Using mobile technology to deliver information in audio format: learning by listening

Margie Wallin  
*Southern Cross University Library*

Kate Kelly  
*Southern Cross University Library*

Annika McGinley  
*Southern Cross University Library*

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Peter Godwin is currently working at the University of Bedfordshire in Luton, UK. Formerly he was Academic Services Manager at London South Bank University, in charge of subject support to all faculties. His interest in information literacy has focused on support to academic staff in universities and the impact of Web 2.0 on literacy in all information sectors. He has presented widely on Web 2.0 and how this affects the content and delivery of information literacy. In 2008 he co-edited the pioneering book Information Literacy and Library 2.0 for Facet Publishing, which is supplemented by a blog of the same name. Currently he is investigating how mobile devices will affect library services. He draws on many years' experience in academic library management and has presented at conferences in Europe, Asia, the USA and Canada.

Gaby Haddow is a lecturer with the Department of Information Studies at Curtin University. She was appointed to the editorial board of the Australian Library Journal in 2010 and is a member of the Australian Library and Information Association's Research Committee. For three years Gaby wrote evidence summaries for the journal Evidence Based Library and Information Practice and she has published in national and international journals. She has conducted a number of small studies focused on scholarly communication and research assessment and on the communication of research to practice. Gaby's previous position as Humanities Faculty Librarian for Curtin Library has led to an ongoing collaborative project investigating library use and retention of commencing students.

Jim Hahn holds the position of Orientation Services Librarian and Assistant Professor of Library Administration at the University of Illinois at Urbana-Champaign. His day-to-day focus is on helping first-year and transfer students to make the transition to university study. His current research focus concerns understanding how library information resources can be provided to a student's hand-held device, based on position in the library stacks. Recently he has led prototyping research studies on the development of a mobile way-finding app.

Roger Hawcroft, DipT, BEd, MAppSc, AALIA, has over 30 years' experience in a variety of libraries, as well as teaching and commercial experience. His strength is a strong client focus and a willingness to challenge conventional approaches, to innovate and enthuse, and to encourage staff to implement creative solutions.

Keiko Katsura is a male professor of Library and Information Science at Miyagi Gakuin Women's University, Sendai City, Northern Japan. He was born in 1950 in Hiroshima Prefecture and educated at Keio University, Tokyo (BA Library and Information Science, 1973; MA Sociology, 1977) and Columbia University (MS Library Service, 1988). He worked as a librarian at the Japan International Cooperation Agency, Tokyo, from 1979 to 1992. He also worked as a researcher at the Hypermedia Laboratory, University of Tampere, Finland, during 2004/5. He is currently involved in university courses, delivering web and mobile-based lectures with a range of Web 2.0 content. His main area of interest is in the information search and retrieval literacy of academics.

Kate Kelly is Library Manager of Southern Cross University's Gold Coast and Tweed Heads Campus library. During her career, she has seen the library transform from fortress to hand-held. Her current research interest is in the opportunities that mobile devices and associated applications provide in teaching, learning and research.

Cristina López-Pérez has been a manager at the Open University of Catalonia (UOC) Library since 2006. She is responsible for Library Services for Learning. Previously, she was the manager of Documental Resources. She is a member of EDUCAUSE from UOC. She has a degree in Librarianship (University of Barcelona, 2000) and a technical specialist degree in Knowledge Management (UOC, 2004). She is now studying for a Bachelor's degree in Documentation at UOC.

Daniel McDonald is an alumnus of the University of Southern Queensland (USQ) and is currently a health librarian with the Toowoomba Clinical Library Service. He was recently shortlisted for the HLA/HCN Innovation Award and the ALIA/IGO Excellence Award. In June 2011 he spoke at the Australian Pain Society Annual Scientific Meeting about his work with the Acute Pain Service in Toowoomba.

Sophie McDonald is an Information Services Librarian at University of
Technology, Sydney (UTS) Library. She is involved in investigating the ways in which Web 2.0, mobile devices and emerging technologies can be used to develop new information literacy programmes and library services. Sophie has a keen interest in the future of information literacy and developing more dynamic programmes through experimentation and play. She sees information literacy as a part of ubiquitous learning in physical, digital and mobile spaces and works with social media sites for UTS Library as a means of engaging with clients in their online communities. As a blogger, Sophie is interested in the idea of the 'library of the future' and the role librarians play in shaping that future. As a reader, she particularly enjoys vampire fiction in hard copy and on her iPad.

Annika McGinley chairs the Library Emerging Technologies Advisory Committee at Southern Cross University (SCU) in Lismore, New South Wales, where she is the eReadings Coordinator. She has also worked as ePublications Librarian (Business and Law) for SCU’s institutional repository and is currently programming the library’s mobile website. Annika is pursuing a Master of Information Sciences degree at Edith Cowan University in Perth, focusing on best practice and benchmarking in library emerging technologies and, in particular, applying ITIL v3 (Information Technology Infrastructure Library v3) in an academic library setting.

Dr Damien Meere received his BSc degree in IT&T (Information Technology and Telecommunications) from the University of Limerick, Ireland, in 2005. He is currently completing his PhD within the Telecommunications Research Centre at University of Limerick. His research is focused on the provision of contextualized and personalized mobile e-learning (m-learning) services within a variety of informational environments, primarily facilitated through the use of intelligent mobile Agents. As well as developing blended learning environments, Damien’s academic interests include computer networking. He is a Cisco Certified Network Associate (CCNA) and a Cisco Certified Academy Instructor (CIAI).

Keren Mills is the Digital Services Development Officer in the Open University Library. She is responsible for Library Services web site content and usability, providing support and guidance to content authors to ensure quality and integrity of library web content. She is also involved in monitoring, evaluating and implementing mobile technology and audio, video and interactive software applications within digital library service innovation. In 2009 Keren undertook a ten-week research fellowship at Cambridge University Library, focusing on finding out how people use their mobile phones to access or use information on the move. The results have informed development of library services to mobile devices at both Cambridge and the Open University libraries. The findings were reported at the Second International M-Libraries conference in June 2009.

Sam Moffatt is currently a Systems Co-ordinator in the University of Southern Queensland (USQ) Library, working in areas from open repositories with e-prints to resource collection repositories and library catalogue search using VuFind. In this work he has worked on building alternate access to information to support mobile services. Sam also works on the Joomla! open source content management system and is doing work using Joomla! to provide mobile web services side by side with the desktop equivalent.

Niu Xianyun is the Intermediate Engineer for Information and Network Department, National Library of China.

Dr Máirtín Ó Droma, BE (NUiS), PhD (NUiS), CEng, FIET, SMIEEE, is Director of the Telecommunications Research Centre and Senior Lecturer, Electronic and Computer Engineering Department, University of Limerick (UL); Member, Governing Authority, UL; Subject Matter Expert, Institute of Electrical and Electronic Engineers (IEEE); Invited Expert, International Telecommunications Union (ITU), Geneva; Chairman, Royal Irish Academy’s Communications and Radio Science Committee; President, Official Commission Members Ireland, International Union of Radio Science (URSI); Ireland’s delegate to European Science Foundation (ESF) Cooperation in the field of Science and Technology (COST) Research Actions: ‘Wireless networking for moving objects’ WNIeMO (IC0906) and ‘RF/microwave communication subsystems for emerging wireless technologies’ RFCSET (IC0803); and UL’s delegate to the national PRTLI-5 Telecommunications Graduate Initiative (TGI). His
Sarah-Jane Saravani is currently the manager of the Learning Hub at the Waikato Institute of Technology, Hamilton, New Zealand. She has responsibility for the provision and development of access to a range of information and learning resources, and for services to staff and students to support their development as lifelong learners in the 21st century. She is the current convener of the ITPNZ Libraries Forum and the Forum's representative on the Strategic Advisory Committee to the National Library of New Zealand. She is involved with international standards committees on IT in education.

Hassan Sheikh is currently the Head of Systems Development team at the Open University (OU) Library in the UK and manages systems developers and IT support staff. He is the technical leader on several internal and external projects, including the continuous development of the OU Library websites, collaboration with several international institutions on the development of mobile library services, shaping the OU Library Systems Strategy and advising the OU Library senior management and staff on the latest technology trends in the world of libraries. Hassan has several years' experience in programming and usability evaluations and worked at the Open University Institute of Educational Technology for four and a half years before joining the OU Library in October 2006. His research interests include evaluating emerging (in particular library-related) technologies, development of mobile library services, programming, usability and user interface design, enabling interoperability between different systems and tracking the website users' behaviour.

Dr Stanimir Stojanov, PhD, ACM, IEEE, received his Bachelor's and Doctoral degrees from the Humboldt University of Berlin in 1978 and 1986, respectively. He is Lecturer and Head of the Computer Systems Department at the University of Plovdiv, Bulgaria. His research interests include: context-aware and adaptable software architectures, intelligent agents and multi-agent systems, agent- and service-based architectures, middleware, e-learning tools and environments and mobile e-learning services. Dr Stojanov has served on the technical programme committees of many international conferences and workshops.

Margie Wallin is a Liaison Librarian at Southern Cross University, Coffs Harbour, New South Wales, and one of her dreams is to make the process of navigating the 'world of information' a little easier for students and staff. Providing access to information in a mobile setting is one way of achieving this goal - especially in terms of flexibility and access.

Andrew Walsh works at the University of Huddersfield as an academic librarian, where his main role involves subject liaison for the schools of Education and Professional Development and Music, Humanities and Media. Andrew is particularly interested in information literacy, the use of active learning within library sessions, the application of mobile technologies within the library environment and making use of appropriate Web 2.0 technologies. In recent years he has delivered conference papers, including keynotes, and published articles on information literacy, active learning and mobile learning in libraries; has co-written a book on active learning tips for librarians; and has written several book chapters on social media and mobile learning. Most of his recent publications and talks can be found via the University of Huddersfield repository (http://bit.ly/lilacAW). Andrew is an active researcher-practitioner, including studying part time for an information literacy-related PhD at the University of Huddersfield.

Wei Dawei has a Master of Public Administration degree and is an engineer. He graduated from Beijing Institute of Petrochemical Technology in July 1999. Since then, he has been working in the National Library of China (NLC). He has successively acted as Manager of the System Management and Maintenance Department, Beijing National Library Digital Technology Co., Ltd; Deputy Director, Acting Director and Director of NLC Automation Department (NLC New Technology Research Center); Director of NLC Computer and Network System Department (NLC Library Technology Research Center). He was appointed NLC Deputy Director in June 2009. He is currently the SC Member of the IFLA Section of Information Technology (2007–2011, 1st term).

Xie Qiang is Deputy Director of the Coordination and Operation Management Division, National Library of China.
environments. This means that a librarian will be expected to multi-task more and also to become ‘mobile’. For example, although one can be a reference librarian to an on-campus student, one will also be expected to instruct a student off-campus in how to use the mobile phone or mobile broadband to access library services.

Librarians will need to be more assertive and bolder in the way they use mobile technology for their work. This means that they should be making their demands known to the mobile service providers in the areas that either lack service or are in need improvement.

**Conclusion**

For the USP region, the use of mobile technology in libraries is in its early stages. Most libraries lack the services of full-time professional staff and have other operational priorities on their agendas that need attention. There is not going to be a better time than now to gradually begin using mobile technology to offer library services to students. It is hoped that the digital divide will be narrowed once a choice and implementation for either mobile broadband or mobile phone is made — first for the campuses at Laucala, Fiji; Emalus, Vanuatu; and Alafua, Samoa; and then for the other campuses.

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# Using mobile technology to deliver information in audio format: learning by listening

*Margie Wallin, Kate Kelly and Annika McGinley*

**Introduction**

Libraries globally are exploring ways to deliver the myriad of quality information resources available to their users — via mobile devices. As well as focusing on documents (with the inherent problems associated with reading on small screens), Southern Cross University (SCU) Library has explored ways of accessing key documents and converting them to audio form, so that students and staff have an alternative way of engaging with academic literature.

Learners today exist in an increasingly multimodal environment. Mobile devices provide them with extra levels of flexibility, offering them both auditory and visual input and allowing them to learn anytime, anywhere and while doing anything. As Eisenwine and Hadley (2011, 5) state, ‘the digital generation prefers parallel processing and multitasking as a way of digesting information. In addition, that generation prefers pictures, sounds and video over text.’

Traditionally, academic libraries have provided access to predominantly text-based materials. With a highly mobile cohort, however, the problems inherent in viewing or reading on small screens, combined with the need to support different learning styles, have provided the impetus for exploring audio-based alternatives to the academic literature.

As SCU Library staff worked towards the development of a mobile platform, they simultaneously explored the provision of text-based audio files within that platform and the University’s learning management system.
Read, listen and learn

The pedagogical value of providing audio-based resources, especially podcasts, has been well documented (Hew, 2009; Kervin et al., 2006; McGarr, 2009; Tempelhoff, et al., 2009). Generally, such podcasts have been based on lecture materials or supplementary materials designed to support specific units. Other examples include the provision of conference or workshop presentations. Little has been written evaluating the use of audio forms of published and/or scholarly literature.

Between 2008 and 2010, database vendors began providing audio files of selected academic literature. Factiva led the field with linked audio files for all its articles (of less than 4000 words). EbscoHost and Gale Cengage followed suit, providing audio files for full-text HTML documents, but not for PDF files. All three vendors provided an immediate 'listen' function and the facility to download an MP3 version. Ironically, despite being the provider of the first mobile database platform, EbscoHost disabled the 'audio' function for mobile devices. Ebook Library (EBL) provided a 'read aloud' facility within its e-book collection, but not downloadable MP3 files.

In January 2011, SCU Library invited the University community to participate in a research project to evaluate the use and usability of audio files as learning tools. The 'Mobile Resources' Library guide (http://libguides.scu.edu.au/mobile) incorporated a research project tab that linked to selected journal articles (on m-learning/e-learning) with both text and audio formats. A screencast provided instructions on downloading and listening to the selected articles and a link to the survey tool was provided.

Forty-two responses were received, from both staff (15%) and students (85%). This low response rate was not unexpected because the project was undertaken during the traditionally quiet summer session of the academic year. All faculties and schools within the University were represented, and there was a fairly even spread across ages, which ranged from 18 to 64 years. Of the student cohort, 41% were studying internally, 6% were offshore students and 53% were studying at a distance.

Survey participants were asked to comment on how effective they found a particular format for their learning, and which article format they would prefer to access on their mobile devices. A preference for access to both formats was expressed by 64% of respondents. Many of the comments reflected the general advantages of mobile devices – convenience and flexibility:

- It's a lot easier than hugging around a huge text book or pages that add to clutter and can get lost.
- More mobile than sitting at a computer work station. Was able to relax in own environment.

Not surprisingly, the main criticisms of accessing 'text' on a mobile device related to screen size and the associated reading difficulties. Some respondents also commented on the limited or non-existent 'note taking' functionality of some devices:

- Words too small to read.
- I like to use the hard copy so I can make notes and add Post-its.

Having audio access to journal articles was a new feature for many of our survey respondents, and this was reflected in their overwhelmingly positive comments:

- As I am an international student, this format assists me to develop my listening skill.
- It was excellent. How good, can we have all the journals available to listen to?
- I prefer reading for academic-related info, however I found podcasts useful. I would download audio to my mobile device and play it while driving, or maybe peeling carrots, etc . . . This sort of facility would be very useful for me.

However, despite the positive responses, almost all criticisms of the audio format pertained to the voice quality – its synthesized nature and speed of delivery:

- But I want a human voice rather than a computer-generated one.
- I found I was able to read much quicker than the speaker was relaying the text, however, with the amount of reading time available to us, as it takes total concentration, being able to listen while walking, driving, on the train etc. has huge benefits. Having the text means you are able to refer back to specifics if needed.
Having access to both text and audio formats was the most popular approach (64%):

This is such a great idea and I hope the time and effort is put in to make this a freely available tool for all students. Accessing the data in both audio and text format is so invaluable as a greater understanding is gained by using both styles of learning. It is a far more complete experience. Although I did notice that when I read the article after listening to it I picked up some things I hadn’t when just listening.

Listening is good but reading can allow clarification.

A preference to access neither format on a mobile device was expressed by 10% of respondents. Generally these comments reflected a preference for print materials:

With a difficult article I need to study what is being said with frequent backtracking. I usually prefer to print the difficult papers.

**Unit-based cohort**

In addition to the resources made available to the entire university community, selected articles – relevant to two assessment tasks – were embedded in online course material for a postgraduate unit (Foundations of Management) within the School of Business. This cohort was keen to embrace new learning technologies – being time poor, yet with ready access to technology, internet and mobile networks. Students provided informal feedback via a virtual focus group within the learning management system.

Feedback both on the forum and via the discussion lists indicated a lack of expertise in downloading (usually via iTunes) and managing the files. Students discussed technical frustrations that diminished their experience. In response, the SCU Library and Flexible Learning Development Services (FLDS) are developing a ‘software toolkit’ with advice and screen cast instructions on managing multimedia files.

Students on the forum were enthusiastic about resources provided in multiple formats for use on mobile devices. One student explained that he was able to expand his study time by listening to audio content on his daily commute to work. For these students, the overwhelming response was that providing material in multiple formats allowed them to make better use of their time and to use different formats to optimize ‘reading’ time.

**Audio investigations**

As a result of this feedback, SCU Library staff continued to investigate opportunities for providing both text and audio forms of academic literature to their users. Feedback was provided to those database vendors who offer an audio alternative to the academic literature, based on respondents’ comments. The provision of such services by other database vendors is being monitored on an ongoing basis and new resources are promoted when available. Journals providing their own podcasts (e.g., *Nature, Wall Street Journal* and *New England Journal of Medicine*) have also been explored and promoted (Templehof et al., 2009).

In addition to providing access to existing audio files, the Library hoped to generate audio files (using text-to-speech software) for unit e-reserve materials. However, there are a number of implications pertaining to the creation and distribution of ‘adaptations’ of such literature. Each publisher or vendor applies varying restrictions or negotiates specific licence agreements, and having to investigate this on a document-by-document basis would not be cost or time efficient. In one study (Miller and Filler, 2005) audio versions of set readings were created. There were a limited number of readings involved and permission was sought for each reading.

While institutions are bound by copyright and licensing restrictions, individuals are able to create such files, solely for personal research or study. It was decided to explore the possibilities of making text-to-speech tools available to university students and staff.

**Text-to-speech**

Text-to-speech tools (or speech synthesizers) have been in use for many years, often for accessibility purposes or to support language students. Such tools are equally valuable for auditory learners, and some interesting applications of these tools include essay revision, assisting struggling readers and providing narration for web lectures (Balajthy, 2005; Chong, Tsaukhowong and Sakauchi, 2002; Garrison, 2009).
As stated by Rughooputh and Santally (2009, 137), 'Research into personalization and individual learning preferences has shown that the use of multi-modal approaches to delivery can help improve learning experience of learners irrespective of whether in classrooms or through distance education.' This reinforces the comments made by a number of the survey participants.

A range of free and commercial text-to-speech software tools and applications were identified and evaluated. Evaluation criteria included ease of use, voice quality, choice of accents and speed, file size and format, as well as cost. As with the audio files provided by database vendors, the quality of 'voice' was viewed as a key consideration. A selection of these tools were documented, along with key features and comments, and the information was made available to SCU staff and students on the Text-to-Speech tab within the 'Mobile Resources' Library guide (http://libguides.scu.edu.au/mobile).

As mobile devices are more than just 'phones', desktop-based software and mobile applications were also investigated. Thus, all users are supported — whether they have high-end mobile devices, including smartphones, or just basic MP3 players. This ensures a service that is both equitable and flexible. One comment from a student was: 'I will still access files via the web and then load them onto my phone from my computer (it's cheaper that way!).'

Initially, information about text-to-speech resources was provided to participants in the research project and promoted via the SCU Library web page. Individual feedback was extremely positive. Students and staff reported using these tools to create MP3 files of journal articles, selected e-readings and course materials, book chapters and book sections, web pages, newspaper articles — to name just a few. All the respondents commented on the value of these tools and the increased flexibility they provided to them as mobile learners. They also reinforced the comments from the initial survey, on the value of having multiple formats of the same resource.

**Conclusion**

Novelty is probably one of the most powerful signals to determine what we pay attention to in the world. (Poldrack, 2010, 1)

While the use of audio files or podcasts in the academic environment is not new, the ability to access audio forms of scholarly literature is a recent development. In addition, enabling staff and students to create their own personalized collections of audio files — generated from text-based resources — is both novel and empowering for mobile learners.

This project has demonstrated that scholarly literature can be repurposed to suit a variety of learning styles, particularly in the mobile setting. The success of embedding dual-format, mobile-ready scholarly resources into a unit has also created opportunities within other unit offerings.

In response to the research findings, the SCU Library, FLDS and the Teaching and Learning Centre continue to collaborate on the development of 'mobile literacy' resources, enabling students to navigate the technical complexities of creating or downloading and listening to content via mobile devices.

As Low and O'Connell (2006, 2) note, 'the highly personalised nature of digital mobile devices provides an excellent platform for the development of personalised, learner-centric educational experiences'. By providing opportunities for learners to both create and access multi-format and mobile-ready scholarly resources, the Library continues to support mobile (and indeed all) learners in their academic endeavours.

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Trevor Davey, Lecturer, School of Business, Southern Cross University.

### References


