

SMS-Based Mobile Learning

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INTRODUCTION

Students today combine study and work and expect significant cost and time savings from the use of information and communication technologies, including mobile communication. A strong interest in implementing mobile technologies in learning has emerged. Experiments with one of the most popular technologies—text messaging—have been reported in the literature (e.g., Stone & Briggs, 2002; Finn, 2004) with some including the development of blended learning models (Stone, Briggs, & Smith, 2002).

An early definition of mobile learning (m-learning) as “learning through mobile computational devices” can be found in Quinn (2000). Later, frameworks and research models were developed, providing guidelines for implementing suitable pedagogical approaches and for building services and applications relevant to a variety of mobile platforms and contextual settings (Garner, Francis, & Wales, 2002; Seng & Lin, 2004; Berth, 2005; Brown, 2005).

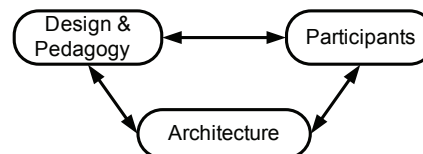
SMS (short message service, or text messaging) is an extremely popular and still growing 2G mobile data service, especially with young adults (Finn, 2004; Prensky, 2005; MMA, 2006; Grinter & Eldridge, 2003), which makes it suitable as a learning technology. This short article presents and illustrates the concepts of SMS-enabled m-learning, describing a series of SMS learning scenarios derived from the literature. The defining features of the scenarios are identified and discussed, including future trends.

BACKGROUND

Mobile learning is often referred to as a type of e-learning (Vavoula & Sharples, 2002; Leung & Chan, 2003; Seng & Lin, 2004). For the purposes of this article mobile learning is defined as a form of e-learning, which can take place any-time and anywhere through the use of a wireless and mobile communication device and the related network technology (Brown, 2005; Kukulska-Hulme, Evans, & Traxler, 2005; Wagner, 2005; Petrova, 2007).

An SMS scenario can be defined as a self-contained learning experience focused on a group of participants who act in a specific context and perform specific tasks to achieve knowledge acquisition oriented goals using the SMS mobile technology (Petrova & Sutedjo, 2004; Evans & Taylor, 2004). As text messaging is enabled on all types

Figure 1. An SMS-based learning scenario framework



of 2G and 3G mobile phones, an SMS-learning scenario will be accessible to virtually any mobile phone user.

The framework in Figure 1 captures the main aspects from which researchers have described and evaluated m-learning, including SMS-based learning (Trifonova, 2003; Attewell, 2005; Riordan & Traxler, 2005; Silander & Rytönen, 2005; Chinnery, 2006).

Architecture

Architecture deals with the specific mobile platform or platforms developed and used within a mobile learning scenario. The basic architecture would include access to the SMS provider network, an SMS-enabled cell phone and an SMS server or gateway (Petrova, 2007; Capuano, Gaeta, Miranda, & Pappacena, 2004). It might also include a number of auxiliary servers, such as a Web site, used to send bulk SMS messages and/or to provide instructions for participants. In some cases, additional infrastructure is needed to support a scenario where SMS is used in conjunction with another mobile technology (e.g., WAP), or a scenario where SMS learning is integrated with another e-learning approach to become part of a blended learning model.

Design and Pedagogy

Design and pedagogy describes the context for which the scenario was designed and developed, including its activities and expected learning outcomes. The framework in Figure 2 presents the general design contexts and the pedagogical aspects of m-learning.

Participants

The *participants* might be learners (university students, adult learners, or the general public) and teachers (faculty,

Figure 2. SMS learning scenarios: Design contexts and pedagogical aspects

SMS Scenarios: Design Contexts (Roibas, 2002; Bollen, Eimler, & Hoppe, 2004; Kadirire, 2005; Pincas, 2004; Colley & Stead, 2003; McMillan & Keough, 2005)	SMS scenarios: Pedagogical Aspects (Pincas, 2004; Singh, 2003)
<ul style="list-style-type: none"> • Supporting both independent & collaborative learning • Supporting “just-in time learning” • Supporting content delivery in a condensed format • Supporting multiple learners’ learning styles 	<ul style="list-style-type: none"> • The urgency of user needs • The ownership of initiative • The mobility of setting • The interactivity of process • The situated-ness of needs • The integration of content

administrators). Participants’ background, perceptions, attitudes and priorities play a critical role in the successful adoption of a scenario where they have a stakeholder role (Barker, Krull, & Mallinson, 2005).

TYPES OF SMS-BASED SCENARIOS FOR MOBILE LEARNING

Scenario descriptions were extracted from the literature on mobile learning (2002-2005). These include cases from Europe (UK, Ireland, Greece, Germany, Finland), Asia (Japan, Thailand, Malaysia), Africa (South Africa), Australia and New Zealand. The scenarios were classified based on their context, content, and orientation (Figure 3).

Two major categories were identified, each comprising five scenario types: *learning* (delivery of new content, test and quizzes, learning for revision, simulation-based learning, collaborative learning), and *learning support* (student support, communication, teacher support, blogs, Q&A sessions). Examples that illustrate each type are presented as follows, providing details about the participants, the educational setting, and the required additional technology.

Figure 3. Types of SMS learning scenarios

Learning	Learning support
Delivery of new content	Student support
Tests and quizzes	Communication
Learning for revision	Teacher support
Simulation based learning	Blogs
Collaborative learning	Q & A sessions

Delivery of New Content

All examples in this category refer to learning a foreign language. The participants are learners—there is no interaction with teachers. The SMS server needs to be able to handle registrations and store content.

The InLET project (Pincas, 2004) provided language support for international tourists attending the Olympic games in Athens. Tourists who subscribed to the service received SMS messages with short phrases in Greek. They could also request and receive a translation from or into Greek of a commonly used phrase.

Another example is the structured short course in English delivered to working learners in Hong Kong (Song & Fox, 2005). New words and expressions were sent to learners on a regular basis, following a predefined sequence of learning tasks. The course material was also available on the Web. Similar scenarios were implemented in Japan (Thorton & Houser, 2005) and in Australia (Levy & Kennedy, 2005).

Commercial mobile services for language support are also available (Chinnery, 2006). Munro (2005) describes a commercial application, which delivers a pair of learning objects to a paid customer: a text-based object using SMS, and a sound object via podcast to an MP3 player or a smartphone.

Tests and Quizzes

Tests and quizzes are used for formal learning and for self-assessment. Tests are typically conducted in controlled conditions. Quizzes are used in class or as a supplementary homework activity. Receiving feedback (“the score”) is an important feature of a test or a quiz.

Tretiakov and Kinshuk (2005) describe a scenario where students in class were given a quiz and then had to submit

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