

Structure and Delivery for Mobile Learning Experiences: Marrying Informal Flexibility With Formal Stability

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ABSTRACT

The purpose of this article was to identify, implement, and evaluate the effectiveness of best practices from the mobile learning literature for the structure and delivery of mobile learning. Mobile learning activities were deployed in a videoconference equipment training course which was accessed by physicians, nurses, and healthcare professionals at medical organizations across Ontario. With regards to mobile learning delivery, user flexibility and control were identified as critical when utilizing a mobile learning experience to apply knowledge in a specific learning context. Avatar hosts were also identified as effective feedback and guidance mechanisms. The informal structure of mobile learning proved to be ideal for contextual, hands-on learning of specific workplace skills, supported by the baseline and summative knowledge provided by the online learning course. This study found that the structure and delivery of mobile learning must be considered during the instructional design stage in order to provide practical learning experiences and reliable learning outcomes.

KEYWORDS

Avatar, Contextual Learning, Elearning, Guided Learning, Mlearning, Pragmatism

INTRODUCTION

Mobile learning has been defined as wireless devices and technologies that are used by a learner as they participate in an educational experience (Traxler, 2007). Many research studies have focused on the mobile nature and technical usability of these technologies, but it is equally important to consider the learning contexts, activities and opportunities that mobile devices afford the learner (El-Hussein & Cronje, 2010; Huang & Chiu, 2015). Mobile devices provide unique design requirements that need innovative, customized approaches in design and delivery in order to create structured learning material (Haag, 2011). According to Berking, Haag, Archibald and Birtwhistle (2012), effective mobile learning requires a paradigm shift, requiring new design strategies and learning theories.

For many researchers, it is the structure and delivery of mobile learning that are identified as the critical components of effective pedagogical design. “Mobile learning design is the design of a mobile learning course taking into account what needs to be delivered, how it will be done and the structure of such a delivery” (Stanton & Ophoff, 2013, p. 502). Mobile learning can be structured to bridge the informal and formal learning environments of contextual learning and the traditional classroom

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as long as educators keep in mind the learners' needs, circumstances and abilities when structuring and delivering the mobile learning material (Kukulska-Hulme, 2010). Contextual learning in the workplace provides a variety of pedagogical opportunities, including increase learning flexibility, promoting problems solving, and shortening learning time (Zhang, David, Yin, & Chalon, 2013).

The literature identifies challenges with the adoption of mobile learning, particularly due to ineffective delivery of mobile learning activities or the structure of mobile learning content in both the educational setting (Joo, Kim & Kim, 2016) and workplace settings (Hardyman et al., 2013). While there are already an abundant variety of educational applications and resources available for mobile learning, there is limited experience in how to effectively deliver these mobile activities (Cheon, Lee, Crooks, & Song, 2012), and how to incorporate mobile learning into online learning environments (MacDonald & Creanor, 2017).

The purpose of this article is to identify, implement and evaluate the effectiveness of best practices from the mobile learning literature for the structure and delivery of mobile learning experiences. A "mobile learning experience" refers to an informal learning activity that the participants perform on their mobile device (laptop, tablet or phone), in a specific physical context or location. The structure of this informal learning experience was deployed as an interactive mobile activity within the format of a formal online learning course. The mobile learning experiences were deployed in a pilot study of the Ontario Telemedicine Network's online videoconference equipment training course which was accessed by healthcare professionals at medical organizations across Ontario.

LITERATURE REVIEW

The Informal or Non-Formal Structure of Mobile Learning

In this study, "structure" refers to how and when the contextual, practical workplace mobile learning experience is supported by planned and deliberate learning content. This can be better understood through a discussion about formal, informal and non-formal learning. Formal learning refers to the systemic and intentional education that is guided by learning objectives, goals and designed and delivered by a teacher in the classroom or online course (Werquin, 2010). Informal learning has been defined as not having a curriculum and is not pedagogically organized or planned (Khadage, Muller & Flintoff, 2016). "Non-formal learning is learning that is in addition or alternative to formal learning. In some cases, it is also structured according to educational and training arrangements, but in a more flexible manner. It usually takes place in community-based settings, the workplace and through the activities of civil society organizations" (Singh, 2015, p. 20). It is important to note that the line between informal and non-formal learning is often blurred, and many authors have argued that formal, non-formal and informal learning are not discrete categories, but are part of a learning continuum (Galanis, Mayol, Alier & García-Penalvo, 2016). Informal or non-formal learning environments have the potential to support formal learning environments since much of the real-world, contextual knowledge that individuals acquire about their jobs, social groups or learning environments are acquired informally in the field through interaction, observation and trial-and-error (Comas-Quinn, Mardomingo & Valentine, 2009). For this study, the online portion of the course was considered formal as it had five identified features of formal learning: a prescribed learning framework, an organized learning package, the presence of a designated teacher, the award of a qualification, and specific learning objectives/outcomes (Eraut, 2000). The learning in the mobile learning experience was closely aligned to the definition of non-formal learning in that it was contextual, activity and inquiry-based, but guided by prescribed activities and objectives.

In this study, the formal learning environment of the online classroom was supported by the non-formal, guided participation activities of the mobile learning experience. Bo-Kristensen et al. (2009) advise forming links between formal and informal learning environments by creating three types of activities: pre-activities, main activities and post-activities. "Pre-activities" can take place in the

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