Learning emerging technologies – whose responsibility is it?

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Abstract

As the river of technological change flows faster and faster, it is imperative that library staff keep learning to provide the best service for their users. Yet many of us feel more like we are drowning than riding the river of new technology. Is it management’s role to provide development or do we need to take charge of our own learning experiences?

Being able to recognize, record and reflect on our playing, experimenting and learning may be the answer. Self directed learning is about developing your own goals, choosing how you are going to learn, putting a time frame around your goals and evaluating your own learning. To do this we need to change the way we view our own learning experiences and praxis. Through the development of skills in self-directed learning, library staff will not only be able to embed ongoing learning into their own practice, but also through reflection and sharing develop the learning culture around them.

This paper presents the background to the author’s doctoral research to address a gap in current knowledge investigating how academic library staff can incorporate learning about emerging technologies into their every day work practices. Using an action research method and a framework of self-directed learning, this research may provide a cost effective and sustainable way for library staff across all sectors to learn about emerging technologies and to ride the rapids of technological change with skill and grace.
This paper presents the background to my research being undertaken as part of my doctoral candidature at Charles Sturt University, NSW. My interest in the area of keeping up to date with emerging technology stems from my role as staff development coordinator at an academic library in Melbourne and my belief that despite the ever changing nature of technology in the LIS field, library staff will always have the drive to provide the best customer service by having the skills necessary to meet their clients’ needs.

The changing landscape of academic libraries

Williams (2010) in her report on the transforming roles of Liaison Librarians writes of the new higher education paradigm that is being driven by changing technology, the increasing abundance of digital information and the changing practices of academics and researchers.

A library’s primary purpose is to serve its clients and as that client group changes and their information needs become more technology dependent, library staff need to keep up with technological changes and develop skills to be able to both lead and assist in this area (Cooke, 2011, p. 2; Marmion, 1998, p. 26).

Changes in the way libraries collect, store and provide information is now being driven by technology (Neal, 2010, p. v). Relying on skills learnt in library education or training is not enough to sustain a library worker throughout a long career.

Changing skills required by academic library staff

As the environmental landscape of the academic library changes, so staff need new or evolving skills.

In an Australian study Wise and colleagues (2011) found generic IT skills and E-resource skills rose in their rankings of importance in the 6 years between their study and one done in 2006 by Kennan, Willard and Wilson (2006). Wang and colleagues looked at advertisements for reference librarians in the United States of America and found that technology skills remain among the most commonly requested skills in reference librarian advertisements (Wang et al. 2010).

In 2010 Partridge and colleagues from the Queensland University of Technology undertook a study examining the skills Australian library workers would need in the future. Seventy-six library and information professionals from around Australia joined focus groups to discuss the skills, knowledge and attributes of current and future library professionals. The
discussions highlighted that as the library clients’ needs change, library workers must be prepared to make changes and learn new skills to meet these needs. Library workers in the future need to recognize that change is ongoing and that they need to be continually and actively re-skilling themselves to meet these changes (Partridge, Lee, & Munro, 2010, p. 270).

Changes in the technology skills and expectations of academic library users also affect the skills required by academic library staff. Increases in the number of students studying away from the campus and the increasing variety of digital methods for offering education through organisations such as Open Universities Australia or massive online open courses (MOOCs) means libraries need to provide services, previously only offered face to face, in an online environment using new and emerging technologies (Lukasiewicz, 2007, p. 822). Customers also request technology help to access information from a variety of online sources, expecting library staff to have to skills to assist them (Kaur & Singh, 2011, p. 744)

Learning on the job: Formal and informal learning
To study how librarians can best keep up to date with changing technologies the various methods by which individuals and organisation learn within the workplace setting needs to be considered. The methods individuals use to learn on the job are often grouped into formal and informal types of learning.

Researchers have come to agree that the concepts of formal and informal learning reside along a continuum with the level of control of the individual has over the learning forming the basis for where various types of learning sit along this line (Mocker & Spear, 1982, p. 1). There are a number of models of the learning continuum, Figure 1 shows that proposed by Rohs (Zurcher, 2010). Rohs’ continuum highlights the different aspects that make up workplace learning including factors of the content and outcomes required as well as the level of control the learner has.

Figure 1: Rohs’ continuum. Source: (Zurcher 2010)
In workplaces an emphasis is often placed on the need for formal learning opportunities, which provide employees with the knowledge and skills required for a particular workplace. This has led to the rise of staff development committees or managers and the allocation of specific training budgets. These formal learning opportunities have been popular because they are based on measureable inputs; it is possible to record and report on the number of hours and the number of people who have engaged in this type of learning opportunity. These programs can be included in performance management schemes for staff as they are concrete, measurable programs that can be used as a key performance indicator, or objective.

However, formal programs are not the whole story. Conlon's (2004, p. 283) review of the informal learning literature found researchers estimate that between 80% to 90% of what employees learn in the workplace comes not from structured or formal learning opportunities but instead from individuals learning through observation, questioning and reflecting on their work, or informal learning opportunities.

**Self-directed learning**

Part of the informal end of the learning continuum refers to self-directed learning, or “self-determined” as referred to by Rohs. Self-directed learning occurs when the learner has control over such things as content and method of learning.

Definitions of self-directed learning differ: some suggest it is a process of learning; and others a personal attribute (Song & Hill, 2007, p. 28). Those researchers who define it as a process focus on the degree to which a learner has control over the instructional process and are then able to plan, monitor and evaluate their own learning (Song & Hill, 2007, p. 32). In contrast, those researchers who define self directed learning as a personal attribute argue that as an attribute it determines a learner’s motivation and capability for taking responsibility for their own learning (Song & Hill, 2007, p. 28).

Candy (1991), one of the earliest researchers in this field, outlines a process of self-directed learning involves six steps; determining what should be learned, identifying one’s own learning needs, developing learning objectives, identifying a learning plan, successfully implementing the learning plan, and self evaluation. These six steps provide a complete, circular process moving from identifying what skills or competencies are required and identifying gaps in one’s own skills through deciding the outcomes expected, how the learning will occur, the actual learning followed by assessing the success of the learning
which then goes on to inform further identification of skills gaps (Figure 2).

Figure 2: Candy’s model of self-directed learning. Source: Based on Zimmerman & Lebeau (2000, p. 301).

Straka argues that self-directed learning is more complex than the model offered by Candy. For self-directed learning to occur the learner needs to have interest in the subject, then needs to develop strategies to assimilate the content, after which control is taken over the learning. Finally evaluation of the learning is undertaken. Straka also recognizes that environmental and internal conditions impact upon the learning process (Straka, 2000, p. 246).

While self-directed learning appears to be an individual-focused, individual learners can have considerable effect on the organisation within which they learn. Through acting upon their learning and sharing their reflection and knowledge they are able to assist others in their development and change the culture within which their development is occurring (Kemmis & Grootenboer, 2008, p. 58).

**Keeping up to date with emerging technologies**

In investigating how library staff currently keep up to date with emerging technologies it is noted that during the last few years a variety of programs have been developed to assist librarians to learn this new technology. We look now at these programs and their success in meeting the needs of the current academic library staff.
The programs found were all organisation-led and ranged from programs which have a set curriculum such as that offered by the University of Western Australia (Pegrum & Kiel, 2011), to more open programs such as the 23 things program (Blowers, n.d.) that is offered in libraries throughout the world.

Beginning in 2008 the University of Western Australia Library offers a program now called Emergent Technologies in Education (Pegrum & Kiel, 2011, p. 583). This program aims to give the participants skills in developing e-learning material, in particular focusing on the pedagogical approach to e-learning.

Pegrum and Kiel (2011, p. 595) report positive individual results but also recommend that ongoing support is needed for participants to continue their learning. This highlights the limitations of formal programs to provide ongoing learning; while a course can provide the know-how to assist an individual to learn individuals must also have the right environment and the ongoing assistance to share their knowledge and be able to put the knowledge gained at a formal program into practice. These types of formal programs do not allow or particularly encourage continuous learning in the area and for this reason the University of Western Australia made plans to develop an online network following the third program in an effort to promote “cascade and viral models of knowledge and skill dissemination” to keep up the learning that had begun (Pegrum & Kiel, 2011, p. 596).

A variety of less formal, but still organisation-led programs, designed to develop skills in emerging technology, programs such as the 23 things (Blowers n.d.) and Learning 2.0 (Forsyth, Joseph, & Perry, 2009) have also been developed. These programs have been designated as informal learning programs because while giving some direction as to the tasks that must be completed, it is up to the individual learner to decide how they will learn and when they will learn.

These informal programs developed from the recognized need that currently employed library staff need to be aware of and able to trial and evaluate new and emerging technologies. The programs are designed to direct learners through a range of tasks at their own pace and have been designed to provide direction for informal learning and to put in place some social network and mentoring opportunities to promote learning.

Blowers, who developed the internationally successful 23 things program, says that the reason she developed the program was out of frustration. In three months of providing
traditional face-to-face training sessions she only managed to train 60 of the 540 staff within her organisation (Blowers & Reed, 2007, p. 12). She concluded that it was necessary to move away from instructor-lead training and develop an individual-driven program that could be completed in the workplace. In an interview with Collegeonline.org Blowers went on to stress that the greatest outcome of the program was not the learning of the technology per se but that a person’s learning was individually directed.

Stephens and Cheetham (2011) studied the success of the 23 things program in Australia. From an online survey of 384 Australian library and information employees who had undertaken the program, they found that the program resulted in perceived personal benefits such as improved confidence and a willingness to continue to explore emerging technologies. The program also promoted the benefits of better sharing and communication within the workplace. Some of the roadblocks or barriers for the program’s success nominated by the respondents included lack of time; lack of access to the appropriate technology and the lack of organisational participation following the program that meant that the sharing and collaboration that had started during the program stopped (Stephens & Cheetham, 2011, p. 55).

In 2008 research was conducted by NSW State library staff (Forsyth et al., 2009) into the Learning 2.0 program offered free of charge to over 2300 NSW public library employees. This Learning 2.0 program was based on the 23 things program. In all 893 library staff began the 12-week course, 226 completed it, a 25% completion rate.

The low participation (37% of possible participants began the program) and very low completion rate (only 25% of those that began the program actually completed it) point to these programs not being as successful as library management might have hoped. Stephens and Cheetham (2012) have just completed a further survey of Learning 2.0 programs. They conclude that participants of the program reported a better awareness of emerging technologies however organisational change was not as evident as hoped (Stephens & Cheetham, 2012, p. 14). Stephens and Cheetham remain positive about the benefits of the program however their research figures show that they received 50 pre-program surveys and only 16 post-program surveys, and although they don’t equate these with the number of participants who started and completed the program it could suggest that the completion rate was only around 30% (Stephens & Cheetham, 2012, p. 11). For a program that the authors believe is of great benefit to promote the professional development of librarians in the area of emerging technologies the low completion rates must be noted.
The Brigham Young University Library have tried yet another way to help staff keep up with emerging technologies, through their Technology Challenge (Quinney, Smith, & Galbraith, 2010). This challenge aims to achieve two objectives: to develop staff’s knowledge of new technologies and to promote the development of lifelong learning habits so that the learning would continue beyond the life of the program. The Technology Challenge is a truly self-directed learning experience where participants are encouraged to explore new technology on their own by spending at least fifteen minutes each day undertaking some learning task.

Based on the belief that adults prefer to choose what and how they learn; the Brigham Young Library program aims to be different from the Learning 2.0 programs by encouraging participants to choose what they want to learn and to do so in a manner that would be habit forming (daily learning) (Quinney et al., 2010, p. 206). As a guide, participants are given a range of tasks or challenges that they can undertake but they aren’t a requirement for the successful completion of the program, reward is given based on a range of challenges completed and more importantly on time spent on learning tasks. The library had 175 staff at the time of the six-month program although Quinney and colleagues reported only on the ninety-six participants who completed the challenge (55% of staff completed).

Organisation-led informal programs, such as the Learning 2.0 programs address a moment-in-time learning need for library staff but do not appear to provide for sustainable, ongoing learning, although due to the recent nature of these programs there has yet to be the opportunity to do much follow-up or longitudinal studies.

To date the literature on how academic library staff keep up to date with emerging technologies is based on practice literature, rather than research. Literature studying informal or self directed learning activities have relied, in the main, on retrospective reporting of activities through surveys and questionnaires, an unreliable measuring tool with regard to this area of learning. There is yet to be a study that uses ongoing, at the time, reporting of learning activities.

My research project aims to understand how academic librarians can incorporate continuous learning about emerging technologies into their everyday professional practice. To do this I will look first at what library staff are currently doing to keep up to date with emerging technologies and to work with them to identify how effective they believe they are in keeping up to date, what methods they are using, and what barriers are they encountering. Participants will keep an ongoing journal of learning activities as they are occurring. Once a base line has been established of what learning is happening currently, I will be investigating
whether self-directed learning theory can provide a framework for learning in this area and how effective it might be in helping library staff to develop ongoing learning practices.

**Action research**

I am undertaking this research using an action research method, which isn’t as yet widely used in LIS research. Kurt Lewin is generally credited with developing the term action research and developed the action research cycle of planning, acting, observing and reflecting (Klein, 2012, p. 1). The active involvement of the participants in directing the research is one of the key features of action research that distinguishes it from other methods of research.

Action research involves the participants of the research project in ways that other research does not, they become an active part of identifying the issues around the research topic, developing plans to address the issues, putting the plan into place and then evaluating the outcomes. The researcher works to facilitate the process contributing their own expertise and in some research projects can be a participant as well as the researcher (Berg, 2004, p. 202; Swantz, Reason, & Bradbury, 2008, p. 42). The steps of an action research project are shown in Figure 3 and show that a number of cycles are usually undertaken with the evaluation and reflections from one cycle informing the planning and action of the next.

![Figure 3: Action Research Cycle. Source: http://www.web.ca/robrien/papers/arfinal.html](http://www.web.ca/robrien/papers/arfinal.html)

**Conclusion**

The proposed research aims to address a gap in current knowledge to investigate how
academic library staff can incorporate learning about emerging technologies into their everyday practice. The use of action research will provide a means by which practitioners can record and reflect on how they are currently learning about emerging technologies and how their own current practice may be improved through a framework of self directed learning.

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References


