Mobile learning: should we get a move on?

By Mark J.W. Lee

With mobile technologies, you can run, you can hide, but you have no excuse to stop working – and learning.

The worldwide connectivity of telecommunications networks and the internet, as well as the widespread uptake of portable electronic devices for communications and entertainment, opens up new possibilities for making learning as ubiquitous as placing calls and sending messages on our mobile phones and personal digital assistants (PDAs). It seems almost as if it were yesterday when we were told that learning was going online. Yet, already, there is talk about e-learning making the transition to mobile learning (m-learning).

WHAT IS M-LEARNING?

M-learning is a field that lies at the confluence of mobile computing and e-learning. The rationale behind m-learning is to use the wasted or ‘down time’ we spend travelling on buses and waiting at traffic lights, to facilitate productive learning. It is what David Metcalf (2002) calls the ‘stolen moments for learning’. When applied to the context of a specific workplace, m-learning takes us yet another step closer to true, situated learning.

The tools that support m-learning are usually thought to be portable electronic devices with computational capabilities, such as digital mobile phones and PDAs, but more generally we might think of any device that is small, unobtrusive and autonomous enough to accompany us as we go about our day to day activities, that can be used to facilitate some form of learning.

A myriad of different devices now spring to mind, including portable music players, game devices and tablet PCs, that are now almost everywhere we turn. The birth of the ‘smartphone’, a communications device incorporating voice, text messaging, multimedia and personal productivity capabilities, means that our mobile broadband communications and personal computing needs can now be met by a single, integrated device.

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The best way to explain m-learning is to illustrate with a few applications that are possible given the current state of the technology.

Performance and knowledge support. The multimedia capabilities of modern portable devices can be used to deliver text, audio, images and video to members of a distributed workforce in small, ‘byte-sized’ pieces for just-in-time learning. For example, the capabilities of the Multimedia Messaging Service (MMS), an extension to Short Message Service (SMS) now found on most mobile phones, can be used to deliver the latest product specifications to travelling salespeople through their mobile phones. Repair technicians can gain instant access to inventory data as and when they need it, in addition to accessing job aids such as checklists and schematics on the fly. Emergency personnel can be briefed by means of customised animations or video and can...
run quick simulators on their mobile devices to prepare themselves immediately prior to entering an emergency scene.

**Hybrid web-based and mobile courses.** The eXtensible Markup Language (XML) allows for separation of the content of e-learning materials from the rules that specify how it is to be presented. This makes it possible to have web-based training resources that are displayed differently depending on the type of device that is accessing the resource. For example, a page may be displayed in standard web-based (HTML) format when viewed in a web browser, but can be formatted to be suitable for consumption on a Wireless Application Protocol (WAP), General Packet Radio Service (GPRS) or Third-Generation (3G) enabled mobile phone or PDA when requested by one of these devices. This avoids the cost of having to develop and maintain separate sets of resources for the same content.

**On-the-job assessment and evaluation.** Simulations can be built for quick, formative and/or diagnostic assessments that can be completed by learners at their convenience. Assessors or supervisors observing learners’ on-the-job performance can complete assessment checklists or reports on their mobile phones, PDAs and tablet PCs, to be either uploaded wirelessly in real-time or stored locally on these devices for later synchronisation with a server-side database when a network connection is available.

**Mobile collaborative learning.** Mobile devices come equipped with a variety of multimedia input devices including built-in microphones and cameras. This opens new doors in the way of delivering learner-generated content, for both learning as well as assessment purposes. In addition to text, learners can capture voice, images and video to be shared with their peers and instructors, either asynchronously (discussion board, SMS, MMS, e-mail or synchronously (chat, phone call, video conference).

**M-mentoring.** A workforce that is not only distributed but also mobile will benefit from the ability to connect learners with their mentors from out in the field with minimal delay to provide on-demand feedback and assistance, for example through instant messaging. Once again, by making use of the multimedia capabilities of mobile devices, learners can be supplied with guidance while performing job tasks through opportunities for observation, correction, remediation and/or feedback by their mentors.

**Mobile classrooms.** The traditional classroom can be replaced with one comprising mobile devices that form networks in an ad hoc fashion, using technologies like Bluetooth, for instructor-led training delivery, supported by electronic software tools such as shared whiteboards and slide projectors. Learners can be encouraged to engage in problem and project-based learning by working in groups with their mobile devices, and forming personal area networks (PANs) through these devices for wireless communication and data exchange. This type of application is ideal in situations where there is a need to remove the confines of the traditional, four-walled classroom, but where face-to-face contact (‘same time, same place’ learning) is still desired, such as site visits and field work. Apprentices and other on-the-job learners can have the classroom brought to them, rather than vice-versa, for authentic training and assessment that is tightly integrated with their workplace context.

**WHY SHOULDN’T WE GET A MOVE ON?**

While mobile technology does open up a world of exciting new possibilities for ‘anytime, anyplace’ learning, one may justifiably question the feasibility of learning on the move from a pedagogical perspective. For example, the brevity of expression that is characteristic of ‘SMS discourse’ (‘CU L8R’) threatens to discourage deep thinking and critical reflection. Relying on these modes as sole delivery mechanisms also causes us to run the risk of stunting the development of critical interpersonal communications and oral presentation skills. In the first place, is it educationally sound to fill up every last spare second of our day with online learning?

The fact of the matter is, whether we like it or not, mobile technology has already made and will continue to make inroads into every aspect of our daily lives: ‘...the number of mobile devices [is] predicted to surpass the number of conventional computers for web access in the near future and...bandwidth for mobile devices [is] predicted to increase.
...the growth of m-learning in Australia is being hampered by the practices of the major telecommunications companies.

CAN WE GET A MOVE ON?

A recent article in the Sydney Morning Herald indicated that the growth of m-learning in Australia is being hampered by the practices of the major telecommunications companies. The ability to switch between networks to maintain connectivity is important for m-learning to prevent dead spots and dropouts from interrupting real-time learning and assessment activities. Unfortunately, the telcos are causing mobile data transmissions to be confined to high-cost cellular networks, neglecting the viability of wireless networks and satellite technology (Wilson, 2005).

Moreover, whether or not we have already achieved the technology required to facilitate true m-learning is debatable. For example, some argue that the miniature screens present on mobile phones and PDAs severely restrict the types of learner-computer interactions that are possible. Indeed, the full potential of learning ‘on the move’ may only be realised when user interfaces have developed to a stage where learning activities are able to integrate into our daily lives in a truly unobtrusive fashion. Learning should be able to coincide with other, manual tasks such as walking the dog, washing the car and doing the dishes. At this stage it is difficult to imagine how it will be feasible for us to walk down the street with PC displays mounted inside our eye glasses, without causing a hazard to ourselves or those around us! We may also need further advancements in an area known as pervasive computing, to enable the development of context-aware devices that are sensitive to their environment, able to cooperate with one another and smart enough to know when to supply content, or otherwise intervene to facilitate learning (for example, see Carnegie Mellon University, 2001).

This all having been said, as is always the case with technology, it is purely a matter of time before any technical shortcomings of m-learning are overcome. Far more important to its success is the need for us to be prepared for a paradigm shift in the way we think about learning. For one, the advent of m-learning will blur the distinctions between learning, work and play – and this goes far beyond even the notion of moving training out of the face-to-face classroom and into the workplace. The emphasis will be on providing short, five to ten minute, informal learning events that can be completed by the learner at various interspersed moments during the day, rather than having large blocks of time dedicated to deliberate learning efforts. The ‘learning object’ philosophy – now widely adopted and integrated into most popular LMS’s – has begun to prepare us for this to some degree.

As we have seen with e-learning, we may find in many cases that a blended solution is required, incorporating different delivery modes, at least in the immediate future. However, even more so than with e-learning, the designer of an m-learning experience must cater for the seemingly infinite number of possible combinations of needs, backgrounds, situations, learning styles, preferences, and so on. How can this be done effectively with a set of finite resources? One possible answer is to look toward the learner to take some of this responsibility off our shoulders.

THE M-LEARNER IN FOCUS

It’s time to bring the learner back into the spotlight. With e-learning it almost seems as if we have come full circle in terms of instructional delivery methods. A sense of déjà vu is experienced when realising that what is needed in e- and m-learning is to remove some of the emphasis from the content and the instructor, and place it back onto the learner. Birch (2002)
switch between multiple media types, be one who is able to operate across and
structure their learning experiences to suit
their own individual learning styles and
preferences.

Moreover, the successful m-learner will
have control over time and place, and be able to
learn how to learn through an awareness of basic
thinking skills, has traditionally been the
consideration of instructors and instructional
designers. The m-learner must ‘learn how to
learn’ through an awareness of basic adult learning theory, and the ability to
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concern of instructors and instructional
The importance of these competencies becomes even more apparent in a mobile
environment. Of particular interest are the self-directive competencies, in which
learners must be able to exercise self-advocacy in charting out their own learning
journeys to meet their ultimate needs and goals, making use of the myriad of
resources (including instructors!) that are available to them. Self-reliance becomes of
utmost importance as time management is necessary to cope with the fact that
time and place do not provide an escape from the reach of our modern mobile
communications technologies.

As learning moves steadily towards
a learner-directed, resource-based
approach, there is a need for learners
to develop metacognitive competencies.
Metacognition, which entails actively
controlling the cognitive processes
involved in learning through higher order
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Moreover, the successful m-learner will
be one who is able to operate across and
switch between multiple media types,
interacting with others as necessary, face
to face or online, constantly multitasking
to interweave learning and other activities
throughout the course of a day.

The characteristics of a successful m-
learner are in fact attributes that are
exhibited by any successful lifelong
learner, although the importance of certain
competencies is further underscored by
the removal of the confines of time and
place. Eventually, the boundaries between
e-learning and m-learning will disappear.
For that matter, we will no longer need
to make distinctions between e-learning,
m-learning and learning altogether, as the
‘e’ and ‘m’ will be a given, just as there
was never a need for labels like ‘f-learning’
and ‘c-learning’ to denote ‘face-to-face’
and ‘classroom-based’. At the heart of
our endeavours is the goal of maximising
the quality of learning. Our high-tech
toys are simply enabling tools that, in
combination with sound strategies, can
assist in this endeavour. Learning involves
a set of internal processes that are the same
irrespective of the external mechanisms
that help support them. Until we recognise
this, there is little hope of getting a move
on, at least in the right direction.

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