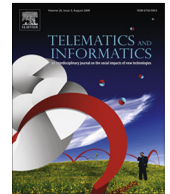




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Mobile Learning (M-Learning) adoption in the Middle East: Lessons learned from the educationally advanced countries



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ABSTRACT

The integration of mobile devices in the educational system presents enormous opportunities stretching from improved efficiency to accessibility of education to communities living in remote areas. The last decade has seen emergence of a new economy called Knowledge Economy, a fusion of globalization and Information and Communication Technology (ICT). Educationally advanced countries such as South Korea, USA, Japan, Taiwan, Singapore, Malaysia, European Union and Australia are using mobile devices in the educational sectors. These countries have been found promoting Mobile Learning (M-Learning) as a matter of national policies. They have accommodated E-Learning and M-Learning in their traditional learning systems. However most of the Middle East countries are still out of race and facing number of challenges in M-Learning adoption. A critical review of educationally advanced countries suggests that adoption of M-Learning is influenced by country specific as well as individual constraints. As a consequence five important lessons have been drawn from these countries, national level initiatives, public and private partnership, characteristics of learners and cultural norms, M-Learning infrastructure, and awareness. This paper is intended to help policymakers of the educationally less advanced countries to overcome the challenges of M-Learning, following the footsteps of educationally advanced countries. The review concludes with the discussion of five lessons in the context of the Middle East, assigning priority the most important being the national level objective, followed by M-Learning awareness, partnership between public and private entities. Also learners' characteristics and cultural norms, M-Learning infrastructure, policymakers must evaluate when making decisions about M-Learning adoption.

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1. Introduction

During the last fifteen years the education system in the industrialized nations witnessed major reforms. These reforms have brought flexibility, independency, creativity, and interactivity in the academic environments. The emergence of Knowledge Economy and integration of mobile devices into the academic settings has produced everlasting impact on the modern learning system. Learning is no more confined to classroom and directed by instructors, instead it has moved to a new horizon of anywhere, any time and by anyone using mobile devices called M-Learning. Internet based learning

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promotes cooperative learning and has attracted attention of health science (Gürol, 2010). Mobile devices are highly portable and therefore provide flexibility in learning at any time and any place (Traxler, 2007; Sarrab et al., 2012). The educationally advanced countries have developed strong policies and strategies for handling the 21st century educational need. These countries are the front runner and have been able to make best use of mobile devices in learning. European countries have tackled number of M-Learning projects for example MoLeNET in UK, with a budget of 12 million British pounds and 40,000 learners. Many countries underwent changes for the creation of knowledge-based economies (Organisation for Economic Co-Operation, 2000; Riley, 2004) and the European Union acknowledges the importance of knowledge-driven economy, innovations and technological adaptation (Chen and Dahlman, 2004; Sahlberg, 2006). Even, 14 U.S. states and Canadian provinces have taken up M-Learning initiatives but the Middle East still lacks enthusiasm, working on small scale and in most of the cases as a support to traditional learning (UNESCO, 2012a).

This paper aims to:

1. Explore and critically analyze M-Learning initiatives of the educationally advanced countries in academic environment.
2. Uncover the factors that facilitated M-Learning adoption in these countries.
3. Provide lessons for the M-Learning providers in the educationally less advanced countries of the Middle East in particular.

It is organized into five sections: introduction, methodology, study, lessons learned, results & discussion, and conclusion. While the introduction presents an overview of M-Learning in educationally advanced countries and objective of the study, the method describes different steps which have been followed in the exploration, gathering of information, analysis and drawing of conclusion. The lessons learned consists of five factors for the successful M-Learning adoption, and their discussion in the light of current educational scenario of the Middle East with the most important being: national level M-Learning objective, proper planning and leadership support to the lesson of less significance- M-Learning infrastructures. The review attempts to cover a diversity of M-Learning experience across the region of North America, Europe, South Asia and East Asia targeting educationally advanced countries, which could be used by the educationally less advanced countries of the Middle East in particular and others in general. Also, efforts have been made to cover the latest information as much as possible.

2. Methodology

Initially technical as well as non-technical challenges of M-Learning and their corresponding solutions were analyzed in general. Some of the major technical and non-technical challenges in the uptake of M-Learning, which have been observed during literature review include lack of political commitment, lack of necessary infrastructure (bandwidth, end user support, and digital divide), lack of awareness, lack of motivation, social and cultural norms, and negative perceptions. These issues were then narrowed down and coupled with the experiences of educationally advanced countries so to capitalize the opportunities of M-Learning in the educationally less advanced countries. Experiences of educationally advanced countries can be used as guidelines by educationally less advanced countries for M-Learning adoption.

The primary data gathering technique which involves the desk review of secondary sources of data, including academic literature, research and evaluation reports, project reports, and blogs has been used. Information retrieval techniques of Google have been employed as a search strategy, since these techniques index electronic databases and provide direct links to the resources. Few of the techniques are listed in Table 1.

During the study electronic databases search included: Journals published by professional societies (such as ACM Digital Library, Compendex, IEEE Xplore, ISI Web of Science) and professional publishers (such as Science Direct Elsevier, Springer Link, Wiley Inter Science Journal Finder). Articles were eligible for inclusion in the review if they presented evidence on M-Learning adoption factors and solutions in the educationally advanced countries and Middle East. The review includes qualitative and quantitative research studies, published up to and including 2014. Only studies written in English were included. Studies were excluded if their focus, or main focus, was not M-Learning. Furthermore, as the research questions are concerned with M-Learning in the education as a whole, and its underlying assumptions, studies that focused on practices, such as M-Learning in non-education sectors were excluded. Steps used in screening of articles are shown in the Fig 1.

Step 1, the titles, abstracts, and keywords of the articles were identified and searched in the electronic databases using specific terms including Google information retrieval techniques.

Step 2, studies that were clearly not about M-Learning adoption factors was excluded. As an example, while searching the term “Mobile Learning AND USA”, several hits on articles related to how to use mobile devices were reported.

Table 1
Google information retrieval techniques.

S. no.	Searching techniques	Examples
a.	AND	M-Learning AND adoption factors
b.	OR	M-Learning AND adoption factors AND USA OR UK
c.	File type: pdf	M-Learning adoption factors: pdf
d.	“ “	“M-Learning in South Korea”
e.	#. .#	M-Learning in Middle East 2000. .2014

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