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Yee, A. (2012). Mobile technology: academic libraries in Australia and beyond. VALA2012 Proceedings, 1-18.

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Document Version: Published Version

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Citation:

Yee, A 2012, 'Mobile technology: academic libraries in Australia and beyond', in Bart Rutherford (ed.) VALA2012 Proceedings, Melbourne, Australia, 6 - 9 February 2012, pp. 1-18.

Mobile technology: academic libraries in Australia and beyond

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Abstract

This paper reports on the current uptake of mobile technologies by academic libraries and attempts to identify key issues including drivers of success and restraining factors affecting implementation of mobile technologies. It is based on an investigation comprised of literature search, a survey of members of the Council of Australian University Librarians (CAUL) to establish current practice in academic libraries in Australia and New Zealand and investigative visits to academic libraries in USA, Singapore and Hong Kong.

Introduction

The Council of Australian University Librarians (CAUL) International Travelling Fellowship provides up to \$5,000 each year to support overseas investigations of current issues of importance to university libraries in Australia. In 2011, the author was awarded the Fellowship and investigative visits to the USA commenced in March 2011. Further support was also provided by RMIT University Library. The proposal was to identify what mobile technologies and devices have been used to improve library services in academic libraries in the USA. This paper also report on brief visits to libraries in Singapore and Hong Kong in December 2010.

Mobile technologies were chosen because the 2010 Horizon Report ranked 'Mobile Computing' as a major trend having the most significant impact on education. It has been identified as having the likelihood of entry into mainstream educational institutions within the next year. Mobiles were again mentioned in the 2011 Horizon Report, thus highlighting this technology as having great potential in academic environment (Johnson et al. 2011).

For 2011-12, Australian mobile phone penetration is expected to reach 131.3%. This means that people will have multiple SIM cards and wireless broadband data cards (Jeremiah 2011). The main driving force for the phenomenal growth in mobile ownership is the demand to be constantly connected, causing people to own multiple SIM cards and other wireless cards for work and personal use. Some people may acquire additional cards to cover geographical areas not well serviced by their existing mobile carriers.

Many homes have now cancelled their fixed line connections, opting instead for mobile services. 46.6% of the telecommunications services industry revenue in Australia comes from mobile services compared to 29.6% from wired services and 15.1% fixed internet services (Sallmann 2011). Mobile wireless (excluding mobile handset connections) was the fastest growing internet access technology in actual numbers, increasing from 2.8 million in December 2009 to 4.2 million in December 2010 (ABS 2011).

Growth in the mobile industry and in particular, the increasing trend for students to use mobile devices is greatly influenced by subscription and data plans becoming much more affordable. In the USA, unlimited text plans and packaging of mobile subscriptions for families has given students greater mobile access. The increase in mobile ownership has also changed how Australians access the internet. In September 2010, about 36% of Australians used their mobile phones to access the internet in that 30-day period. (Nielsen 2010).

Methodology

This paper reports on current uptake of mobile technologies by academic libraries and identifies key issues including drivers of success and restraining factors affecting implementation of mobile technologies. It is based on an investigation comprising literature search, a survey of members of the Council of Australian University Librarians (CAUL) to establish current practice in academic libraries in Australia and New Zealand, investigative visits to academic libraries in USA, Singapore and Hong Kong.

Terminology

Survey questions refer to services offered via mobile friendly sites or sites optimised for mobile use, including applications developed in-house as well as commercial applications. The survey does not refer to services accessible via a web interface accessible on a mobile phone.

The definition of smartphones is difficult to establish as more and more 'feature phones' have evolved to having more capabilities than those phones once considered as smartphones. Smartphones have operating systems to run applications, access the internet, allow downloads, support multiple e-mail accounts, create and edit documents, create playlists and even provide location/direction via GPS (Wikipedia 2011). For the purpose of this investigation, smartphones include mobile phones capable of accessing the internet to current day 'super phones' with capabilities equivalent to minicomputers and laptops.

iPads were selected for the survey, as they were by far the most popular tablet at the time of the survey being conducted. The survey also included eReaders, designed for reading digital books. It does not include devices such as PDAs and iPod Touch, which are also capable of reading eBooks.

Survey

In November 2010, the author initiated a survey amongst CAUL members as a preliminary project prior to commencement of the 2011 CAUL Travelling Fellowship. The objective was to have an environmental scan of Australian university libraries using mobile technologies.

A short questionnaire was sent via email to all 39 CAUL members. The objectives of the survey were:

- To determine the extent of mobile technology being used amongst university libraries in Australia and New Zealand.
- To develop a snapshot of these libraries use of mobile technology both at present and in the near future.
- To determine which university libraries and which library service are being offered mobile services.

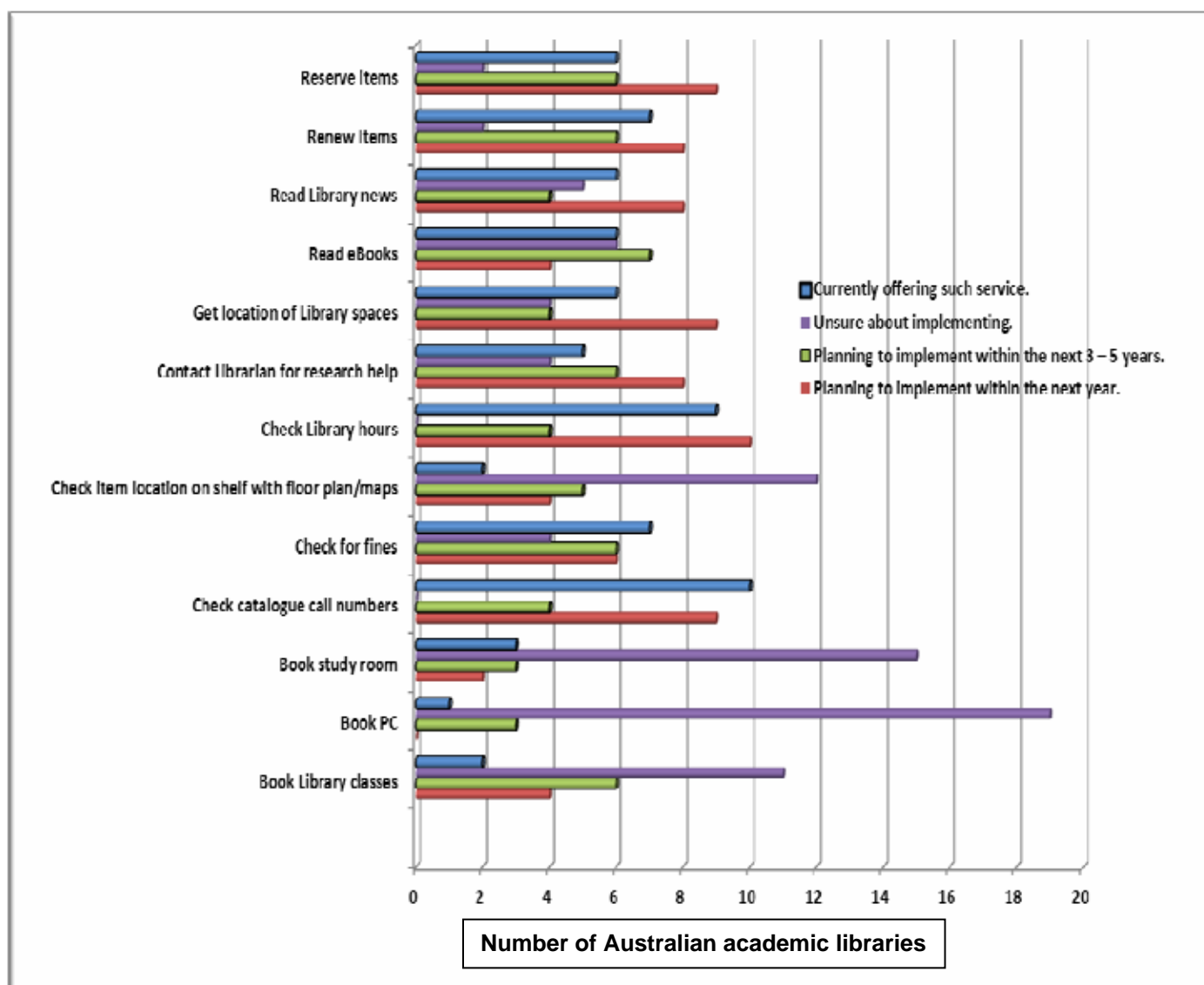
CAUL members were asked the following questions:

- What services does your library currently offer on mobile phones?
For this question, a list of services was provided.
- Does the library plan to implement any of the services within the next year?
- Does the library plan to implement any of the services within the next 3–5 years?
- What sort of devices does your library loan to students? Laptops, iPads, eBook readers? Question referred to iPads as it was the most popular tablet at the time of survey.
- How are Quick Response (QR) codes used at your library?

The following is a **summary** of this survey. Full survey results are available from CAUL.

- Out of a total of 39 CAUL members, 23 members responded to the survey, giving a response rate of 58.97%
- 10 out of 23 universities (43.5%) are currently providing a mobile friendly service to check catalogues. This is the most popular service currently available.
- Within the next 5 years, the rest of the respondents planned to implement a mobile catalogue.
- University of Queensland, Swinburne University of Technology (via MyPC) and University of Wollongong, currently offer mobile services for users to book rooms. University of Melbourne, Queensland University of Technology, Bond University, Monash University and University of Tasmania reported plans to offer similar service within the next 5 years.
- 15 universities (65.2%), however, have no intention of offering this room booking service.
- University of Wollongong currently offers library users the option to book PCs via mobile devices. University of Tasmania, Monash University and Swinburne University of Technology, have plans to offer this in the next 5 years.
- Booking library classes, study rooms and PCs are services least offered on mobile devices.
- Over the next year, 8 libraries (34.8%) will be introducing online reference help via mobile devices. Curtin University, University of Auckland, University of Melbourne and University of Wollongong reported having this currently available.

Chart 1: Number of Australian universities offering library services from mobile-friendly / enhanced interfaces



Current uptake of mobile services

In December 2010, the author made impromptu visits to Nanyang Technological University (NTU) Singapore and Hong Kong University of Science and Technology (HKUST) Hong Kong Special Administrative Region to get a snapshot of how academic libraries in these two neighbouring countries to Australia have made use of mobile technologies.

The telecommunication environment and infrastructure in Singapore was vibrant, progressive and very competitive. Wi-Fi service is easily accessible and services for “people on the go” were emphasised and expected in Singapore.

Communication and technological environment in Hong Kong Special Administrative Region (SAR) has advanced rapidly in the past 5 years. Competitive pricing have made devices and mobile phone plans very attractive for consumers to upgrade their

devices. With the increased ownership and use of mobile devices, libraries have been quick to offer library services through use of mobile devices.

Under the 2011 CAUL Travelling Fellowship, investigative visits were made in March 2011 to University of California Los Angeles, University of Virginia, Duke University, University of North Carolina at Chapel Hill, North Carolina State University, New York University, Columbia University and Yale University. Some of these universities were selected partly because literature reviews pointed out their success with mobile technologies.

Due to competing priorities and limited resources, libraries visited in USA have taken on different projects over the years and have 'championed' services proven successful for them. Librarians were very generous in sharing their experiences, and would not hesitate to refer to other contacts or universities who had been successful with certain mobile services. One library may concentrate on SMS service, another runs a very successful service lending out eBook readers, while yet another has the resources to develop its own apps unique to their users.

Apps or no apps

Although the focus of the visits was primarily on services offered, discussions at times focused on the development of mobile sites. Considerations include whether to build in-house, a mobile-based website with a stripped down design that reads well on small screens, a stand-alone app or as part of a university app (Kostuski & Skornia 2011). Nielsen (2011) did recommend a separate mobile version designed for optimal usability for small-screen hand-held devices.

Libraries have to consider native apps versus mobile web application, whether to create an app-like experience without the apps or provide re-skinned versions of existing web applications. Also how relevant is it to build a native app for a range of devices that continues to improve with technology or apps that keep improving?

In USA, libraries have compromised around optimising for hand-held devices, giving users the look and feel of the iPhone interface without the apps. Some have used Sencha Touch to develop mobile web apps; others investigated JQTouch, a plug-in for mobile web development. Boopsie is in the American market with apps ranging from catalogue searching, through providing patron account and basic library information, to allowing users to scan a book anywhere, check for availability at their home library and then put a hold on the item. Boopsie is popular with American public libraries as it provides access to OverDrive eBook Collections.

With the aim of optimising user experience on mobile phones, a group of student designers/developers at the University of California Los Angeles worked on a mobile/web hybrid application. This application, called 'Stash It' will allow users to save online content and append notes while on a mobile device or laptop. It will also enable users to save library catalogue records onto their account. Another version will allow users to capture and upload images from mobile to their library account. The application was scheduled for release in 2011.

Hong Kong University of Science and Technology (HKUST) stood out amongst the other universities in Hong Kong SAR as the most progressive in mobile technology. It has forged ahead in spite of being the 'youngest' university in Hong Kong, having opened its doors only in 1991. HKUST Publishing Technology Centre (PTC) and the Library have jointly developed m.HKUST application, offering it as a free download from the iPhone App Store via iTunes. Similarly, HKUST Library Catalogue Android application developed as a student course project is also a free download from the Android market. These downloads are linked from the library web page by QR codes.

Services on mobile devices

Not all university libraries have their own stand-alone mobile library site. Most libraries offer mobile services via the university mobile site. Most of the successful mobile services at libraries were joint projects between university education department, faculty, school, publishing department, marketing departments and IT students. The successful uptake amongst universities communities depended on the suite of services offered. Surveys were often used to examine the demand for library services, in particular searching catalogue with small screen devices (Cummins, Merrill & Borrelli 2009). Others used Google Analytics to determine what devices were being used to access web site when considering applications.

To find out what users wanted, the University of Virginia Library conducted an interesting 'survey' by getting students to stick Post-it® notes onto list of services on posters near high traffic areas. Passers-by were each given 5 Post-it® notes to stick their preferences onto the posters. Ranking was not required as it was easy to determine the popular services just by counting the Post-it® notes per service.

Nanyang Technological University's (NTU) 'Cool Campus Project' offered mobile services for 'printing-on-the-go', social media, campus maps, mobile portal for popular student services, locating tutorial rooms, virtual tour through web cams, banking, crowd watch, and tracking shuttle buses on campus. Although some of the more popular services offered through NTU University's mobile site were non-library services, the mobile 'package' offered a comprehensive suite of relevant services, enhanced student experience on mobile devices and contributed to traffic into the Library mobile site. Such a 'holistic' approach contributed to the success of the University's mobile presence.

The NTU Library mobile site was subsequently released in March 2011 as part of a suite of services offered on the University's mobile site. NTU Library mobile services included access to new titles, e-resources updates, catalogue searching, booking rooms and PCs, contacts, events and databases optimised for mobile use.

Hong Kong University of Technology mobile site, m.HKUST, enables users to search for library materials, see the cover image, read a summary, obtain item availability information including QR codes, find out which bookshelf the item is on using floor maps, provide feedback on the item and save the item information for future reference. The Library's opening hours, news, floor plans and subject guides are also easily accessible on mobile phones. In addition to the Library catalogue's

classic version, HKUST Library has developed a next generation catalogue interface called SmartCAT, based on open-source software Scriblio. This is available on iPhone, Touch and iPad.

The University of Virginia (UV) has an official mobile application, and is developing an updated version of the website that is optimised for hand-held, web-enabled mobile phones and devices. The general Library mobile interface offers services like text-a-librarian, staff contacts, library news and events, opening hours and library account access. UV Health Sciences Library offers access to clinical videos, drug information, departmental information, hospital events and resources of interest to health professionals. This was launched in 2009, initially intended for iPhone and iPod Touch. The site now runs on various devices with very comprehensive instructions regarding its use with links to many resources.

University of North Carolina mobile web application offers a campus-wide mobile site as well as the library mobile site separately from their web site. North Carolina State University Libraries launched a carefully selected menu of library services for mobiles in 2009 accessible from the University mobile web site. Duke University Libraries' mobile catalogue sits within the University mobile interface. A search on the catalogue will take the user to the floor location of the item.

The following are some services commonly offered on interfaces optimised for mobile use.

Ask a librarian / Text / Chat Athletics / sports Calendars Catalogue search Contacts Courses Cards-ID/access/accounts Full university website Find groups/meetings	Library locations and hours Maps-campus and library floors News and events Photos/images Places/Location awareness Room/PC reservations Videos Webcams YouTube
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Services like catalogue search, renewing loans, reserving items, or checking for PCs and rooms are more common than access to research material, databases and similar related content. Generally, there was a greater demand for convenience and organisational services than actual academic content to be provided on mobile devices.

Loan of mobile devices

Nanyang Technological University (NTU) has the largest university campus in Singapore with Wi-Fi access throughout the campus. NTU plans to implement 100% PC, laptop or notebook ownership for every new student in 2011. Instead of laptops, students were bringing onto campus notebooks and netbooks, as they were lighter, more portable and the screen size was bigger than mobile phones. The Library observed that not many students have iPhones or smartphones and many students

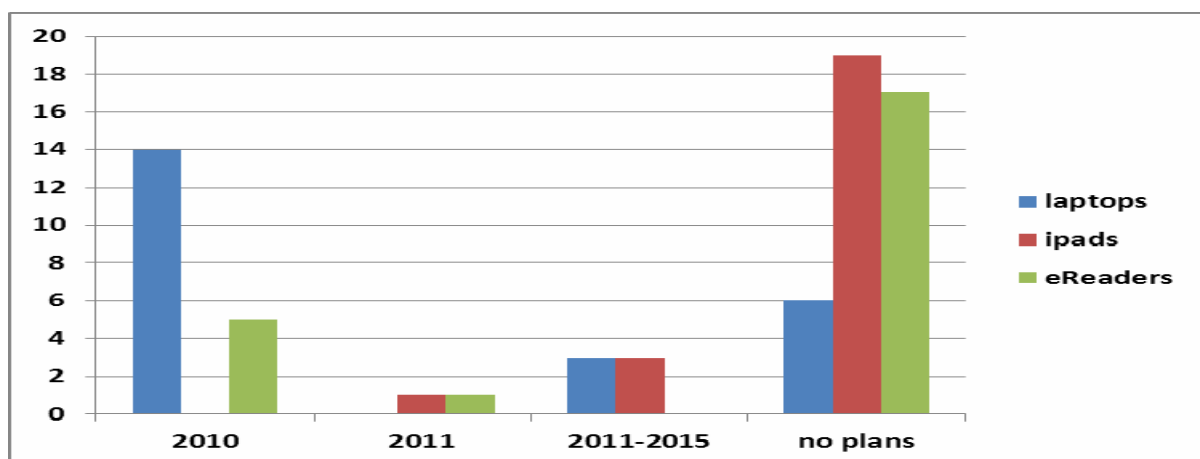
just have low-end phones. It was common at NTU for students to use both a feature phone and a notebook or netbook.

The majority of Australian academic libraries surveyed commented that they were observing and monitoring what other universities were doing in this area. Swinburne University of Technology Library currently loans out laptops but is unlikely to provide other mobile devices for loan in the short term. The ICT Unit of the University of Canberra Library was considering loan of iPads and netbooks in 2011. The majority of libraries have purchased iPads for staff to test and determine if they could be used to support library services.

The following is a summary of the CAUL survey on loans of mobile devices from 23 Australian academic libraries.

- 14 libraries (60.9%) are currently lending out laptops and 3 others planning to do so within 3-5 years.
- iPad loans are being considered by 3 libraries in the next 3-5 years. The rest have no intention to lend at all.
- 5 libraries are currently lending out eBook readers and the rest have no intention to do so in the future.

Chart 2: Academic libraries lending out devices



SMS service

Although SMS messaging started in 1992, libraries became more interested in using this service when it became possible to send SMS to an email service. All eight university libraries visited in March 2011 offered some form of SMS or texting library service. It was a service expected by library users. Popularity of texting in the USA has been on an upward trend. Libraries SMS service is a growing medium alongside face to face and email services.

Text messaging has increased from 52.6% in 2008 to 72.9% in 2010 (EDUCAUSE 2010). 72.2% of wireless users in the USA have paid for SMS packages. In 2008, 2.5 billion text messages were sent each day in the USA. More text messages are sent per phone than phone calls (SSON 2009). According to (Weimer 2010) the USA Cellular Telecommunications Industry Association reported an exponential increase

in text messaging among young adults aged 13 to 19 years, with the proportion of time spent talking versus texting, increasing in favour of texting.

In 2005, Southeastern Louisiana University adopted "Text a Librarian" using Altarama (*Text a Librarian* 2005). New York University Libraries launched a pilot phase in 2008, starting with a designated mobile device and moved onto a full service, currently maintained on LibraryH3lp software.

Discussions with librarians in the USA indicated that their SMS reference service was predominantly managed by the library with little or no involvement from their IT department. The majority of libraries visited used LibraryH3lp - Google Voice Gateway, Android SMS Gateway and Twilio SMS Gateway. LibraryH3lp is an integrated IM and web chat system designed specifically for Virtual Reference services in libraries (Sessoms & Sessoms 2008). Its ease of use, available technical support, affordability and the fact that it was designed by librarians have made it popular SMS reference software.

Other software includes Mosio's Text a Librarian, Altarama SMS and LibAnswers software. In 2007 the University of Virginia Library decided to try Canadian Upside Wireless offer of a "virtual SMS channel" (Weimer 2010)

Some libraries have used the free service from AIM Hack but Google Voice free software is also very popular for text referencing services. Recently, San Jose State University and the Alliance Library System used iGoogle, Gmail Calender and Gmail Groups to manage part of their text referencing service (Luo & Bell 2010).

Qualitative and quantitative analysis of New York University Libraries SMS service found that 60% of the queries received were directional and 40% reference (Collard, Whatley & Pearce 2011). Those who used the service were generally in the library and would prefer to text even when physical points of service were open and staffed (Pearce, Collard & Whatley 2009). Reference enquiries averaged 3.85 messages. Sometimes as many as 16 messages were exchanged between a librarian and the client. Messages were also conversational in nature (Pearce, Collard & Whatley 2010).

Directional and location services

Tours at the Sterling Memorial Library, Yale University were very popular. The use of iPods and MP3 players to provide an audio tour was a welcomed solution when staffing resources were limited. In addition to distributing MP3 players for audio tour, Beinecke Rare Book and Manuscript Library at Yale University also offers options for visitors to access recordings of exhibits on their mobile phones. This service allowed visitors to explore at their own pace and interest without straining staff resources.

North Carolina State University Library 'WolfWalk' application makes use of the Libraries' existing digital collection and location-aware campus map. It features historical photographs of important people, places and events in North Carolina State history while the user walks around the campus. The application works across iPhone, iPod, Android smartphones and iPads.

University of Virginia was investigating using Layar or Wikitude for an augmented reality project for their campus grounds.

Other services

QR Codes

Curtin University, Charles Darwin University and Deakin University Libraries reported in the CAUL survey, using QR codes on promotional posters, selected Library web pages, Lib-guides and t-shirts. In addition to using QR codes on promotional material, University of Queensland Library and Queensland University of Technology Library have embedded QR codes on the result page of the catalogued item providing details of item location and call numbers. This made it easier for users to locate items from a catalogue search. They have also placed QR codes at strategic locations to supplement communication messages or facilitate self-service. For example, QR codes provided text, web-links and video instructions on how to use self-check-out machines, printers and re-charge machines.

QR codes provided on Hong Kong University of Science and Technology Library site are for easy access to download their mobile catalogue onto iPhones and Android phones. Users can also access and bookmark their library account page on mobile devices using QR codes.

Claude Moore Health Sciences Library, University of Virginia used QR codes to promote and provide easy access to recommended apps on medical, health and science subject areas. Users could then download the apps immediately onto their devices.

There was a proposal to use QR codes next to paintings and artworks showcased at the Wilson Library, University of North Carolina at Chapel Hill, which houses rare books, special collections, historical paintings and exhibits.

Teaching and Learning

The School of Humanities and Social Sciences at NTU Singapore was investigating possibilities of integrating library services into 50 course modules in Blackboard Mobile Learn site. This will enable students to access reading material and library resources directly from their Blackboard with their mobile devices.

Columbia University has released a mobile version of their web site with links to their EnhancED resource mobile site, news and staff directory. Access is available via iTunes U and YouTube EDU media platforms. The EnhancED site is maintained by the staff at the Columbia Center for New Media Teaching and Learning (CCNMTL) to provide support for teaching and learning.

Twitter

Duke University Libraries encouraged users to tweet for general questions and quick updates on library happenings, events on campus, collections and IT support. Their Twitter profile includes the reference desk (askref), digital collections (dukedigitalcoll), instructional technology (dukecit), law library (dukelawlibrary), and preservation and digitisation services (dukePresDPC).

Implications for Australian academic libraries

The Asia-Pacific Region has the largest mobile user base with 2.14 billion users in 2011 while North America had 0.26 billion users. Total number of worldwide user was reported at 3.82 billion. China's 1,062.1 million mobile users forecasted for 2015 will mean that China will make up 36% of mobile users in Asia Pacific by 2015 (Elkin July 2011). The number of mobile users in North America however, seemed to have stagnated between 2009 and 2011 with very little growth forecasted for 2010 to 2015 (Elkin July 2011). Australia sits right in the midst of this huge mobile user base with immense potential to offer mobile services. At the same time, Australian universities have a large cohort of international students from the Asia-Pacific region.

Internet access via mobile phones is growing at a faster pace than wired access, particularly in countries where there is lack of fixed infrastructure. Mobile wireless (excluding mobile handset connections) was the fastest growing internet access technology in Australia with actual numbers increasing from 2.8 million in December 2009 to 4.2 million in December 2010 (ABS 2011). Already 35% of online Australians now own a Smartphone (Nielsen 2011).

Behavioural trends of students in Australia are changing. A study released by ECAR found that 83.8% of undergraduates own a laptop, 62.7% own a smart phone or internet enabled device, while only 45.9% own a desktop computer. 48% of students already access the internet via their mobile phones (EDUCAUSE 2010).

Based on these statistics, what strategic plans can academic libraries put in place to take advantage of the emerging trends in the use of mobile devices? How then can Australian universities remain competitive, relevant and attractive particularly to neighbouring countries? What can academic libraries do to ensure services are relevant for these students?

It is no longer a question of whether Australian libraries should offer mobile services. Giving users the option to access library services via their mobile devices has become standard practice, just like retail, commercial and government sectors have done.

What service would be relevant given the uniqueness of each university demographics? Do we know the demographics and social economic background of the student community? How prevalent is mobile usage in your university community? Is the success of library services measured by user acceptance? Telecommunication companies may be offering very attractive mobile plans and packages, mobile subscriptions are forecast to grow exponentially, but how are users using their mobile phones in an academic environment?

What sort of services to offer?

The list of services offered by libraries visited indicated that users demanded services that are more organisational and directional than for library resources. Even where database vendors have provided mobile platforms, students may still prefer to access larger pieces of information on a desktop or laptop with bigger screens.

Authentication issues and the difficulty of reading research material on a small screen could be reasons for electronic resources not being commonly available on mobile sites.

Evaluating mobile services offered by academic libraries in USA, Australia, Singapore and Hong Kong, indicated that the commonly demanded services on mobile devices include catalogue searching, SMS/text a librarian, locating spaces, booking computers and rooms. From Gartner's announcement of its top 10 mobile applications for 2012 (Gartner 2011), possible interest to academic libraries may relate to location based services, payments, mobile emails, instant messaging and videos.

Duke University observed that their users still prefer to access the regular site than the mobile site. Users' feedback was that they prefer to see an interface on mobile that is similar to a web interface. There was not much interest or traffic to their mobile site in spite of promotion and links to their mobile site. A user survey conducted by North Carolina State University found that contrary to general assumptions, many of their users do not have smartphones.

There are many possible reasons for low uptake of mobile sites. The 'newness' of the service and lack of awareness requires much promotion. Are the services offered aligned with what mobile users prefer? The socio-economic and demographics unique to each university community will influence how quickly mobile services for smart phones are accepted. Perhaps developers and decision makers could offer options to users with older feature phones and a separate platform for users with smart phones to access services. Advanced mobile usage in Asia-Pacific has not been exclusively associated with smartphone ownership (Elkin July 2011).

What about SMS services?

Although NCSU reported the slow uptake of SMS service in 2007, and Australian academic libraries may have observed similar low usage, the popularity of this service will grow as student behaviour changes, demanding constant connectivity and convenience from an industry that now makes such services more affordable. Already, 65% of teens are more likely to text their friends than call them. Mobile phones have become indispensable tools in teen communication (Nielsen 2011). The current generation of users prefer to text or SMS instead of talking, phone-in or face to face (Dr Mackay & Weidlich 2009). Academic libraries need to be prepared when the current teens start to populate the university environment.

SMS/text referencing or simply providing directional help is an easy starting point for most libraries. Libraries can start with a dedicated mobile phone, using existing learning management system, investigating Google Voice when it is fully launched in Australia, and move on to using commercial software when funding becomes available.

Once library staff becomes familiar with such service delivery, they will be more receptive to innovative solutions in providing services at users' point of need. The ability to text the library is another option but a more readily available option for current users. The provision of SMS/text service helps better position the library to

offer additional services via mobile phones when updated innovative features become available on such devices in the near future.

From general observation, a large proportion of international students would prefer to text than enquire on the phone or at the desk. This could be due to language difficulties, chances of being misunderstood or inability to understand the librarian. Texting could also be their preferred choice of communication in their home country. For quick queries, rather than logging onto a computer or laptop, it is easier to reach for a mobile phone that is always nearby. As a Singaporean librarian said: "...offering relevant services on mobile phones is important but speed is still 'king'."

There is now an emerging trend to shift to data services as voice services reach maturity. Vendors and operators have increased their services by including gaming and music applications as well as TV and videos in their pricing strategies.

A post on Digiknow (Sept 2011) debated on the 'death' of texting as Facebook launches 'Facebook Messenger', Apple introduces 'iMessage', Samsung announces 'Chat on' and 'WhatsApp' service allowing for unlimited text across multi-platforms. Perhaps these are opportunities for academic libraries to explore in the near future.

Staffing issues

Libraries in USA were asked if they have a framework or programme whereby staff are trained and provided professional development to keep up with the current and future technology environment. Most libraries offer casual arrangements for staff to experiment with new devices, software and even job rotation. Library management is generally very supportive and at one library, staff were given time every morning to 'indulge' in their choice of technology, software or device before they return to their area of work. There was no formal framework whereby staff had to be up-skilled in line with changing technologies. However, newer recruits into libraries in USA often have IT background, experience or qualifications.

In order for mobile services to stay current with changing technology, it is imperative to have staff resources dedicated to monitoring and scanning the horizon for innovative products and services so as not to miss the peak of the trend. Libraries that are successful with mobile implementations usually work in teams of three or more staff. One librarian expressed concerns that his 'mobile team', which included another librarian, a library technician and himself as manager, were not skilled or trained in technologies and therefore had to rely on IT staff for expert advice on projects.

Possible collaboration

How can Australian academic libraries take advantage of expected growth in mobile subscriptions and leverage the potential from competitive pricing in emerging technologies to offer relevant services? Can Australian academic libraries afford limited resources to 'go at it' alone? Collaboration not only empowers participants with negotiating their own competing resources but also promotes ownership on satisfying users. Some commercial or government areas are able to create memorable user experiences and a culture around their 'brand'. Can academic libraries learn from them in delivering an effective SMS service?

My InfoQuest, a collaborative text-messaging project launched in 2009, enabled over 60 American libraries to offer a cost-effective way to reach a wider user community over longer service hours. With the launch of Google Voice in Australia, it will be interesting to observe the uptake of this free service by Australian libraries for the purpose of offering another point of service via SMS.

Collaboration amongst Hong Kong universities libraries had been difficult until recent years as they had different library management systems. All eight Hong Kong universities libraries now use the same library management system, making it easier for collaboration projects to progress quickly.

Conclusion

Statistics have confirmed current prevalence and forecasted growth in the mobile industry. Situated in the midst of a booming mobile industry in the Asia-Pacific region, Australian universities have immense opportunities to succeed with mobile implementation in libraries, as mobile devices are fast becoming users' first choice of access.

However, Australian academic libraries need to evaluate the usage of their own mobile users unique to their university. Mobile services offered at the American libraries tend to be services that help students organise their studies and campus life. The CAUL survey confirms a similar situation in Australia, where services offered were more for students' convenience and organisational needs. Users' preference for news, catalogue searching, databases, or booking rooms and PCs require further investigation as not all users will use their devices the same way.

Although the use of network enabled mobile devices may already be established in many universities, the benefits of further collaboration amongst Australian academic libraries implementing mobile services need to be explored quickly.

Contributions toward successful mobile implementation include Telco's market competition, government intervention or support, telecommunication infrastructure and the speed by which academic libraries are embracing such technology.

The challenge is for libraries to have a pool of skilled staff ready to take on emerging new roles and to have strategic plans prioritised, as technology time frames are very short.

Libraries can continue to offer a relevant form of communication channel as well as an opportunity for users to connect with the library at their point of need with a device that they always have with them. The 'danger' however is that...

"As librarians, we often waste time in deciding what and how to pursue a particular technology and by the time an application is developed the technology has lost its relevance." (Jacobs 2009)

Acknowledgements

The author wishes to acknowledge and thank the following for their willingness to participate and generously share information to make this paper possible.

Columbia University, New York

Breck Witte, Systems Analyst, Library Systems Office
Mark Phillipson, Senior Program Specialist, CCONMTL
Rob Cartolano, Director of the Libraries IT Office

Duke University

Aisha Harvey, Head Collection Development
Debra Kurtz, Head, Digital Projects Department
Lynne O'Brien, Director, Academic Technology & Instructional Services
Meghan Kennedy, Academic Technology Consultant
Michael Peper, Reference Librarian for Mathematics and Physics
Patricia Pawlak, Centre for Instructional Technology
Sean Aery, Digital Projects Department
Thomas Crichlow, Digital Projects Consultant

New York University

Alexa Pearce, Librarian for Journalism, Media, Culture & Communication
Kara M. Whatley, Head, Coles Science Centre, Bobst Library

North Carolina State University

Adam Rogers, NCSU Libraries Fellow – Research and Information Services
Cathy Donohue, University Library Technician
Jason Casden, Digital Technologies Development Librarian
Tito Sierra, Associate Head for Digital Library Development

University of California, Los Angeles

Kevin Rudblad, User Experience & Social Technology Strategist
Todd Grapone, Associate University Librarian, Digital Initiatives & Information Technology

University of North Carolina at Chapel Hill

Chad Haefele, Reference Librarian for Emerging Technologies
Jay Gaidmore, University Archivist
Pam Sessoms, Director of the Undergraduate Library
Winifred Metz, Media Librarian

University of Virginia

Anne Houston, Director of Humanities and Social Sciences
Erin Mayhood, Head Music library
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References

ABS 2011, *Internet Activity 8153.0, Australia, Dec 2010* Australian Bureau of Statistics, viewed 19th July 2011

<<http://www.abs.gov.au/ausstats/abs@.nsf/mf/8153.0/>>.

Collard, S, Whatley, K & Pearce, A 2011, 'Reference Philosophy in a Mobile World: Evidence for Service Provision and Sustainability', paper presented to ARCL 2011 Virtual Conference, Philadelphia, Pennsylvania, March 3 to April 2 2011, <http://www.ala.org/ala/mgrps/divs/acrl/events/national/2011/papers/reference_philosophy.pdf>.

Cummings, J, Merrill, A & Borrelli, S 2009, 'The use of handheld mobile devices: their impact and implications for library services. ', *Emerald, Library Hi Tech*, vol. Vol 28, no. No 1, pp. 22-40, viewed 24th April 2011,

<<https://research.wsulibs.wsu.edu:8443/jspui/bitstream/2376/2325/1/Use%20of%20handheld%20mobile%20devices.pdf>>

Dr Mackay, MM & Weidlich, O 2009, 'Australian Mobile Phone lifestyle index', *5th Edition – Special Topic: Mobile Commerce*, viewed 19th July 2011,

<http://www.aimia.com.au/enews/mobile/090929%20AIMIA_Report_FINAL.pdf>.

EDUCAUSE 2010, *What are students doing with technology*, Educause Centre for Applied Research, viewed 10th June 2011

<<http://net.educause.edu/ir/library/pdf/ers1006/rs/ers10065.pdf>>.

Elkin, N July 2011, *Asia-Pacific Mobile: Redefining the Digital Landscape*, eMarketer Digital Intelligence edn, 6th August 2011, PowerPoint,

<<http://totalaccess.emarketer.com/Reports/Viewer.aspx?R=2000804>>.

Gartner 2011, *Gartner Identifies the Top 10 Consumer Mobile Applications for 2012*, viewed 7th Aug 2011 <<http://www.gartner.com/it/page.jsp?id=1230413>>.

Jacobs, ML 2009, 'Libraries and the mobile revolution: remediation=relevance', *References Services Reviews*, vol. 37, no. 3, viewed 8th July 2011 (Emerald)

<www.emeraldinsight.com/0090-7324.htm>.

Jeremiah, R 2011, *Mobile telecommunications carriers in Australia*, 31st August 2011 edn, IBISWorld Industry Report J7122, viewed 9th Sept 2011,

<<http://clients.ibisworld.com.au/industryau/default.aspx?indid=1830>>.

Johnson, L, Smith, R, Willis, H, Levine, A & Haywood, K 2011, *The 2011 Horizon Report*. Austin, Texas: The New Media Consortium

<<http://net.educause.edu/ir/library/pdf/HR2011.pdf>>.

Kostuski, K & Skornia, F, (July/August), 2011, 'Handheld libraries 101', *Computers in Libraries*, vol. 31, no. 6, pp. 11-3, viewed 2nd Sept 2011,

<http://www.infotoday.com/cilmag/jul11/Kosturski_Skornia.shtml>.

Luo, L & Bell, L 2010, 'Text 4 answers: a collaborative service model', *Reference Services Review*, vol. 38, no. 2, viewed 17th July 2011, via Emerald Insight <www.emeraldinsight.com/0090-7324.htm>.

Nielsen 2010, *Australians can't get enough of new technology*, The Nielsen Company, viewed 8th Aug 2011, <http://www.nielsen-online.com/pr/OCR_GOS-oct10.pdf>.

Nielsen 2011, 'The Australian Online Consumer Landscape', *ad.tech*, viewed 12th March 2011, <http://www.ad-tech.com/sydney_uploads/nielsen_WhitePaper2011.pdf>.

Pearce, A, Collard, S & Whatley, K 2009, 'Say what? An SMS transcript analysis at New York University', paper presented to The 2nd International m-libraries Conference Vancouver, British Columbia, Canada, June 23-24 2009.

Pearce, A, Collard, S & Whatley, K 2010, *SMS reference: myths, markers and modalities*, 2010 edn, viewed 7th July 2011, 0090-7324, <www.emeraldinsight.com/0090-7324.htm>.

Sallmann, N, 2011, *Telecommunication services in Australia*, 8th April 2011 edn, IBISWorld Industry Report J7100, viewed 7th Sept 2011, <<http://clients.ibisworld.com.au/industryau/productsandmarkets.aspx?indid=1730>>.

Sessoms, P & Sessoms, E 2008, *LibraryH3Lp: A new Flexible Chat Reference System*, viewed 4th June 2011 <<http://journal.code4lib.org/articles/107>>.

SSON 2009, *Mobile Communications: most effective*, viewed 28th May 2011 <<http://www.ssonetwork.com/sms-stats/11458-A>>.

Text a Librarian, 2005, Southeastern Louisiana University, viewed 19th July 2011 2010, <<http://www.selu.edu/library/askref/text/>>.

Weimer, K 2010, 'Text messaging the reference desk: Using upside wireless' SMS-to-email to extend reference service', *Reference Librarian*, vol. 51, no. 2, pp. 108-23, viewed 11th July 2011, <<http://www.scopus.com/inward/record.url?eid=2-s2.0-77951601277&partnerID=40&md5=0471c716f155ab6f801bf5fb13848715>>.

Wikipedia 2011, *Smartphones*, Wikipedia, viewed 2nd May 2011 <<http://en.wikipedia.org/wiki/Smartphones>>.