

# Chapter 1.12

## Mobile Education: Lessons Learned

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### ABSTRACT

Mobile education, comprising learning, teaching, and education related administrative services delivered via mobile technologies, has incited several projects and discussion in the last years. When reviewing these projects, it becomes apparent that most of them are technology driven, and only a few were formally evaluated at the end. However, certain lessons, chances and obstacles can be identified which may be helpful for further development in this sector. One critical issue is the distribution of costs for mobile services. As both educational institutions and students act on a limited budget, it is necessary to choose an infrastructure which meets the requirements of the users and addresses all relevant obstacles. Consequently, there is no single ideal technological alternative, but each project needs to make a situational choice.

### INTRODUCTION

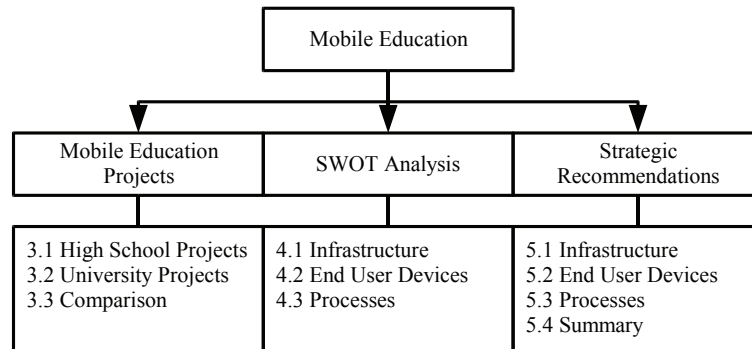
Technological progress continually creates new opportunities for creating, storing, and dissemi-

nating knowledge. One aspect is the utilization of new technologies for learning and teaching: e-learning. Recent endorsements in this sector were *mobile devices*, which can increase mobility, flexibility, and personalization compared to traditional, PC-based approaches. The term “e-learning” was thus extended to “*m-learning*,” or “*mobile education*.”

Mobile education covers three distinct but interconnected areas in which mobile devices may be implemented: learning, teaching, and administration. A major focus in the past was placed on learning activities, mobile learning or m-learning, as the term itself was derived from e-learning. Teaching and administrative tasks were either omitted or understood as learning tasks. Consequently, m-learning can either be understood as a subclass of e-learning or as a distinct area of research (Nösekabel, 2005).

After establishing a framework by clarifying what will be termed as mobile education in this chapter, a survey of m-education projects establishes the state of the art. Selected projects are grouped into high school and university projects, as the didactic requirements for these

Figure 1. Chapter overview



educational institutions are different. Universities, for example, allow their students a higher degree of self-determination and self-direction in learning.

The results of this comparison are compiled into a *SWOT analysis*, which is used to point out experiences, obstacles, and chances for existing and future mobile education projects. Both the analysis and the strategic recommendation focus on mobile infrastructures, end user devices, and educational processes.

## MOBILE EDUCATION

Defining *m-education* is the focus of the following discussion, which helps identify relevant projects which are then analysed. First, a restriction should be placed on the devices used for educational purposes. Devices need to be mobile, as stated by Lyytinen and Yoo (2002), which means they must have a high degree of mobility but only a low degree of embeddedness. This would include mobile phones, personal digital assistants, and other devices (e.g., MP3 players), but excludes laptops, as laptops are only portable and cannot be used easily while in motion. Another factor is that laptops do not have the same technical restrictions as mobile devices; thus, services and experiences from e-learning are mostly applicable and do not

require a new view on these issues. The restriction also excludes pervasive and ubiquitous devices (Dourish, 2001), which are both highly embedded and could be subject to research in “pervasive” or “ubiquitous education.”

Second, m-education addresses—as already mentioned—learning, teaching, and administration, affecting not only students, but lecturers and possibly administrative staff alike. One result for the selection of projects is that so called “*classroom applications*” (Myers, 2001) using mobile devices are also included in the survey. These “*classroom applications*” run on mobile devices, often in combination with a non-mobile PC or laptop. They foster interaction between students and teachers, for example, by offering the ability to conduct polls or to remotely annotate presentation slides as a group.

Third, a network connection is not permanently required when using mobile education. This allows the inclusion of applications where data are transmitted to a mobile device via a stationary PC, for example, during synchronisation. Further included are Java applets (J2ME MIDlets) on mobile devices, which possibly make use of a network connection only during installation over the air or during data transmissions.

These various aspects are covered by several definitions, even though most authors define “Mobile Learning,” not “Mobile Education.” Nyiri,

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