1. INTRODUCTION

Mobile learning is perhaps nine or ten years old. This thought piece, based on my keynote at IADIS Mobile Learning 2010 in Oporto, looks back at those years to ask if we started in the right place and went in the right direction, and if we have gone as far as we can go. In earlier articles (Traxler, 2007) we have, perhaps uncritically, summarised the achievements of the mobile learning community during this time. The community has demonstrated that it can take learning to individuals, communities and countries that were previously too remote for other educational initiatives. The community has also shown that it can enhance and enrich the concept and activity of learning, beyond earlier conceptions, with learning experiences that are more personalised, authentic, situated and context-aware than ever before. The community has shown that it can challenge and extend existing theories of learning and finally the community has often made the claim that mobile learning increases motivation, especially amongst learners who would normally be considered dis-
tant, disengaged or disenfranchised. This piece in effect asks whether these achievements have been as straightforward and as unproblematic as they seemed at first sight.

2. THE FIRST ACHIEVEMENT: ENHANCING LEARNING

The mobile learning community has demonstrated that it can enhance, extend and enrich the concept and activity of learning itself, including aspects of

- *Contingent mobile learning* and teaching, where learners can react and respond to their environment and their changing experiences, where learning and teaching are no longer hard-wired. Learners may, for example, gather and process fieldwork data in situ in real-time on geography field trips and then follow these up with further investigations based on their own hunches or curiosity. Likewise, teachers may change their teaching in response to the changing affordances of the environment and their learners, for example using pico-projectors and improvised interactive whiteboards in the field (Traxler & Griffiths, 2009) or personal response systems with groups of learners (Draper & Brown, 2004)

- *Situated learning*, where learning takes place in surroundings that make learning meaningful, for example learning religion studies whilst visiting temples, mosques, churches and synagogues, learning fish biodiversity at sea or learning language in the community (Burke, 2010; Pfeiffer, 2009, Comas-Quinn, 2009)

- *Authentic learning*, where learning tasks are meaningfully related to immediate learning goals, for example basic literacy or numeracy in work-based learning on the job, in for example hospitals or game parks (Kneebone & Brenton, 2005; de Crom & de Jager, 2005)

- *Context-aware learning*, where learning is informed by the history, surroundings and environment of the learner, for example learning in botanical gardens, museums or heritage sights (Lonsdale et al., 2004; Brown, 2010). Until recently this has been episodic and isolated but the increased functionality of mainstream retail devices opens up enormous possibilities for developing more intelligence and using more history behind the learner experience; and

- *Augmented reality mobile learning*, where learning builds on local context supplemented by an extra audio or video overlay (Smith, 2009)

- *Personalised learning*, where learning is customised for the preferences and abilities of individual learners or groups of learners (Kukulska-Hulme & Traxler, 2005; Yau & Joy, 2006)

- Learning based on *user-generated contexts* (Cook, 2010), a more recent concept that conflates aspects of context-aware, augmented reality and personalized mobile learning.

- *Game-based learning*, now increasingly mobile (Facer et al., 2004; Giles, 2009; Kato et al., 2008; Pulman, 2008)

- *Assessment* aligned to the affordances of mobile technologies, for example with physiotherapy students (Dearle et al., 2008)

These achievements have usually been focused on pedagogy and technology, and have often been part of the *research economy*, that part of higher education separate from mainstream teaching and learning where researchers, developers and innovators bid for funds, implement projects, write papers and move on. Consequently, most of this research and development has been proof-of-concept, project-based, fixed-term and