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New Technologies, New Pedagogies: Using Scenarios for Staff Development with Mobile Technologies

Geraldine E. Lefoe
University of Wollongong, glefoe@uow.edu.au

I. Olney
University of Wollongong, iano@uow.edu.au

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Abstract

This paper explores the staff development process to engage academics in a Faculty of Education to explore new pedagogies required to incorporate the use of mobile learning technologies in teaching and learning activities with their students. Many staff acknowledged the benefits of active learning to meet the needs of millennial learners. This project sought to address ways to incorporate the everyday technologies these learners are using within the assessment process. The staff development process addressed the need for staff to own and use mobile technology in their professional and personal contexts in order to think differently about engaging their students in pedagogically sound ways. We explore the steps taken in this action learning process as staff members became familiar with smartphones and ipods and examine the development of the perspectives of the academics involved of the affordances these technologies could offer to improve and support student learning. The use of scenarios as part of an action learning process assisted academics to think more broadly about how the devices could support student learning.

Keywords

Mobile learning, faculty development, action learning, pedagogy

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New technologies, new pedagogies:
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Dr Geraldine Lefoe
CEDIR
University of Wollongong
glefoe@uow.edu.au

Dr Ian Olney
Faculty of Education
University of Wollongong
iolney@uow.edu.au

ABSTRACT

This paper explores the staff development process to engage academics in a Faculty of Education to explore new pedagogies required to incorporate the use of mobile learning technologies in teaching and learning activities with their students. Many staff acknowledged the benefits of active learning to meet the needs of millennial learners. This project sought to address ways to incorporate the everyday technologies these learners are using within the assessment process. The staff development process addressed the need for staff to own and use mobile technology in their professional and personal contexts in order to think differently about engaging their students in pedagogically sound ways. We explore the steps taken in this action learning process as staff members became familiar with smartphones and ipods and examine the development of the perspectives of the academics involved of the affordances these technologies could offer to improve and support student learning. The use of scenarios as part of an action learning process assisted academics to think more broadly about how the devices could support student learning.

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INTRODUCTION

As mobile and ubiquitous (anytime, anywhere) computing technologies become an extension of the hands of the millenium generation, how can we use the affordances of such technologies to support learning in the higher education sector? There is much discussion in the literature of the changing needs of next generation students and the challenges faculty face in meeting these needs (Dede, 2005; Moore, Moore, & Fowler, 2005). This paper seeks to explore academic development practice to facilitate the development of innovative pedagogies for teaching in a Faculty of Education that incorporate the use of such technologies in assessment tasks. The purpose is to engage future educators in using the technologies that provide opportunities for them to consider pedagogically sound practices to engage their prospective students (Moore, Moore, & Fowler, 2005). Kukulska-Hulme (2005), in a JISC funded project to map the landscape of mobile technology, warns of the importance for lecturers to become 'device-aware' if they are to use such technologies effectively in their teaching. Whilst acknowledging a wide range of factors will influence institutional policy in the area of mobile technologies, two of the strategies they recommend include:

- "Recognition that mobile and mobile devices are 'personal' and encourage 'ownership' amongst lecturers – easy access to a range of mobile devices will develop familiarity, expertise and confidence.
- Sustained, timely and accessible staff development that addresses lecturers' pedagogic and technical worries; mixing 'just-in-case' with 'just-in-time'." (Kukulska-Hulme, Evans, & Traxler, 2005, p. 8)

Whilst there is a distinct body of research in the field in the area of mobile technologies and devices available and successful pilot studies using these technologies, of significant importance to this research is the need to implement supportive academic development programs that acknowledge the challenges faced by academics. It is not sufficient to support the technology aspects of the use of new devices, we must also consider the impact on the academics involved, especially in considering " the achievement of learning goals and maintain[ing] fidelity with existing beliefs about teaching and learning as [staff] come to terms with an emergent digital pedagogy." (Lloyd & Irvine, 2005, p. 378).

The paper will describe the background to the project and provide an overview of the relevant literature and the methodology used. It will then provide an overview of the staff development program and discuss the use of scenarios to expand on perceptions of the affordances of the technology and possible implementations within assessment tasks for students.

Background

Mobile learning is defined by various researchers with a focus on the novelty and development of handheld technologies, such as mobile phones, and wireless technologies, such as laptops, allowing easy access to resources. However, Syvänen et al. (2004) warn of the difficulties faced by people "when [they] tend to access information sources and learning objects

via different devices from different locations, there are many usability, compatibility and accessibility related questions still open that hinder mobility and mobile learning" (p. 1). Whilst the focus for the most part in research was on the mobility of the technology, in recent years the focus has moved from this interpretation to recognize it is the mobility of the learner and the learning that is important (Sharples, 2006). O'Malley et al. (2003) have defined mobile learning as taking place when the learner is not at a fixed, predetermined location or when the learner 'takes advantage of the learning opportunities offered by mobile technologies' (p. 6). This shift in focus from the device to the learner being mobile is also noted by Seppälä and Alamäki (2003) in their explanation of mobile learning as an extreme form of flexible learning where the "mobile environment integrates studies that take place on campus, at home or outside universities facilities into one shared, flexible leaning environment" (p.330).

With the explosion of mobile devices in recent years an evaluation by Goh & Kinshuk (2006) conclude that mobile learning can significantly compliment e-learning by creating an additional channel of access for mobile users with mobile devices such as hand phone, PDAs and pocket PCs.

Kynaslahti (2002) makes an effort to identify the elements that need to be considered as impacting on this mobility as:

- convenience

- expediency

- immediacy

We have considered these efforts to define and categorize these new environments and for the purpose of this paper, we define mobile learning or m-learning as:

Personal access to mobile technologies providing learners with opportunities to be flexible in the way in they collect, store and share information to support their learning.

This paper describes the staff development phase of a larger project originally investigating the potential of three mobile devices, personal digital assistants (PDAs), mobile phones and digital audio players but changed to two devices because of the convergence of technologies which meant only two devices were required, a smartphone and digital audio/video player.

The larger project uses a design based approach to:

1. "Investigate the potential uses or 'affordances' of mobile devices.

2. Engage teachers from a Faculty of Education using an action learning professional development framework to explore and invent pedagogies appropriate to the use of a mobile device in completing a complex task within an authentic learning environment.

3. Implement and evaluate the use of mobile technologies and authentic tasks in learning activities over a period of 3-5 weeks in a range of different subject areas.

4. Describe, categorise and disseminate resultant pedagogies and professional development activities through a dedicated website and a published handbook.

5. Implement the professional development activities for m-learning across other contexts, and disseminate in web-based template form to other universities across Australia and overseas."
   (http://edserver2.uow.edu.au/~janh/mlearning/Home.html).

The focus of this paper is on the professional development aspect of the larger project, which will support the participants to identify learning activities to support their students' learning using mobile devices.

Methodology

An action learning framework for staff development has been used to provide opportunities to explore and develop new pedagogies to use mobile devices in the different subject areas in an appropriate way. This approach allows the concerns and needs of individuals to be met through inquiry learning rather than a fully pre-planned scope and sequence of activities and is appropriate for professional learning needs in this context (Revans, 1982; Zuber-Skerritt, 1993).

Data was collected during the workshop program through addressing two questions:

1. How do you think these devices could support learning activities in your subjects?

2. How have the workshop activities extended your understanding of the affordances of mobile learning technologies?

Reflections were recorded during meeting sessions and feedback was sought through anonymous evaluations. The cycle of plan, act, observe, reflect was used to continuously review the process of staff development (Zuber-Skerritt, 1993).

Participants

The twelve participants in the staff development process included a range of teacher educators from a Faculty of Education in a regional university. They are lecturers in a range of disciplines within this area including mathematics, science, physical and health education, curriculum, visual arts, educational psychology, literacy, early childhood and educational technology. They bring to the project a diverse and solid understanding of pedagogy with a varied

understanding of how new technologies can impact on the learning of their students. Some participants were experienced users of a variety of technologies with a student centred learning focus (for example, Herrington, Oliver and Reeves, 2002; Kerven et al. 2006; Reid et al., 2006). Their enthusiasm and commitment to the project and willingness to change and adapt their understandings to improve student outcomes through the development of new pedagogies is a key driver for this project.

Technology

Selecting mobile technologies for this project was difficult considering the rapid changes in this area and limits imposed by the budget. The initial proposal included three separate devices: a mobile phone; an MP3 player and a personal digital assistant (PDA) but after initial investigations into a range of devices the distinct nature of each became blurred. Issues such as connectivity (bluetooth and/or wireless), computer platform, ease of use, standard features and price were all considered. The final choice was made to provide the best combination therefore reduced to an mp3 player - a 30 GB video iPod, with Extreme Micromemo voice recorder attachment, and a smartphone – the Palm Treo 680, allowing the combination of phone, voice recording and playback, calendar, camera and video recording. Additional covers were purchased for each device to offer protection and to allow for everyday usage situations.

Action learning program

In a recent report on teacher learning with digital technologies the authors point out that there is an assumption that teachers **will** learn with digital technologies but there is little research on **how** they will learn (Fisher, Higgins, & Loveless, 2006). Our staff development program aimed to address this gap through a range of formal and informal activities (Hoban, 2004; Hoban & Herrington, 2005). Lecturers were encouraged to consider the use of the mobile devices as cognitive tools to support learning within an authentic learning environment and this process was modelled within the workshop program (Herrington & Herrington, 2006). By modelling these practices with the digital devices we aimed to support this development.

 Most importantly each of the lecturers was provided with one each of the devices to make their own. They were encouraged to insert their personal phone sim card so they could become familiar with the devices in their everyday work. Some were hesitant to do this at first and carried both personal phones and the smartphone with them for the first few weeks. Whilst informal staff development occurred through their own support of each other and the discoveries and sharing involved in their everyday tasks, the action learning meetings were designed to facilitate regular collaboration, reflection and sharing of experiences. Over the university semester a series of meetings were conducted on campus in a non-specialised teaching space. This open classroom allowed for formal presentations by the staff developers and also an area for collaborative tasks between the attendees. Each meeting followed a semi formal structure with flexibility to provide staff considerable opportunity for group discussion and individual problem solving. Initially the meetings focussed on learning to use the technology including: unpacking and preparing the devices for use; initial exploration and sharing discoveries; connection of devices to desktop computers; short introductions and practical tasks using device key features; take home tasks to further explore or extend and understand operational procedures. "At elbow' support was provided as required by the technical staff and 'corridor' meetings also provided day to day support for solving immediate problems with the technology.

Whilst the initial meeting involved familiarisation with the technologies, the following meetings each focussed on opportunities for extending understanding of the affordances of the technologies. Participants indicated a number of challenges they faced with using the devices themselves including:

- Fear of damaging or losing the equipment: "I'm braver now and taking it out when I leave home"

- Concerns about how quickly the battery went flat

- Difficulties with understanding the multi functions of the device

- Loss or duplication of contact files when transferring from personal phone

- Challenges with the use of iTunes (software for managing audio and video files)

- Managing two phones where the participant had decided to keep their personal phone personal

The successes they identified at this early stage were limited:
- Use of ipod as a portable hard drive for one staff member who was moving computers

- Ease of text messaging with the smartphone

- Engaging their own children in support for the devices

In the second meeting, following discussion of the participants experiences with their devices, small groups discussed four researcher developed scenarios (see Table 1 and Table 2) and identified how the devices could support the activities of staff and students. The use of scenarios is commonplace in business and information systems design for the development of insights and understandings and to support the development of a shared vision (Romeo, 2006; Carroll, 2000). The scenarios in this activity were short ones to be used within activities and were designed to assist participants

to develop a vision of other uses of the devices. A summary of responses by participants are included following each scenario.

Scenario one: Student on campus

Xin Ro is enrolled in the first year of the primary program. She is involved in a collaborative assessment task about global warming. The team gathers at their first meeting and share the initial resources they have collected. They discuss and draft a plan for their project and identify their roles and responsibilities. They have recorded the discussion to make it easier to write the notes later and use this to draft individual action plans. Clearly the PDAs will be useful for administration tasks for their project, but how can their learning be supported? What kinds of learning activities are likely to be on their project plan? How can mobile devices support these kinds of activities?

- Collect data from around the world by connecting with others to graph trends and note changes.
- Recording voiceovers of extreme weather events
- Giving personal perspectives and understandings about the causes and solutions to the problem
- Interview a range of ages for a range of perspectives

Scenario two: Student off campus

Kenny Cope is a third year student about to go on a practice teaching session. He's prepared five weeks of lesson plans for his Year 4 class after much discussion with the class teacher. He needs to reflect on his teaching and evaluate his lessons. He wants to collect evidence of his work and the work of the students to annotate for his teaching portfolio. What kinds of activities is he likely to engage in during practice teaching? How can the mobile devices support his learning in this context?

- Record Kenny teaching on video and analyse his teaching – wait time, questioning techniques, classroom management, small group strategies
- Use of anecdotal records
- Voice memos to reflect and make changes to his practice
- Collecting work samples using photo, video etc and voice over kids and Kenny's comments as evidence of children learning then informing future teaching
- saving documents as pdf then uploading as needed
- Kenny could text his supervising teacher to organise practical aspects of teaching
- Memos for learning journal
- Audiovisual tool creating a product that shows his school from his perspective

Table 1. Scenarios of student activity and summary of participants' responses

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Scenario three: New academic

Dr Way T. Longtime is a new academic in her second year at the university. She must prepare a new first year subject focussed on indigenous education for the next semester. She wants to create an engaging subject that incorporates modelling a variety of teaching strategies. She would like to invite a range of guest speakers from schools and the local communities on various issues but with only a couple of weeks to go she realises this could be difficult. What strategies could she use to add perspectives from the local schools and community to her subject? How could mobile technologies support her or her students to do this?

- Interview the visiting speaker and send it back to the speaker for editing
- Phone calls to key people and recording for podcasting for student access and discussion
- Audio comments
- Set up ipod as database for others to draw on
- Recording interviews for review of issues
- Collecting reflective evidence of her own teaching to plan for future teaching

Scenario four: Experienced academic

Prof Noi Tall is an extremely popular academic and has been on campus for about 10 years. He has been extremely successful with 15 ARC grants and a publication record to die for. This semester is looking grim though. He loves teaching and has three classes this semester, including coordinating a new first year subject with about 100 students. He still has three ARCS to complete this year, a book draft to have ready half way though semester, and is guest editor for a very prestigious journal. Managing his time has always

been one of his strengths but he realises that this semester it will be imperative to find some better ways to do this. What kind of activities is he likely to engage in for the new first year class? How can the mobile devices support him to do his job better, both in administration and teaching?

- preparing and carrying the items needed
- retrieving info is easy as you have it there at the time/from last year
- tutorial roles
- easier distribution of info to students

Table 2. Scenarios of teacher activity and summary of participants' responses

Feedback from the participants through evaluation and reflection indicated that the scenarios were a positive experience and that having a point of focus for their discussions was an important component of identifying possible uses in student learning.

The focus of our discussion for this paper is on this particular activity but it is worthwhile noting how the program built on this activity at the next meeting. It created a further challenge by again introducing new aspects of using the devices, in this case using the camera and video tool on the smartphone, and voice recording using the ipod. The participants developed a digital narrative through a storyboard activity and then recorded the elements to publish in a movie using a desktop computer. They completed this task within a one hour timeframe and then presented their movie to the group. This provided an excellent example of how the devices could be used within a learning context in the classroom as the participants quickly became familiar with the combination of movie, photo and sound recording. The next activity used the ipods for interviewing people about their place of work and the resultant recordings were then transferred to the computer and published as podcasts to share with the other participants.

Throughout the meetings the devices were used to support the learning and reflective aspects of the activities. For example, photos were taken during the meetings by all participants engaging in various activities and frequently shared with each other and on the project website. During the reflective stage of each meeting the ipods were used to record the reflections for later analysis by the researchers. The action learning meetings are ongoing throughout the project.

DISCUSSION

The action learning meetings served as a time for team building, for collaboration, for reflection and for sharing ideas. As noted by Collis and Moonen (2002): 'An individual's likelihood of voluntarily making use of a particular type of technology for a learning-related purpose is a function of four 'E's: the environmental context, the individual's perception of educational effectiveness and of ease of use, and the individual's sense of personal engagement with the technology' (p. 219). The meetings enabled and facilitated all of these factors.

The opportunity to discuss challenges and successes at the start of each meeting provided opportunity to address the immediate needs of the participants and to support the development of skills and knowledge of the technology. The collaborative effort involved meant that those who were new to using the technology felt well supported and could turn to each other and to the support staff whenever the need arose. By creating a strong team and acknowledging the strengths of different members the group were able to discuss their challenges in a supportive environment.

Whilst the academics had engaged in discussion about possible uses in the earlier meetings, the scenarios provided the opportunity for in depth discussion in small groups and sharing across the team. The outcomes of the discussions were interesting by virtue of the fact that the participants identified a significant range of activities to engage their students in learning which moved beyond their earlier perceptions of how they the devices could be used in pedagogically sound ways (See Table 1). In particular the scenario about practice teaching addressed a need that many had identified previously but had not found acceptable ways of addressing. Students involved in practice teaching received feedback from the supervising teacher but the academic staff and the other students were not able to observe their teaching practice in meaningful ways to provide discussion and feedback. Students also felt isolated in the classroom situation and the participants felt the opportunity to use the devices to improve this learning experience for the students would be particularly useful, both for communicating with other students and for communicating with the lecturers.

Scenarios 3 and 4 painted a slightly different picture. Whilst similar activities to Scenario 1 and 2 were identified for the relatively new academic, the uses for the experienced academic were limited to very traditional uses of moving files around and sharing information with students. Both activities related to traditional pedagogies involving delivery of information. This may indicate that there was still a lack of familiarity with the devices and recognition of its ability to support academics in such areas as time management, communication and productivity. It was also an indication of lack of ownership of the devices at this early stage. Much of the literature points to the importance of student's gaining 'ownership' of the technology if they are to use them successfully (Corlett, Sharples, Bull, & Chan, 2005; Sharples, 2006). The team felt this was just as important for the academic staff. We wanted them to go beyond being familiar by encouraging them to make them their own. Possibilities included using the planner facility for their diary, taking meeting notes using the hand recognition software or the keyboard; recording research interviews with their ipods, recording activities with the phone camera and the video. This led to planning for the next meeting to include more active

involvement in using the devices in practical situations. The storyboarding and creation of the movie and recording of interviews and their conversion to podcasts created a great deal of excitement within the group and extended the possibilities for their use both within and beyond the classroom. Following this experiences involving the productivity tools and managing the related software may further enhance these understandings of the affordances of the devices.

CONCLUSIONS

This paper has provided an overview of an action learning approach to staff development for using mobile devices, including a smartphone and an MP3 player with video capabilities. It is part of a larger project which investigates the use of mobile technologies in higher education to identify innovative pedagogies for teaching and learning. The paper focussed on one aspect of the use of four scenarios in small groups to examine perceptions of affordances of the devices both by students and academic staff. Whilst participants could clearly see the potential for new uses within student learning activities they did not demonstrate an understanding of significant changes to the practices of academics. We concluded that making the devices their own is an important facet of staff development for using mobile technologies, a concept supported in the literature (Kukulska-Hulme, Evans, & Traxler, 2005). This preliminary research provides insight into one aspect of staff development with mobile technologies and indicates that there is significant opportunity for further research into the staff development aspects of using such technologies if academics are to meet the needs of future students in the higher education sector.

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