Chapter 11
Mobile Learning in Health Professions Education: A Systematic Review

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ABSTRACT

Recent technological advances have led to the adoption of mobile learning devices throughout the world and this is reflected in the articles that were reviewed in health professions education. Several criteria were used to review the selected articles, including the target group, phase of learning (undergraduate, postgraduate, or continuous professional development), the theoretical framework used, and the reported outcomes. The majority of the studies fit into Kirkpatrick’s first level of evaluation and report learners’ views of learning experiences. A smaller number of articles incorporated changes in learners’ behaviour, but only one reported benefits to the delivery of health care. To assist educators in using mobile learning as part of their teaching, an implementation framework including infrastructure, training, and ethical elements based on the literature reviewed is provided.

INTRODUCTION

During the last few years, mobile learning has established its place in the education sector at all levels. A quick search on Google in June 2012 using the terms + “mobile learning” + definition resulted in 525,000 results compared with the 1,250 in 2005, reported by Laouris and Eteokleous (2005). This in itself is proof that mobile learning or m-learning has taken the world by storm. Mobile learning generally refers to e-learning using mobile devices and wireless transmission and it is allowing learners to move away from stand-alone computers (Walton, Childs, & Blenkinsopp, 2005).
There are two distinct features that characterize mobile learning, one, it allows educational processes to take place anywhere and at any time; and two, it includes any kind of handheld device which is small and easy to carry and that uses a communication technology (Ortega, et al., 2011).

The increased adoption of mobile learning has implications for educators. They need to be aware of the best practices and pedagogical effects of its use in teaching, learning, and assessment. In health professions education, the teaching and learning environment is also rapidly changing as competing demands are being made on educators to provide adequate training in devolved settings with limited resources. Mobile devices may provide a way to engage users with bite sized packages of content and a way to provide more student centred experiences independent of time and space (Clay, 2011).

In this chapter, the authors present a systematic review of mobile learning tools and strategies that are being used in health professional education in order to provide educators with information to assist them with incorporating mobile learning into their settings.

**Objectives**

The main objective of this review is to present a comprehensive account of the current research on mobile learning in health professional education. The questions that guided this review included:

1. Which group was targeted in each study?
2. What phase of learning (Undergraduate [UG], Postgraduate [PG], or Continuous Professional Development [CPD]) was used?
3. What was the nature of the activities? Were the activities enforced upon the learners or were they elective?
4. What theoretical frameworks of learning were applied to the activities?
5. What were the outcome(s) of the mobile learning activities and how were they evaluated?

**REVIEW METHODOLOGY**

A search of two databases, Web of Knowledge and Ovid was conducted in May 2012. The keywords used were Mobile learning, mlearning, and health professionals, doctors, nursing, medical, podiatry, and dentistry. A further search was conducted of references cited in the selected studies.

The following selection criteria were used to review the studies (see Table 1).

Each of the selected studies was then read by both authors to determine its relevance, and to gain further information, including: the year of publication, journal, and country of the study. This information was collated and each of the review questions was then applied.

**RESULTS**

In all, there were 31 research articles selected for inclusion into this review (Appendix 1) Most of the articles originated from the United Kingdom (8) followed by the United States of America (USA) (7), Australia (5), and Taiwan (3). There was one article each from Botswana, Canada, Germany, and Japan.

**Table 1. Selection criteria used for review**

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<thead>
<tr>
<th>Inclusion Criteria</th>
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<td>• Study participants were medical or related health professionals, students, or trainees.</td>
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<td>• The study was related to education in the above disciplines.</td>
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<tr>
<td>• The study involved research related to mobile learning.</td>
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<td>• The articles were available full text and were in the English language.</td>
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<th>Exclusion Criteria</th>
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<td>• Any study that was purely related to perceptions and attitudes of the respondents and did not include an intervention.</td>
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<td>• Duplicate articles</td>
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