

## Chapter XXVIII

# Tapping into Digital Literacy with Mobile Devices\*

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### **ABSTRACT**

*This chapter describes the use of wireless mobile devices for teaching and learning, and their impact on digital literacy. Following a brief description of these digital tools for education, a sampling of short narratives is used to illustrate what types of educational activities are possible above and beyond what is possible without them, what pedagogical changes need to be made to effectively integrate wireless mobile devices in teaching and learning activities, how these devices can be adapted to harness their full potential as ubiquitous devices for teaching and learning, and how digital literacy skills influence and are being influenced by this technology. The ultimate goal of this chapter is to provide evidence of the potential that wireless mobile devices have for teaching and learning.*

### **INTRODUCTION**

We live in a world in which change is a constant, especially when it comes to technology. New developments and inventions occur on a daily basis; think, for example, about developments in the use of alternative fuel sources, human cloning, and nanotechnology. Education is affected like any other field through the continuous introduction and integration of new tools such as digital imaging and video, the Internet, wireless technologies, and more recently, personal technologies like mobile

phones and handheld computers. These new tools have the potential to fundamentally change teaching and learning when integrated appropriately and under the right conditions.

The development of wireless mobile devices can be traced back to the 1970s, starting with Xerox PARC's research into the Dynabook concept, a highly mobile, notebook-sized computer with artificial intelligence capabilities. This was followed by the development of related devices such as the Psion I (1984), GRiDPaD (1988), Amstrad's PenPad and Tandy's Zoomer (1993),

the unsuccessful Apple Newton (1993-1995), and the eMate (1997-1998). However, while others struggled, US Robotics (bought in 1997 by 3Com) introduced the Palm Pilot in 1996, featuring a graphical user interface, text input using *Graffiti* handwriting recognition software, and a cradle for data exchange with a desktop computer. This device became the forerunner of several generations of devices powered by the Palm OS, ranging from the Palm Pilot 1000 to handhelds like the Tungsten TX (Bayus, Jain, & Rao, 1997; Williams, 2004), and a plethora of peripherals. During the same time, Microsoft also actively pursued the development of a portable device, modifying its Windows operating system to fit on handhelds produced by such companies as HP and Compaq. This development did not have a real impact on the mobile computing market until Microsoft's release of Windows CE 2.0 in 1997, and the Handheld PC Professional and Windows Mobile 2003 Operating Systems (HPC Factor, 2004).

New form factors and platforms constantly enter the market. The most recent ones can be categorized as either Ultra Mobile Personal Computers (UMPCs) or Mobile Internet Devices (MIDs). UMPCs are somewhat larger in size as previous devices, sporting a larger screen (usually a 7-inch touch screen) and providing productivity tools on top of Internet connectivity, communication, and entertainment. Examples include the Asus Eee PC, the OQO model 02, and the Samsung Q1. MIDs can be placed somewhere between a mobile phone and UMPC on the spectrum of wireless mobile devices, providing users with PC-like Internet connectivity, communication, and entertainment. It features a slightly larger touch screen (~ 5 inches) than a mobile phone or handheld computer. The first MIDs are expected to be released in 2008, using Intel's Ultra Mobile Platform 2007.

In addition to more "traditional" handheld computing devices, the last decade or so has also

seen the development of a plethora of small digital devices that serve a variety of purposes. For many devices the primary function is entertainment, media creation, or communication, including media players such as Apple iPods, portable gaming devices like the Sony PSP and the Nintendo DS, and, of course, wireless mobile phones. These types of devices are becoming increasingly multifunctional, with iPods being able to store and play music, pictures, and video; portable gaming devices sporting wireless capabilities for interaction between devices (and in the case of the PSP, Internet access); and mobile phones being used to shoot pictures and video, upload content to the Web or e-mail it elsewhere, do text messaging, and make phone calls. Whatever the device, convergence seems to be increasingly important, and growing numbers of young people are using mobile, digital, and connected tools whenever and wherever they need them.

Even though mobile and digital technologies will continue to develop in ways that we cannot possibly predict, agreement exists that future tools will have some characteristics in common (see e.g. Roush, 2005; Stead, 2006; Thornburg, 2006; van 't Hooft & Vahey, 2007, p. 4). They will be:

- Personal (one-to-one or one-to-many access);
- Mobile (always-on-you technology);
- Networked and connected to the Internet 24/7 (always-on technology);
- Accessible (cheap and easy to use);
- Flexible (users have choices);
- Social (collaboration and allowing for creating, sharing, aggregating, and connecting knowledge);
- Multi-modal (support the consumption AND creation of different media including text, image, sound, and video); and
- Contextual (context-awareness, but also context creating).

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