Chapter 6

Mobile Phones as Mediating Tools within Augmented Contexts for Development

John Cook
London Metropolitan University, UK

ABSTRACT

This paper argues for the need to re-examine approaches to the design of, and research into, learning experiences that incorporate mobile phones in the learning context. Following an overview of 'mobile learning' the author's argument describes two initiatives: Firstly, Design Research is presented as an approach that tends to have interventionist characteristics, and is process-oriented and contributes to theory building. Secondly, describing Augmented Contexts for Development; these place context as a core construct that enables collaborative, location-based, mobile device-mediated problem-solving where learners generate their own 'temporal context for development', and a case study is used to reify this Vygotskian-oriented initiative. This paper revisits Design Research by making use of various questions, and concludes by briefly outlining intentions on how to move toward some preliminary generalized design principles and implications for broader theory.

INTRODUCTION

The nature of learning is being augmented and accelerated by new digital tools and media, particularly by mobile devices and the networks and

structures to which they connect people. 'Mobile learning' is an emerging, and rapidly expanding field of educational research and practice across schools, colleges and universities as well as in the work place (for example see: van't Hooft & Swan, 2007; Sharples et al., 2008; Attwell et al., 2009; Pachler et al., 2010). It is also gaining increasing

importance in what is frequently referred to as 'informal', as opposed to 'formal', learning (see e.g., Cook et al., 2008) and it is starting to attract the interest and imagination of practitioners in all phases of education as well as of researchers. In view of the increasing portability and functional convergence of technologies, as well as the reduction in their cost, and the cost of services available for them, mobile devices have become more and more central to, and at the same time invisible in the life-worlds of users. Consequently, in this paper I argue for the need to re-examine approaches to the design of learning experiences that incorporate mobile phones in the learning context; such an undertaking seems particularly timely if we are to take full advantage of the affordances these devices provide in formal and informal contexts for learning.

Sharples et al. (2008, p. 5) conceive mobile learning as a 'process of coming to know through conversations across multiple contexts amongst people and personal interactive technologies'. Pachler et al. (2010) note that although this definition is attractive, it may be too narrowly focussing on 'conversation', which foregrounds the link to people but underplays the linkages to systems and media structures (e.g., YouTube); this may be better expressed by the broader term 'communication'. Key characteristics of mobile devices include among other things increasing portability, functionality, multimedia convergence, ubiquity, personal ownership, social interactivity, context sensitivity, location awareness, connectivity and personalisation. In terms of context sensitivity, an important affordance of mobile technology is that of digital augmentation, whereby contextual data is added to objects to enable a deeper understanding of them and richer meaning making (I will return to this in the case study below). Furthermore, the multimodal affordances and characteristics of mobile devices are seen as important, particularly how images and sound-related functionality impact on the input and output dimensions of interac-

tions as well as the representation of information and knowledge.

An important question to consider with respect to mobile learning is this: what is there to commend mobile phone usage as a mediating tool for learning inside and outside the formal learning context? In answer to this question I have (elsewhere) drawn on the literature to delineate three phases of mobile learning (Pachler et al., 2010; Cook, 2009b): a focus on mobile devices, a focus on learning outside the classroom and a focus on the mobility of the learner. The beginnings of widespread experimentation with mobile devices for learning came in the mid 1990s. The first phase is characterised by a focus on what the mobile devices can be used to achieve in an educational context (PDAs, pen tablets, laptops or mobile phones) for formal education and training. This first phase, which in fact is still running in parallel with other phases, makes productive use of the affordances of mobile technologies such as e-books, classroom response systems, handheld computers in classrooms, data logging devices and reusable learning objects. A focus on learning outside the classroom is a characteristic of the second phase of mobile learning. The affordances in the second phase can include field trips, museum visits, professional updating, bite-sized learning and personal learning organisers. The third phase goes beyond mobile learning and is characterised by a focus on the mobility of the learner, the design or the appropriation of learning spaces and on informal learning and lifelong learning. There are three important affordances of the third phase: mixed reality learning, context sensitive learning and ambient learning (the latter includes augmented reality).

In this paper I argue for the need to re-examine approaches to the design of, and research into, learning experiences that incorporate mobile/cell phones in the learning context. I advance my argument by describing two initiatives. Firstly, below Design Research is presented as an approach that tends to have interventionist characteristics, is

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