Use of e-readers-

Report from Loughborough University Library

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Introduction

E-readers are becoming increasingly common – since April 2010 sales of the iPad have reached 12 million units. Although exact sales of the Kindle are unknown, over Christmas 2010 the Kindle outstripped Harry Potter as the biggest selling item on the Amazon web site(1). The e-ink used by devices such as the Kindle, Sony Touch and iRiver Story enables books to be read in broad daylight and without problems associated with screen glare. The ability to store large numbers of books and PDFs are other reasons that the Kindle and similar devices are developing quickly for personal use. An as yet unpublished Library survey indicates that of 1107 respondents some 25% had access to e-books from some mobile device (54 had Kindles, 17 Sony readers, 48 iPads, 153 other - mainly iPod Touch and iPhone). This project sought to explore how the Library might make use of, or support the use of, e-readers.

Literature review and other e-reader projects

There are a large number of news articles discussing e-readers, concentrating on new product announcements and particular advantages to the consumer of each one. A number of these are listed in the bibliography. Most instructive discussions are those highlighting the potential use of e-readers in academic libraries and these were recently provided by Dougherty (2) and by Drinkwater(3). Drinkwater in particular illustrates a number of weaknesses of e-readers:

1. Lack of academic content
2. Fiddly, fragile, needs charging
3. DRM (Digital Rights Management)
4. Environmental e.g. inability to replace a battery

Drinkwater concludes that "*it may be that the devices sit better as a very specialised consumer device than as part of a core library service*".
Polanka (4) who posts a blog on e-books has edited a book *No Shelf Required: e-books in libraries* which neatly summarises the use of e-books in libraries and contains some case studies of the use of e-readers in US academic libraries.

A number of university libraries have undertaken initiatives involving e-readers. As part of this project the authors contacted those responsible for the following projects:

- North Carolina State University – week loan lending of Kindles for user selected leisure reading and a Kindle DX for newspapers on 4 hour loan. Sony Readers for classics. (5)
- University of Newcastle – lending Sony Readers for use with PDFs (6)
- Loughborough College – lending iPads for searching key databases e.g. Mintel within the Library

Standards

Digital Rights Management (DRM) on many e-books is very restrictive and a mix of standards hampers flexibility for libraries seeking to provide an e-reader service. To acquire an e-book to read on your Kindle you *must* buy from Amazon. The iRiver Story and Sony reader Books use the epub standard and Adobe Digital Editions which facilitates the downloading of e-books from various sources. Freely available material from Project Gutenberg can be downloaded to these devices whilst other leisure reading material may be purchased from e.g. Waterstones or W.H. Smith's but not Amazon. The iPad allows use of e-books bought through Apple's proprietary ibooks software, though a Kindle app is also available.

Digital Rights management and restrictive licensing make it very difficult to lend e-book readers with content.

e-readers trialled

The capabilities of the following e-readers were assessed: iPad, Kindle, iRiver Story, Sony Reader Touch edition, ipod Touch.

An evaluation was made by Nick Loakes (Student Summer Intern, at the Department of Information Science) as to the ability of each reader to support a range of functions, these being:

- Tools for academic use – highlighting, notes, bookmarks
- Navigation – search features, page numbering system, jump to page
- Reading on the device – screen orientation, font sizes, zoom features, reading PDFs

- Downloading content – wifi, buying books, free content, PDFs, formats supported
- Battery life and charging

Using evaluation scores assigned by Nick, the Sony Reader Touch edition narrowly beat the Kindle into second place, the Sony Reader Touch Edition scoring highly in the Tools for academic use category. See Appendix 1 spreadsheet for more detail.

Rather than repeating similar trials our project sought to evaluate a range of e-readers and explore how these might be used in the following areas:

- e-books on reading lists
- Leisure reading
- PDFs
- Inter-Library loans
- Newspapers
- Teaching support

This report now explores the potential of each of these areas of use.

e-books on reading lists

Loughborough University Library has two preferred suppliers of e-books: DawsonERA and EBL. Such e-books are delivered online and can be accessed through networked workstations and laptops using Athens authentication. When canvassed at a major e-book conference (SLIC October 2010) none of the major e-book suppliers seem to be developing any services to e-reader devices and e-books. DawsonERA do not allow e-books to be accessed from an e-reader device, though via the internet e-books could be accessed on an iPad.

EBL **do** allow the downloading of their e-books onto such e-reader devices which support the epub standard and have Adobe Digital Editions installed. This includes the iRiver Story and Sony Reader. A number of EBL e-books are

available on reading lists. Using a script from the Library Systems team the project group were able to determine that a number of Geography and Politics modules contained multiple items available as e-books from EBL. However, determined users who follow the lengthy download instructions (Appendix 2) will find that, due to the Digital Rights Management installed, their reward is the ability to read and annotate the book for *one day only* in the majority of cases. Most unsatisfactory!

Recommendation 1: under current DRM restrictions there appears to be no scope for purchasing e-readers to support use of reading list material.

Leisure reading

The Library has a significant number of works of fiction within its collections and also helps to support a University book group. Whilst members of the book group were interested in trying out e-readers there would be a significant workload for the Library in making these e-readers available. Taking the Kindle as an example, lending content contravenes the user agreement. It would however be possible to lend the device by de-registering it. The user would then register it to themselves and purchase Amazon e-books to read for themselves on the device. On completion of the loan the reader would deregister the Kindle again, thus deleting the paid for content and return the Kindle to the Library where upon it would await another user. This approach is being undertaken as a service at NCSU Libraries which has a track record of lending technology (op cit). Orion Pozo at NCSU indicates that lending Kindles is straightforward (7) and is well received by users but the advantage does seem to be limited to offering students the opportunity to try a Kindle.

One member of the Loughborough Radar Book Group has acquired a Kindle whilst another partially sighted member of the book group has found that the Kindle DX with its large 9 inch screen and ability to adjust the font size makes it advantageous for reading.

Recommendation 2: lending Kindles for leisure reading would be costly in staff time and the only advantage would be to enable users to "try before they buy"

PDFs

Just as e-readers have the advantages of storing large numbers of books so too can they store large numbers of PDFs. Indeed PDFs can easily be stored on most of these devices by attaching the power cable to the USB port on a workstation. Each of the devices tested had its unique advantages over the others and an analysis of the PDF functionality is contained in Appendix 4.

For document reading, matt screen surfaces are less tiring to read from than touchscreens, but more difficult to keep clean than glossy ones. Touchscreens are clumsy at this level of detail – your smallest finger is bigger than several words on the screen so although a generation of iPod users have got used to large icons taking over the display, it isn't good interface design for a learning device. On all devices, font size of PDFs cannot be increased easily unlike e-books. This makes reading many journal articles as PDFs on the standard 6 inch screen of the iRiver Story, Sony Reader and the 6 inch Kindle an imperfect experience.

To store PDFs on the Apple iPad requires the PDFs to be transferred via an iTunes account. Once transferred these PDFs are easily readable. Alternatively where wifi is available, PDFs can be viewed through a Safari browser. Apps can also be purchased though these haven't been tested.

 In conclusion, pre-existing PDFs tend to be more easily readable on a 9inch Kindle DX and on the iPad. The iPad also has the ability to display in colour. The multi-functionality of the iPad makes it very useful for reading PDFs of journal articles while travelling for instance. At least one academic at Loughborough is using an iPad to read PDFs. However storing associated bibliographic data for citation purposes is currently unwieldy since iTunes was designed for music.

If using a Kindle, it is worth converting a PDF to Amazon's .AZW format – it usually works well, and results in a more usable file. However the process can silently fail with complex layouts, so a converted file should be proof-read before release to students. Owners could do the conversion for themselves, for free. This native format is more flexible than PDF on a Kindle.

Recommendation 3: the iPad has potential for reading PDFs. Knowledge of how to transfer PDFs to iPad in particular could therefore be useful to Library staff.

Inter-Library loans

Electronic delivery of journal articles has been offered by the British Library for some years. However in practice this "Secure Electronic Delivery" or SED has proved somewhat problematic to operate due to various restrictions placed on the service and Loughborough University ceased advertising it in 2008. One of the main restrictions is that the recipient needs to have a copy of Adobe Digital Editions loaded on their workstation. This software is required for users of the Sony Touch e-reader and the iRiver Story so it seemed possible that electronic delivery of inter library loans could be an added benefit for users owning these devices. A trial was carried out.

Downloading of SED ILLs was very similar to downloading the EBL Books. A file is downloaded from the source (BL in this case) and into Adobe Digital Editions on a PC (for Rights management / format conversion). A copy is then moved onto the e-reader (via the relevant software). Step by step details of how to do this are in Appendix 3.

The process of transferring the SEDs to a device can be time consuming and may even take longer than it would to read most journal articles. Problems were also found with reading the ILLs on the Sony and iRiver Story devices (the two trialled with ILLs) as the small text cannot be magnified. It is also important to note that ILLs are time limited and that they will not be available on devices for any longer than they could be read for on PCs (whereas print documents could be kept for as long as required). Also, once a link has been activated to the PDF, it cannot be re-activated. So, if the user has opened it, but not saved it in Adobe Digital Editions then it would be lost, potentially with the cost of their department having to purchase a replacement ILL, and the extra time delay before the user can read it.

In conclusion it was found that whilst it is technically possible to acquire and read inter library loans via SED the service was still not sufficiently robust to

merit introducing the service. The British Library is now phasing out the SED in favour of FileOpen advertised as "The British Library's preferred DRM service" although the same DRM issues apply.

Recommendation 4: continue to monitor developments in the British Library's electronic delivery DRM services, including the currently preferred FileOpen service, to see if there is any improvement.

Newspapers

Apps exist to enable newspapers such as *The Times* and *Sunday Times* by subscription to be read on the iPad. The *Independent* and a number of US newspapers are also freely available. The Kindle has subscriptions for Times, FT, Mail, Telegraph and Independent available. Reading newspapers on larger format e-readers was found to be quite satisfactory for personal use. NCSU lend a Kindle DX loaded with newspapers for 4 hour loan, however whilst this could be a way of encouraging students to read newspapers it would appear to be an expensive way of lending them. If a critical mass of major newspapers become available in this medium it may be worth considering the development of a service whereby readers can borrow e-readers to search and view newspapers.

Recommendation 5: Monitor the marketplace to see if more newspapers become available.

Teaching support

Some US universities e.g. Princeton (8) have issued e-readers to students with specific texts preloaded to facilitate consistent reading of prescribed texts. At Loughborough module EAB027 Shakespeare Page to Stage is one instance where the lecturer (Gabriel Egan) has a need for students to consult specific editions of set texts in class. This module only runs in semester 2 and three students will trial the use of Kindles to see if this approach is successful. Results of this trial will be reported in June 2011.

Citing references

Since books read on e-readers do not have pagination this can make citing quotations from such works more difficult and it will be necessary to offer guidance. Macquarrie University and the University of New South Wales already do this.

Recommendation 6: Loughborough University Library should offer "How to cite" guidance for e-books on e-readers. In the absence of Libguides software this should be provided on LEARN or Web pages.

Conclusions

Digital Rights Management severely restricts the ability of Loughborough University Library to lend e-readers with pre-installed content.

- The project has helped develop library expertise in the use and support of e-readers and further staff training will be undertaken to advise students and staff seeking to use their e-readers in the Library.
- Whilst some e-books *are* available on reading lists, only a few of these can be read on e-readers. Publishers and e-book suppliers seem reluctant to expand in this area.
- Provision of Inter-library loans to e-readers is possible but is too staff intensive and overly complex to be a viable service.
- Leisure reading of e-books on devices can be a particularly pleasurable experience works well and the ability to increase text size will be welcomed by partially sighted readers.
- E-readers may yet overcome some of these barriers, for instance coloured e-Ink is becoming available (9) to increase the flexibility of use of e-readers.
- Tablets like the iPad have more flexible uses e.g. for reading newspapers and PDFs.

Recommendations for Loughborough University Library

1. There appears to be little scope for purchasing e-readers to support use on reading list material.

2. There is no financial incentive in purchasing e-readers to facilitate leisure reading.
3. Training on e-readers should be provided to facilitate Library staff to support students and staff at enquiry desks.
4. Continue to monitor developments in the British Library's electronic delivery DRM provision to see if the service improves.
5. Monitor the marketplace to see if more newspapers become available.
6. Loughborough University Library should offer "How to cite" guidance for e-books on e-readers. This should be provided on LEARN or Web pages.

Acknowledgements

Although using an e-reader is mainly straightforward the project team is grateful for technical help received from the Library Systems and Support Services teams.

List of References

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Appendix 1

Feature/eReader	iRiver story	Amazon Kindle	Sony reader touch edition	iPad	ipod touch
Tools for academic use					
highlighting	no	yes, can highlight a passage and add a note to it	you can highlight pages easily	you can make highlights and notes to go with them	yes
notes	no	yes, notes can be made by themselves or with highlights	you can make notes on their own as well as making notes to go with highlights and bookmarks	notes can be made and all notes/highlights for a book can be read in one place	yes
bookmarks	yes, you can bookmark pages but cannot add a note to the bookmark	yes, but cannot add notes to bookmarks.	you can bookmark pages and put notes with them	bookmarks can be made, but you can't make a note with bookmarks	yes, but cannot make a note to go with the bookmark
additional comments/score out of 10	not very useful for making notes about books/ 2	you can view all notes and bookmarks for a book when in that book using the menu button./ 7	viewing notes/highlights/bookmarks can be done from main menu and each book, and it is easy to look through them/ 9	good overall/ 8	similar to iPad, works well despite small screen/ 7
Navigating the device					
save your last page?	yes	yes	yes	yes	yes
page numbering system		yes, shown at bottom	page number always shown at bottom	page shown at bottom	yes
easy to jump between pages?	yes, simply use option button and pick any page	yes, there is a 'go to' option. You can also 'go to' the table of contents and find page or chapter.	yes, using 'go to page' feature, and you can also view a table of contents using options. History feature is also useful for viewing recent pages	you can view a table of contents while reading, and you use a slider bar to navigate through the book.	slider bar used to navigate the book, and there is a button that allows you view a table of contents and jump to a chapter

Search features	yes. Can search main menu for a certain book and can search book when reading, but only for single words.	yes, can search book and main menu, as well as kindle store. Searching more than one term finds where words are close together.	can search through for term easily. Can search more than one word.	can search more than one word, finds only when words are directly next to each other.	could not find search feature
additional comments/score out of 10	search features quite good, single word search limits scope however/ 7	very good, comprehensive and easy to find relevant page/ 8	navigation is easy, helped by tough screen / 8	8	6
Reading on the device					
screen orientation	2 way, horizontal or vertical	4 way rotation	2 way orientation	4 way orientation based on movement of device in your hand. Can be over sensitive, meaning orientation changes when you don't want it to.	not changeable
Font sizes	3 zoom settings for font size. small, medium or large.	8 font sizes	5 font sizes	only 2 font sizes, however the big screen makes this acceptable.	5 font sizes, can use sepia and black on white background (kindle app)
zoom features	no additional zoom	no zoom feature unless reading PDFs	can zoom using a slider bar in addition to 5 sizes.	no zoom	no zoom
Reading PDFs	awkward to read due to poor zoom features. When orientation is changed it appears you cannot zoom.	150%, 200%, 300% and 'actual size' options for zooming, and the screen rotation make reading PDFs not too difficult, but still not ideal.	PDFs are ok to read, and orientation and slider zoom bar can be used to make text bigger.		there are various apps said to allow you to read PDFs.
Glare, ease of reading on the eye, screen quality	contrast of the screen is not great, some glare but not too bad	screen quality good, e-ink. Very little glare, easy to read	gives off glare, possibly due to touch screen, contrast of screen is good however	gives off glare. Screen is good quality but not e-ink so could hurt eyes when reading	some glare, small screen can be a problem but can still read on it.

additional comments/score out of 10	font/zoom not good enough/ 4	lots of options allow users to choose what they want/ 8	glare makes reading difficult which is a shame/ 6	glare and lack of e-ink let the reading experience down/ 6	good considering the size on the screen/ 6
Downloading Content					
downloading using device wifi	no wifi	yes, can download from kindle store via wifi/3G	no	yes	yes
buying books	Epub books can be bought from online shops such as WHSmiths and waterstones, so not limited by where you buy books	kindle store only, which limits you (DRM). However amazon does have largest collection of eBooks	can buy books from number of bookstores, WHSmiths, Waterstones and Mills and Boon	done through iTunes, or you can use kindle app	
free content	supports Epub so free books such as books on Guttenberg are easy to download onto the device.	there are free books available on the kindle store, which are easily downloaded, however other free content such as Epub files must be converted to work on kindle.	supports epub so downloading free content is easy	there is free content on ibookstore and kindle store. Supports ePub files	
PDFs	supports PDF but they are not easy to view	supports PDFs and they are readable with zoom.	PDFs are supported, easy to put on device and easy to read.	supports PDFs	
other formats	supports word documents and excel files. However similar issues to the PDF issue.	DRM limits greatly what the kindle supports, and this is its only downfall when it comes to downloadable content.	can put photos, MP3 on it as well.	iPad supports various other file types as it is a multi function device. It supports MP3, photos, and you can view word documents, although editing them is trickier.	
additional comments/score out of 10	Epub files easy to get onto device, and not limited to one store/ 8	very very good other than limitations to kindle bookstore/ 7	good selection of ways to get books on, and you can install a programme to your PC to make it easy (bit like iTunes)/ 8	very good options when it comes to downloading, freedom of choosing between kindle store and ibookstore/ 8	

Battery and charging

battery life	e-ink so battery lasts long time.	e-ink		Up to 9 hours with 3G on.
mains charging?	no	Yes, Kindles now supplied with mains charger		yes
additional comments/score out of 10	8	8	8	5
Overall score out of 50	**29**	**38**	**39**	**35**

Appendix 2.

Downloading EBL Books to the Sony Reader (PRS-600 Touch Edition)

Please note that EBL books can only be downloaded / loaned for a set amount of time (usually one day). After this time they will no longer be accessible via the e-reader, although you can download them again.

1. Make sure you have Adobe Digital Editions on your PC. (http://www.adobe.com/products/digitaleditions/)

2. Make sure you have the eBook Library installed on your PC. When the Reader is first plugged in a box should appear giving the option to "Install e-book Library. *Please note that this software is not automatically included on Library PCs and would need a member of Library Systems Team to do this. I'm not sure about the situation elsewhere in the University.*

3. Plug the Reader into the USB port of the PC with the USB connector (the Reader itself should be switched off at this point).

4. Download the EBL book from the Library Catalogue or Reading List and save to the Digital Editions folder on your PC. *Your Athens username and password will be required.*

5. If the books do not automatically open as PDFs in your Adobe Digital Editions:
   - Open up the Digital Editions folder on your PC and minimise the size of the screen;
   - Open up the Adobe Digital Edition software;
   - Drag and drop the EBL book PDF from the Digital Editions folder over onto the Adobe Digital Edition screen.

6. Option 1:
   Open up the eBook Library:
   - Click on the "File" menu at the top left of the screen, then select "Import files";
   - Locate the ebook PDF in your Digital Editions folder;
   - Drag and drop the correct file from the list onto "Reader" on the left hand side menu (just above "Computer"). *If Reader does not appear in the menu please make sure the Reader is connected into the PC.*
   - Wait until the file finishes downloading.

Or

   Option 2:

   - Open up Adobe Digital Editions and go to the thumbnails of the books;

- Move the thumbnail of the required book into the PRS-600 option on the left hand side menu;
- *Please note that you still need to have eBook Library installed on your PC to use this option. The presence of the Reader will not be recognised within Adobe Digital Editions without it.*

7. Disconnect the Reader from your PC.

8. Switch on the Reader and the book should appear in the list of books on the device. There will also be a timer representing the amount of time left to read the book.

9. After the allotted e-book download time has ended a "No entry" sign will be displayed when attempting to access the e-book. At this point it will need to be manually deleted from the Reader – it doesn't automatically disappear.

N.B. If the Reader has previously been registered to another person's Adobe account, then the Reader will recognise this and ask if the user wishes to link the Reader to the new person's Adobe account instead. If an email and password are requested, these will be the same as for the Adobe account used to register to download Digital Editions.

Appendix 3

Downloading ILL SEDs to the Sony Reader (PRS-600 Touch Edition)

Please note that ILL SEDs may be time limited. After this time they may no longer be accessible via the e-reader.

1. Make sure you have Adobe Digital Editions on your PC. (http://www.adobe.com/products/digitaleditions/) (Also available as a staff download from IT Services).

2. Make sure you have the eBook Library installed on your PC. When the Reader is first plugged in a box should appear giving the option to "Install e-book Library. *Please note that this software is not automatically included on Library PCs and would need a member of Library Systems Team to do this. I'm not sure about the situation elsewhere in the University.*

3. Plug the Reader into the USB port of the PC with the USB connector (the Reader itself should be switched off at this point).

4. Download the ILL SED and save to the Digital Editions folder on your PC.

5. If the ILL does not automatically open as a PDF in your Adobe Digital Editions:
   - Open up the Digital Editions folder on your PC and minimise the size of the screen;
   - Open up the Adobe Digital Edition software;
   - Drag and drop the PDF from the Digital Editions folder over onto the Adobe Digital Edition screen.

6. Option 1:
   Open up the eBook Library:
   - Click on the "File" menu at the top left of the screen, then select "Import files";
   - Locate the PDF in your Digital Editions folder;
   - Drag and drop the correct file from the list onto "Reader" on the left hand side menu (just above "Computer"). *If Reader does not appear in the menu please make sure the Reader is connected into the PC.*
   - Wait until the file finishes downloading.

Or

   Option 2:

   - Open up Adobe Digital Editions and go to the thumbnails of the PDFs;

- Move the thumbnail of the required PDF into the PRS-600 option on the left hand side menu;
- *Please note that you still need to have eBook Library installed on your PC to use this option. The presence of the Reader will not be recognised within Adobe Digital Editions without it.*

7. Disconnect the Reader from your PC.

8. Switch on the Reader and the book should appear in the list of books/items on the device. There should also be a timer representing the amount of time left to read the item.

N.B. If the Reader has previously been registered to another person's Adobe account, then the Reader will recognise this and ask if the user wishes to link the Reader to the new person's Adobe account instead. If an email and password are requested, these will be the same as for the Adobe account used to register to download Digital Editions.

Appendix 4

PDF Functionality of e-readers

PDF functionality on e-Readers

functionality	Acrobat Pro PC	Kindle 3G	Kindle DX	iRiver Story	iRiver Story reflow	Sony PRC-600	Apple iPad	converted Kindle 3G	converted Kindle DX
Rotate image	Y	Y	auto	Y	Y	Y	auto	Y	auto
Zoom image	Y	4-stages	4-stages	infinite	Y	Y	infinite	4-stages	4-stages
Pan/scroll image	Y	Y	Y	N	Y	Y	N	N	N
Graphics in document	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reflow text on resize	N	N	N	optional	Y	Y	N	Y	Y
Search text	Y	Y	Y	Y	Y	Y	N*	Y	Y
Hyperlinks within document	Y	N	N	N	N	Y	N	N	N
URL hyperlinks	Y	N	N	N	N	N	N	N	N
Headers & footers	Y	Y	Y	Y	Y	Y	Y	N	N
Footnotes	Y							Y	Y
Fill in Acrobat forms	Y	N	N	N	N	N	N	N	N
View sticky notes	Y	dumb icon	dumb icon	N	N	dumb icon	N	N	N
View attachments	Y	N	N	N	N	N	N	N	N
Text-to-speech	Y	N	N	N	N	N	Y	Y	Y
Sound in document	Y	N	N	N	N	N	N	N	N
Video in document	Y	N	N	N	N	N	N	N	N

Apart from the larger screen and the auto-rotation, there was no software difference between the Kindle 3G and Kindle 2 DX.