

# Chapter 15

## Support for Cloud– Based Mobile Learning

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### ABSTRACT

*Cloud based mobile learning (m-learning) is emerging as one of the most important branches of cloud computing, and is still in its infancy. These days, there are two emerging archetypes in Information and Communication Technologies (ICT) for learning. The first one is the anytime, anywhere, on-the-move, to be called the mobility archetype, and the second one is the cloud computing. Both archetypes are radically transforming the way we learn, communicate, access, and utilize information resources, and connect with peers and colleagues, thus affecting all aspects of education. This chapter delivers an introduction of the evolution of cloud based m-learning, benefits and characteristics of cloud based m-learning. It also canvasses the current scenario of m-learning utilizing the cloud, various challenges for implementing the m-learning system on the cloud. It further confers technologies used for cloud based m-learning. It also considers a brief look at methods for creating m-learning content and experiences, suggested by various researchers and concluded with the future aspects of the cloud based m-learning.*

### INTRODUCTION

Mobile learning or m-learning involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. Learning can unfold in a variety

of ways: people can use mobile devices to get access to educational resources, connect with others, or create content, both inside and outside classrooms. As mobile devices are gradually converging into Individual Information Centers, m-learning becomes a viable learning channel that would fit the living style of today.

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The term mobile learning (m-learning) has various meanings. Even though m-learning is related to e-learning and distance education, it is different in its focus on learning across contexts and learning with mobile devices. M-learning can also be defined as “any sort of learning that happens when the learner is not at a fixed, pre-determined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies”. In other words, m-learning decreases the limitation of learning location with the mobility of general portable devices.

M-learning refers to the use of mobile or wireless devices for the purpose of learning while on the move. Typical devices used for m-learning includes cell phones, smart phones, handheld computers, tablet PCs, laptops, and personal media players, etc. M-learning is any sort of learning that takes advantage of learning opportunities offered by mobile technologies. The main objective of m-learning is that the learners can get the knowledge from the centralized shared resources at anytime and anywhere they like free of cost. Increasing penetration of mobile phones, personal digital assistants (PDAs), and smart phones have redefined and accelerated the growth of mobile learning—or m-learning. There are three ways in which learning can be considered mobile—in terms of space, in different areas of life, and with respect to time (Townsend, Bond, & Zimmermann, 2013).

It is the era of the emergence of a connected, mobile society, with a variety of information sources and means of communication available at home, office, organizations and in the community at large. To be always connected there are many ways like mobile, tablet, etc.

Although cloud computing has established itself as a novel paradigm, mobile devices have unique characteristics and capabilities that are not inherently made part of a cloud and this new ad-hoc infrastructure is based on mobile devices. Despite the attention acquired, cloud computing, with its dynamic scalability and virtualized resource

usage, is being widely deployed for several applications in many organizations. It is envisioned that, in the near future, cloud computing will have a significant impact in the mobile based teaching learning environment also, enabling its own users to perform their tasks effectively with less cost.

Summarizing cloud computing according to the NIST (2011), cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

The significant momentum and attention have been attracted by both cloud computing and m-learning, but still they were treated as separate entities, with little work accomplished in their synergy. The integration of the cloud computing and m-learning was viewed in terms of accessibility and mobility features of cloud computing. This creates m-learning based on cloud computing, to be called m-learning. M-learning is at the intersection of mobile computing and e-learning conveying e-learning through mobile devices using wireless connectivity; this intersection includes the use of desktops as well as laptops. M-learning provides powerful features and functions such as mobility, reachability, localization, flexibility, and motivational effects due to self-controlling and better use of spare time.

M-learning provides the potential to provide the right information to the right people at anytime and anyplace using portable learning devices. Thus, m-learning can be summarized in a single statement – “deliverance of education or any learning via any portable devices” (Goundar, 2010). M-learning and cloud computing are two of today’s buzzwords in the academic and business worlds.

An m-learning environment works as an interface between the students and their learning objectives, and provides different modes of learning. The m-learning environment supports

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