User Studies of Commercial and Free Electronic Journals

Cliff McKnight, Jack Meadows*, Fytton Rowland*, Hazel Woodward† and Carolyn Pritchett**
* Department of Information and Library Studies and †Pilkington Library
Loughborough University
Loughborough, Leics LE11 3TU, UK
e-mail:c.mcknight@lboro.ac.uk

ABSTRACT

The paper reports on initial findings from user studies of electronic journals in which users from six academic disciplines participated. Issues of access, content, layout and navigation are considered in addition to the perceived advantages and disadvantages of electronic journals. It is concluded that librarians should view electronic journals as an opportunity rather than a threat.

Introduction

The vast growth in the number of 'electronic journals' during 1996 was largely the result of several publishers making electronic versions of their paper journals available over the Internet. If electronic journals are ever to become a viable information resource for the majority of academics, this form of parallel publishing represents an important phase in the migration from the paper to the electronic domain.

The initial interface to these journals is typically via a World Wide Web browser which allows display of author/title listings and abstracts. However, when it comes to full text, many commercial publishers have opted for an electronic format which accords with their model of the journal — a page-based representation — stored in PDF and displayed using the Adobe Acrobat reader.

The Pilkington Library at Loughborough University has been providing access to commercial and free electronic journals through its Web pages on the University's information gateway. The free journals were selected on the basis of scholarly quality (usually refereed titles) and relevance to teaching and research within the University. The commercial titles include those of the publishers Chapman & Hall, Academic Press and the Institute of Physics in addition to the Project Muse journals based at Johns Hopkins University. Over 300 journals are currently accessible through the Library pages.

Because many of these journals only became available in electronic form during 1996, studies of the views of users were lacking. The Café Jus project (**C**ommercial **A**nd **F**ree **E**lectronic **J**ournals : **U**ser **S**tudies) sought to investigate these views.

User studies

The project has investigated the use of electronic journals by four groups of users at Loughborough University: academic and research staff; research students; taught master's degree students of the 1995-96 cohort; and taught master's degree students of the 1996-97 cohort. The approach to these groups was guided by our experience in the earlier ELVYN project (Rowland *et al*, 1995), when the usage of a single electronic journal across several universities was examined. This suggested that different approaches were needed for taught master's students, on the one hand, and for staff and research students on the other. A more structured approach, involving setting defined tasks to the group, worked best in providing good experience of electronic journals in a short space of time, and thus elicited informed opinion from students. [Experience with undergraduates evaluating electronic journals in the InfoTrain project (Meadows *et al*, 1997) was similar.] By contrast, academic staff and research students were asked to use electronic journals in a less contrived way, as part of their regular current awareness activities. This second group of users were shown how to access a number of relevant journals in short individual briefing sessions and then asked to use the electronic journals routinely, responding to the research team on a regular basis and using a diary to record their experiences.

Data collection is still proceeding for the academic staff and research students. The present paper reports on the data obtained from the 1996-97 cohort of taught master's students, the earlier cohort having been used to pilot the questionnaire and methods.

Method

The basic method involved approaching course tutors with an initial request for an opportunity to address a group of their students for 10 minutes. At these sessions, one of the project team would explain the nature of the project, request volunteers and arrange a suitable time for a group of students to visit one of the computing laboratories in the Department of Information and Library Studies.

When a group of students arrived at the lab, they were given brief instructions on how to access the journals through the library pages and were then given a set of passwords for the commercial systems available, a list of the journals which fell into their broad area, a crib sheet on using Adobe Acrobat and a questionnaire. Their task was to select a journal of interest to them, browse/read it until they were familiar with it and then complete the questionnaire. A minimum of two members of the project team were present at each session. The sessions were conducted at different times during the day in case there were any time-dependent problems.

The decision to use a lab rather than provide access from across the campus meant that problems of access and handling could be observed direct and discussed with the group.

Participants

The total number of questionnaires returned was 85, the participants being drawn from six departments: Civil Engineering (18), Computer Studies (7), Economics (7), Human Sciences (11), Information and Library Studies (16), Sports Science (26). Of the questionnaires returned, 47 were completed by male students and 38 by female students.

As part of the background information collection, participants were asked to assess the extent of their expertise with computers. Responses indicated that 20% had limited expertise, 50% had some expertise and 30% rated themselves as expert.

Participants were given a £5 book token for taking part in the studies.

Hardware and software
All sessions took place in a Macintosh equipped lab. The machines are connected via the departmental network into the campus LAN which is connected to JANET, the British Joint Academic Network. The software used was Netscape Navigator version 2.02 and Adobe Acrobat version 2.1.

Results

The results are presented under various headings which generally reflect the structure of the questionnaire.

Access
There were continuing problems of gaining speedy access to the journals, almost entirely relating to the commercial and very rarely to the free journals. In this sense, the IDEAL system often proved to be far from ideal, particularly in the early stages of the study. There could be considerable delays at any time of the working day and the existence of two sites only seemed to make matters worse. For example, one student was told to login to the San Jose site because there were too many connections to the Bath site. He was then refused entry to the San Jose site and told to login to Bath.

Some longer articles took so long to download that the session timed out and students had to login again. In its favour, IDEAL gives file sizes which assist in the decision of whether or not to download. Not all publishers provide such useful information.

Some relevant comments from students on whether there were access problems for their selected journal were:

> 'Generally no, although the fact that the IDEAL username box isn't long enough for 'Loughborough' to fit in could cause confusion'
>
> 'Finding it was relatively easy, but it did take some time to load — about 5 minutes [and this was at 9:00 am!] It then took another few minutes to get from the IDEAL menu to the listing of journals.'
>
> 'Yes! Nowhere on the front screen tells you to press the SUBMIT button to get into the system. I presumed you just had to hit the ENTER key. It took 10 - 15 minutes to get to the first journal article!'
>
> 'I could not get into the full text of one article; the message that came up was 'Adobe Type Manager 3.6, or newer, must be installed. Acrobat Reader will now quit.' This happened twice. We started to access the system at 2:00 pm; it is now 2:50 pm and I have not been able to see a full text article.'

'No, but we did have assistance.'

These comments and others reflect on a number of difficulties encountered:
• The means for gaining entry can be far from obvious and trying to guess can be time consuming.
• There is a need to know something about the journals beforehand (e.g., who the publisher is).
• Not all the journal titles are immediately transparent. This is particularly true of the free journals (e.g., PACS-R).
• It is especially tiresome for publishers to assume that all readers have access to the latest software, particularly if they upgrade their requirements without notice.

Content
In general, the journals selected were seen as being relevant and of interest (though the files for some journals were either incomplete or unavailable). On a scale of 1 - 5 reflecting increasing relevance, almost 80% of the articles were rated between 3 and 5. Almost all students thought the nature of the contents were what they would have expected from the title. Indeed, a substantial proportion (over 40%) thought the contents were more interesting than they had expected from the title. There was general agreement that the standard of the articles was about par for the field concerned. This is not particularly surprising since nearly 75% of the articles viewed were electronic versions of printed journals. However, it implies both that the electronic versions now coming online are of journals that readers wish to access, and that free journals are not seen as being of appreciably lower quality than commercial journals. Nearly a third of students were already acquainted with the print versions.

Layout and navigation
Detailed analysis of these results is still in progress. However, some general points can be made, many of which relate to the Acrobat reader and its relationship with Netscape. Of the journals themselves, legibility proved to be the least satisfactory feature, with over a third of the students finding the articles difficult to decipher. This was made more difficult by problems in trying to enlarge the text. One student, who rated the legibility as satisfactory, commented, '...if you understand the [Acrobat] zoom function, which is definitely not intuitive!' Details of graphics and tables were also often difficult to see.

There was some evidence of confusion on the part of students regarding where particular features operated. For example, search functions exist in Netscape, in Acrobat, and many of the journals also provide for searching across their issues.

Although most students regarded the various icons as easy to use, there was often some confusion until they became accustomed to them. One problem was that the icon might not immediately call to mind the operation concerned. For example, some failed to guess that a man with a spanner represented 'services'. Another problem was misinterpretation of the activity involved. For example, some expected the 'back' button to return them to the contents page rather than the previous page of text. It was also not immediately clear to many how to exit from an article.

The help facilities were not found to be very helpful. Indeed, a number of the students did not manage to find them. As one commented, 'Could not find them — they should be obvious to novice users!'

Perceived advantages of the electronic journal

- Finding specific information (e.g., appropriate articles) is better. Student comments included:

> 'The electronic version has excellent searching capabilities — that feature is extremely helpful and would save time in research.'
>
> 'Easier to find related articles.'

- Avoids some of the problems of using printed journals. Student comments included:

> 'Can manipulate the electronic version; can view lots of journals without having to go out of your mind trying to find all the paper versions in the library.'
>
> 'The advantage of the electronic version is that it is readily available at any time as compared to the paper version, which may be in use by another person when you want to read it.'

Perceived disadvantages of the electronic journal

- Not necessarily usable by novices. Student comments included:

> 'There are no instructions or guidelines immediately accessible to help you find out how to use the electronic journal, and to move around the system. To be honest, it is not very user friendly.'

- Some operations take more time. Student comments included:

> 'It is easier to turn the page of a paper journal.'
>
> 'At the moment it is too slow to connect, and disconnection occurs too easily.'
>
> 'Takes too long to move from one journal to another.'

- Reading from the screen is less pleasant. Student comments included:

> 'To read a screen is tiring.'
>
> 'The graphics were very grey and boring.'

The predominant view was that electronic journals were already useful for reading from a site with no nearby library, or for quick scanning and searching. However, they still need appreciable improvement if they are to compete with paper journals. As one student commented, 'Need more user trials before implementation. Avoid the "Big Bang" introduction of the system. Patience!'

Comments from discussions in sessions
There were a number of comments relating directly to the publishers' approach and particularly relevant to the present project.

• The use of different passwords for different publishers was confusing.

• Some material in a given journal was in a different format according to when it had been input.

• Some journals had been scanned in. This led to a generally indistinct appearance of text and graphics on-screen.

• Changes made by publishers without warning are difficult for even computer-literate readers to disentangle.

• The more complex the journal, the greater the potential software problems. For example, one engineering journal required additional software (the Shockwave plug-in for Netscape) in order to view the animation. The lab machines had the wrong version, so the students missed the value-added element of this journal.

• Most students did not understand 'bookmarks' and 'thumbnails'.

• Some of the colours used, especially for hypertext links, were difficult to see on-screen (e.g., a combination of green and brown).

Apart from these, the overwhelming comment was that accessing and using many of the electronic journals (primarily the commercial ones) would have been difficult, or even impossible, without the handouts and oral guidance given during the sessions.

Conclusions
In view of the problems outlined above, it is perhaps surprising that two-thirds (66%) of the students claimed that the electronic versions were easier to access than the paper versions. It seems, however, that they were thinking of the whole process of access, including going to the library from their department. This is reflected in their answers to the question 'Which do you find easier to use?' Nearly two-thirds (59%) said that the paper version was easier.

Low level problems, especially delays, are a major demotivating factor in the use of electronic journals. Some of these are within the control of the publishers and some are not. For example, Academic Press noticeably improved server access efficiency during the course of the study, but the bandwidth between the United States and Britain remained the same throughout.

Free journals generally come out better from this comparison than commercial journals and readers do not seem to regard them as being of lower calibre. Part of the reason presumably is that several are well-established and so not changing so rapidly. However, the main reason seems to be that they are easier to access, largely due to the fact that they need nothing more

than a Web browser. Although it is a good printing device, the Acrobat software favoured by several publishers does not adequately support journal usage.

On-screen reading remains unpopular when something is to be read in detail. Efficient and rapid print facilities are vital and will continue to be so for many years to come.

Publishers currently appear to be more interested in pursuing their own learning curve than in assisting their customers. After several years of dithering, waiting to get involved in electronic journals, they have finally taken the plunge...only to make the classic mistake of being driven by technology rather than human factors. The research literature on paper journal usage has been largely ignored.

Use of electronic journals is going to require a considerable training exercise, particularly if publishers keep changing what they are doing. There is some evidence that subscription agents are now moving to provide a common interface to several publishers' journals (e.g., Blackwell's Electronic Journal Navigator, SwetsNet, BIDS JournalsOnline). However, far from feeling threatened by electronic journals, librarians should see them as an opportunity to expand considerably their user education programs.

Acknowledgement
The Café Jus project was funded by the British Library Research and Innovation Centre.

References

Meadows, J., Rowland, F. and Yates-Mercer, P. (1997) An online electronic journal for teaching purposes. *ALT-J, Association for Learning Technology Journal*, 5(1), 13-18.

Rowland, F., McKnight, C. and Meadows, J. (1995) *Project ELVYN: An Experiment in Electronic Journal Delivery*. London: Bowker Saur.

Jack Meadows is Professor of Library and Information Studies at Loughborough University. He was previously Head of the Department of Astronomy and the History of Science at Leicester University

Cliff McKnight is currently Head of the Department of Information and Library Studies at Loughborough University. A psychologist by background, he has had an interest in human-computer interaction since working with the late Christopher Evans in 1971. His current research focuses on the impact of information technology on scholarly communication, particularly those issues relating to the development and use of digital libraries. He is the Senior Editor of the OUP/BCS Journal of Digital Information (JoDI).

Fytton Rowland is a lecturer at the Department of Information and Library Studies at Loughborough University, where he is Programme Tutor for the Information & Publishing degree programme. Originally a biochemist, he has previously worked in publishing and information posts with the Biochemical Society, The Royal Society, and The Royal Society of Chemistry.

Hazel Woodward is currently Academic Services Manager at the Pilkington Library, Loughborough University. Hazel has a long standing interest in serials management and the process of scholarly communication and has been involved in a number of electronic journal research projects. She has presented many national and international conference papers and published widely on this topic. She is a member of the UK Serials Group Committee, a member of the SCONUL Advisory Committee on Serials and Scholarly Communication, and Chair of the IFLA Standing Committee on Serial Publications.

Carolyn Pritchett has an honours degree in history from London University and a PG certificate in education from Nottingham. After spending over 20 years as a teacher she gained a masters degree in information and library studies at Loughborough University where she has worked for the past four years as a research and teaching assistant.