A Mobile Learning Overview by Timeline and Mind Map

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ABSTRACT

Mobile learning has been a research topic for some 20 years. Over that time it has encompassed a wide range of concepts, theories, designs, experiments and evaluations. With increasing interest in mobile learning from researchers and practitioners, an accessible overview of this area of research that encapsulates its many facets and features can provide a useful snapshot of the field to interested parties. This article provides a summary of the field of mobile learning, applying the main analysis categories of research, technology, content, learning and learner. The author presents these categories and subcategories in the form of a mind map, which outlines the details of the major themes in mobile learning. In addition, the author contextualises the key developments in mobile learning in a timeline. The intent of this article is that it may serve as an introduction to the research field of mobile learning, enabling researchers to quickly familiarise themselves with the type of work that has been done in the past, and the potential areas of investigation that might prove fruitful in the future.

Keywords: *Literature Review, Mind Map, Mobile Learning, Timeline*

INTRODUCTION

Mobile learning is an increasingly popular approach to learning with technology, particularly with the increase in BYOD (Bring Your Own Device) approaches to classroom learning, where students are using their own mobile devices to learn. With this increasing interest in the subject, it may be a useful aid to new researchers, or other interested readers, to provide an accessible overview of mobile learning that encompasses its many facets and features. Although there have been many reviews of the mobile learning literature, these have tended to focus mostly on the nature of the work from a research perspective. Further, they have focused on a specific subset of the overall literature. For example Wingkvist & Ericsson (2011) surveyed the papers published in the Mobile and Contextual Learning (mLearn) conference series, but classified them according to only two dimensions: research method and research purpose. Pollara & Broussard (2011) provided a review focused specifically on student learning outcomes and processes. Sattler et al (2010) focused on the benefits (particularly to constructivist learning) and challenges (buy-in, interface issues, cost and infrastructure.) Orr (2010) focused on pedagogy and constraints. Some review articles have specifically confined themselves to a particular type of mobile learning, for example mobile language learning (Viberg &

Grönlund, 2013.) It is, of course, in the nature of a comprehensive literature review that it will sacrifice breadth in favour of depth, within a chosen area of investigation. The intention of this article is to sacrifice depth in favour of breadth, in order to provide a full-landscape view of the field of mobile learning, which has so far been lacking from the literature.

THE CONCERNS OF MOBILE LEARNING RESEARCH

A number of authors have attempted to break down the field of mobile learning research into various specific concerns. The ways in which this has been done has, of course, varied depending on the focus of interest of these authors. From a general perspective, for example, Traxler (2009) defined a number of mobile learning categories: technology-driven, portable, connected classroom, informal, personalized, situated, performance support and in the development context. He also outlined some aspects of affordances; infrastructure, sparsity, policy agenda and blended learning modes. Laurillard (2007) provided a slightly different interpretation, pointing to aspects of mobile learning's uniqueness as a learning mode by referencing learner generated contexts, digital objects co-located with the learner, the three 'mobilities' in m-learning (learners, technology objects, and information) and motivation through ownership and agency. While these categories are all relevant and helpful, this article attempts to develop a new overview, based on a broad analysis of the literature up to and including 2013, and provide visualisations of the main themes, concepts and concerns of mobile learning.

ANALYSIS METHODOLOGY

The methodology used in this article was based on seeking comprehensive coverage of mobile learning research as represented primarily by journal articles and book chapters, and presenting visualisations of our findings (in the form of a timeline and a mind map.) Our main sources were journal articles on the topic of mobile learning revealed in a search of the Web of Science (400 articles), all articles published in the International Journal of Mobile and Blended Learning (94 articles), chapters in mobile learning books (~50), and additional articles found in a search of Google Scholar that covered concepts not previously identified, and included additional types of publication such as conference papers (~50). Each paper was analysed in terms of its own statements of its key features and contribution, based mainly on the abstracts and conclusions of the papers, and visualisations of the data were developed incrementally as new concepts were added, revised and rearranged. In seeking a saturated sample, these data were accumulated until the additional concepts being gleaned from the literature were either (a) already included in the data or (b) were only providing further examples that were indicative rather than exhaustive. For example, one of our themes related to the subject content of mobile learning systems. Since the number of subjects became increasingly large, the final visualisation only includes a small subset of the most popular subjects covered. The papers cited in the commentary provide indicative examples of each of the main concepts of the mind map, though in many cases there were many other papers that could equally have represented the chosen concepts, and it is not claimed that each of these examples is the 'best' paper that could have represented each individual concept. Further, due to limitations on space, it has not been possible to provide commentary and references for every single concept in the mind map, so the article focuses instead on what is hoped to be a representative sample.

Data Presentation

This article presents its landscape view of the field of mobile learning in the form of a timeline (mapping in time) and a mind map (mapping in space). Timelines are an important tool in the visualisation of temporal data, for example they have proved particularly useful in the visualisa-

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