Introduction & Context

Introduction

The world of mobile technology has changed a great deal within the first few years, but mobile phones and mobile computing is not new. If we compare its uptake within libraries, perhaps, with the use of the internet, it can be a little puzzling how little these technologies are utilised. Text messaging (SMS) was introduced on the early mobile phones in 1993, roughly the same time as browsers such as Mosaic enabled the emergence of the world wide web from the largely text based internet prior to the 1990s. PDAs (Personal Digital Assistants) predated this, with Psion starting to release these devices from the mid 1980s onwards, which eventually merged with mobile telephony to create the smartphones so many of us use today.

Libraries seemed to have enthusiastically engaged with the early web, with many of us having webpages by 1995. Try looking on the Internet Archive Wayback Machine (http://www.archive.org/web/web.php) to try and find your library's early pages! However, most of us seem to have only recently started to think about engaging with mobile phones or mobile computing, despite the technology being around and available for a similar length of time. Increasing numbers of these devices are now smartphones capable of accessing the Internet and combining the capabilities of telephone and Personal Digital Assistant. After this slow start, and as there capabilities grow, now is the time to consider more seriously taking advantage of these near ubiquitous devices.

So, what can we do with these mobile devices most, or all, of our users own? This chapter gives us the context we need to be aware of when considering how we can use mobile devices to deliver library services. With a clear idea of how much this technology has become part of our everyday lives, we can then move onto the following chapters which illustrate ways we can use that technology.

Context

Mobile phones now seem to be a near ubiquitous technology, with, for example, more mobile phone contracts than people in the United Kingdom (130 contracts for every 100 people) and 92% of adults owning and using one (Mintel, 2011a). Worldwide there were 5.9 billion mobile phone subscriptions in 2011, with a penetration of 79% of the population owning mobile phones in the developing world (International Telecommunication Union, 2011**)**.

Thinking of one of the most basic mobile phone functions, an incredible 4.1 billion SMS messages were sent daily during first half of 2009 (Van Grove, 2009) .

The use of mobile devices is not limited to phones, of course, and the use of tablet computers in particular has exploded since the launch of the iPad. For example, almost 10% of UK adults owned a tablet computer in May 2011 (Mintel, 2011b), 19% of American adults owned one in December 2011 (Pew Internet & American Life project , 2012) and Gartner is forecasting that tablet computer sales will be in the region of 103.5 million units in 2012 (as reported in the Guardian by Arthur, 2011) **.** Added to that the number of handheld games devices, ebook readers (19% of US adults owned an ebook reader in January 2012, Pew Internet & American Life project , 2012b) netbook computers, and more that we could include as mobile learning equipment, and the range and number of such devices is incredible.

These devices are driving a shift towards mobile internet access. Mobile data traffic in 2011 was eight times the size of the global internet in 2000 and according to forecasts, mobile devices will soon outnumber humans (Cisco, 2012). Active mobile broadband subscriptions reached almost 1.2 billion towards the middle of 2011, with mobile internet access capable of reaching 90% of the world's population (International Telecommunication Union, 2011). Mobile phone and internet access is allowing many developing countries to leapfrog past problems with installing fixed phone lines and access the internet for the first time, revolutionising information access for many people.

So, the availability and ownership of mobile devices is now enormous. The vast majority of the world's population is within reach of mobile phone and mobile internet connectivity. Most of our users have at least one device such as a mobile phone; netbook, ebook reader, handheld games device or portable music player that can be used as a mobile learning device.

Libraries have until recently considered these devices more as a source of noise and irritation than vehicles to deliver our services through. "No mobiles" signs still proliferate in libraries, though they are slowly changing away from outright bans, to warnings about switching devices to silent operation. Now mobile phones are an accepted part of everyday life for most of our users, with increasing numbers owning tablet computers and ebook readers, we need to consider what this means for their potential as learning devices and their potential uses to deliver library services. These devices are simply too much part of our users lives to try to ignore, or even ban, when we are trying to provide relevant and accessible library services.
There is a great deal of literature available on mobile learning in general, with somewhat fewer readings available on their potential to deliver mobile services. There are some general materials included in the Further Reading part of this chapter on both mobile learning and libraries in particular. It is worth noting that there is a great deal of material available on mobile learning which we can transfer across to our own particular situations within the world of libraries and information provision. This book takes elements of these ideas and puts them into a practical and relevant context to help you develop mobile friendly services within your own library services.

There are two key streams of literature and thought about mobile learning, as there doesn't seem to be an overall consensus what it actually is. There is a stream that tends to discuss it in relation to the technology. For example one definition by Traxler (2005) states that *"Mobile learning is any education provision where the sole or dominant technologies are handheld or palmtop devices"*. The alternative stream considers more the flexibility of the learner, rather than focussing primarily on the technology, for example the definition by O'Malley et al (2003) *"Mobile learning is any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies"*. This work tends towards the second definition, looking at the available technologies to facilitate learning and the delivery of library services. At times the technology enables new services, but often it simply creates opportunities for our users to access existing services in new and exciting ways, wherever they may be.

Much of the literature is directly transferable to the library environment, and we should take full advantage of the research available. This is especially true with the literature considering the learner as a whole and the mobile technology as simply a facilitator to enable learning to happen any time and any place. At the moment much of the library based literature focusses on the technology itself. Many existing case studies cover the details of how a particular technology has been introduced. Relatively few, however, discuss how access to our library services has been enabled using a range of suitable technologies and why these were chosen to meet the needs of users. The focus has been on the how, rather than the why, or even on the user.   This wide range of examples in this book, together with an emphasis on addressing users' needs, allows more balance between the technology and its suitability. The book extends individual case studies beyond which of our services we have forced to fit mobile technologies, to more of the context of the wider service and user needs.

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Outline of this book

Within this context of widespread ownership and usage of mobile devices, the increase in accessibility of mobile internet networks as well as wifi, and an established tradition of taking advantage of these opportunities to enable mobile learning, this rest of the chapters in this book look at how these opportunities can also apply to library services.

Written from the personal experience of the author, working as an academic librarian and teaching fellow at a medium sized UK university, many of the examples are drawn from the context of college and university libraries. The services discussed, examples and case studies given, however, do cover a good range of UK and international libraries, from school settings to State libraries. It is hoped that whatever sector of the overall library community you work in, wherever in the world, there will be useful tips, examples and information to help you improve your mobile offering. The material in the book is non-technical, and should be accessible to anyone with an interest in the topic.

Chapter one looks in depth at something that is vital to the success of any new library service: considering your users wants and needs. "What mobile services do students want?" is based on some research done at the University of Huddersfield, updated and expanded to be relevant to any sector. For any project, especially one to do with new technology, we shouldn't get carried away with our own enthusiasms. Instead we need to consider what services our users want and would find useful and focus on those. Everyone should have these thoughts foremost in their minds before introducing any new mobile project.

Chapter two, on mobile information literacy, addresses an issue of real concern. When I was at school I used only print materials, either hand outs from the teachers, or the occasional book from the Public Library. At University for my first degree in the late 1980s, early 1990s I started using the internet for the first time, but my studying was again from print materials (almost entirely books) from the library. Academic research and study was something done in the library, or in my room using materials carried across from the library. Finding other things out, such as what was on at the cinema, or what time a venue opened involved either visiting the location itself, or finding a printed phone book and going to a public telephone box and ringing someone up.

This chapter discusses the development of information literacy in the new mobile dominated environment. The chapter is a first step to considering what has changed between "fixed" information literacy, where we seek information at set locations, to truly mobile information literacy, reflected the truly mobile world. It is based primarily on existing literature and as such focusses largely on the search process itself, reflecting how our users may be searching for information via mobile devices. If we can start to realise what it means to be information literate now, rather than what information literacy looked like twenty years ago, we can begin to consider how this impacts on our provision of library services.

We move on from there to Chapter 3, "The mobile librarian". This discusses how librarians and information specialists can become more mobile. Covering areas such as mobile reference and roving; mobile productivity and keeping up to date, it gives practical examples to the librarian who wishes to take advantage of mobile opportunities in their own work.

If any of us were asked to name a mobile device there is a high chance we would say mobile phone. If asked to name something we did on our mobile phone, many of us would quickly name text messaging. Chapter 4 shows some ideas of how we can use this basic, accessible and well used technology in many different ways.

Chapter five, "Apps versus mobile websites", discusses the issues around providing information and services online to mobile devices. It outlines the advantages and disadvantages around the two competing ideas – do we provide mobile friendly web sites that can be accessed from any

device, or do we produce device specific apps. It includes examples from several libraries to help you decide which is best for your library service.

QR codes and location aware applications have really taken off with the advent of smartphones. QR codes appear to be everywhere at the moment in the UK, and libraries across the world have used them to market or provide access to their services. Increasing numbers of apps for Apple and Android devices seem to want to access the GPS chips embedded in these devices to calculate your location and Google even tweaks your search results to take location into account. Chapter six, "Linking physical & virtual worlds via mobile devices", considers QR codes, RFID, location aware services and Augmented Reality to show some potential and practical implications of these technologies. It discusses some quick, free and easy ways to use QR codes. For those libraries that use RFID tags to control their stock, it suggests ways to use this technology for alternative services. The chapter also outlines ways in which we should be considering location aware services and how we could be preparing for the Augmented Reality services that are now emerging.

Chapter Seven on "Mobiles in teaching" introduces some of the multitude of ways you could use mobile devices in the classroom, particularly to teach information skills. Including many practical examples and case studies from creative librarian teachers, this chapter aims to equip every librarian who teaches with examples they can apply to their own practice. The examples and ideas given are generally either free or low cost, especially when combined with the initial discussion over whether we should use our learners' own devices or not.

Continuing the theme of examples and practical illustration of services is Chapter eight, "Ebooks for mobiles". This is an area that is undergoing rapid change at the moment, with increasing numbers of books sold for consumption on ebook readers and tablets. The chapter discusses some of the issues around providing ebooks in formats that can be read on mobile devices (as opposed to from a standard computer) and some of the services that are available for libraries.

The book is rounded off with a chapter entitled "So what now?". After covering a range of possible library services that can be delivered to mobile devices and giving many examples of how this might be done, this final chapter invites you to consider your next steps. As the first chapters discuss, things are different in the mobile world, but first and foremost should be that you try to deliver services in the way that your users want and need. This chapter helps you reflect and consider what your users want, and what your staff can deliver. It advises you to start steadily, but to introduce full services rather than pilots. It reminds us that nothing needs to be final, but that for new mobile services we should review and assess as we go. Finally, it encourages us all to keep an eye to the future.

At the end of each chapter there is a brief annotated bibliography pointing towards some relevant useful resources, primarily journal articles. This introductory chapter is no different, except that the "further reading" that follows points mainly towards some general texts that cover many of the issues discussed elsewhere in the book.

Hopefully everyone who reads the following chapters will gain new ideas into how library services can be delivered via mobile devices and how we can take best advantage of them to support ourselves and our users. As mobile devices continue to penetrate into our daily lives, it won't be long "mobile" is an integral part of every library's offering. Whether you are taking your first steps towards this, or are already a long way down that road, I hope you enjoy taking this exciting journey with your staff and users.

References

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O'Malley, C. Vavoula, G. Glew, J. Taylor, J. Sharples, M. & Lefrere, P. (2003) *MOBIlearn WP4: Guidelines for learning / teaching / tutoring in a mobile environment.* **Available at:** www.mobilearn.org/download/results/guidelines.pdf **(Accessed 22nd February 2012)**

Pew Internet & American Life project (2012a) *Adult gadget ownership over time (2006-2012).* Available at: http://www.pewinternet.org/Static-Pages/Trend-Data/Device-Ownership.aspx **(Accessed 24th February 2012)**

Pew Internet & American Life project (2012b) *A Snapshot of E-reader and Tablet Owners.* Available at: http://www.pewinternet.org/Infographics/2012/A-Snapshot-of-Ereader-and-Tablet-Owners.aspx **(Accessed 24th February 2012)**

Traxler, J. (2005) Defining mobile learning. *In:* **Isias, P. Borg, C. Kommers, P.& Bonanno, P.** *Mobile Learning 2005.* **Malta: International Association for Development of the Information Society Press.**

Van Grove, J. (2009) WOW: 4.1 Billion SMS Messages Are Sent Daily. Available at: via mashable http://mashable.com/2009/10/07/ctia-wireless-survey/ **(Accessed 22nd February 2012)**

Further reading

Attewell, J. & Savill-Smith, C. (2004) *Learning with mobile devices: Research and development.* London: Learning and Skills development agency.
This book of papers came out of the mlearn conference, a major international mobile learning conference, in 2003. Although the papers are a few years old now, the cover a range of areas and are a varied and good introduction to mobile learning. There doesn't appear to be any consistency with publishing the mlearn conference proceeding, but those that have been published appear to all be openly available online.

Attewell, J. Savill-Smith, C. & Stead, G. (2006) *Mobile learning in practice: Piloting a mobile learning teachers' toolkit in further education colleges.* London: Learning and Skills development agency.
Packed full of useful information and results from a major mobile learning project, this publication reports on the development of a mobile learning teachers' toolkit for post sixteen education. The toolkit included a text messaging quiz tool, a tool to create mobile learning games and the mediaBoard tool which allowed a variety of media to be added to an online noticeboard and to material uploaded there by tutors. Besides the tools themselves, which can rapidly become outdated in the fast moving mobile environment, there are some really useful research questions

addressed around how mobile learning impacted on tutors and students. These results are still as relevant today and are a highly recommended read for anyone introducing mobile services.

Griffey, J. (2010) *Mobile Technology and Libraries*: *The Tech Set #2.*New York: Neal-Schuman.
This fairly short book is part of the Tech Set of books. It covers a series of issues to do with introducing mobile technologies into libraries, including planning, implementation, marketing, best practice, and how to measure success, all from a easy and basic point of view. It aims to be a primer for those considering mobile technologies in their own libraries.

Hanson, C. (2011) *Libraries and the Mobile Web.* Library Technology Reports. American Library Association.
Part of a range of Library Technology reports, this one focussing on the issues libraries should be aware of when introducing services that take advantage of the increasing accessibility of the mobile web.

Johnson, L. Adams, S. & Cummins, M. (2012) *The NMC Horizon Report: 2012 Higher Education Edition*. Austin, Texas: The New Media Consortium.
The New Media Consortium produces a range of reports showing how they feel new technologies are travelling and their uptake. They are all freely available to download from their website. This Higher Education 2012 edition outlines a range of technologies they feel will be mainstream in Higher Education over three time periods: one year or less; two to three years; and four to five years. Under "one year or less" are both mobile apps and tablet computing, with mobile tools part of many of the other future promising technologies. If you aren't already aware of the NMC reports, they are a great resource for helping to identify emerging technologies that are likely to have a major impact on us all.

Horrigan, J. (2009) *Wireless Internet Use*. Pew Internet & American Life project. Available at: http://www.pewinternet.org/Reports/2009/12-Wireless-Internet-Use.aspx **(Accessed 22nd February 2012)**
This project gathers a great deal of information on American use of the internet, including wireless and mobile access. If you want some quick and easy statistics from a highly reliable source to back up your arguments for a mobile library service, this is a good place to start.

Kroski, E. (2008) *On the move with the mobile web: Libraries and mobile technologies*. Library Technology Reports. American Library Association.
Another Library Technology report, this one covers a whole range of technologies. Starting from scratch, Ellyssa Kroski outlines an enormous range of potential applications for mobile services, many of them fairly basic. Most of the references in this report are to web addresses, especially news stories and blogs. That said, the overview is broad and can show the sheer range of services people were considering several years ago.

Library Success Wiki (2012) *M-libraries*. Available at: http://www.libsuccess.org/index.php?title=M-Libraries (Accessed 24th February 2012)
This wiki is a useful resource that links out to a range of examples, papers, conferences and more on mobile library subjects. Like many wikis in can be out of date in parts and be intermittently updated, but there had been several edits to the page in the week this list of references was prepared. If you find it useful and want to keep it up to date for other people, please contribute yourself to the effort in doing so!

Mills, K. (2009) *M-Libraries: Information use on the move: A report from the Arcadia Programme.* Available at: http://arcadiaproject.lib.cam.ac.uk/docs/M-Libraries_report.pdf (Accessed 24th February 2012)
A basic and very accessible general introduction to mobile library services, based on Keren Mills' Arcadia project. This was based on a survey of staff and students at two very different UK universities, Cambridge (very traditional) and the Open University (entirely distance learning).

Murphy, J. (2011) *Mobile Devices and the Library: Handheld Tech, Handheld Reference*. New York: Routledge.
This book, edited by Joe Murphy who regularly presents on mobile technology and libraries, was originally published as a special issue of "The Reference Librarian". It is a selection of papers from the Handheld Librarian conference. There are other special issues of The Reference Librarian containing the papers from other Handheld Librarian conferences. This series of conferences are online and attract an international, though largely American, audience. If the m-libraries conference is the key annual conference in this area, I'd suggest that the Handheld Librarian conference is a much cheaper and more accessible alternative.

Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). *Literature Review in Mobile Technologies and Learning: Report 11. Educational Technology*. Futurelab. Available at: http://www.futurelab.org.uk/resources/documents/lit_reviews/Mobile_Review.pdf **(Accessed 22nd February 2012)**
With the further reading at the end of all the other chapters, you should see the majority are recent references. I've tried to show what is currently happening as exemplars. With this reference, along with some of the others in this section, we should see there is a longer history to mobile libraries and mobile learning. This report is a high quality literature review into mobile learning, helping to set it in the context of earlier pedagogical research. An incredibly useful report for those of us who want to think about mobile services in a wider pedagogical context.

Needham, G., & Ally, M. (2008). *M-libraries: Libraries on the move to provide virtual access.* London: Facet .

Needham, G., & Ally, M. (2010). *M-libraries 2: A virtual library in everyone's pocket*. London: Facet.

Needham, G., & Ally, M. (2010). *M-libraries 2: Transforming libraries with mobile technology*. London: Facet.
These books are essentially the conference proceedings of the M-Libraries conferences. These international conferences attract an excellent mix of papers from across the world and from every library sector. The annual m-libraries conferences themselves are the key international mobile library conference to attend each year. I've deliberately not included any of the individual papers from these in any of the following chapters. Instead I'd recommend obtaining the full books and selecting yourself those papers of most interest.

Walsh, Andrew (2011) Blurring the boundaries between our physical and electronic libraries: Location aware technologies; QR codes and RFID tags. *The Electronic Library,* 29 (4). pp. 429-437.

Walsh, Andrew (2010) Mobile Technologies in Libraries. *FUMSI* (34).

Walsh, Andrew (2010) QR Codes – using mobile phones to deliver library instruction and help at the point of need. *Journal of information literacy,* 3 (1). pp. 55-65.

Walsh, Andrew (2010) Supplementing inductions with text messages, an SMS "tips and tricks" service. *ALISS Quarterly,* 5 (3). pp. 23-25.

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Walsh, Andrew (2009) They all have them - why not use them? Introducing mobile learning at the University of Huddersfield Library. *Sconul Focus*, 47 (Winter). pp. 27-28.

Walsh, Andrew (2009) Text messaging (SMS) and libraries. *Library Hi Tech News*, 26 (8). pp. 9-11.

Walsh, Andrew (2009) Quick response codes and libraries. *Library Hi Tech News,* 26 (5/6). pp. 7-9.

This awareness of new technologies and possible services they enable will help you prepare for the future, but don't feel like you have to break new ground yourself. It is great if you have the enthusiasm, commitment, time and money to do so, but for most of us there is an alternative. Instead of being in the forefront of mobile innovation, try instead to watch new developments. Read the literature, keep an eye out for case studies, and attend training and briefings where you can. Take advantage of those people who are in a position to truly innovate. As long as you keep an eye on the innovators and keep talking to your users, you will be able to pick the new mobile services that look practical for you and desirable for your users.

Build possible new services into your library's plan if you are in a position to do so, using the experiences of others to select what services are desirable. This will help you plan the introduction of new services at the time that large numbers of your users will be in a position to take advantage of them, rather than just the first early adopters.

Summary

At the core of every service should be considering what your users want, but it is especially important when considering new and different services. So firstly, consider what your users want. Then you can introduce services, not pilots, that you know are likely to be successful. Continue to assess and develop your services, with the users' needs at the centre of this assessment. Finally, keep a weathered eye on new technologies that are developing and how early innovators are taking advantage of them.

If you do all of this you will be in a position to successful introduce and deliver more services in a mobile environment, and importantly to continue to do so for a long time to come.

Use the ideas and case studies in this book to help you decide what may work for you and your users, remembering that these are a simply selection of current possibilities. Hopefully they are useful for you as a source of ideas to select from, suggesting some services your users will find useful, but I hope you will continue to watch the multitude of future possibilities that will unfold in front of you.