

Portable devices - libraries trying to meet the demands of the iPhone generation

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Abstract

This paper presents a study of portable digital devices that was undertaken by Library Services at the University of Birmingham. The project team systematically examined a number of portable devices ranging from e-book readers to smart-phones to investigate how accessible services and resources provided by the library were on these devices. A number of limitations and restrictions were found that related to IPR and other issues rather than their size. The team also surveyed University members to find out which devices they currently use and how they use them. The results to this contradicted previously made assumptions regarding internet use by students, and have proved useful for planning future library services and developments. The paper also demonstrates the cost effectiveness of running small tests on devices, and how for a small amount of money a library can find key information about its own users, a group who may be very different to those of other institutions.

1 Background

Over the past decade portable digital devices have become more sophisticated and less expensive. Due to this there has been a sharp increase in their uptake and the 2010 Horizon Report has listed mobile computing as being a key trend with an adoption period of less than 12 months, whilst it lists the main adoption date for electronic books as being in the next 2-3 years, as these can tap into the “global cellular networks” (Johnson *et al.*, 2010).

The growth in uptake of various portable devices such as netbooks, smart-phones, and dedicated e-book readers such as the Sony Reader and Amazon’s Kindle was identified. The project aimed to assess their impact on library services. This seemed to be a groundbreaking area, and the project aimed to look at the

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Received 24 February 2011

Accepted 11 September 2011

possibilities for future use and try to pre-empt some of the demands that might be made. This was firstly done by purchasing a number of devices, and systematically testing how they worked with the library services and resources at the University of Birmingham. Secondly, members of the University were surveyed to find out how they currently interact with portable devices. The results of both the review of the devices and the survey are discussed in full below.

2 Devices

A range of devices were selected. These were:

E-book readers:

Sony Reader PR-550 and Touch edition PR-600, Elonex e-book, Cybook Gen 3, iRex Iliad 2nd Generation, Amazon Kindle (this had just become available via Amazon USA only).

Other devices:

iPod Touch, Samsung netbook, Treo Pro Palm (smartphone).

As only one mobile phone could be purchased for the project it was decided to purchase an iPod Touch rather than an iPhone as the functionalities of the two devices are very similar, with the exceptions that the iPod Touch lacked the camera and telephone calling capabilities. This then allowed the purchase of a very different mobile phone complete with Microsoft Office.

2.1 Testing

The devices were tested initially by Library Services staff to assess a range of technical features and capabilities within pre-designated criteria. These included size and memory capacity and their ability to access library resources.

Library Services staff were asked to use the devices to give us some real-life, honest reactions - and complete a simple feedback sheet with six questions.

Sample:

Question 5: Could you see yourself using this device for work purposes in the future?

- Respondent 1 (testing the first Elonex eReader): "No, too slow overall to be useful".
- Respondent 2 (testing the first Sony eReader): "Not really. Personally I prefer other methods of reading and ways of carrying my work around."

Only by testing the devices could the practicalities or otherwise of using them in a library or academic context be seen.

The devices were first tested to see if a user would be able to access and/or read e-journal articles via the device. As the e-book readers, apart from the Kindle, had no web browser it was impossible to use them to access, from within, any e-journal articles. Instead the user would need to use a PC first to access the article and then download it to the e-book reader using either a wireless service or the USB connection. This worked well for all of the e-book readers tested. Though the Kindle has a web browser it is still only in BETA mode, and the testers were

unable to access or download any journal articles via that method. The Kindle also has problems with displaying some PDF articles in a format that is easy to read – the text is often too small. Surprisingly the font increase feature of the Kindle does not work on PDF documents; this meant that the PDFs had to be converted into TXT files before the font increase feature could be used.

It was very easy to access and download journal articles via the netbook. It was also very easy to access journal articles via the iPod Touch as long as there was a wireless connection. It did prove to be difficult to download articles to the iPod Touch, although with the newer operating system (iOS4) which enables the iBooks App, this is more straightforward. The user simply chooses to open the PDF in iBooks, which in turn saves the PDF. The iBooks 'Library' has separate collections for Books and PDFs. (Clearly, the bigger screen of the newer iPad would be easier for viewing and reading PDFs and books). Despite the Treo Pro Palm mobile phone having internet access it proved to be very frustrating to navigate through the online systems on such a small screen and slow connection. The testers also had mixed success in getting the full text to display when they had navigated to it. For example the Harvard Law Review is available to the University of Birmingham in PDF format via both EBSCO and JSTOR. The JSTOR PDFs opened without any problems though they were obviously quite small and not conducive to reading long pieces of text. The same article in PDF via EBSCO would not open despite testing it and other articles several times.

Next, access to the university's e-book collections was tested on the devices. It soon became clear that the majority of the university's e-book content could not be read via the e-book readers, again because the readers did not include fully working internet browsers, but also because the majority of our e-book suppliers do not allow the download of significant portions of the text. This again meant the netbook and the iPod Touch were the best devices to use for accessing University of Birmingham libraries' e-book collections. Although the Palm mobile phone had a web browser, navigation and display of content was unsatisfactory. These findings support those of a similar study conducted by Yale University (Thomas, 2009), which showed that 84% of their e-book collection could be accessed via the iPod Touch whilst only 24% could be accessed via dedicated e-book readers. It could be suggested that for e-book readers to gain popularity amongst academic users, they need to have a fully functioning internet browser and WiFi service. Alternatively, e-book suppliers need to develop new business models that allow for books purchased by libraries to be downloaded to portable devices to be read offline.

Testing was also done to see if users would be able to access the Library's information literacy training courses that are held within the VLE. Once again due to the lack of web browsers the testers could not do this via the e-book readers. The netbook worked like a normal PC and gave full access, as did the iPod Touch. The Treo Pro Palm mobile phone did allow the testers to log into the VLE but once there it did not display the course lists correctly, so was essentially useless.

Overall the netbook and the iPod Touch proved to be most the versatile tools for accessing university resources such as the library catalogue, electronic resources,

email, VLE, web pages, portal etc. The e-book readers were only really useful for reading longer pieces of text once they had been downloaded via a PC, but they performed the job of being readable far better than the other devices. Despite the mobile phone having the most functionality, it proved to be very poor at performing the tasks of accessing the range of university services.

2.2 E-book readers - possibilities and limitations

University members often have to carry a significant number of books to and from campus but it is now possible to carry hundreds or thousands of books on a lightweight e-reader. WiFi and 3G enabled devices make the mobile web easily attainable through phones, netbooks and now tablet computers. All of these offer potential to busy students and staff preparing lessons, assignments and projects which often require the use of library resources.

In this study the limitations of e-book readers rapidly became apparent. Slowness of navigation to and around an individual title make equivalent use to that of a print textbook particularly impractical, as do the limits of graphics and text formatting, despite the advances of the Kindle. Users may opt for the multi-functional tablet PCs now on the market, the iPad leading the way with its iBook Store and Samsung's Galaxy Tablet with the eReading app. The graphics of the tablets make for much more attractive reading, and may be essential for students of anything from art to anatomy - or for anyone who needs colour. Navigating around e-books is also much quicker using the tablets than the e-ink readers, (though the lack of eye-strain with a Kindle or Sony is still significant). This and other limitations have been noted by other projects such as Cranfield and the Open Universities' e-book reader pilot (Mallett, 2010) and (Lippincott, 2010).

However, the current limited functionality, for example inability or poor capability for annotation or note taking, has made them less acceptable in some areas of higher education, particularly as textbook substitutes.

(Lippincott, 2010)

2.3 E-book reader loan schemes

Some academic libraries are already offering e-readers on loan: the Radcliffe Science Library in Oxford has two Kindles and a Sony Touch (Bodleian Libraries, 2011); Newcastle University lends Sony Readers (Newcastle University, 2011). In the USA, some libraries have implemented a Kindle loan scheme, including the University of Alabama and North Carolina State (University of Alabama, 2011).

Additionally some other libraries are offering digital loan e-books in formats including E-pub and Mobipocket, for download to e-readers and other devices owned by the user, for example in South Dublin (South Dublin Libraries, 2011). Users can also choose their own loan time (an advantage of digital rights management (DRM) application).

This project aimed to find out if it was worth buying a set of e-readers and lending them to users. This idea was eventually rejected for a number of reasons.

First, as explained by Hilton and Wiley (2010), "digital rights management technologies prevent some ebooks from being downloaded or used on multiple

computers". This in effect means one book per e-book reader, not transferrable to other e-readers even via an SD Card. Purchased material almost always has this restriction. This disables shared use in library terms, except by sharing the same e-book reader. A new development enables Kindle owners to "lend" their purchased e-books to other Kindle owners for a set period, whilst having their own access blocked for that time (Page, 2011).

Secondly, the administration time involved in issue desk staff issuing the devices and checking them on return to ensure that anything the borrower had uploaded was removed is substantial. There was also uncertainty over the question of whether to lend out the devices with content already added or with no content, so that students could add their own items. It would be difficult to pre-load devices for loan and still ensure fair coverage of all programmes of study.

However, the main factor that decided against lending out devices, especially pre-loaded ones, was the difficulty of gaining any usage statistics to indicate which items on the readers were being used and how often. Currently, each time a student accesses an electronic item, usage statistics are recorded, and given that this information is used as a factor when deciding whether to cancel subscriptions, it is vital that these statistics are accurate. Once an item has gone offline as a download to an e-reader, with a number of other titles, usage measurement is impossible.

In the short time scale of this project the first e-book readers that were purchased now seem old compared to newer versions, so a library purchasing e-readers for loan also has to consider the life cycle of these devices and the speed of change. Rapid purchase of the latest hardware - without prior critical assessment - possibly in an attempt to look "cool" or "modern" to users, will just as rapidly leave libraries with expensive and obsolete equipment. It is still being considered whether to make some types of portable devices available to users who benefit from the assistive technology functions (such as text to speech).

2.4 Limitations - availability and format issues

Compared to print there are still not many books available in e-format - publishers are reluctant to release current, frontlist (or much backlist) material this way. This is now changing as more publishers are offering their collections digitally, but only slowly. Commercial retailers such as Amazon have indicated good sales of e-books, now outstripping paperback print sales in Amazon's case (Campbell, 2011) but how much of this is of material not otherwise out-of-print? A browse of e-books available on retailers' websites, and a comparison with what is available in print, soon shows up the disparity. Textbooks in particular are still seen as the 'crown jewels' for publishers. While there is a trend to providing extra e-content - for an individual user - this is linked to the purchase of the hard copy book with a supplied password (the e-content can only subsequently be accessed by the first person to use this). This means that libraries are unable to make this extra e-material available to their users, as only the first person who registered can gain access to that material.

2.5 Library acquisition and e-book access

Publishers are often reluctant to allow third-party suppliers, i.e. aggregators such as eBrary or MyiLibrary, to re-sell their content, so libraries have to buy in to a number of publisher platforms to provide the best range of material for users. Again, DRM will prevent downloads to offline or other devices, which means that direct online access to password-protected university e-resources has to be the route for portable devices. File formats still vary across e-readers: Amazon use their own format for the Kindle, and E-pub is the most prevalent for the Sony and similar readers such as the Elonex. PDF, .txt and .html file formats are also used, but with varying results in terms of presentation quality and thus usability.

Apple have made inroads with their dedicated apps such as the iBook store, Stanza, Beamitdown, and of course Kindle books from Amazon (acknowledging that many will prefer to read Amazon e-books via Apple devices rather than buy a Kindle), though recent news stories suggest that Apple may be re-visiting allowing competing e-book Apps onto Apple devices (Miller and Helft, 2011).

2.6 E-books: the persistence of print

Gutenberg or Caxton were maybe the Steve Jobs or Bill Gates of their day. Mass production of print books has been an invention that has probably not yet been surpassed. Print books are simply very popular with users, including younger readers who might be expected to prefer e-format and devices.

Currently the use of e-books mostly satisfies the need for brief information and rapid fact extraction. This may be due to poor usability ... but suggests that print titles are required and that e-books complement the use of print

(JISC Collections, 2009).

Academic journals, a later invention, have proved more amenable to the e-format and respond well to access by portable internet-connected devices.

2.7 Assistive Technology

This aspect became clearer towards the end of the project when the features provided by Apple with the Snow Leopard operating system came to our attention, particularly as provided by the iPad and greater-capacity (more than 8GB) iPod Touches. The University's Assistive Technology officer is currently testing an iPad for use with students who could potentially benefit from these features.

The Kindle has a text-to-speech function, but the keypad below the screen is not user-friendly for visually-impaired users. Indeed, there have been concerns about the trialling and use of e-book readers in the USA. Scott, the editor of *North Carolina Libraries*, noted the US Department of Education's recommendation not to use e-readers or similar devices 'in a teaching or classroom environment' due to inaccessibility to visually impaired users.

In its re-affirmation of the requirements of the Americans with Disabilities Act of 1990 the Department of Education "ask[s] that you take steps to ensure that your college or university refrains from requiring the use of the any electronic book

reader, or other similar technology, in a teaching or classroom environment as long as the device remains inaccessible to individuals who are blind or have low vision.”

(Scott, 2010)

All the e-readers allow for increasing font size, and netbooks have the zoom function of laptops and PCs of course. iPods (and iPads) use the pinch-screen facility to increase or decrease, and apps generally have a font size increase/decrease option (pinch-screen or stepped).

This is a significant area which needs to be considered in any future purchasing decisions, and is perhaps the most exciting in terms of improving access and use for groups that are sometimes left out of the discussion (as they were with print books).

3 The Survey

Having subjected selected portable digital devices to testing by Library Services staff, the project also aimed to find out how other members of The University of Birmingham currently used portable devices and to discover which University services they would be most keen to be able to use via such devices. As Char Booth (2009) points out, “dynamic services should preface their efforts with local research in order to create a clearer perception of *actual*, rather than *imagined*, library and information needs of their immediate campus microcosm.” Booth makes the point very clearly that each university is unique, and so before large amounts of money are invested in new technologies or in developing new services for use with these technologies, it is important not to base decisions on assumptions of what users are currently doing and what they would like to be able to do, but to find out by asking them.

To do this an online survey ran for four weeks during Easter 2010. The survey was advertised via the Library web pages and by also posting about it on Facebook sites that were popular with University of Birmingham students (the later proved to be a very successful way of gaining respondents). There were 301 responses in total. The majority of respondents (209) fell into the 16-25 year old age bracket and were students.

3.1 What they already own

The survey started by asking which devices respondents already owned. All but one respondent owned a mobile phone and the majority (252) also owned a laptop, with a further 24 owning a netbook. Only 14 of the respondents owned an e-book reader, with the most popular being a Sony Touch (at this time the Kindle was not for sale via amazon.co.uk). The majority of the respondents (194) stated that they would not be considering purchasing an e-book reader in the future. Interestingly more owned an iPod Touch (48) than an iPhone (36).

3.2 What was really “portable”

In order to find out which of these “portable” devices was really considered to be an item that respondents would be willing to carry with them on a regular basis,

the survey asked which of the items owned by respondents were also brought by them onto the University campus. Everyone that owned a mobile phone carried it with them to university. The laptop and the netbook were perceived as being less portable with only 116 of the 252 laptop owners carrying it to university. The netbook fared slightly better with 17 of the 24 netbook owners being willing to carry the device to university. The survey did not ask why they did not bring the other items to university with them, but it may be partially that the size and weight of these items makes them less portable, and also because the respondents would be able to access computer clusters on campus and so may not have felt the need to carry such items with them.

3.3 Mobile phone usage

To help plan for future mobile services, the survey wanted to find out the age of the mobile phones that our members were using. Just under half (142) of respondents owned a mobile phone that was under 12 months old, and a further 91 respondents had a mobile phone that was between 1-2 years old.

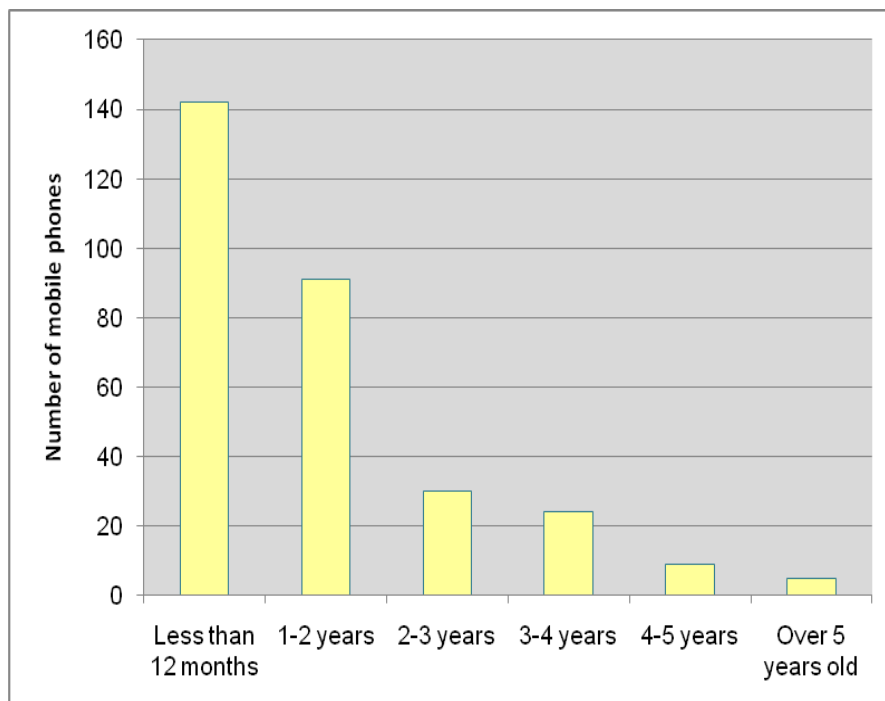


Figure 1: The age of the respondents' mobile phones.

Figure 1 shows that very few respondents had a phone over the age of 2 years, with only 5 respondents having a phone that was over 5 years old. It is expected that these figures will remain similar over the coming years with the majority of users having newer mobile phones. As the majority had a newer mobile phone, so it was likely that their mobile phones would include some type of internet browser and functionality.

The project team noted that there was a general assumption by those working within the University and by participants at librarian events (conferences, workshops etc.) that the majority of students accessed the internet frequently using mobile phones, and was keen to see if this was true of University of

Birmingham members. The survey found that users were divided in their use of accessing the web in this way, with 107 respondents stating that they access the internet daily via their mobile phone, whilst 147 of the respondents had never accessed the internet via their mobile phone. The results showed that even in the 16-25 age category there was still a large divide, with only 81 of the 209 accessing the internet daily via a mobile phone whilst 96 never did.

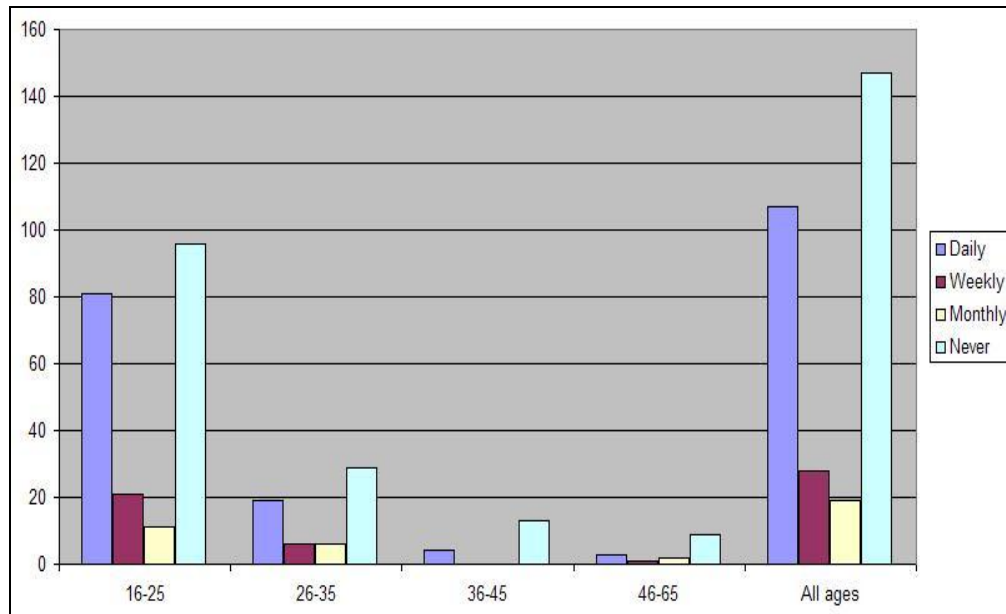


Figure 2: Age of the respondent and how often they accessed the internet via a mobile phone.

According to an EDUCAUSE survey in 2009 (Smith *et al.*, 2009), the cost of accessing the internet via a mobile device was found to be a significant factor in the undergraduate population not accessing the internet whilst on the move. Before running the survey it was questioned whether the cost of accessing the internet via a portable device would have an impact on usage, and so the survey asked members how they were paying for portable internet access.

The most popular method (110) was via a subscription linked to a mobile contract, with free WiFi services being the next most popular method (100). A few respondents (35) were using the pay as you go services on their mobile phones, and 6 were making use of a pay as you go dongle. A significant proportion (22.9%) of respondents were unsure if their mobile phone was WiFi enabled, and this may mean that many of the respondents were missing out on being able to use the internet whilst on the move due to their own lack of knowledge of their device's capabilities, as even many of those with new phones were unsure. Only 48.2% of respondents claimed to have a wireless enabled phone and 28.9% believed that their mobile phone was not wireless enabled. Overall, those with newer phones were more likely to access the internet via their mobile phone than those with older devices.

3.4 University services that were already being accessed

The survey asked respondents which University services they currently access via their portable devices. For all types of respondents the University email account

was the most popular (156), followed by the university portal (141), Library catalogue (105), WebCT (99 - and the second most popular item amongst undergraduate students), eLibrary (99), e-journals (93), e-books (57). It was encouraging to see that a reasonable proportion of those that are accessing the internet via their portable devices are using library resources, though more work on encouraging this use needs to be done. Overall usage of library resources was more likely by postgraduate and academic staff respondents than by undergraduate students. The latter valued WebCT more highly.

In preparation for the future the survey asked respondents which devices they were planning to purchase in the future. The iPhone was the most popular item (131), followed by a Blackberry (83) and an iPod Touch (71). At the time of the survey the iPad was not available for purchase but a number of respondents still listed this as an item that they plan to purchase in the future (though to date the authors have not seen many iPads in evidence on campus!)

4 Conclusion

The project has shown the importance of testing new devices within an individual academic institution to see how they work with that institution's services. Each institution has its own work context, types of user, suppliers and electronic services, and therefore each may have a different experience when testing such devices. The project was very low cost, and the ability of staff members to use these devices themselves has proven to be invaluable in terms of keeping staff up to date with the use of specific new technologies. It is only by using these new technologies on a regular basis that staff members can be innovative in employing them. Only then can they both enhance users' experience of the library's services, and learn to be more time effective in their own work.

Due to the project, many staff members now take the netbook with them to conferences so that they can type up notes during the talks; this has saved time when they return to the office. Others use the 'Note' feature in the iPod Touch for the same reason. Netbooks have also been introduced for staff doing stock work in the stacks: previously the stock would have had to be loaded onto a trolley and taken to an office with a PC. The netbooks allow staff members to save time moving the stock by working directly where the stock is shelved. Having the mobile phone and iPod Touch available for staff testing meant that the Library could quickly test to see whether it was worth purchasing iPhones for the roving enquiry staff to use. After testing, this scheme was then fully implemented. This has now led to a further pilot involving having students text one of the mobile phone numbers in order to alert staff that somebody in their study area is causing a disruption (by talking etc.). This means that a member of staff can go directly to that area in order to deal with the complaint, without the student having to leave their study space in order to complain.

The survey was also very low cost and gave a large amount of data about our current users and their technological preferences. It is planned to re-run the survey on a regular basis in order to monitor our users' experiences and expectations, with the aim of ensuring that services can be developed in appropriate directions. For example, many students in the survey stated an

intention to purchase the iPad; a future survey would reveal whether this proves to be a popular device amongst that cohort, or if the practical limitations of the device and its cost prove to be prohibitive. This would allow Library Services to re-evaluate any plans to adapt services for best use by this kind of device.

As this is a fast changing area with new devices coming onto the market all the time, so a continuous programme of (judicious) selection and testing needs to be implemented. This will help libraries keep abreast - or one step ahead - of what needs to be done in order to develop services, so that they meet the demands of the current and hopefully future generations of library users.

Libraries may need to lobby publishers and suppliers to provide more e-content in a flexible manner through more helpful business models. For example it would be preferable if users could download content to their own devices so that they can then have offline as well as online access (Anderson, 2011).

The survey showed that the general assumption that the majority of students were accessing the internet on their mobile phones on a regular basis was not true of the Birmingham respondents. The survey also highlighted that those with newer mobile phones were more likely to access the internet via their phone. As price plans for accessing mobile networks become cheaper, and wireless access extends, we can expect to see more library users wanting to interact with library services whilst on the move.

In future surveys the Library expects to find that each year a growing number of users will be accessing the internet via their mobile phones. As such, now is the time to prepare for this and ensure that services are converted into a mobile friendly format so that customer satisfaction can be ensured in the future. To this end, Library Services at the University of Birmingham are pushing to have the Library Services web pages converted so that they are mobile friendly. Library Services at the University of Birmingham recently launched a mobile friendly version of the library reference chat service which has proved to be very popular amongst users. Discussions about how to make more of the library's services mobile friendly are taking place, in particular in the area of resource discovery and in the short term, a web page detailing how users can gain access to mobile versions of resources is being developed. The devices from the project are being used to test how these mobile versions of resources work so that user instructions can be written.

The Library has already received a few user enquiries about e-book readers and using the mobile version of Refworks. Being able to test things quickly and easily was key to resolving those questions. Project survey results, focus groups and Google Analytics statistics are being used to inform developments so that a 21st Century mobile library service can be developed.

References

- Anderson, L. (2011) *Publishers restricting the use of ebooks*. URL: <http://newtbbham.wordpress.com/2010/11/12/publishers-restricting-the-use-of-ebooks/> [accessed 22.02.11].
- Bodleian Libraries (2011) *E-book readers at the RSL*. URL: <http://www.bodleian.ox.ac.uk/science/services/e-readers> [accessed 22.02.11].
- Booth, C. (2009) *Informing innovation: tracking student interest in emerging library technologies at Ohio University*. URL: <http://www.ala.org/ala/mgrps/divs/acrl/publications/digital/ii-booth.pdf> [accessed 22.02.11].
- Campbell, L. (2011) Kindle sales outstrip paperbacks as Amazon has first \$10bn quarter. *The Bookseller*. URL: <http://www.thebookseller.com/news/kindle-sales-outstrip-paperbacks-amazon-has-first-10bn-quarter.html> [accessed 22.02.11].
- Carlucci Thomas, L.C. (2009) *Mobile access to e-books at Yale*. URL: <http://www.scribd.com/doc/28984716/Mobile-Access-To-E-Books-At-Yale-Lisa-Carlucci-Thomas-2009> [accessed 22.02.11].
- Hilton III, J. L. and Wiley, D. A. (2010) A sustainable future for open textbooks? The flat world knowledge story. *First Monday*, **15**(8). URL: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2800/2578> [accessed 22.02.11].
- JISC Collections. (2009) *JISC national e-books observatory project. Key findings and recommendations*. Final report, November 2009. London: JISC Collections. URL: <http://observatory.jiscebooks.org/reports/jisc-national-e-books-observatory-project-key-findings-and-recommendations/> [accessed 11.09.11].
- Johnson, L., Levine, A., Smith, R. and Stone, S. (2010) *The Horizon report: 2010 edition*. Austin, TX: The New Media Consortium. URL: <http://www.nmc.org/pdf/2010-Horizon-Report.pdf> [accessed 11.09.11].
- Lippincott, J. K. (2010) A mobile future for academic libraries, *Reference Services Review*, **38**(2), 205-213.
- Mallett, E. (2010) A screen too far? Findings from an E-book reader pilot, *Serials*, **23**(2), 140-144.
- Miller, C. C. and Helft, M. (2011) Apple moves to tighten control of App Store, *New York Times*, 1 February. URL: <http://www.nytimes.com/2011/02/01/technology/01apple.html> [accessed 11.09.11].
- Newcastle University. (2011) *Newcastle University Library e-book reader loans – frequently asked questions*. URL: http://www.ncl.ac.uk/library/resources/ebooks/faq/loan_scheme.php [accessed 22.02.11].
- Page, B. (2011) New sites for Kindle readers to “Lendle” to each other, *Guardian*, 16 February. URL: <http://www.guardian.co.uk/books/2011/feb/16/new-sites-kindle-lendle> [accessed 22.02.11].

Scott, R. L. (2010) To Kindle or not to Kindle, That is the question!, *North Carolina Libraries*, **68**, 1. URL:
<http://www.ncl.ecu.edu/index.php/NCL/article/view/314/360> [accessed 22.02.11].

Smith, S. D., Salaway, G. and Borreson Caruso, J. (2009) *The ECAR study of undergraduate students and information technology*. Boulder, CO: EDUCAUSE Centre for Applied Research. URL:
<http://net.educause.edu/ir/library/pdf/ers0906/rs/ERS0906w.pdf> [accessed 11.09.11]

South Dublin Libraries (2011) *Digital books*. URL:
<http://digitallibrary.southdublin.ie/B99A1BD0-39D0-4CAF-ABD8-9C5E2924C0C0/10/382/en/Default.htm> [accessed 22.02.11]

University of Alabama (2011) *Kindle borrowing information*. URL:
<http://www.lib.ua.edu/kindle> [accessed 22.02.11].

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