
2. Student profile and learning styles

2.1 Student profile

The information professionals interviewed saw electronic short loan as a valuable service which could be offered outside core library opening hours and either away from the campus or across a number of geographically widespread campuses. One of the new universities had what was termed ‘distributed users’ who might have family and work commitments, and who could not easily visit the physical library. Another information professional, also at a new university, considered that the traditional student was now rare and even most eighteen year-old students had to work when they did not have lectures.

“We believe there’s no such things as a traditional student, because all students are non-traditional in the way they attend.”
[Information professional]

Electronic short loan was one way of helping those students unable to visit the library, without disadvantaging those who could. In this case twenty-four hour students PC laboratories were available.

Older universities, too, are having to consider how to cater for the government’s plans for widening participation in higher education. Access to material for students spread across different campuses was seen as an essential part of learning support.

“Of course, supporting their learning through suitable learning materials is clearly going to be a major issue, so I think access is a principle benefit.
[of electronic short loan]”
[Information professional]

Some publishers were also thinking about the affect the increase in distance learners might have on the format of materials. One felt that they were lagging behind what was actually happening in higher education institutions.

“I think at the moment there’s still a bit of a disconnection between what’s going on and what publishers do.”
[Publisher]

2.2 Student learning styles

Most of the interviewees felt that the majority of students were still happier with print on paper, although this was often discipline dependent.

“...it’s a discipline issue, which we’ve discovered from some of the surveys we’ve done. Health, for instance, has no inclination to use computers whatsoever and is probably by and large unable to do so and that’s several thousand students.”
[Information professional]
All the interviewees agreed that very few people read from the screen and most people find it easier to absorb information in a printed form. This meant that most students printed out what they needed. Some publishers had taken part in surveys and studies of reading habits. These showed that students were not prepared to read more than two or three screens and that the amount they read was very much dependent on the quality of the hardware. None of the students in one survey envisaged giving up paper and pencil altogether.

“They like the immediacy of a book. They can see the beginning and the end. They can feel it, smell it, touch it.”

[Publisher]

One information professional felt that many students still regarded a lecture followed by reinforcement by reading a book from the library as the norm.

“...so, although students are coming with increasing IT literacy and competency and are used to getting information in an electronic form, there is still a considerable cultural issue for students in terms of accepting that this is the equivalent of the real thing.”

[Information professional]

In contrast, two of the academic staff from the University of Birmingham who participated in the BUILDER pilot electronic short loan service saw it as particularly suitable for the groups of students they were teaching. One group of students mainly used their departmental library and were “very wary about going into the Main Library”. The second group were MBA students, mainly from overseas. These students were used to finding information via the Internet and enjoyed using electronic media. Both these academics felt, however, that books worked very well for project work where there was more time and students needed to read more widely. Neither felt that electronic short loan would reduce the amount of browsing students did, because most of them only read the minimum whatever the format.

“They’re used to having text books and it’s really very hard to get anyone to read anything beyond what I am teaching. So there’s no browsing anyway.”

[Academic]

Another interviewee, however, felt that electronic short loan might actually encourage students to read more. If he wanted students to look at two or three views on a subject, the fact that these views were easily available in electronic form would be a bonus.

“What’s more problematic is getting them, particularly in the second year to look at two or three views...”

[Academic]
3. Impact on library and information services

The improvement in access provided by electronic short loan was seen as one of the main advantages by both academic staff and information professionals. This included access in terms of where it was available, at what times and how many people could access it at the same time. One member of academic staff saw increased access as the only ‘extra’ provided by electronic short loan as opposed to the traditional printed short loan service. When asked what he saw as the advantages he said:

“In the implementation as it stands at the moment, it’s access to heavily used resources that may only exist as one or two copies in short loan.”

[Academic]

A number of academics liked the idea that they could recommend a text to a large group of students and know that they would all be able to get hold of it.

“It really makes access available to them all. They cannot come to me and say I couldn’t get hold of this.”

[Academic]

One also liked the idea that he could check the material from his office.

“It’s quite nice for me to be able to check it from here rather than going over to the library.”

[Academic]

An important aspect for the information professionals was the ease of access for students, especially twenty-four availability and access across different campuses.

“It is about ensuring that material gets to students more easily than is otherwise the case, in a more reliable way, which we’re not necessarily achieving at the moment.”

[Information professional]

This ease of access could be further improved by linking directly from reading lists to full text versions of articles.

Having material available electronically also overcame the restrictions of library opening hours. The large-scale introduction of electronic short loan would also remove some of the pressure on traditional printed short loan services and the need for items to be returned in a very short time scale. Another advantage of electronic short loan is the ability to maintain the integrity of the collection. Anything in an electronic format was safe from theft and being defaced. It was not thought that this would produce significant financial benefits but would give an enhanced service to the users.

“I don’t think we’ll notice the savings greatly, but we’ll be providing a better service and that’s most important.”

[Information professional]
One information professional had found that certain students, who were much more IT literate than their lecturers, were searching bibliographic databases and then removing articles from print versions of the journals before the lecturers were aware of their existence.

Another improvement in the service which could be provided by electronic access to key texts was highlighted by another information professional. She felt that library and information services had always failed to provide the sort of service needed by undergraduates.

“….in many ways we’ve never really been able to support the sort of studies undergraduate students require, because no library would be able to acquire multiple copies of text books which are only required for a two week period, so there’s always been a gap in what we can provide...”

[Information professional]

This improvement in service would, however, have to be brought about without any increase in budget. The introduction of the electronic delivery of learning materials would, therefore, have an impact on other services and library management would have to rethink staff structures.

“So I think it’s not a matter of finding new resources, but of restructuring to support those kind of new ways of working.”

[Information professional]
4. Barriers to the effective delivery and use of electronic learning materials

4.1 Copyright

Most interviewees saw copyright as one of the main barriers to the scaling up of electronic short loan. It was an area where there were still major decisions to be made about procedures and agreements. Both academics and publishers agreed that there should be a more straightforward procedure and both groups were anxious to be fair to the other. Academics did not want to be seen to be depriving publishers of their income and publishers recognised the need to disseminate information. One academic wanted a system of retrospective payments for the use of articles from some journals. His suggestion was:

“...we have an audit system where you [the publisher] can check what we've done. We're not doing this to defraud you guys, but if we could have a year's advanced permissions and use articles from this journal and just put them on, then that would be brilliant.”

[Academic]

Another academic found that having to clear every article slowed the process and made it uncertain.

“I imagine a positive aspect would be if you could get some sort of system whereby you didn’t have to clear every individual item.”

[Academic]

Most of the publishers were just starting to formulate their policies regarding digitisation. Two had already signed up to the Copyright Licensing Agency (CLA) digitisation mandate and two were considering doing so. Previously requests had been dealt with on an individual basis which had become rather time consuming and administratively complex, so they were pleased to have a formula to follow. Most had overcome their anxiety about what might happen to material in an electronic environment, but most were still keen to know what other publishers were doing.

“We've signed a mandate. We're delighted. We didn’t know how to deal with it and we dealt with each request on it's merits.... I think there was a fear that they [the editors] had no control over what happened to the material.”

[Publisher]

Other publishers, too, were happy about the CLA taking over the administration of the copyright element. One was particularly pleased with the terms of the agreement:

“You can set a default number of pages. You can set the fee. You can exclude material. There's a lot more choice and control and there isn't the blanket licence aspect either.”

[Publisher]

All agreed about the time that they would save in terms of administration.
“The bottom line for us is that administratively it’s a lot easier for it all to go through there [the CLA] than for all of it to come to us.”

[Publisher]

Publishers did, however, foresee problems. One pointed out that it was not always easy to find out who held the rights to particular material especially where one company had taken over another.

“Suddenly I don’t know as much as I did about our list and to get clearance on this material involves rights research and that can be very time consuming, but, on the other hand, no one wants to pay much for this material.”

[Publisher]

Another publisher, although keen to allow libraries to exploit their stock, was anxious that whoever did the scanning took responsibility for ensuring exact page representation.

“Authors, I know, are very, very nervous about manipulation, abridgements and slightly changing and spinning.”

[Publisher]

Another anxiety expressed by the publishers was over the use of book chapters. They were happy that journal articles should be made readily available but were concerned that the use of individual chapters might affect sales. The information professionals and academics, however, felt that it was equally important that book chapters could be used. One information professional thought that ideally there should be a database of material which was not necessarily ‘branded’ by a particular publisher. He recognised, however, that this would affect the publishers’ income and that academics were still anxious to be published by prestigious publishers.

Overall, interviewees thought the situation regarding copyright had improved and progressed. Publishers were well on the way to formulating policies with regard to digitisation of materials. The information professionals, always, as one of them pointed out, ‘the custodians of copyright’, were developing security for material and academics were beginning to realise what they could and could not do. Many of the institutions involved in the interviews were also working with projects such as HERON to move the process forward.

4.2 IT infrastructure

The success of any electronic delivery of material was seen to be dependent to a large extent on the provision of computer and printing facilities and the financial support it was given. Some academics were particularly concerned about the provision of computer facilities whereas others saw it only as a minor problem. Two saw the pressure on the system as a potential barrier and another was concerned about the facilities in his particular School.
“... but we're always stuck with the world the way it is in terms of what our labs can do and what our lecture rooms can do... You can have a blindingly wonderful service but if everything else is lagging behind, then it won't have the impact it could do.”

[Academic]

The information professionals were also concerned about the ability of the institutional IT infrastructure to cope.

“We don't know whether it's [the network] capable of holding up with very large files moving around...”

[Information professional]

Most of the information professionals also expressed concern at the level of internet connectivity amongst the student population.

“So I think there are resource issues relating to accessibility that clearly have to be cracked.”

[Information professional]

“The only downside is, of course, for undergraduates particularly, sometimes getting access to the actual hardware, because they don't necessarily have a PC on their desk or in their study bedroom.”

[Information professional]

One publisher, who had visited a number of universities, had noted the vast difference in computer provision at different institutions and he was concerned that different levels of financial resources might affect the quality of the students' experiences. He saw no point in developing sophisticated delivery systems if the hardware was not capable of coping with it.

4.3 Cultural change

As with all new services, the successful implementation of an electronic short loan service would depend to a large extent on a change in the habits and attitudes of all those concerned. The variation in students' attitudes to electronic services has already been noted. This variation is also true of academic staff. Those interviewed were all participants in the BUILDER pilot electronic short loan service and therefore their attitudes may not reflect those which would be found amongst their colleagues. Two of the academic staff planned to build one of their modules around material available on the service and another saw it as an ideal medium for material on a broad based course. It was considered, however, that other academic staff might be slower to see the benefits.

“I think it's catching on very slowly with other lecturers”

[Academic]
“You will always get lecturers who want to work in a particular way, but my feeling on that is they can work that way and the rest of us can take advantage of what’s available.”

[Academic]

Although the potential of electronic delivery was recognised, some felt that there was a danger of becoming so involved with this that the real purpose would be lost.

“…it’s a kind of balancing act, getting that right alongside the other things without allowing it to distort what teaching is for…."

[Academic]

On the other hand, one electronic short loan project was using the system as an indirect means of teaching and had embedded IT skills into the service. Some of the information professionals also thought that academic staff would be slow to change their approach.

“…there’s a level of scepticism from senior academics about the resource based approach…. With us it’s been an academic culture change as much as anything, which hasn’t taken place.”

[Information professional]

“I’ve talked about the cultural issues to do with students but there is an even bigger issue with the academic staff.”

[Information professional]

Other information professionals saw it as partly a problem of ignorance about IT on the part of many academic staff and a failure of library and information services staff to explain the role it could play. One thought that academic staff might feel that the library was trying to take over their teaching and that they needed convincing that the library was a support service. It was also thought that many academics saw new developments as just adding to their already heavy workload. Again it was up to the library and information service to show academic staff how they could be helped to save time.

“Somehow you’ve got to get it over to them that this will save them time. We can work with you. You give us your reading lists and we can say to you this is the information we can feed into it.”

[Information professional]

The publishers, too, were aware of the difference in attitude between different academics and different disciplines. It was felt that developments would be driven by those for whom the electronic medium had positive benefits.

“I think it’s already changing in those research disciplines where electronic media is enabling them to do things which they can’t do otherwise. The traditional example is astronomy where some of the electronic versions of journals are just amazing.”

[Publisher]
5. Economic opportunities and threats

5.1 Library and information services

The economic implications of the scaling up of the electronic delivery of learning materials went beyond the provision of good computer hardware and were, as yet, far from clear. Many electronic short loan services had so far been run as projects and had had little effect on the finances of their home institution. Permissions were often given free to projects because it was clear what their limits were and publishers felt their material was safe. They were also willing to support work that would help to clarify the direction in which electronic provision was moving.

The information professionals also had to take into consideration the maintenance of the balance of traditional print holdings and access to electronic resources. The costs of funding a hybrid service are not yet clear and the situation is a complex one.

One project had used one particular module to try to ascertain what the costs would be outside a project. They did not negotiate the cost of permissions but paid what they were asked. This proved to much more expensive and raised the question of who would pay, the library or the Faculty. As yet, electronic short loan had not been used instead of purchasing extra textbooks, but if it did, the question of who paid would have to be resolved. Some information professionals felt that an electronic short loan or electronic reserve might become a separate service from the library and could be centrally funded.

“In some institutions it may be seen that an electronic reserve is a central service and it can be funded centrally, nothing to do with the library.”

[Information professional]

This links with the idea of the library no longer being the sole provider of information.

“....I think there’s a whole continuum by which essential material is going to be provided....”

[Information professional]

All the information professionals considered that it would not be a question of finding more money, but of restructuring. There might be small savings on issuing and discharging of items and costs for photocopying would transfer to printing, but these would have a minimal effect. Some costs, such as the use of ‘home grown’ material like exam papers, were quantifiable. It was still difficult, however, to gauge the cost of gaining permissions both in terms of payments to publishers and in staff time.

One information professional felt that, in thinking about costs, libraries had to look at the current models of information provision.

“Obviously one should be looking beyond those models of pricing information to one which is related more to the volume of access which would be possible with a particular sort of access.”

[Information professional]
In other words, one copy of any item in electronic form provides the sort of access which could only be provided by multiple copies in print form.

5.2 Publishers

Most of the publishers had reached the stage where they were considering the electronic delivery of materials for teaching but were still too unsure of the market to invest heavily in development. One publisher felt that, although the format might change the market would not.

“It would be a question of how much we would have to invest and whether there’s a shift from selling text books and towards publishing in a different way. But at the end of the day it’s only the medium that will change. We are still a scholarly publisher and we publish for that market.”

[Publisher]

“Until it’s clear then I don’t think publishers are going to invest a lot of money in doing things differently, because you can’t, in fact, because you’ve got to do what’s working and what looks like working for the next three to five years rather than leap into repackaging.”

[Publisher]

This remark reflects the cautious approach of many publishers to change. The economic realities mean that limited investment can be put into new developments.

Although another publisher agreed that it had to make economic sense for a publisher to invest in something new, it was those who were prepared to take the risk who would be successful.

“There may be a period of time when it [the print subscription base] is under threat and there is an imbalance, but I think those publishers who go for it will come out on top ultimately.”

[Publisher]

This same publisher suggested another economic model whereby, as long as they received a certain amount of income from a particular market, they would include lots of extras. This would be simpler and cheaper to run.

Because the market is changing so quickly, there is a need for publishers to review the situation every year. The cost of electronic publishing had now settled down and the main cost was the same as for print, namely the editing and reviewing.

“Whereas for many years we just talked about the one form, print on paper, now each year we’re having to review the way we plan the whole financial structure. We’re having to make changes. We have to be prepared to make shifts.”

[Publisher]
Consideration was being given by one publisher to setting up a trial using different material from different sources. He emphasised, however, that this sort of service would still need to be financially viable and that authors would still need to be rewarded. He felt that there would always be a place for the single author book which distilled the information on a particular subject and that this was best delivered in a print format and would not be enhanced by the electronic format. Multi-author texts, however, could be delivered in this way and transaction fees paid only for those sections which were used.
6. Changing roles of stakeholders involved in the electronic delivery of learning materials

6.1 Information professionals

The changing role of both professional and support staff was seen as being influenced by a number of developments of which electronic short loan was only part. One information professional summed up the views of some of the others when she said:

“Librarians need to look outside their box.”  [Information professional]

In this she was expressing the idea that the librarian’s role should involve much closer liaison with the Faculties. One library service had already restructured its staff so that more routine tasks had been taken away from subject librarians, releasing them to spend more time in supporting Faculties.

“This releases the Faculty Librarians to do more direct one to one support through the various centres around the university and over the network...”  [Information professional]

Another information professional had found that some subject librarians were keener than others to go out and talk to academic staff and that, equally, different academic staff varied in their relationship with the library.

“Different libraries have different systems but, if you have a system where there are subject librarians, some librarians may be more interested in it than others, therefore the way they present it [electronic short loan] to Faculties will affect the way it’s taken up.”  [Information professional]

Two of the interviewees stressed the need for library and information services to become involved in the development of the teaching and learning strategy of the university.

“I think there’s a role for developing modules through an electronic reserve, for professional staff to work more closely with academic staff in a support role to develop their teaching methods...”  [Information professional]

One also felt that the library should question what sort of experience the whole institution was offering its students.

“...also, instead of just thinking we are providing a library service, to be able to look outside and say the library service is only part of a wider thing. What is the institution doing? What sort of learning experience are we trying to offer the students who come to this institution?”  [Information professional]
The library’s relationship with students was regarded as equally important as that with the academic staff. Library staff would act in much more of an enabling role in the future. This change would affect both professional and support staff and would involve not only assistance for IT problems but also, as one information professional phrased it, enabling students to see electronic short loan ‘within the context of a much broader information resource’.

6.2 Support staff in library and information services

All the interviewees recognised the need for support staff to be confident in the use of IT in order to provide adequate assistance to the students. One library had ‘re-jigged’ its Enquiry Desk so that staff were more approachable. Another considered that library staff, who had good people skills, were in a better position to help students than technical staff.

“...I also think for the profession, customer care is very important and I also think that the reason librarians have been more successful in moving themselves forward...... is that they have got the people skills”

[Information professional]

Many of the libraries had regular training and appraisal schemes to ensure that staff were confident in their abilities, particularly with regard to IT. One had found that younger support staff were especially keen to learn new skills and another had employed students who were more successful than staff in helping other students.

The fact that electronic material would be part of a service to distance learners meant that support was even more important. One information professional thought that staff would be less concentrated in areas such as issue desks. There would be:

“...less in terms of physical concentration of individuals and more a distribution of individuals who are going to be providing support to end users at the point at which they are actually trying to access information.”

[Information professional]

6.3 Academic staff

There was a fear amongst some academics that they could become too involved in what they could do using the electronic format and forget that their aim is to deliver effective teaching.

“...it’s a kind of balancing act, getting that [electronic delivery of learning materials] right alongside the other things without allowing it to distort what teaching is for, because otherwise it becomes a rather back to front exercise and teaching is being used as an excuse to play.”

[Academic]

Others were happy to use electronic short loan to ensure access for their students and enjoyed the contact with library staff in helping to develop their courses. The academic staff still saw
their prime role as teachers and relied on the library to keep them informed about new resources, especially electronic resources.

“What I would like to see is that I was regularly updated online with the latest information on my subject.”

[Academic]

6.4 Publishers

The publishers’ role would continue to be largely the same as it always has been. They would still keep pace with changes in the market by talking to groups of academics and librarians and attending conferences.

“...people in the company go to UKSG and librarians’ conferences. It’s crucial that we keep that close communication. We’re all learning as we go along. Really we have to listen to the market place.”

[Publisher]

They will also continue to act to ensure the quality of the material. This may either be in print or electronic format, although it is all the more important in an electronic environment where anyone can create a Web site.

“...lots of people can write HTML and make basic animations, but it’s awful. So the publishers’ role is to add value, doll it up and give it an international sales reach.”

[Publisher]

One publisher was already acting for learned societies and maintaining their Web sites for them. Although this is a change of role in some respects, in other respects it is just an extension of what they were already doing. The publishers’ role in protecting authors’ rights was seen as even more important in an electronic environment.
7. Future scenarios

Some of the points mentioned in this section have been highlighted elsewhere. It was felt, however, that it was worthwhile bringing them together under one heading.

7.1 Teaching

All the academic staff interviewed considered that the BUILDER pilot electronic short loan service needed to be developed further. If it was, teaching methods might well change. Developments which academic staff would find useful included: the ability to divide much larger works into smaller sections and use them; information on which publishers were prepared to give clearance; and a much more interactive system, whereby students could do small tests.

“...I would like to see aspects of a whole copyrighted material being available for example. Basically the breaking up of a larger body of work into smaller chunks fit for a particular teaching purpose.”

[Academic]

“That, as well as saying ‘Read this’, you can say ‘Here's a little test and it’s interactive and it’s fun....’”

[Academic]

One publisher saw one of the main benefits of electronic learning materials as their ability to give academic staff time for more personal contact with students.

“It will replace the didactical components of the course, all the formal elements of the course, and then you’ll be able to release the time of lecturers for seminars, tutorials.”

[Publisher]

Certainly some of the academic staff in the study found that, with the increase in student numbers, they were having to teach the same material to several different groups. A well-developed service which included lecture notes and exercises could help relieve this burden.

It was suggested electronic short loan could also be used to develop students' IT skills. This is already being used by one electronic short loan project where basic IT skills are needed to use some elements of the service. The project leader sees a future:

“...for professional staff to work more closely with academic staff in a support role to develop their teaching methods, in that an electronic short loan can actually support different teaching outcomes.”

[Information Professional]
7.2 Role of library and information services

The overwhelming feeling amongst information professionals was that library and information services needed to work ‘in a corporate sense’ and not as an isolated unit, trapped by the traditional view of the library.

“E short loan could be about institution wide services....”
[Information professional]

“Of course a lot will depend on what the overall institution model is for delivering electronic information....”
[Information professional]

Library and information services were seen as playing a major role in the management of electronic material. It would be library and information services staff who had the skills to create the management system used to keep track of permissions etc. One library was also working on templates for academics to use when setting their own Web sites for teaching purposes.

“Hence we are working on templates, for example, for delivering material to students through the internal network, so at least there is some sort of commonality. You're dealing with the same sort of metadata and systems.”
[Information professional]

It was librarians, too, who were aware of the different national schemes for digitisation and would see how those fitted in with projects such as HERON.

“...I think to a certain extent we have to be very careful about having some sort of national database of individual items because it's got to work in parallel with the burgeoning amount of digitised content that's being made available.”
[Information professional]

One information professional saw colleagues in the future very much reacting to each situation as it arose. There will be no universal policy with regard to what format is used for the delivery of information.

“If you've got a course which is entirely dealt with by distance learning you are going to be relying much more heavily on that [electronic short loan] than you might other tools...”
[Information professional]

One future for electronic short loan services suggested by a number of interviewees was that it might be a completely separate service from the library. It might be part of the university or some aspects might be provided by outside bodies, particularly from the commercial sector.

“In some institutions, it may be seen that an electronic reserve is a central service and it can be funded centrally, nothing to do with the library.”
[Information professional]
“...whether it's done in a specialist unit at the university, in a copy shop, or some of the book shops are getting involved now.”

[Publisher]

This can be seen as part of a general move away from libraries being the sole information providers. Information professionals will, however, always have a role as enablers and in helping to ensure the quality of information.

7.3 Hybrid information environment: print versus electronic

7.3.1 Publishers

One of the main decisions publishers will have to make in the future is how far to move towards digitised rather than print material. Most felt that it would be a long time before print disappeared completely, especially where books are concerned. Journals were viewed quite differently. All of the interviewees already had these available in both print and electronic format. One predicted that some journals might at some stage only be available to members of the society which produced them via a password. Another envisaged the electronic format being the norm and print being available on demand. They were anxious, however, in a global market, not to disenfranchise some areas of the world.

“I think for any global publishers, as we try to be, there are groups of people who would find it very difficult, if not impossible, to access electronic products and they can use print products.”

[Publisher]

Most publishers were also aware of the limitations of the electronic environment and the fact that not all teaching could be done in this way. Some felt that it would be easy to become carried away with the technology and not improve the content.

“Maybe we've got to say that a cold, electronic computer can't actually educate people the way a human can, because there's that certain special ingredient. I think it will be an add on, a very good supplement.”

[Publisher]

They were also anxious to receive feedback so that they knew whether they were creating what people wanted.

“We want people to use it and let us know what they think, because it is very easy to create these wonderful products and all people do is just print them and we're back to square one.”

[Publisher]

Two publishers were particularly involved in Web based teaching projects. One was about to join a working party on Web-based teaching and another was working with colleagues in the USA to look into medical teaching via the Web. He felt that an international approach was needed and that this was too complex for either academics or librarians to tackle piecemeal.
“I think it's got to be left to people with a passion for education to ask ‘What do we want to do?’ and then find out what technology we need and then buy that technology. On the Web it should not be left to universities. It's a waste.”

[Publisher]

7.3.2 Library and information services
The information professionals all recognised that there would continue to be a hybrid environment for some time to come. There was no suggestion that the virtual library would become reality within the foreseeable future. The library as a place would continue to exist. Provision for part-time and distance learners will push ahead the development of online services and provision, but this would continue to run alongside other services for those unable to visit the library very frequently such as postal loans and telephone renewals. It was suggested that developments would be moved forward by particular disciplines while others will still prefer print. One information professional considered that the change from print to electronic would happen more quickly for teaching and learning than for research.

“I suspect that it will take some time to do even on the learning and teaching horizon. For research it will be a much more incremental shift and institutions which have traditionally been holdings based will by and large continue to be holdings based because a lot of the information which we are continuing to access is retrospective information.”

[Information professional]

7.4 The publishing industry
One aspect which will undoubtedly influence the decisions made by publishers is the competitive nature of the market. Publishers continue to amalgamate and merge, creating an insecure business environment. This creates a tension between the reluctance to risk innovation and the recognition that those publishers who take the risks may be those who succeed.

“At the end of the day, like all things, it has to make economic sense for us to do it and that’s I suppose, the challenge as much as anything.”

[Publisher]

7.5 Self publishing on the Web
One area that has been growing is academics publishing themselves on the Web. None of the publishers, however, saw this as a threat. They thought that academics would continue to recognise the added value that publishers could give in terms of marketing, illustrations and peer review, as well as the prestige that was still attached to certain publishers' names.
“...they [the academics] get added value by having the services of a commercial publisher in expanding their readership, and we do quite a lot of sophisticated marketing”

[Publisher]

“I don’t think it’s anything we would lose any sleep over, though, because of the marketing side. Certain publishers have prestige as well.”

[Publisher]

7.6 Consultation and co-operation

One of the main themes running through all of the interviews was the fact that none of the stakeholder groupings (publishers, academics or librarians) could afford to work alone. There was a consensus that the situation is changing so rapidly and costs can be so prohibitive that it is essential that everyone knows the needs of all the other groups and is aware of what developments are taking place. One academic stated that he had been co-operating with the BUILDER project ‘in order to establish the principles’ and publishers were working with Electronic Libraries (eLib) Programme projects in order to help them decide how to deal with new developments. One said: ‘We like to have feedback on how projects are going and would like to know what other publishers are doing.’

The publishers all worked with different groups of academics and librarians to find out what each wanted. One publisher, in particular, met groups of academics at least once a year and sent representatives to library conferences. Although this is clearly good commercial sense, there is also the feeling that everyone must work together if each group is going to recognise the needs of the other and both education and publishers are going to benefit from new developments.

“We really need to know what the academic community wants.”

[Publisher]

“We need to know what academics want.”

[Publisher]

7.7 Development of electronic short loan services

It seems unlikely that electronic short loan as a way of holding in demand material will remain static. For those developing the services, decisions will need to be made about the way to move forward. There is an argument for keeping the service as simple as possible so that students have straightforward access to the texts they need. On the other hand, there is the potential for electronic short loan to be part of a much wider teaching and learning strategy where students can have access to lecturers’ notes and to exercises to enhance their studies. As academic staff become more IT literate they are finding information from a variety of electronic sources. Those who run electronic short loan services are faced with decisions on how to give students easy access to this material and how to deal with the thorny issue of copyright clearance. These are
issues that need to be considered as projects finish and institutions make decisions about scaling up. A service which makes use of the full potential of the electronic format for delivering learning materials will need commitment on behalf of an institution in terms of staff and finances.
8. Conclusion

8.1 Student profile and learning styles

The introduction of learning materials in electronic form needs careful planning. Clearly with both the increase in numbers of students and in those attending in a non-traditional manner, electronic resources provide a valuable means of access to information. Care must be taken, however, not to disenfranchise some students. Computer provision must be adequate and, although many students will be IT literate, those who are not must be given suitable training for them to be able to take advantage of the resources. Since most students still prefer not to read more than short passages on screen the type of information available electronically should also be carefully considered.

8.2 Impact on library and information services

The view of both information professionals and academic staff was that the electronic delivery of learning materials could enhance library and information services and ease pressure on traditional services. The challenge for the information professionals was to deliver these materials alongside other services with only the same resources available. This will mean looking at information provision as a whole and might entail a restructuring of staff.

8.3 Barriers to the effective delivery and use of electronic learning materials

8.3.1 Copyright
The complex problem of copyright was seen as a frustrating barrier by academic staff, who were anxious to make material available to their students. Both information professionals and publishers recognised the need to protect authors' rights but were keen to have procedures in place that would make the process less complex and time-consuming. A number of developments, including the introduction of the CLA digitisation mandate, have gone some way to standardising and simplifying procedures.

8.3.2 IT infrastructure
There was some concern expressed about poor computer facilities negating the benefits of electronic delivery. Other interviewees pointed out that computer networks had not yet been tested with a full-scale service, so there were some doubts about their ability to cope.

8.3.3 Cultural change
The attitude of both academics and students was seen as one of the major barriers to progress. Many academics were still wedded to traditional ways of teaching and were reluctant to spend time on new developments from which they saw little benefit. Although some students were keen to use electronic media, most still preferred print and saw a book as the main source of information.
8.4 Economic opportunities and threats

8.4.1 Library and information services
The cost of electronic delivery of learning materials is currently difficult to quantify. Some costs, such as digitisation can be estimated, but the uncertainty of the copyright situation means that both charges for clearance and the time taken to obtain clearance, are very difficult to cost. As one information professional pointed out, there may need to be new models for costing, which take into account the increased access provided by electronic material.

8.4.2 Publishers
Although the publishers saw the electronic format as an opportunity to develop new services and had already invested in electronic journals, they were reluctant to invest heavily in an uncertain market. Some were beginning to consider electronic delivery for material which had traditionally been in book form and most were reviewing the situation on a regular basis.

8.5 Changing roles of stakeholders involved in the electronic delivery of learning materials

8.5.1 Library and information services staff
It is clear from the interviews that librarians need to extend their role as a support service and be much more active in assisting academics in developing their teaching. Both professional and support staff must work in an enabling role to ensure that both academics and students obtain maximum benefit from the services on offer. This means that both groups of staff need to receive adequate training so that they are confident in their dealings with users.

8.5.2 Academic staff
The role of academic staff is changing not only because of the development of electronic formats, but also because of subject reviews undertaken by the Quality Assurance Agency for Higher Education (QAA). Both mean that they have to be more proactive in their relationship with the library and think carefully about how library services fit in with their teaching.

8.5.3 Publishers
The role of the publishers will to a large extent remain the same whatever the format. They will still offer added value in terms of editing, peer review, layout, illustrations and marketing. What may change is the format of material on offer, and the means of distribution.

8.6 Future scenarios

8.6.1 Teaching
All the interviewees agreed that the electronic delivery of learning materials could play an important role in future teaching. Electronic short loan has great potential for helping academic staff in their teaching. Both information professionals and academics need to work together so that academics know what is possible and information professionals are aware of their needs. The success of an electronic short loan service in helping with teaching is dependant on solving many of the problems already mentioned, particularly those related to copyright and computer facilities.
8.6.2 Role of library and information services
The library and information service needs to become an integral part of the teaching and learning strategy of the university. It will act as a central service and help to ensure that whatever department a student belongs to the service he receives will be of equal quality. The library and information service will be there to manage the systems which deliver the information so that, to the users, it appears seamless. It will also manage copyright.

8.6.3 Hybrid information environment
Both publishers and information professionals will need to establish clearly the best way to deliver different types of information. Currently, and for some time to come, that will continue to be in print and electronic formats. There is no doubt that in many ways people still prefer books, but this situation will need to be kept under review. Many of the current generation of primary school children are being brought up on the Internet and may expect information to be in an electronic form.

8.6.4 Consultation and co-operation
One of the major themes to emerge from all the interviews was the feeling amongst all stakeholders was that they needed to consult with each other if progress was to be made. The development of electronic delivery of learning materials is too large a project for one university or publisher or group of academics to tackle alone. Many of the people interviewed were already working with other stakeholder groupings, but there needs to be a national strategy to fully develop the potential of the service.
9. Recommendations

9.1 Teaching and learning strategies

- Universities should develop strategies at an institutional level for teaching and learning using electronic formats.

9.2 IT infrastructure of higher education institutions

- Finances should be made available to ensure that IT infrastructure in universities is adequate to support electronic learning materials (for example: networked PCs, networked laser printers, adequate bandwidth, adequate servers).

9.3 Copyright

- Work should continue on a copyright clearance system that, while fair to publishers, does not hinder the ability of academic staff to use the most appropriate material.

9.4 Partnerships

- Academics, information professional and publishers should continue to work in collaboration and develop their partnerships further.

9.5 Training

- Training on the use of electronic resources should, where necessary, be integrated into students' learning.

- Adequate training should be given to both professional and support staff in library and information services to ensure that they can give support to both students and academics in their use of electronic material.
Appendix 1

Stakeholder interview questions

Interview questions for academic staff

Comparison with printed short loan
- What are the advantages of electronic short loan over paper short loan?
- Are there any instances when paper short loan is more suitable?

Teaching methods
- How does electronic short loan fit in with the way you teach?
- Does the time scale for requesting items to be added to electronic short loan fit in with when you need to make decisions about references to include in reading lists?
- If electronic short loan were introduced on a large scale, would it affect your teaching methods?

Future developments
- Would you like to see the service developed further?

Barriers to service development
- Are there any barriers to its large scale introduction?

Interview questions for information professionals

Advantages and disadvantages
- What are the advantages and disadvantages of electronic short loan over paper short loan?
- Do you feel there are any barriers to its large scale introduction?

Resources
- What affect might electronic short loan have on resources?
- Would electronic short loan alter the balance between access and holdings?

Role of staff
- How do you think electronic short loan will change the role of professional staff?
- How would the large-scale introduction of electronic short loan affect the training needs of support staff?

Interview questions for publishers

Copyright and digitisation
- What are your policies with regard to digitisation of material for teaching purposes?
Format for publishing material
• Would you consider publishing material for teaching purposes only in a digitised form rather than printed or would you publish in parallel?

Charging
• What are your policies on charging for the digitisation of material for teaching purposes in the immediate term?
• Do you have any charging models in place?

Finances
• How would this change in format affect the financial planning of your organisation?
Appendix 2

List of interviewees

Academic staff
Dr David Davies School of Medicine, The University of Birmingham
Dr Andrew Hawker Accounting and Finance, School of Business, The University of Birmingham
Dr Damian Hodgson Commerce, School of Business, The University of Birmingham
Dr Isabelle Szmigin Commerce, School of Business, The University of Birmingham

Information Professionals
John Akeroyd Head of Learning and Information Services, South Bank University
Christine Dugdale ResiDe Research Fellow, Library Services, The University of the West of England
Dr Clive Field Librarian and Director of Information Services, The University of Birmingham
Hazel Woodward University Librarian and Director of Cranfield Press, Information and Library Services, Cranfield University

Publishers
Fiona Carr Journals Copyright Manager, Oxford University Press
Keith Courtney Business Development Director, Taylor & Francis
Vivienne Dunlop Contracts and Rights Manager, Sage Publications
Claire Lloyd Senior Publishing Administrator, Blackwell Publishers
Dr Mike Stein Medical Commissioning Editor, Blackwell Science