Chapter 11
Meeting the Challenges in Evaluating Mobile Learning:
A 3-Level Evaluation Framework

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ABSTRACT

We propose six challenges in evaluating mobile learning: capturing and analysing learning in context and across contexts, measuring mobile learning processes and outcomes, respecting learner/participant privacy, assessing mobile technology utility and usability, considering the wider organisational and socio-cultural context of learning, and assessing in/formality. A three-level framework for evaluating mobile learning is proposed, comprising a micro level concerned with usability, a meso level concerned with the learning experience, and a macro level concerned with integration within existing educational and organisational contexts. The article concludes with a discussion of how the framework meets the evaluation challenges and with suggestions for further extensions.

INTRODUCTION

Mobile learning is a relatively new research area, with the first research projects appearing in the second half of the 1990s and the first international research conferences less than a decade ago. It is a field whose practice has not yet been

standardised in terms of research frameworks, methods and tools. Thankfully, mobile learning has a lot of common ground with related research areas including Technology-Enhanced Learning (TEL) and Mobile Human-Computer Interaction (mobileHCI). 'Borrowing' frameworks and methods from these areas has been common practice for early mobile learning research, providing researchers with useful starting points.

As our conceptions and understanding of mobile learning deepen, these 'borrowed' frameworks and tools might no longer be adequate. We now appreciate mobile learning not just as learning that is facilitated by mobile technology, but also as the processes of coming to know through conversations and explorations across multiple contexts amongst people and personal interactive technologies (Sharples *et al.* 2007a). Such evolving conceptions introduce challenges to all aspects of mobile learning research, including evaluation. As the field matures, our frameworks and tools need to address these challenges.

In this article we summarise six challenges in evaluating mobile learning: capturing and analysing learning in context and across contexts, measuring the processes and outcomes of mobile learning, respecting learner/participant privacy, assessing mobile technology utility and usability, considering the wider organisational and socio-cultural context of learning, and assessing in/formality. The article proposes an evaluation framework with three levels: a micro level concerned with usability, a meso level concerned with the learning experience, and a macro level concerned with integration within existing educational and organisational contexts. The article demonstrates how this framework has guided data collection and analysis in one mobile learning evaluation project, and concludes with a discussion of how it meets the evaluation challenges and with suggestions for further extensions.

CHALLENGE 1: CAPTURING LEARNING CONTEXT AND LEARNING ACROSS CONTEXTS

A major task for educational evaluation is to identify and analyse learning within and across contexts. For mobile learning, the interest is not only in how learning occurs in a variety of settings, but also how people create new contexts for learning through their interactions and how they progress learning across contexts. This poses a significant challenge to evaluators of mobile learning. In order to establish, document and evaluate learning within and across contexts, a researcher needs to analyse: the physical setting and the layout of the learning space (where); the social setting (who, with whom, from whom); the learning objectives and outcomes (why and what); the learning methods and activities (how); the learning progress and history (when); and the learning tools (how).

When evaluating learning in a traditional classroom, researchers generally have access to information about these context elements before, during and after the learning experience. Thus, they can inspect the classroom and interview the teacher and learners in advance of a lesson to discover the objectives, methods, lesson plan and tools. To evaluate a school museum visit or field trip, the researcher can visit the site and inspect the lesson plan, but will generally not know in advance the route that each student will take. For personal or family visits to museums or other learning sites, neither the objectives nor the trajectory may be known in advance. Learning objectives may arise as a response to interactions with the environment and learning trails may be guided by curiosity or unplanned events. The learners themselves may not be known in advance, for example when evaluating the learning experience of museum visitors randomly selected at the museum entrance. Personal mobile learning embraces any learning event where people, individually and collectively, continually create micro-sites for learning out of the available physical and social resources. In considering this generic case, the setting, objectives, methods and processes may all be unpredictable.

Table 1 portrays the increasing vagueness in moving from evaluating a classroom lesson, to a school museum visit, to personal or family museum visits, to personal mobile learning across formal and informal settings. Each set of context elements requires specific evaluation methods, to

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