

# Chapter 20

## Learning on the Move in the Web 2.0: New Initiatives in M-Learning

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### ABSTRACT

*This work aims at presenting the current state of the art of the m-learning trend, an innovative new approach to teaching focused on taking advantage of mobile devices for learning anytime, anywhere and anyhow, usually employing collaborative tools. However, this new trend is still young, and research and innovation results are still fragmented. This work aims at providing an overview of the state of the art through the analysis of the most interesting initiatives published and reported, studying the different approaches followed, their pros and cons, and their results. And after that, this chapter provides a discussion of where we stand nowadays regarding m-learning, what has been achieved so far, which are the open challenges and where we are heading.*

### INTRODUCTION

M-learning (or mobile learning) is a growing trend in education extending the concept initiated years ago by e-learning, and can be easily summarized as “learning on the move.” Initially, e-learning

meant the introduction of computer networks to facilitate learning, promoting new ways of remotely accessing, managing and acquiring knowledge. However, the advent of mobile technologies resulted in a fast penetration of portable devices like mobile phones, tablets or netbooks,

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which support anytime/anywhere execution of a wide array of applications. And education and learning applications are no exception.

However, m-learning does not just mean accessing e-learning services on the move. E-learning normally provides services to be consumed statically, like remote access to training material, educational platforms to facilitate course and score tracking by teachers, discussion forums to allow exchanging of knowledge, personalized learning content selection, etc. While it is true that mobile devices are a great way to access these services, it is also true that a whole new array of applications which were completely out of reach for e-learning are now viable thanks to m-learning. Mobile devices are capable of real time interactions and normally pack advanced hardware like cameras or accelerometers, capable of supporting collaborative applications for field experiments, evidence retrieval on the go, real time evaluation of students, context-aware learning clients, etc.

There are a large number of new initiatives offering m-learning solutions for diverse applications, targeting several groups of people (from school students to specialized training). However, the education world is not always receptive to the introduction of new methodologies, with some academic and professional institutions usually being reluctant to abandon well tested, old learning and teaching schemes. The result is that in the current educational landscape there are many emerging m-learning alternatives, but it is hard to find standards, large scale real world applications (deployments and experiments are usually done at small local tests) or widely adopted solutions. Initiatives are usually promoted as research projects instead of deployable products. Even more, the community is still debating whether there are real benefits in m-learning as an educational methodology or it is just a new fashionable technological trend.

This work aims to clarify these questions by offering a synthesized view of the current m-learning landscape, summarizing and analyzing

the main features of the most prominent m-learning initiatives, allowing the reader to understand what are the differential features of m-learning applications, their advantages and disadvantages, lessons learned during these experiences, and the results of their application to the real world.

## **BACKGROUND**

While there are some differential concepts and features among them, m-learning and e-learning could be considered technological siblings in some way. Both are trends evolving around the idea of applying new technologies to the educational plane, with e-learning focused on computers and m-learning focused on mobility.

The theoretical fundamentals of m-learning have been widely studied in the literature. For instance, Caudill (2007) presents a detailed theoretical study of the different definitions given traditionally for m-learning (Frohberg, 2006) and the existing differences with e-learning, concluding that m-learning is a new educational method, made possible thanks to mobile computing technologies, but going further than a simple technological change. M-learning allows learning on the move, facilitating many knowledge acquisition applications and methodologies that will remain valid even if the technology is updated and that do not only represent an update of e-learning applications.

The main conclusion at which most authors arrive is that m-learning is always e-learning, but e-learning is not necessarily m-learning, as it is the case that e-learning is always distance learning (d-learning), but d-learning is not necessarily e-learning (Georgiev, Georgieva, & Smrikarov, 2004). The differences between e-learning and d-learning are originated in the application of a new set of technologies to the traditional principles of d-learning, but during its evolution e-learning has become its own paradigm, with its own methodologies and applications. The same is true for m-learning: the differences from e-learning have

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