Chapter 1.12
Mobile Educational Technology

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INTRODUCTION

Mobile devices such as laptop computers, personal digital assistants (PDAs), and cell phones offer many features useful for learning both inside and outside classrooms. These devices offer access to Web pages and e-mail, and provide other functions such as textual noting and video cameras. They promise a single, easily learned device that can be useful in a variety of educational settings. When used appropriately, these devices can enrich the learning experience by connecting learners with each other, their environment, and with information providers. They can enable collaborative problem solving by providing easy face-to-face sharing of data through infrared (IR) beaming or distance sharing through e-mail and Web interfaces. For learners who require repetitive practice for skills development, mobile devices offer a personal tool that can be used anytime, anywhere for quick review. Because of their low cost and ease of use, mobile devices have the potential to bring the power of a computer to every learner.

MOBILE DEVICES:
DEFINING THE TECHNOLOGY

Mobile devices, which we define as small portable networked computers, can be categorized as laptops, PDAs, or cell phones. Laptops can be further categorized as clamshells, with keyboards mounted below display screens, or tablets, with touch-sensitive screens but no keyboards. Laptops are miniature desktop computers, so they run the same programs and use the same peripherals as desktops, but laptops require a desk and cannot be used while walking. In contrast, PDAs are pocket-sized tablets, that is, computers with touch-sensitive screens operated like paper notepads; some also have tiny keyboards operated by thumbs, but...
Mobile devices can profitably replace desktop computers in the classroom, conferring several advantages.

**A Computer for Every Learner: Affordable Computers in the Classroom**

In the United States (Soloway, Norris, Blumenfeld, Fishman, Krajcik, & Marx, 2001) and Chile (Cortez, Nussbaum, Santelices, Rodriguez, Zurita, & Correa, 2004), researchers are investigating the use of PDAs as affordable alternatives to desktop or notebook computers for elementary and secondary students. They point out the failure of previous initiatives for providing computer access to all students, citing reasons such as high cost and lack of space in existing classrooms. They argue that mobile devices can address those concerns and have the added advantage of mobility. Most PDAs already have word-processing and database programs installed, and simple educational programs are being developed. Some argue that the tiny screens, difficult input methods, and short battery life make these devices a poor alternative. However, researchers are beginning to show that for younger generations, small screens and thumb input are not regarded as usability problems (Houser & Thornton, 2004). Other researchers are designing battery-recharging stations for the classroom (Deng, Chang, Chang, & Chan, 2004).

Mobile devices can replace PCs for many tasks. Although mobile devices are much smaller than desktop PCs and have inferior capabilities, they are sufficient for most educational activities. Modern PDAs, for example, enjoy capabilities similar to 1995 desktops: similar processing power, memory storage, network speed, and display resolution. Modern mobile phones are even smaller and less capable, but still support standard Web pages and e-mail.
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