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How should the higher education workforce adapt to advancements in technology for teaching and learning?

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How should the higher education workforce adapt to advancements in technology for teaching and learning?

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Abstract

In a time of change, higher education is in the position of having to adapt to external conditions created by widespread adoption of popular technologies such as social media, online social networking and mobile devices. Faculty members need opportunities for concrete experiences capable of generating a personal conviction that a given technology is worth using and an understanding of the contexts in which it is best applied. The paper examines approaches to educational professional development at The Open University and elsewhere, including recent initiatives related to faculty development in relation to mobile learning. It sets out what can be learnt from these experiences and proposes a plan for co-development of faculty and students in a lifelong learning perspective. Given that 'professional role model' to students is one of the main roles of the teacher, the author argues that faculty engagement should go beyond technology adoption in their teaching to adoption in research and lifelong professional learning.

1. Introduction

"A time of change" has become a familiar refrain in discourse concerning higher education. In April 2009 the Association of American Colleges and Universities asked participants in its conference to consider what is at stake in a time of "increased splintering of roles, contingency of status, and workload demand, and what faculty and institutions are doing to creatively and thoughtfully respond in the face of change and conflict" (AACU, 2009). A February 2010 report on the higher education workforce by the Higher Education Funding Council for England poses the question: "How can the sector become more flexible at a time of change while maximising the talent and commitment of its people?" (HEFCE, 2010). The report identifies technology advances as a major aspect of the context in which the sector operates; it is argued that advancing technologies and technology-based services will change public experiences and expectations when it comes to accessing and sharing knowledge. Higher education institutions will need to respond by providing more online learning, online content and more effective tools to find and use this content. The report also recognizes the continuing need for updated skills and ICT capacity. Institutions are bound to be considering how they can respond to these challenges. Conole (2010) draws attention to further emergent themes such as user generation of content and new practices of social viewing and content sharing.

This paper will consider how universities should adapt to the new external conditions which have an impact on teaching and other activity within the academy, and in particular, advancements in technology such as social media, online social networking and mobile technologies. These are popular everyday tools and services that are also potential or *de facto* resources for education. They enable not only online learning but also offline – through digital resources such as e-books downloaded to mobile devices and accessed at the learner's convenience. Their widespread adoption means that mobile devices, and the social networks and resources they give access to, are a significant part of the grain of daily life (Pettit & Kukulska-Hulme, 2007). The findings of a survey of US college students, faculty

and IT staff (CDW-G, May 2010) highlight that the technologies students use in their personal lives, such as mobile devices, blogs and podcasts, are largely absent from the classroom. Indeed, those involved in teaching have long argued that a new generation of technology-savvy students is entering higher education, bringing with it the need for a different approach to the use of digital tools (e.g. Prensky, 2001; 2010). Research by Jones *et al.* (2010) and others demonstrates that students in advanced industrial countries are far from homogenous in their response to the new technologies; nonetheless it is clear that personal technologies are part of their social and learning landscape. Furthermore, we can expect that mature learners will keep returning to study to update their skills, for career advancement, or to learn for interest and enjoyment, bringing with them different sets of experiences and expectations with regard to the use of social and mobile technologies that they may have encountered as educational tools in the workplace.

Increasingly, changes we notice in the use of technology in daily life may also be observed at work within the walls of the academy – physical walls or virtual. They are breaking down traditional barriers separating academic research from teaching, work-based learning and informal learning. Academic research requires keeping up with technological advancements and social media dissemination channels, even if technology is not the research focus. However in this paper, we are particularly concerned with those who are responsible for curriculum design and teaching delivery. The paper outlines a particular position with regard to faculty development, arguing that faculty engagement should go beyond technology adoption in their teaching to adoption in their own professional learning. Against the background of multiple opportunities for educational and professional development at The Open University, three specific initiatives relating to mobile learning are discussed: a Mobile Learning Guide, a set of active case studies in the form of 'Mobile Experiences', and a Mobile Learning Festival. Finally, a proposal is made regarding how the higher education workforce needs to adapt to the conditions created by a world which is fast becoming saturated with personal and social technologies capable of supporting teaching and learning.

2. Position Statement

Higher education institutions are currently challenged to look for innovative ways to develop their faculty, particularly in light of new economic realities that put pressure on resources (Cariaga-Lo et al., 2010, p.19). The challenge is to find cost-effective yet engaging solutions to the intractable problem of getting faculty to take seriously their own professional development with regard to new technologies for teaching and learning. Mclean, Cilliers & Van Wyk (2008) express a typical perspective on this issue: "If senior faculty administrators pay only lip service to faculty development, academic staff will perceive little need to participate and will spend their time where they derive most personal benefit" (p. 563). This perspective reflects the widespread view that fundamentally, academic staff do not wish to participate in professional development, as they do not associate it with sufficient personal benefit. They will only engage if compelled to do so. This is congruent with the experience of many departments tasked with professional development of academic staff, even if many such units have found creative ways of tackling this problem through formation and animation of professional learning communities on campus or in virtual space.

The key issue to highlight here is that of focus. While it is reasonable to claim that a major function of faculty development should be about "making teachers aware of aligning their teaching practice with the needs of students" (Mclean, Cilliers & Van Wyk, 2008, p.565), in higher education the needs of students may be perceived as relatively remote from the needs of faculty. To break this stalemate, to overcome this attitudinal barrier, a focus on personal, social and work-related use of personal technologies by academic staff offers an attractive alternative as a starting point. In her efforts to engage faculty in the adoption of distance learning, Powell (2010) uses the tactic of putting each faculty member in the position of online student, by running online workshops that give them some direct experience of online learning. A similar approach can be developed with regard to mobile learning. Fisher, Higgins, & Loveless (2006) found that little research had focused on how teachers learn *with* digital technologies, but rather there was research on how they learn *about* technologies, or how they use them to teach. Interest should now therefore be directed towards the possibility of higher education faculty learning *with* personal and social digital technologies. Furthermore, it is argued in this paper that learning *with* mobile technologies should go beyond hands-on experience, to the appropriation of the technologies for longer-term personal and professional development. In the process of learning *with* these technologies, attention might also be directed towards learning *about* the technologies, and reflection on their use for teaching and learning.

3. Faculty Development Evolution

Traditional and more innovative ways of providing faculty "training" in technology were discussed a decade ago by Backer (2001), who even then remarked that for a public institution with limited funds, providing training is a difficult undertaking. During the past decade, the idea of training has morphed into 'development', which can be understood as an ongoing process concerned with changing attitudes and behaviours and preparing for the future. Development makes better use of the institution's human potential and places more personal responsibility in the hands of the workforce. Yet the responsibility still has to be shared, as faculty cannot do without some form of formal or informal support, and that may include "training".

Burnett & Meadmore (2002) argued in favour of localized professional development, provided by colleagues with whom rapport has been established, since this offers a more sustainable form of support than centrally organized seminars and workshops. A localized approach makes connections with the pedagogical and disciplinary context in which teaching and learning takes place. In a similar vein, Friel *et al*. (2009) give evidence for the effectiveness of a "collaborative training team" approach whereby technology training is placed into a pedagogical context by means of pedagogical dialogue to complement technology skill attainment; their approach also involved IT representatives providing one-on-one faculty support between training sessions to allow for development of personal technology skills among faculty, and a hotline for immediate problem solving. Formal development and training may be supplemented or at times replaced by opportunities that are more informal. For example Anderson (2002) recounts the positive experiences of a group of staff in tertiary education who participated in informal professional practice groups in order to foster their professional learning and reduce isolation; groups comprising both academic and allied staff met in an informal setting, with the aim of learning by sharing ideas and experience. This type of work-based learning has previously been advocated by Mumford (1996) in the form of action learning sets which encourage an informal yet structured approach to learning from experience. The group approach can be taken to another level by developing a model of a faculty professional learning community or FLC (Cox & Richlin, 2004); such communities are largely informal, and they typically include more emphasis on the social and enjoyment aspects of learning.

All the above approaches embrace peer learning from experience: collectively reflecting on a work-related (teaching or learning) experience, or going through experiential learning together in a community or group. Considering faculty development for the future, Brooks (2010) observes that as technological advancements rapidly evolve, and as expectations to use technologies increase, faculty members need timely assistance when faced with technology-related problems. Short-term problem-solving is needed as well as support in long-term development. The sections which follow offer a review and reflection on opportunities for educational and professional development around mobile technologies in various institutions of higher education, including The Open University, UK.

4. Faculty Development for Advancements in Mobile Technology

Strategies for engaging faculty to consider how they might use mobile technologies to rethink their teaching range from those that take a whole institution or community approach to those that are concerned with transforming particular teaching programmes or how individual faculty can change their practices. An institution's primary mode of operation (for example whether it delivers conventional or distance education), its funding model (public or private), as well as its physical configuration (single campus, distributed facilities, mobile workforce), may also be factors in preferred styles of engagement.

Institutional strategies include evaluating how faculty respond to the impact of mobile devices being distributed to large cohorts of students. Such is the case of Abilene Christian University where in 2008 all new students received an iPhone or iPod Touch and two generations of internal Mobile Learning Fellow projects have been established to study aspects of the experience. The claimed outcome is a transformation of faculty into "teaching-experimenters" and the development of a culture of innovation in the institution (Perkins & Saltsman, 2010).

A community focused approach is exemplified by Wright State University (Stover, 2007) which established a learning community to help faculty implement mobile learning strategies in their learning environments during the course of a university-wide mobile learning initiative, concentrating on podcasting and digital storytelling. The goal was to enable faculty to gain proficiency in the use of technology for teaching and learning by utilizing a range of new tools to create learning resources as

well as discovering existing ones. Seo *et al*. (2010) confirm that podcasting as a content delivery strategy has been instrumental in shaping new mobile learning communities in both traditional classrooms and in distance education. Their survey of a sample of US universities reveals that about a third have formal podcasting initiatives or training programs in place, and that these are more likely to be provided by larger, public universities rather than smaller, private ones. The authors argue that continuous administrative support and research efforts are needed in fostering podcast communities in higher education.

As emerging educational technologies stimulate the formation of new communities, they are also increasingly shaping learning and development experiences that are more individualized. Mobile learning epitomizes this tension or challenge: mobile devices are uniquely personal tools as well as having notable capability to support intense and ubiquitous cooperative learning, social interaction and sharing. Their personal nature means that for example they are well suited to play the role of a personal 'mentor', assisting with meta-learning, such as ways of studying and remembering ideas, or providing long-term guidance on developing skills (Sharples, 2000). The mobile device therefore acts like an experienced mentor, but it is perceived as a novel tool. An interesting analogy can be made with the idea of "reverse mentoring" put forward by Diaz et al. (2009), whereby newer, "more technologically savvy" faculty members can assist senior faculty with new pedagogical approaches and delivery models, emerging technologies and tools. Combining personal technology use with a community dimension is another model (Kukulska-Hulme & Pettit, 2008). For example, Lefoe *et al*.'s (2009) project aimed to engage faculty, who were teacher educators, with personal use of mobile technology for six months prior to implementation in their teaching. This was done through an action learning approach that included learning activities addressing theoretical underpinnings and technology skills as well as opportunities for reflection, in a community of practice setting.

For institutions offering mainly distance education, there is a primary focus on learner experience and it is considered important to ensure that students benefit from mobile delivery and interaction without relying on the informal peer and instructor support that is available in a campus setting. For instance in the Canadian context, Athabasca University has made great efforts to ensure content optimization for mobile delivery, including specific resources to create a mobile library. The university has also established mobile provision for particular target groups such as students requiring practice in English or French as a Second Language, and Workplace English (Elliott, 2011). In these types of institution, and in other universities offering some distance learning provision, faculty development must focus on the implications of mobile learning for the design of distance teaching materials and student support, as well as consideration of research findings from studies of evolving learner practices with mobile technologies (Kukulska-Hulme & Pettit, 2009). The next section presents faculty development at The Open University, UK, with particular reference to mobile learning.

5. Educational and Professional Development at The Open University

The Open University has a firm commitment to offering both problem-solving and ongoing educational professional development opportunities to its large number of academic and academic-related staff, including development related to the use of new technologies for distance education. Table 1 exemplifies the offerings that have been developed in recent years. This represents a considerable array of opportunities to learn about, and to obtain support in relation to, new technologies, with many of the study materials, resources and events relating specifically to personal and social technologies and services. Some would argue that those who participate in these events and make use of the materials and resources might then need to work hard to integrate the knowledge gleaned from such an extensive "buffet" of diverse offerings (see Zuiker & Ang, 2011). The diversity is partly a reflection of the fast pace of innovation in the university, resulting in online offerings that are also novel ways of experiencing educational and professional development. Integration can be achieved through personal development plans and an IT User reference framework which specifies a range of areas of competence for individuals using ICT in their role. An IT Helpdesk for any immediate problems with technology is also accessible by phone, SMS from a web page, and by email.

Events	Exploratory spaces
- an annual conference with a strong focus on teaching and learning with new technologies - an annual 'Learn About' fair, for exhibits and informal networking to learn about different technologies - regular Technology Coffee Mornings for discussions of work-in-progress, e.g. new formats for content delivery - technology-oriented development events for the university's Associate Lecturers who are directly involved with teaching and supporting students - ad-hoc seminars and workshops, some presented by visiting academics	- a creative space in the Library to inspire and support innovation in the development of new learning materials, including for mobile devices (Digilab, http://digilab.open.ac.uk/) - a lab space run by the Institute of Educational Technology to support usability, accessibility and developmental testing for module teams around the University working with course materials, the Virtual Learning Environment and the University's online presence (Jennie Lee Research Laboratory, http://jennielee.open.ac.uk/labs/about.cfm)
Communities	**Resources**
- a thriving eLearning Community on campus, which holds frequent events and discussions - a Mobile Technologies special interest group, meeting quarterly - a support centre for open resources in education, providing networking and advice on how to create, publish, re-mix, re-use and redistribute Open Educational Resources (SCORE, http://www8.open.ac.uk/score/) - an open social networking online environment for information sharing (Cloudworks, http://cloudworks.ac.uk/) - an emerging platform for social learning, with some defined learning paths (SocialLearn, http://www.open.ac.uk/blogs/sociallearn/about/) - discipline-based Learning Technology groups	- online guides, resources and activities provided by various departments and units, accessible via a searchable online catalogue - a web space linking together all mobile learning related activity across the university (Mobile Connections, http://www8.open.ac.uk/about/teaching-and-learning/mobile/) - courses and self-paced online tutorials on technical subjects including use of office, management, project and presentation tools - access to Computing, Technology and ICT study materials that are derived from Open University courses (OpenLearn, http://openlearn.open.ac.uk/) - podcasts and interactive e-books (The Open University on iTunesU, http://open.edu/itunes/)

Table 1. Examples of educational professional development opportunities at The Open University

In 2008 the university began working more intensively on a mobile learning strategy (Thomas, 2010) with a number of accompanying actions including the development of mobile access to the Virtual Learning Environment and surveys of students who were accessing the university's study resources via their mobile devices, to ask their opinions and ascertain their needs. A Mobile Learning Guide was also authored in 2009 by the university's Institute of Educational Technology, intended primarily for academic staff and module teams, to provide an introduction to mobile learning with some advice on implementation. The Guide was distributed widely in the university and an evaluation was undertaken to find out how the Guide had been received as well as faculty views on mobile learning and their own development in relation to it. The findings would guide future faculty development in this area.

5.1 Seeking new directions: evaluation of the Mobile Learning Guide

The Mobile Learning Guide is an attractively presented, A4 size, 20-page printed booklet explaining mobile learning, why it is important, what it is good for, how to design for mobile learning and how to evaluate it. The booklet also includes several brief case studies of early mobile learning implementations in various parts of the university, and gives contacts and some resources. The Guide is part of a series of Learning and Teaching Guides produced in the Institute of Educational Technology.

The Guide was evaluated in 2010 by a researcher who had not been involved with its creation or distribution (Farrow, 2010). The overall purpose of the evaluation was to gather feedback from Open University staff who had received a copy of the Guide. The evaluation sought to establish:

In relation to the Guide
- which parts of the Guide the interviewees found useful
- whether they engaged with suggestions designed to stimulate thinking about mobile learning

In relation to their courses
- whether they had introduced any mobile learning components to their courses
- which aspects of mobile learning were relevant to their courses

In relation to developing mobile learning provision
- what they would need in order to develop their own mobile learning provision
- who should provide help or advice

To obtain this information, 24 course chairs and course managers, comprising three per faculty (two course chairs and one course manager) were randomly selected from those who had been sent the Guide at the time of distribution. Fifteen interviews were carried out in person at the Walton Hall campus, 7 interviews were conducted by telephone, and 2 were completed over email.

Although interviewees were not required to have read the Guide ahead of the interview, some requested a fresh copy as an aide memoire. It turned out that the Guide had not been not widely read by the recipients in the sample. Some of the reasons that interviewees gave for this included the perception that neither reading the Guide nor mobile learning constituted a core activity for course leaders; that a number of different Guides had arrived at once and presented too much extra curricular reading in one go; and that course teams were already stretched to capacity and could not accommodate any extra work. Furthermore, although the transition from print-based to online teaching and learning had been realized across most of the university, there were still some course teams for whom this transition remained a more pressing concern than moving on to the introduction of mobile learning.

There was a range of reactions to the idea of introducing mobile learning within Open University courses; some enthusiastic, some neutral and some sceptical or negative. Where interviewees expressed concerns about the value or usefulness of mobile learning, their comments indicate that these concerns may have resulted from misconceptions about the way that mobile technology might be integrated into course production, or what constituted mobile learning. Podcast content was perceived to be relevant to their courses by almost all of the interviewees, but they did not seem to connect this with mobile learning. In general, there was less enthusiasm for the use of mobile technologies for 'context specific learning', which may reflect the fact that the courses the interviewees were responsible for involve little or no fieldwork, or perhaps the interviewees' lack of personal experience of contextualised learning.

Interviewees were asked what they thought they would need in terms of support to develop future mobile learning provision, with a number of suggested options, as shown in Figure 1. Case studies and one-on-one help/advice were the top choices, with a formal course being the least preferred option. Interestingly, responses to another question reveal that only 30% of interviewees thought that the case studies in the Guide were useful; the reasons for this remain known, and could relate to the format of the case studies, their relevance, content, or the fact that they were placed at the end of the Guide.

Q7. What would you need to develop your own mobile learning provision?

Category	Percentage
One-on-one Help/Advice	87.50%
Formal IET course	41.70%
Case Studies	87.50%
Community of Practice	79.20%
Intranet Resources	66.60%
Subject-specific Workshops	75%
Generic Workshops	75%

respondents

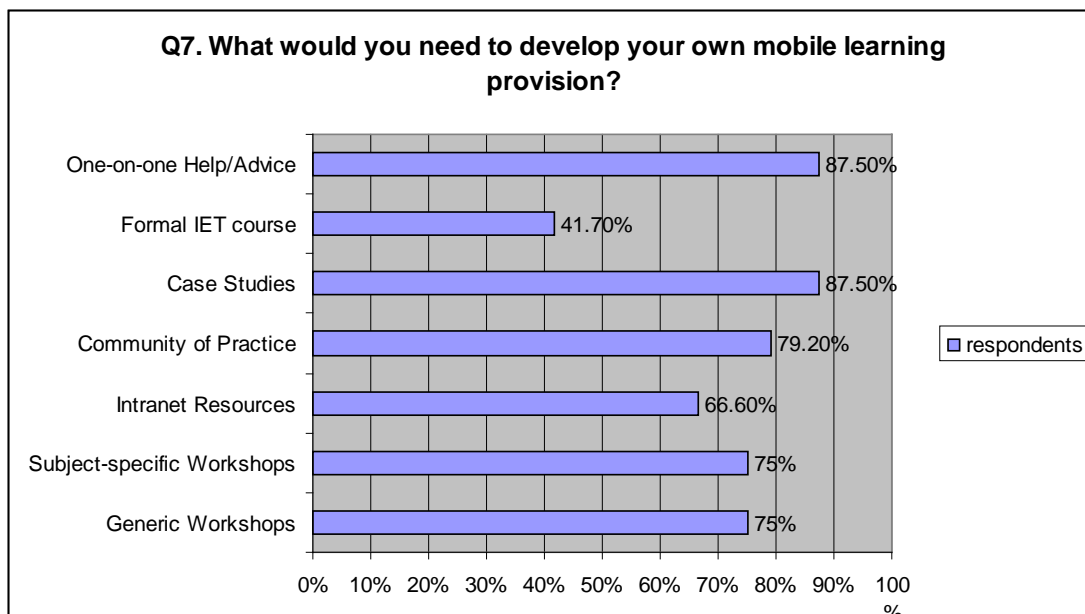0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Figure 1. Interviewees' preferences for support in developing mobile learning

Interviewees were also invited to make any additional comments. In these additional comments, there were signs of scepticism and anxiety:

"Mobile technologies are likely to have a fundamental impact on the way we learn, but the traditional values of education need to be preserved."

"I'm concerned that 'bite-size' forms of communication are of limited use to teaching and learning."

"A lot of our courses are text-heavy and it's not clear how this would translate to mobile learning."

"There are massive cost implications for redesigning courses."

"I'm very aware of the potential dangers of mobile devices in [health and social care] from the perspective of confidentiality and ethical issues. What kind of future is envisaged?"

"There is also a concern that people who don't want to learn in this way could be disadvantaged."

"When you explain mobile learning to me, it makes perfect sense, but I suppose that the devil is in the detail."

There was also evidence of shifting points of view:

"In general, I don't feel well informed about mobile technologies, and I'm too busy to find the time to do something I perceive as peripheral….That said, we are running a photo competition [in subject area] using Flickr, and this could be carried out completely on mobile devices."

"Our courses are very much based in reflective practice and gathering evidence, so I can see how mobile devices could be useful for this. We as course leaders need to overcome our fear of new technologies, and this involves having the time to spend on these kinds of areas."

"It's not always appropriate to use mobiles…That said, there is lots of potential for the use of this kind of device in science… One technology course, for example, uses a mobile device which takes all kinds of readings. The relevance of this for field work is obvious."

The evaluation concluded that, although there was an encouraging level of interest in mobile learning, and most of those interviewed could see the relevance of mobile learning to their courses when presented with more detail, nonetheless important issues included the amount of time and effort course teams felt able to invest in learning activities which they considered to be peripheral to the delivery of their courses. In some cases, scepticism about the use of mobile technologies in delivering Open University courses seemed to be based on misunderstandings about the possible role of such technologies (such as using a very small screen to do a lot of reading).

The evaluation was a chance to reflect on our mobile learning strategy and the opportunities for faculty to gain knowledge and experience with mobile technologies for teaching and learning. At the same time, it was becoming clear that mobile technologies were rapidly becoming an important way to access social networks, which can be sources of support. Faculty also needed to understand that students would soon be accessing the university's Virtual Learning Environment via their mobile phones and tablet computers. We would therefore need to create opportunities for faculty to experience learning *with* these technologies, so that they might more fully assess the potential and explore some of the constraints.

5.2 Moving on: Mobile Experiences and Community Building
The interviewees had expressed a preference for case studies and one-on-one support. These options can be difficult to provide without significant resourcing. Case studies can also be time-consuming to produce; and there is a risk that people will request case studies but subsequently will not read them, so the presentation of the case studies must also be considered carefully. We wanted to come up with an innovative case study format, and we also looked for a way to give faculty access to individuals who had valuable experiences to share, in an environment where they could ask plenty of questions and get hands-on experience with mobile and social technologies.

First, we developed a collection of new professional development resources in an innovative format, as a set of ten Mobile Learning Experiences. These cover increasingly popular activities on mobile phones, such as:

- sharing photos, videos and documents
- reading, editing and annotating e-texts
- doing tests and quizzes
- accessing information on the move
- location-based access and sharing

Each 'experience' is a description of something that can be done quite quickly by an individual at any time, on their own or with others, using their own mobile phone (see Figure 2). The main purpose is to give hands-on personal experience of using a mobile phone to do something that individuals might want to do. For example, one case study describes how an OU-produced mobile app is used as a means of engaging current and prospective students in an interactive activity on human evolution. It is also a way to introduce what students already do, or might want to do, with their phones in the course of their studies with The Open University (OU). We include information on how each activity is relevant to OU study or how it might promote OU study. Cost issues are considered, as this had previously emerged as a concern among course teams wishing to take advantage of some aspects of mobile learning.

Second, we planned a new event. The annual 'Learn About' fair already provided a good model of a popular event where participants can spend concentrated time getting to know different technologies and the people who can provide them with further information and advice. It was decided to organize a Mobile Learning Winter Festival, which was held in January 2011. Over a two-day period, participants could spend as much or as little time as they wanted, trying out various mobile applications and services, and talking to more knowledgeable others. The Festival was organized around a number of themes, with a strong focus on the needs of academic staff and course production. The Mobile

Connections website (see section 5), which provides resources and is a gateway to community, was also launched and publicized at this event.

Feedback from 48 optional evaluation forms filled in by participants in the Festival indicates that the event was very successful. There was particular interest in e-books, the iPad, the mobile VLE, iSpot (a website for sharing wildlife observations which is also developing a mobile app) and applications in language learning. The value of the event was often expressed in terms of hands on use of mobile devices and being able to talk to people. Participants remarked that students are asking about, and expecting to engage with, mobile learning. Following this event, colleagues from two different parts of the university have approached the Institute of Educational Technology with requests to provide them with additional opportunities to consider mobile learning, in the form of more targeted professional development for their academic staff. Their requirements have focused on individual and collaborative mobile learning activities that could be tried out by groups of academic staff, covering existing proven applications of mobile learning and some experiences with innovations that are already on the horizon. This will enable them to consider the feasibility of mobile learning in their disciplines and to debate its added value.

6. Discussion

Based on our work at The Open University in introducing mobile learning to academic and other staff involved in the production and presentation of distance education courses, we have previously argued that a major barrier to the uptake and integration of mobile technologies in teaching is the lack of personal experience of mobile device use for learning on the part of those involved. We previously reported our attempt to address this lack of hands-on experience by running a project to introduce a group of academics and other staff to the use of smartphones to support their own learning (Kukulska-Hulme & Pettit, 2008). Whilst this attempt created an opportunity that was appreciated by the participants, on reflection it did not create the conditions for personal conviction, since a particular smartphone and a specific use agenda had been imposed. The professional learning community approach adopted by that project has met with success elsewhere (e.g. Stover, 2007), but it requires relatively high levels of time investment and a commitment to change. Whilst not rejecting evidence that a community of peers is important in helping faculty take steps to investigate and adopt new technologies, it seems to be a necessary but not sufficient condition for generating personal conviction. The degree of freedom that faculty largely enjoy with regard to the ability to determine the approach, content and method in their teaching and research programmes is in contrast, and ultimately in conflict, with imposed uses of technology that are not born of personal conviction as to their validity and usefulness.

In our Mobile Experiences, we have tried to cover concrete yet generic activities such as sharing photos and annotating texts, to appeal to a wide audience; they are simultaneously practical activities carried out on the academic's own mobile device. In the Mobile Learning Festival, there was ample opportunity to have quality one-on-one conversations and make arrangements for follow-up meetings and support. These elements – concrete activities, personal devices, quality discussion and good support – have emerged as important ingredients in the process of exposing faculty to the potential of mobile learning in a way that enables them to make considered decisions about its value in their teaching.

It has been instructive over the years to reflect on how we can engage faculty in critical assessment and adoption of new technology if they perceive that it will bring them no personal benefit or that they have no time. Given that mobile technologies raise a number of problems for academics, including issues of cost, accessibility and the ability to imagine redesigning learning for mobile access, the widespread and largely enthusiastic adoption of mobile and social technologies in daily life may be more persuasive than conventional case studies which often relate to disciplines or particular contexts too far removed from an individual academic's sphere of interest. Our research with mature learners using mobile devices in their lives and learning is a useful way to demonstrate that learners are increasingly taking the lead in exploring possible applications of mobile technologies to make their studies more effective, enjoyable or convenient (Kukulska-Hulme et al., 2011). This research also challenges the common preconception that mobile devices are not suitable for academic study, by providing evidence that learners can and do use their mobile phones and other portable devices to engage in academic activities such as reading journal articles.

7. Proposal: Faculty as Lifelong Learners

Mobile learning covers a very wide repertoire, from elaborate, technologically advanced experiments to on-the-go access, conversations and simple transactions. The entry point for faculty is likely to be at the simpler end, with convincing everyday uses proving their worth and adoption in teaching and learning then more likely to follow. Given this gradual process, the broader framework for the adoption of mobile technologies and social media should be lifelong learning, which can be defined as "The combination of processes throughout a lifetime whereby the whole person experiences social situations, the perceived content of which is then transformed and integrated into the person's biography resulting in a continually changing person" (adapted from Jarvis, 2006:134). Both the personal and social aspects of this development are well aligned with the personal and social nature of the current generation of mobile technologies. Such a changing person will need to exercise considerable self-management, self-monitoring, self-awareness and meta-learning (Stäuble, 2005). Knowles (1980) saw adult learners as autonomous and self-directed, with an orientation to what is relevant and practical, while Kolb (1984) highlighted experience as a source of learning and development; furthermore, Lave (1988) recognized social interaction in a 'community of practice' as a critical component of situated learning. All these aspects will continue to be important in faculty development for social media, social networking and mobile learning.

Faculty members ought to be able to commit to lifelong learning, remembering that "professional role model" to students is one of the main roles of the teacher, besides other roles such as planning, facilitation and assessment (Harden & Crosby, 2000). A role model should know how to make best use of the powerful tools that learners carry around with them at all times, and be able to demonstrate appropriate academic uses or talk knowledgeably about effective practices enabled by those tools. Increasingly, mobile technologies are also changing how research is conducted within academic disciplines; for example, collection of new research data may be done in a participative way using the devices carried by learners in their pockets. Herrington *et al.* (2010) suggest that faculty who used an iPhone or iPod Touch as part of their School of Education mobile learning project should not only use the device in their teaching but also to enhance personal productivity and to research their pedagogical practice, taking advantage of the facilities to take photographs and make voice and video recordings.

It has been suggested that ultimately students will be "active collaborators" in the teaching and learning process, becoming co-creators of knowledge along with other students, teachers and education leaders, engaging with project work and inquiry-based learning (Partnership for 21st Century Skills, 2009). The Higher Education Academy in the UK (Healey & Jenkins, 2009) put forward the idea that universities need to improve the research-teaching nexus, and to help realize this goal, all undergraduate students should experience learning through, and about, research and inquiry. Healey & Jenkins further advocate moving more curricula in the direction of "developing students as participants in research and inquiry, so that they are producers, not just consumers of knowledge" (Healey & Jenkins, 2009: 6). If it is understood that mobile devices can support academic staff in their research (e.g. Mackerron, 2010) and in the task of inducting students into inquiry approaches to learning (see Gaved et al., 2010), these could be strong reasons for greater personal engagement with what mobile technologies have to offer.

Ultimately faculty need to plan and revisit their own development in a self-directed way within a community of learning (peers and/or students), taking into account the various aspects of their role and their own professional learning needs. A high level development plan which may assist in this process is presented in Figure 2. It reflects the assumption that faculty are engaged in teaching, research, and lifelong professional learning, and will be particularly relevant to those who are responsible for teaching delivery and curriculum design. Given earlier comments about active collaboration and the importance of strengthening the research-teaching nexus, the plan suggests that faculty development can, and perhaps should, take place in conjunction with faculty activity in developing their students. Although at first glance mobile technology does not seem to be an essential ingredient in this plan, co-development of faculty and students is facilitated by the use of mobile technology, which easily accommodates self-direction, cooperation, and a multi-faceted perspective on self and others.
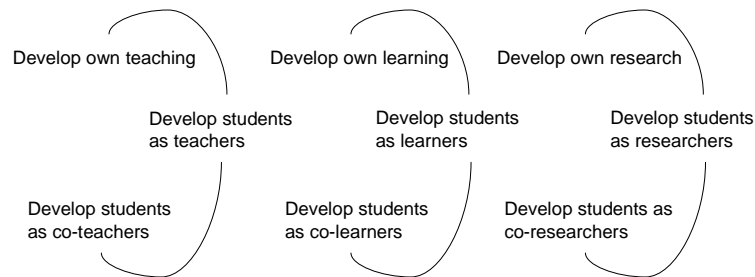
Figure 2. High level development plan for lifelong learning with mobile technology

Mobile learning will continue to develop rapidly due to external influences as well as pressures and opportunities within institutions. The provision of mobile textbooks outside the sphere of influence of the academy is one such example (see McInnis' statement about his company's mobile textbooks: "We aren't here to serve the institution, we are here to serve the students" (Craig, 2011)). Faculty will need to stay informed about these developments, which is considerably easier if they themselves are actively engaged in using mobile tools for teaching, research and learning.

8. Conclusion

In this paper we considered how the higher education workforce needs to adapt to the conditions created by a world which is fast becoming saturated with personal and social technologies, and is characterized by increasingly diverse student populations including those for whom social networking and the use of mobile devices is an unquestionable part of how they learn. We have considered a range of development opportunities offered in higher education and at The Open University, reflecting on how our strategy and tactics have been changing in recent years, against a landscape of change in higher education and in ways of conducting educational and professional development.

Evaluation of the Mobile learning Guide showed a good level of interest in mobile learning; however academic staff were deterred by the perceived amount of time and effort they would need to invest in understanding mobile learning when it was considered peripheral to the delivery of their courses. There was some scepticism about the use of mobile technologies in delivering courses but also evidence of shifts towards more positive views when benefits became obvious. One way to enable identification of benefits is through Mobile Learning Experiences. However, to fully engage with mobile technologies, faculty need to acknowledge that they are professional role models to their students. This means adopting a lifelong learning stance and embracing the opportunity to combine research and inquiry with teaching and learning.

Mobile learning is finally surfacing in higher education as a prominent technology after several years where interest was confined to researchers and relatively small numbers of innovators and early adopters. This is in line with predictions from The New Media Consortium's Horizon 2011 Report, which placed "time-to-adoption" of mobiles at one year or less. The authors of the report furthermore observe that a shift has taken place: "The 2010 Horizon Report placed mobile computing on the near term horizon, with an emphasis on the wide range of activities that are now possible using mobile devices. This year, mobiles are here because so many people use them as their first choice for accessing networked resources" (The New Media Consortium, 2011, p.12). Mobile learning is no longer separate

from social networking and everyday access to information and resources. For this reason, it needs to become an integral part of higher education practice.

Acknowledgement

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