A whole-school approach to technological literacy: Mobile learning and the iPhone

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Abstract: Mobile learning is not pervasive in higher education and yet its potential is enormous. This paper describes a project to instigate mobile learning in a School of Education using a whole-of-school approach to technological literacy and professional learning among academic staff. The project involves supporting every academic in the School to use an iPhone or iPodTouch in their professional lives, and to research their use of the device in pedagogical contexts. The paper describes the planning process together with the professional development initiatives to be implemented and issues associated with the acquisition and use of mobile phones in professional contexts.

Introduction

Mobile technologies are fast making inroads into higher education contexts. A recent study into student use of technologies found almost complete penetration of mobile phone use and ownership among higher education students in Australia (Moyle & Owen, 2009). And yet, mobile devices continue to be used more as organisational aids or personal assistants in universities—if at all—than as cognitive tools to be used to solve problems and address complex issues and ideas.

While individual technologies such as personal digital assistants (PDAs), mobile phones and digital music players (such as iPods) have been studied in higher education settings over the past decade or so, the combining of the individual affordances of these separate devices in the last few years into single mobile devices in the form of smartphones (such as the Blackberry and iPhone) has vastly altered the technological landscape. The educational potential of these feature-laden mobile phones in higher education is yet to be fully realized, not the least because faculty and teachers in higher education are often ill-prepared for the challenge of utilizing them in their classes. Shifting staff perceptions of mobile phones from disruptive personal items (that should ideally be turned off in classes) to one that views them as indispensible learning tools is a first step. In this paper, we describe an initiative to introduce a whole of school (department) approach to the professional development of higher education teachers through the introduction of an iPhone program. In this project, staff across the School of Education at [x] University were offered support to use either an iPhone or iPod touch with a view to increasing the awareness of the pedagogic possibilities of these devices and developing facility with them in their daily lives. In this paper, we describe the planning and processes involved in the School to enable this project to proceed.

Pedagogical uses of mobile phones

In 2004, Jones, Johnson, and Bentley (2004) asked the question: are mobile devices principally personal or educational technologies? Their study concluded at that time, that the educational use of handheld mobile devices was peripheral to most college education classes, with usage confined mainly to performing personal
information management. While the management of time and commitments is a valuable use of mobile phones, increasingly over the decade, researchers and teachers are confirming the pedagogical value of phones beyond the key benefits succinctly summarized as *portability, connectivity, and convenience* (Kukulska-Hulme, Evans, & Traxler, 2005). For example, Atewell’s (2005) report on mobile learning noted positive contributions to learning through the use of mobile phones by young adults, and the report asserted that mobile learning:

- helps learners to improve their literacy and numeracy skills and to recognise their existing abilities
- can be used to encourage both independent and collaborative learning experiences
- helps learners to identify areas where they need assistance and support
- helps to combat resistance to the use of ICT and can help bridge the gap between mobile phone literacy and ICT literacy
- helps to remove some of the formality from the learning experience and engages reluctant learners
- helps learners to remain more focused for longer periods
- helps to raise self-esteem
- helps to raise self-confidence (pp. 13-14).

Enabling mobile devices to provide the learning benefits outlined above is a significant challenge for educators in higher education.

**Professional learning**

In implementing mobile learning, pedagogical approaches need to be designed and implemented to encourage problem solving and higher order thinking—it is not simply a case of making use of low level features of mobile devices, such as email and messaging. Some studies have addressed this issue, by exploring pedagogies associated with mobile learning (m-learning). For example, in a project entitled *New technologies, new pedagogies* (Herrington, Herrington, Mantei, Olney, & Ferry, 2009), teachers designed and implemented pedagogies across a range of subject areas within a Faculty of Education, in areas including adult education, early childhood, environmental education, literacy, science and visual arts. Smartphones and iPods were used as cognitive tools rather than as simple communication devices or delivery platforms, and the resulting pedagogies are adaptable to other higher education contexts. Similarly, the UK based Mobile Learning Network fosters and supports the development and publication of mobile learning projects on its website (MoLeNET, n.d.). The MoLeNET program includes not only technical and pedagogic advice and support for teachers, but also continuing professional development, mentoring, facilitation of peer-to-peer support, networking and resource sharing. As such it is a repository of good practice in mobile learning.

The need to prepare higher education teachers for m-learning is a critical professional learning challenge. Five strategies have recently been identified to support such professional development:

1. Development of a shared understanding of the theoretical frameworks and philosophies of the approach
2. Development of understanding of the affordances of the technologies at hand, and having a significant amount of time to develop these skills before using with students
3. Participation in authentic tasks which model the practices to assist the move from theory to practice
4. Development of a shared language, knowledge and understanding of new pedagogies and the implications for practice and teaching role

Lefoe et al. (2009) noted: ‘Of significance was the ability for faculty to be able to use the devices in their everyday work and to become familiar with them to such an extent that they were then able to incorporate their use in the curriculum’ (p. 25). This is one of the key drivers for the initiation of the iPhone project described in this paper, and importantly, the device was seen as a way to introduce staff to a range of social Web 2.0 tools and other Internet facilities that could readily be adapted for pedagogical uses.
The iPhone project

The release of the iPhone and iPodTouch was recognised as an opportunity for the School of Education to support a significant professional development initiative. The School was in a good position to support staff to engage with a recent and powerful technology with many educational and research uses, and to conduct associated research in mobile learning. The iPhone was initially chosen as the device of choice because of its versatility as: a mobile phone, a widescreen iPod, an internet browser and GPS device. However, in order to solve issues of costs of data plans and calls (that could prevent some from participating), the iPodTouch was also added as a viable and compatible device within the project.

Aims of the program

The aims of the program comprised:

- Beginning cultural change in the School to support technological competence and innovation
- Building technological confidence and disposition within the academic team of the School of Education through the provision of innovative mobile technology
- Researching the impact of how mobile technologies might change and enhance:
  - The professional lives and technological competencies of teaching staff
  - The educational programs of the School.
  - Pedagogical practices within teacher education.

Planning group

In order to prepare for the implementation of the project, a planning group was set up to explore a means to acquire the iPhones for teachers and to plan a procedure for their use in the School. The planning group collected information on the iPhone from Apple websites and distributors, including costs, capacities and features of the different models. The University had existing plans for staff to acquire mobile phones, and offered levels of data download ranging from 5 megabytes per month for very infrequent use, to 1000mb for heavy users. The planning group prepared information documents on the proposal to present to the staff, including information on the project and its rationale, details of the phone purchase by the School, and various options for purchasing call and data plans for daily use of the phones (Figure 1). Another section provided further contextualised information in the form of a Frequently Asked Question guide (Figure 2), and an application form was also provided for submission by staff wishing to be involved (Figure 3).

The plan encompassed the purchase of the iPhones for use by the School of Education academic staff. In this sense, the School would retain ownership of the devices but each phone would remain in the possession of the staff member as long as the recipient was employed in the School. However, the School was not in a position to
cover the cost of either the data plans or the phone calls made on the phone. These costs needed to be covered by
the individual, either from personal funds or from research funds aligned with the principles of the project in
accordance with University fair use policy. The project not only enables staff to engage in a professional
learning program, but also to use the devices with their own classes and to research their own pedagogical
practice.

Participating staff members were also asked to engage in a research project for two years, which required them
to commit to:

- Using the iPhone/iPodTouch for enhancing **personal productivity**, time management, communication
  and connectivity in managing their professional lives. For example, connection to the University
  Exchange server; internet browsing; calendars of meetings and events; maps and directions to schools;
  completing web-based university processes (such as leave applications, approvals); travel tools (such as
  currency conversion tools, flight updates, world clocks, packing lists); email (sending and receiving);
  clock, stopwatches and timers; and calculators and conversion tools.
- Using the iPhone/iPodTouch in their **teaching** program. For example, using the device for video and
  audio feedback in workshops, for controlling presentations, and for creating and planning mobile learning
  tasks for students.
- Using the iPhone/iPodTouch to **research** their pedagogical practice. For example, taking photographs;
  notes for anecdotal records and projects; data collection using voice and video recordings.

**Participant roles and responsibilities**
The different aspects of the project placed responsibilities on staff members to commit to contribute in key ways.
During the initial two year period of the program, staff were asked to:

- Attend professional development sessions and support groups to maximise both personal and professional
  uses of the devices
- Undertake to report on the understandings revealed through the use of the iPhone/iPodTouch
- Participate in research hub discussions on the use of this technology
- Publish at least one research article, individually or in teams, in relevant research journals or conference
  proceedings on their learning and pedagogical use of these technologies.
- Evaluate the program and recommend changes and improvements where possible.

**Implementation strategies**
The invitation to participate in the program was extended to all permanent academic staff members in the School
of Education (approximately 35 people over two campuses). Of these, 25 teachers submitted an expression of
interest to be involved, with 23 choosing the iPhone and 2 the iPodTouch. The School purchased basic models of
the devices (16 Gb iPhone 3GS and 32Gb iPodTouch) with upgrades and variation costs the responsibility of the
individual participant. The devices were purchased from operational and School resource funds and provided to
staff members, effectively on loan, for the duration of the project and beyond.

Individual and small group set-up of devices was also organised by the voice communications section within
the University information technology section, to ensure that each device was optimised to operate within the
University exchange system, and to ensure that each participant was able to access relevant mail, internet and
calendar functions. A professional development plan will be implemented for all participants that will include
regular action learning workshops and support sessions within the School, University-based PD workshops and
seminars, information packs and web-based resources such as a project wiki.

An initial orientation session was conducted as part of a two day planning retreat for all staff, where the
possibilities and affordances of the devices were explored. A presentation was given entitled *A day in the life of
an iPhone* (Figure 4) where a range of programs and tools—both native applications and purchased “apps”—
were explored in the context of typical daily activities.
Each participant is now at the point that he or she is ready to participate in the program. The emphasis on the professional learning will extend beyond learning the functions and applications of the devices to include discussions and workshops on pedagogical affordances and research capabilities. In preparing for the implementation, the planning group felt it important to have a critical mass of participants for this purpose. It was anticipated that the collective group would provide for sharing of ideas and co-construction of knowledge. Murcia and McKenzie (2008) found this to be the case in supporting teachers to effectively use interactive whiteboard technology in a school setting. They recommend that ‘a collaborative approach has to be developed and supported throughout the learning process. Time must be set aside for collegial collaboration, brainstorming and developing skills with the technology. Colleagues or others who act as critical friends also provide a context for sharing dilemmas, valuing learning and celebrating progress’ (p. 10).

Issues and problems related to the program

In addition to the practical issues that needed to be addressed such as payment and plan considerations, and purchasing of a considerable number of devices at the same time, other more philosophical and ethical issues become apparent. Issues of concern emerged that were not immediately related to implementation but instead relate to the fact that the technology is a device with the potential to blur the boundaries between personal and professional lives. As Cooper (1998) has claimed ‘Every new technology creates hidden effects in its environment, rearranging the social order it penetrates’ (p.71).

It was felt by some potential participants in the project that issues of privacy were a deep concern. Some indicated that they did not want to feel that they must monitor or limit their personal calls because the phone would not be their own personal property. Further, some were hesitant to be involved because of the potential of the communications plan to record and monitor personal usage.

Perhaps a more fundamental issue that is of concern across the higher education sector in general relates to the lack of a clear distinction between professional and personal time. The concern is that a tool to ostensibly enhance personal productivity, communication and connectivity in managing an individual’s professional life becomes a permanent presence during nonworking times. The ability to conveniently check one’s email in the otherwise wasted minutes of a traffic jam becomes a feeling of pressure to ensure emails are answered almost immediately no matter where one is. This is an issue of significance for the project, and checks and balances need to be put in place to ensure that there is no expectation that commitment to the project implies additional work hours, or 24/7 availability for professional purposes.

Research and development

The research and development focus of the program will run from 2009 to the end of 2011. The major development initiative will be University-wide and will involve possible initiatives such as a presence in iTunesU (the University equivalent of iTunes) and an application for the iPhone/iPodTouch to interface with the University website and functions, as well as additional custom built applications to meet particular teaching and research aims. Individual or group research projects will be conducted to research the pedagogical uses of the
devices. A mentored research program will be introduced to the participants in the project. Using an action-learning approach, participants can plan and conduct an innovation and/or research program in their undergraduate and graduate classes using the device. For example, research project might include:

- Action learning research on the use of (students’) mobile phones for data gathering in a class project
- Reflection on changes to pedagogy prompted by the use of a mobile device for recording anecdotal records
- Collection of stories (historical or cultural) using mobile phone videos or audio recordings for assembly on a project website
- Examination of the student voice: the impact of the mobile phone on students’ perceptions on learning and technology use.

Researching the implications of educational apps is another potential area of interest, and as noted by Schuler (2009), important for developers and educators alike.

In addition to individual unit/course research projects, the planning team will research the effectiveness and affordances of a whole-of-school approach to professional development through innovative technology adoption. Questions that are of interest as a result of planning and implementation to date include: What differences are there, if any, between the experiences in the project of early adopters and more reluctant or delayed adopters? What are the beliefs and attitudes of members of the School of Education who opted not to be involved, and their reasons? What processes and procedures optimise the whole-of-school approach to professional learning and a change of culture in relation to technological innovation? The investigation of such issues will further advance understanding of mobile learning and the professional learning strategies necessary to support it.

Conclusion

This paper has described the planning and implementation stages of a bold initiative to up-skill a whole university department in technological literacy using a common device. The introduction of the iPhone and iPodTouch to a School of Education is a catalyst for change that will help to ‘rearrange the social order’ in both the teaching and research of the School using recent powerful technologies. Importantly this quest for understanding is occurring within an educational community with common values and a shared vision for pedagogical excellence.

References


