UNDERSTANDING HOW STUDENTS AND FACULTY REALLY USE E-BOOKS: THE UK NATIONAL E-BOOKS OBSERVATORY

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Abstract

The E-Books Observatory project of the UK's Joint Information Systems Committee (JISC) aims to provide higher-education students throughout the UK with access to a number of popular textbooks in digital form free at the point of use, and then measure their usage of them. Subject areas covered were business studies, media studies, engineering and medicine. Surveys of users were conducted in January 2008 and in January 2009, to measure changes in usage as a consequence of the availability of the e-books. Focus groups of users have also been held. The usage of these e-books has also been monitored by deep weblog analysis, which will continue until Summer 2009. It is believed that this is the largest study of E-book usage yet mounted. Both the questionnaire surveys attracted over 20,000 respondents. Preliminary conclusions are given here, and they suggest among other things that electronic availability of textbooks will not impact sales of the printed books because print and electronic versions are used in different ways.

Keywords: E-Books; Student textbooks; Usage study; Deep log analysis.

1.   Introduction

The concept of the UK National E-Book Observatory arose from within the Joint Information Systems Committee's E-Books Working Group. In 2007 the group commissioned a team of consultants to examine the current e-book environment from the perspective of both librarians and publishers and to ascertain what the role of JISC Collections – as a purchasing consortium – might be in the future. The consultants' report highlighted a number of challenges that needed to be addressed, but the key message to come out of the report was that publishers are not making the right textbooks available electronically on the right terms.

In the light of this report, the working group was convinced that a major initiative was necessary to persuade publishers of the value of making textbooks and core readings more readily available though higher education libraries. But how could publishers be persuaded to do so - given their concern about the loss of student sales of textbooks if libraries provided concurrent, 24/7 online access to such books? The answer might be to provide a collaborative, secure, funded project to find out precisely what would happen under this scenario and to share the findings with both publishers and libraries. And so the National E-book Observatory Project was devised.

The project aims are as follows:
- To license collections of e-books that are highly relevant to the UK higher education taught course students in four discipline areas:
    - business and management studies
    - engineering
    - medicine (not mental health or nursing)
    - media studies
- To evaluate the use of the e-books through deep log analysis and to assess the impact of the 'free at the point of use' e-books upon publishers, aggregators and libraries;
- To achieve a high level of participation in the project by making the e-books available on the bidders' own platform (where appropriate) and on a variety of e-book aggregator platforms. Higher education institutions will thus have the option to access the e-books on platforms they already use and which are familiar to their users;
- To transfer knowledge acquired in the project to publishers, aggregators and libraries to help stimulate an e-books market that has appropriate business and licensing models.

Once the project aims had been established, an Invitation to Tender (ITT) was sent out to publishers. The tender emphasised that JISC Collections wished to license e-

books of relevance to higher education taught course students for a period of two years and that the e-books would be available to all higher education students in all universities within the UK. Even after rejecting non-compliant e-book offers, the working group was still left with 136 e-books across the four disciplines with a total value £2.08 million. Given that the amount in the project budget for licensing the titles was £600,000, clearly some further weeding was necessary.

At this point the working group went out to community consultation. Using pre-existing contacts in all UK university libraries, librarians were asked to prioritise the 136 candidate titles against their local reading lists and to identify which part of the ITT was most important from their perspective. At the end of the consultation, 36 e-books were selected. 26 titles (5 business, 7 media and 14 engineering) were made available on the MyiLibrary platform and 10 titles (medicine) were made available via Books@Ovid.

All the books were made available to all UK higher education institutions (HEIs) for the start of the academic year 2007/08 in September. The project team was delighted with the high level of uptake: 127 (76%) HEIs signed up for the books on MyiLibrary and 80 (47%) signed up for Books@Ovid.

2.   Methodology: The deep log analysis and benchmarking surveys

The deep log analysis study commenced in January 2008 and is due for completion in summer 2009. It is being led by CIBER, a research group based at University College London, who helped to develop the notion of a national observatory model.

The data requirements for the E-Books National Observatory developed from the need to be able to provide some answers to a series of questions that are absolutely critical to the success of electronic course texts. These include: What are the views and perceptions of students and faculty regarding electronic course texts? What is the overall context into which these JISC titles are being embedded? How does e-book provision fit into library strategy? What is the impact of free-at-the-point-of-use access to electronic texts, specifically in regard to library circulation of existing hard copies and, most critically, upon publishers' sales? How, in reality, do students actually use electronic course texts, and what are the wider implications for learning and teaching and the all-important `student experience'?

The study has two aims: firstly to collect qualitative and quantitative data on e-book user behaviours and secondly, to measure the impact of making e-books freely available at the point of use on publisher's print sales and library circulation figures. These aims are being achieved by:

- Benchmarking surveys carried out in January 2008 and in January 2009, which explored current users' awareness, perceptions and attitudes towards e-books. Together, these surveys received over 48,000 responses.
- Analysis of raw server logs to see exactly how users discover, navigate and use the e-books.
- Case studies including focus groups held at eight universities. Data gathered from the focus groups held with students, teaching staff and librarians has been analysed against the log data to explain user behaviours and attitudes.
- Analysis of library circulation and print sales data against the usage of the e-books and information on student purchasing intentions.

The wealth of evidence and knowledge gathered in the observatory project will be unpacked into practical recommendations to help everyone in the digital supply chain, including librarians, publishers, e-book aggregators and JISC Collections to work collaboratively and develop a market that is based on empirical data.

3.   Results: Highlights of the Deep Log Analysis of MyiLibrary

The analysis of the MyiLibrary server logs provides detailed and unvarnished insights into users' information-seeking behaviour. Unlike traditional surveys, log data analysis does not raise issues with sampling and sample size: every record is analysed and millions of transactions can be processed. What follows are the initial findings emerging from the use of 26 JISC e-books available on the MyiLibrary platform.

3.1. The biggest and most detailed e-book usage study ever conducted

A 14-month study (November 2007 to December 2008) of the 26 JISC e-books and the non-JISC e-books (10,000) available on MyiLibrary platform. The study has examined use of these e-books by 127 universities, evaluating 6 million page views during half a million user sessions.

Usage was measured by page views, sessions conducted and time spent online. Trends over time were established. A wide range of information seeking characteristics were examined and identified including, method of access (referrer link), location of access (on/off campus), session 'busyness' (number of pages viewed in a session), searching and browsing, the type of content viewed, individual titles and subjects used.

3.2. High usage

Use at the participating universities generated over 760,000 page views to the JISC e-books. This means that each title attracted about 18,796 views. 65,000 sessions were undertaken in respect to these e-books.

Seven out of the top ten MyiLibrary e-books used by Observatory universities were JISC e-books. Considering that the JISC e-book titles had moderate print sales, this demonstrates a clear demand from students and universities for course text e-books.

3.3. The typical visit and volatility

Sessions typically lasted around 13 minutes and users viewed 6 pages on average of the JISC e-books. The length of the sessions shows substantial use of the e-books. Deep log analysis provides unique and fascinating results about what time e-books were used. The JISC e-books were used during every hour of the day but 10am to 2pm were the most popular times. 25% of use occurred between 6pm and 8am. One fifth of all use took place over a weekend and students spent more time viewing an e-book during the weekend.

Use of the JISC e-books varied enormously throughout the year and would appear to be more dependent on the academic timetable than the use of e-journals. Use rose and fell by 50% from one month to another. November was, by some distance, the busiest month. On 18th and 19th November 2008 the JISC e-books received 5605 and 6730 page views, three times more than the average daily rate. Only 39 views per day were made to JISC e-books on 30th August 08 and 91 on 26th December 20008 – the lowest rates across the 14- month period

3.4. Students power browse rather than read online

An e-book page can be scan-read in about one minute. Only 6% of users spent more than five minutes viewing a page, and 83% spent less than one minute viewing a page. This indicates that a large amount of power-browsing and downloading is occurring

3.5. Location

One third of use took place off-campus in the UK and another 6% of use emanated from outside the UK. While there was not much difference in the busyness of sessions (number of pages viewed in a session) between on-campus and off-campus use in the UK, sessions conducted overseas where significantly busier.

3.6. 'Superusers'

Sheffield Hallam University, University of Sheffield, and the University of Glamorgan were the top three universities in usage terms and were in a class of their own, recording around 19,000 page views. There is clearly something special about Sheffield! In general though, the size of a university is a good indicator of the level of use of a JISC e-book.

3.7. Popular subjects and popular titles

The business management titles proved the most popular, accounting for 45% of all use despite the fact they accounted for just 20% of the JISC e-books. Media studies titles (constituting 25% of the JISC e-books) also punched above their weight accounting for 32% of usage; conversely the engineering titles, which accounted for over half of the JISC e-books attracted less than a quarter (23%) of the overall use. Interestingly, sales figures (2007/8) indicated that the business titles obtained the most hard-copy sales.

Organisational Behaviour and Analysis: An Integrated Approach proved to be the most popular title by some margin, obtaining more than 82,000 page views. Interestingly, sales figures for 2007/08 show that it performed fourth best out of the five JISC business titles. The top five e-books accounted for over half of all use and consisted of four business titles and one media studies title. The top ten popular titles consisted of five business, four media and two engineering titles. At the other end of the table, *Better Places to Work* attracted less than 3000 views, not surprising if you take into account that it sold no print copies in 2007/8. However, you could argue that its use was boosted as a result of its featuring in the Observatory.

4.   Results: Highlights of the Benchmarking User Surveys

In January 2008, CIBER invited students at all levels, teaching staff and researchers to take part in an online survey to provide benchmark data for the national e-books observatory project. The response was overwhelming: 23,445 people answered, making this the world's largest e-book survey. Detailed findings from this survey can be found on the JISC website [1].

The survey was repeated with minimal changes in January 2009 to evaluate whether, and if so, how far user attitudes and behaviour have moved on since the beginning of the observatory. To date, over 23,000 responses had been received. As with the first survey, a large number of responses from across the country were received.

A full account of the differences between the two benchmarking surveys will be published in summer 2009 as part of the final report of the project. This section offers a quick snapshot of some of the headline differences between the `entry' and `exit' surveys. There has not been time to run any formal tests to see how statistically significant the differences are. However, the sample size of respondents is large enough that CIBER is 99 per cent confident that the percentages reported here can be extrapolated to include the whole of the UK higher education sector to within plus or minus 0.9 of one percentage point.

The findings in the tables that follow are indexed in the final column to facilitate comparison between 2008 and 2009. The `JISC' disciplines referred to are: business and management, engineering, media studies, and medicine (excluding nursing and mental health).

Table 1: Do you use e-books? (*n*=43,849)

Percentages and index (2008=100)

Those indicating yes	**2008**	**2009**	**Index**
Students in a JISC discipline	63.2%	65.5%	**103.6**
All other students	61.4%	64.2%	**104.6**
Teachers in a JISC discipline	57.0%	63.5%	**111.4**
All other teachers	58.9%	64.9%	**110.2**

There is evidence here of an upward trend in e-book use, with university teachers rapidly closing the gap with the `Google Generation'. A clear majority of students and teaching academics now use e-books at some point, mainly for study-related purposes. This is a general question and relates not just to university life but to leisure and other interests outside work or study as well.

Table 2: Thinking back to the last time you used an e-book, how did you get hold of it? (*n*=43,849)

Percentages and index (2008=100)

From my university library	**2008**	**2009**	**Index**
Students in a JISC discipline	43.5%	51.5%	**118.4**
All other students	45.5%	52.3%	**114.9**
Teachers in a JISC discipline	50.3%	54.0%	**107.4**
All other teachers	50.1%	56.8%	**113.4**

This question asked respondents how they got hold of their last e-book: perhaps by purchasing it, getting it free off the internet, from a friend or colleague, through their university library or another library. More information needs are being satisfied through library-provided e-books. It is known if this is due to increased avail-

ability, or simply through more intensive use of what was there already. But university libraries are now the provider of first choice for the majority. This seems especially to be true of students in the four disciplines covered by this project.

Table 3. How many *e-book* titles have you used in the past month? (*n*=43,849)
Percentages and index (2008=100)

Three or more titles	2008	2009	Index
Students in a JISC discipline	40.0%	44.4%	**111.0**
All other students	38.2%	42.2%	**110.5**
Teachers in a JISC discipline	31.1%	42.0%	**135.0**
All other teachers	33.7%	39.9%	**118.4**

Academics, both students and teachers, are using more e-books each month, and the growth rates (more than ten per cent) suggest that use of e-books is really starting to catch on in a big way. This growth is notable for teachers in the four JISC disciplines, with an increase of 35 per cent!

Table 4. Typically, how long do you think you spend reading an e-book from the screen in one session? (*n*=43,849)
Percentages and index (2008=100)

Eleven minutes or longer	2008	2009	Index
Students in a JISC discipline	74.1%	73.2%	**98.8**
All other students	75.0%	75.7%	**100.9**
Teachers in a JISC discipline	61.2%	61.2%	**100.0**
All other teachers	64.4%	65.3%	**101.4**

There is no evidence here of any change in fundamental online reading behaviour and this self-reported data is entirely consistent with the findings from the deep log analysis. In comparison with CIBER's findings for many other digital scholarly platforms, MyiLibrary users dwell for a relatively long time.

Table 5. How much of that e-book did you read online? (*n*=43,849)
Percentages and index (2008=100)

I dipped in and out of several chapters	2008	2009	Index
Students in a JISC discipline	51.9%	53.5%	**103.1**
All other students	55.4%	57.3%	**103.4**
Teachers in a JISC discipline	60.0%	58.6%	**97.7**
All other teachers	60.1%	62.5%	**104.0**

Again, no evidence here of any change in fundamental behaviour: as with research available on other consumers of scholarly information, e-book users surf the literature, dipping in and out and comparing resources. This user behaviour is referred to by CIBER as `power browsing', without passing any value judgment. A cavalier disregard for the etiquette of scholarly norms, or just how it is, knowledge discovery inside and within documents, a behaviour that publishers and librarians have not previously supported?

Table 6. Thinking about *printed* course textbooks, how satisfied are you with their availability in your university library? (*n*=34,685)

Percentages and index (2008=100)

Satisfied or very satisfied	2008	2009	Index
Business students	43.3%	46.2%	106.7
Engineering students	50.5%	56.3%	111.5
Media studies students	44.9%	52.5%	116.9
Medical students	51.0%	53.7%	105.3
All other students	43.1%	46.3%	107.4

This is good news for libraries: across the board students report higher levels of satisfaction with print collections. It is too early to say what the likely cause is, but it is tempting to speculate, given the evidence throughout this paper, that student information-seeking behaviour may be shifting in favour of library provided electronic content. A more considered view should emerge when the impact of the Observatory experiment on existing hard-copy circulation is analysed.

Table 7. Have you used any of the JISC Collection titles in their *electronic book* form? (*n*=13,219)

Percentages

Those indicating yes	2009
Business students	13.2%
Engineering students	14.3%
Media studies students	14.4%
Medical students	7.6%

Of course, no meaningful benchmark is available here since few universities offered these titles at the beginning of the project, but these figures look encouraging in that they are roughly in line with a question in the 2008 survey that asked how many students had borrowed a library print copy. This suggests little user resistance to e-books; they have made the switch very quickly.

Table 8. Do your students regularly report back any problems concerning library provision of textbooks? (*n*=1,478)

Percentages and index (2008=100)

Those indicating yes	2008	2009	Index
Business teachers	57.1%	47.7%	83.5
Engineering teachers	41.1%	34.5%	83.9
Media studies teachers	65.2%	61.0%	93.6
Medical teachers	43.5%	28.4%	65.3

Mirroring the earlier question, here is further evidence of a strong upswing in student satisfaction with library provision of textbooks, this time as reported by university teachers.

Table 9. Do you recommend or actively encourage your students to use e-book materials? (*n*=3,899)

Percentages and index (2008=100)

Those indicating no	2008	2009	Index
Business teachers	28.0%	21.0%	75.0
Engineering teachers	34.5%	30.2%	87.5
Media studies teachers	13.3%	13.5%	101.5
Medical teachers	39.5%	44.8%	113.4
All other teachers	29.3%	26.2%	89.4

The proportion of university teachers that **do not** recommend or actively encourage their students to use e-book resources seems to be falling away rapidly in many subjects. For those teachers outside of the subject scope of this experiment, the figure has declined by just over ten per cent in one year. This suggests that e-books are rapidly becoming embedded in academic practice. Interestingly, media studies and medicine are bucking the trend.

5.   Conclusions: What do the findings tell us so far?

The use of e-books by staff and students shows sharp peaks and deep declines. Use of e-books over 24 hours shows the highest use period being 10am to 2pm, but 25% of usage occurs between 6pm and 8am. This demonstrates that libraries need unlimited numbers of concurrent users when they license e-books – the spikes are lots of students with the same deadlines. When implementing DRM systems, publishers need to recognise that use of e-books is not spread evenly through the year but is concentrated, in line with the academic timetable and at certain times of the day.

Students told us in the surveys that the most important benefit of the e-book is 24/7 access. Off-campus use at 31% illustrates now important e-books are for home study – so it is extremely important to get access and authentication procedures right.

The way in which the JISC e-books are being used perhaps indicates that e-books are not being used as a substitute for printed books. 85% of users are spending less than one minute per page. They are using e-books in a non-linear way - dipping in and out. This may indicate that if a user wants to read in a constant, frequent or linear way they will still buy or borrow the printed book. E-books are for 'just in time' or remote use.

The surveys and the deep log analysis show that at least 56% of respondents access e-books via the library website or the library OPAC. What makes e-books successful is having the MARC records in the OPAC so that students can discover them along with other material on their reading list. Getting accurate MARC records from the participating publishers was one of the biggest challenges of this project. Publishers need to significantly improve their standards in this area.

The data (including the sales data) indicates that making available course text e-books free at the point of use is not a threat to print sales revenue. There has been no negative impact on the sales of hard copies and no negative impact on the use of print copies in the short loan collections. Students are using e-books in addition to the print they bought or borrowed. Publishers need to recognise that a new pricing model for e-books is required which reflects the actual use and usage behaviour. Library provision of e-books is not a threat but a chance to grow a new market.

With so much data, many more findings will emerge over the coming months. In particular, research will focus on the changes in attitudes and behaviours implied by these early results and probe them more deeply. Investigations will also be made to see whether there are clusters of respondents who are especially high users (or non-users) of e-books and what makes them stand out from the crowd.

Reference

[1] *Findings from the First User Survey*, JISC Collections, April 2008. Available at: www.jiscebooksproject.org/wp-content/e-books-project-first-user-survey-a4-final-version.pdf (April 2009).