

# Mobile Learning: Learning on the Go

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## INTRODUCTION

The mobile revolution is finally here. The evidence of mobile penetration and adoption is irrefutable: smartphones, personal digital assistants (PDAs), portable game devices, portable media players, MP3 and MP4 players, tablet PCs, and laptops abound and can be found everywhere. Also, the increasing availability of high-bandwidth network infrastructures and advances in wireless technologies have opened up new accessibility opportunities (Kinshuk, 2003). No demographic is immune from this phenomenon. People from all walks of life and in all age groups are increasingly connected and communicate electronically with each other nearly everywhere they go (Wagner, 2005). The development of and adoption rate of mobile technologies are advancing rapidly on a global scale (Brown, 2005). Since 2000, there is considerable interest from educators and technical developers in exploiting the universal appeal and unique capabilities of mobile technologies for the use in education and training settings (Naismith, Lonsdale, Vavoula, & Sharples, 2004).

The use of mobile technologies to support, enhance, and improve access to learning is a relatively new idea and many learners are quite comfortable with various mobile devices. M-learning (mobile learning) is consequently an emerging concept as educators are beginning to explore more with mobile technologies in teaching and learning environments. Already, there are numerous applications for mobile technologies in education—from the ability to transmit learning modules and administrative data wirelessly, to enabling learners to communicate with instructors and peers “on-the-go” (Brown, 2005).

Still in its early stages, m-learning is comparable to where e-learning was a few years ago. M-learning is at the point by which mobile computing and e-learning intersect to produce an anytime, anywhere learning experience. Advances in mobile technologies have

enhanced m-learning tools at just the right moment to meet the need for more cost-effective just-in-time training options—Learning on the Go. Today, the evidence is overwhelming that m-learning is beginning to take hold:

- The population of mobile and remote access workers in the United States alone will grow to 55.4 million by 2004 (Shepherd, 2001).
- Over 50% of all employees spend up to half of their time outside the office.
- The average employee had less than three days of training in 2003.
- There will be more than 1 billion wireless Internet subscribers worldwide by 2005.
- Multipurpose handheld devices (PDAs and telephones) will outsell laptop/desktop computers combined by 2005.
- Most major U.S. companies will either switch to or adopt wireless networks by 2008 (Ellis, 2003).
- More than 1.5 billion mobile phones are used in the world today. This is more than three times the number of personal computers, and today's sophisticated phones have the processing power of a mid-1990s personal computer (Attewell, 2005; Prensky, 2004).
- Smartphones rose by 17% year-on-year in the first part of 2005 in Europe and the Middle East. In contrast, standard mobile phones rose by only 11% (Canalys, 2005).
- Global sales of smart phones will reach 170 million in 4 to 5 years, compared slightly more than 20 million in 2004 (Attewell, 2005).
- More than 16 million 3G phones were sold worldwide in the beginning of 2005, compared to only 10 million 3G handsets sold in September 2004.
- Total U.S. spending on wireless communications will grow 9.3% in 2005, to \$158.6 billion.

- The wireless market will grow at 10% compound annual growth rate through 2008 (Wagner, 2005).

While mobile devices are approaching ubiquity today, the industry is still in its infancy. Fusing mobile technology and e-learning is very natural. Mobile devices are a natural extension of e-learning because mobile devices have the power to make learning even more widely available and accessible. Imagine the power of learning that is truly “just-in-time,” where learners could actually access training at the precise place and time on the job when needed (Kossen, 2001).

## BACKGROUND

Conventional e-learning, delivered to a desktop computer, is leaving a large part of the learners out in the cold. As Elliott Masie (Shepherd, 2001, p. 1) points out:

*The assumption here is to dramatically expand the accessibility of learning beyond the physical footprint of the PC. If we remember that over 50% of the workforce does not sit at a desk, but instead is standing, walking or moving around a factory, we see the potential of breaking the tether of the Ethernet wire.*

M-learning is designed to fit with the unique work-style requirements of the mobile workforce, linked to their office by mobile devices.

Vavoula and Sharples (2002) suggest three ways in which learning can be considered mobile: (a) learning is mobile in terms of space, (b) learning is mobile in different areas of life, and (c) learning is mobile with respect to time. Their definition suggests that m-learning systems are capable of delivering educational content anywhere and anytime the learners need it.

According to Quinn (2000), m-learning is the intersection of mobile computing and e-learning. M-learning includes anytime, anywhere resources, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. Chabra and Figueiredo defined m-learning as “the ability to receive learning anytime, anywhere and on any device,” while Harris referred m-learning to “the point at which mobile computing and eLearning intersect to

produce an anytime, anywhere learning experience” (Dye, K’Odingo, & Solstad, 2003, p. 6).

Commonly, m-learning refers to learning opportunities through the use of mobile solutions and handheld devices (i.e., mobile phones, smartphones, and PDAs) which are connected to information networks. Mobile implies movement and mobility. Likewise, m-learning implies the opportunity to learn “on the go” (Vanska, 2004). M-learning can be an educational environment in which wireless technology is used to assist students in their studies—both inside and outside the classroom. In a mobile learning scenario, students can access their learning materials from anywhere: on the bus, at the cafeteria, or waiting in line. Also, students can easily contact fellow students, check e-mail, or get feedback from their instructors. Unlike being limited to working online in a computer lab, the library, or at home, students can access online materials regardless of their location. M-learning translates to flexibility in accessing course materials, fellow students, and their instructor anytime, anywhere.

Evans (2005), at the Think-Tank Day for the UK mobile learning community, identified several unique features of mobile devices which could enhance the learning experience:

- **Privacy:** The small size of mobile devices makes it possible to learn “unobtrusively” whenever the learner is located.
- **Support for learning styles:** The mobile devices have potential to support learners with preferences for textual, audio and video presentation of material.
- **Immersive:** The richness and diversity of both content and activity can immerse the learners in their experience.
- **Capture of data:** The mobile devices allow the capture of data anywhere and analyze later.
- **Context:** The ability to automatically receive relevant information.
- **User control:** Learners have more control over when and where they choose to study, and over their interaction with other learners.

In his book *The Future of Learning: From E-Learning to M-Learning*, Keegan (2002) discusses the progression of types of learning from distance, to electronic, to mobile. He indicates that the logical extension

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