Chapter 4.8
Accessing Learning Content in a Mobile System:
Does Mobile Mean Always Connected?

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ABSTRACT

This chapter has the aim to point out an important functionality of a *ubiquitous* mobile system, and more specifically, its application in the learning domain. This functionality is the possibility to access the learning material from mobile devices, like PDAs (personal digital assistants) during their off-line periods and the technique to approach it, called hoarding. The chapter starts with the overview of a concrete mobile learning system—Mobile ELDIT, so as to give a clear idea of when and how this problem appears and why it is important to pay attention to it. Later, a description of the development approaches for both general and concrete solutions are discussed, followed by more detailed description of the important hoarding steps.

INTRODUCTION

The use of mobile devices for educational purposes was explored for the first time quite a long time ago, but the term mobile learning can be more and more often found in the literature of recent years. This is due to the fast advances of the mobile devices industry. On the market a large variety of devices with already reasonably powerful characteristics is available. The prices also allow almost everyone to be in possession of such a toy. Of course, this leads to the growing desire to use mobile devices more widely in our everyday activities.

At the same time, in the learning domain the research on the use of those mobile devices and technologies for educational purposes is also growing. Learning happens at every time and in every place of our life and the concept of ubiquitous computing overlaps very well the ways we would like to support the learning processes.

Figure 1. Chapter content
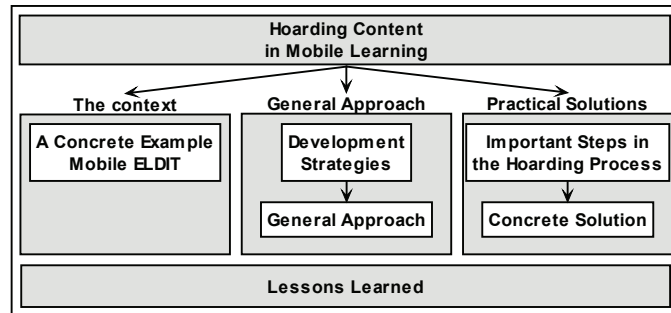
As mobile becomes so important, we should consider what makes a mobile learning system different from what we are used to having in an e-learning system, and how we should adapt to the coming changes. One of these differences is the possibility to become disconnected, and in order to allow the user to continue using the system without disturbance, a technique called hoarding might be used. Here we will define what hoarding is, when it will be needed, and how to integrate it into a mobile learning system.

While mobile learning is mainly discussed within universities and research organizations, there are also commercial m-learning products that appear on the market. They include downloadable m-learning modules, online access to learning material especially designed for mobile devices, supportive tools, and complex frameworks for mobile content creation and management. Some examples are given in Table 1 at the end of the chapter.

BACKGROUND

The field of mobile learning is growing with every passing day. New ideas, approaches, and solutions are continuously appearing, involving different mobile devices, different target groups, and having different pedagogical or technology-testing goals. A review of the literature (Trifonova & Ronchetti, 2003b) shows that there are as many common points researched as there are differences.

Mobile devices, including cell phones, PDAs, and even notebooks, are used for different purposes in different m-learning projects. In certain cases, content is accessed online through the local area network or by using the Internet. In other cases, the devices are used for communication between students and teachers or for cooperation with other students for completing common tasks. Voice or SMS might be used for receiving important educational information, images might be interchanged for sharing experiences, or common spaces might be used for collaborative work. Some of the important research directions are the following:

- The adoption to context, in particular providing location-aware learning
- The pedagogical side of m-learning – new approaches to teaching and studying
- Integration to e-learning and reuse of learning materials
- Usability issues, like facilitation of the input and output
- Provisioning of supportive to learning services
- and so forth

Nevertheless, two things are often overlooked—the support of the user during off-line

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