Chapter 17
Framing Mobile Learning:
Investigating the Framework for the Rationale Analysis of Mobile Education

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ABSTRACT

The purpose of this chapter is to introduce faculty and instructors, and those interested in using mobile technologies to support teaching and learning, to the Framework for the Rationale Analysis of Mobile Education (FRAME; Koole, 2009). This chapter discusses how mobile or handheld devices can be used to promote inquiry-based learning and constructivist and authentic pedagogies. Additionally, the chapter discusses Koole's (2009) FRAME model as a scaffold for guiding "the development of learning materials, and the design of teaching and learning strategies for mobile education" (p. 25). Lastly, the FRAME model is used to guide the implementation of an inquiry-based instructional unit incorporating mobile or handheld devices.

INTRODUCTION

As we enter the second decade of the 21st century, technology tools supporting increased virtual social interactions and augmenting educational practices abound (El-Hussein & Cronje, 2010; Traxler, 2007; Haag, 2011). Today's undergraduate and graduate college students are more connected to each other and the World Wide Web than ever before. Smartphones, netbooks, e-readers, and tablet computing offer broadband and wireless (WiFi) "instant on" connections to the Internet and the expansive amount of resources it offers. According to Dahlstrom (2012), portable

devices are the academic champions (in all their diverse brands and platforms), across campuses today, with students favoring small, portable devices. Johnson, Levine, Smith, and Stone (2010), found mobile devices have become an accepted, integrated, and ubiquitous part of our daily lives, allowing access to video and audio files, geo-locating, social networking, personal productivity, informational and academic resources, and just-in-time learning. More recently, Johnson, Becker, Cummins, Estrada, Freeman, and Ludgate (2013), proclaimed, "tablets are proving to be powerful tools for learning inside and outside of the classroom" (p. 4). As such, the immediacy,

convenience, and ubiquity of hand-held mobile devices readily support inquiry-based pedagogies and authentic, real-world questions.

Mobile learning (or m-learning) by its very name invokes the mobility of the learner with a portable handheld device, resulting in a corresponding mobility of learning (El-Hussein & Cronje, 2010). According to El-Hussein and Cronje (2010), "These observations emphasize the mobility of learning and the significance of the term 'mobile learning'" (p. 14). Because many definitions of mobile learning exist, El-Hussein and Cronje urged the consideration of the relationship of the words mobile and learning in any definition of mobile learning, but acknowledged the difficulty of ascribing one fixed definition to the term. They advocated for the concept of mobility to be an interdependent tripartite classification--the mobility of the technology, the mobility of the learner, and the mobility of learning "that augments the higher education landscape" (p. 17). According to Laouris and Eteokleous (2005), m-learning is not only defined as ever-changing mobile technology (i.e., faster processors, smaller devices, varying output characteristics), but it should also be explained with "… a socially and educationally responsible definition [that views] the learner as the one being mobile and not his/her devices! What needs to move with the learner is not the device, but his/her whole learning environment" (p. 6). This definition offers a more learner-centered, device independent focus when describing mobile learning, which underpins Traxler's (2007) explanation that mobile learning is personal, contextual, and situated. Sharples, Taylor, and Vavoula (2007), proposed a theory of learning directed towards a mobile society where learning is supported not only by mobile devices but also by the mobility of people and knowledge. Similar to Laouris and Eteokleous (2005), Sharples et al. (2007) claimed that the foundation for a theory of mobile learning needed to be grounded in the awareness that learners are always on the move.

We learn across space as we take ideas and learning resources gained in one location and apply or develop them in another. We learn across time, by revisiting knowledge that was gained earlier in a different context, and more broadly, through ideas and strategies gained in early years providing a framework for a lifetime of learning. We move from topic to topic, managing a range of personal learning projects, rather than following a single curriculum. We also move in and out of engagement with technology, for example as we enter and leave cell (mobile) phone coverage (p. 222).

These postulated theories, definitions, and explanations of mobile learning point towards the ubiquitous and personally managed, contextual, networked, and active-oriented nature of m-learning. Intrinsically then, mobile learning readily lends itself to a learner-centered, constructivist pedagogy underpinned by learner-centered theories and constructivist philosophy.

CONSTRUCTIVIST ENVIRONMENT

Constructivism entails humans making meaning and constructing knowledge from active participation and inquiry that is social in nature. Constructivism as a theory embodies knowledge as "emergent, developmental, nonobjective, viable, constructed explanations by humans engaged in meaning making in cultural and social communities of discourse" (Fosnot, 2005, p. ix). A social constructivist view takes into consideration not only what is going on inside the learner's mind, but how the meaning is shaped, validated and shared with others. According to van Merrienboer and de Bruin (2014), "Social constructivist theory discourages the use of traditional lectures, because of the minimal opportunities for communication and discussion with the teacher and fellow students" (p. 27) They posited *the construction of meaning and knowledge through the interaction*

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