Assessing the Role of Mobile Technologies and Distance Learning in Higher Education

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Chapter 8
M–Learning in the Middle East:
The Case of Bahrain

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ABSTRACT

The introduction of e-learning in higher education has brought radical changes in the way undergraduate and postgraduate programmes are designed and delivered. University students now have access to their courses anytime, anywhere, which makes e-learning and m-learning popular and fashionable among university students globally. Nevertheless, instructors are now challenged, as they have to adopt new pedagogies in learning and teaching. This chapter explores the adoption of m-learning at universities in the Kingdom of Bahrain, as well as the relevant current developments and challenges related to the major stakeholders (educators and students) in higher education. It mainly investigates the educators' views and perceptions of m-learning, as well as its future potential in higher education. Most of the educators use m-learning tools to some limited extent, and there is still opportunity to reach full integration with curriculum and the blended learning approach. Further, it is proposed that professional development should be provided to instructors to enable them to use the available new technologies in an appropriate and effective way.

INTRODUCTION

The rapid technological advancements in the context of globalization have changed our everyday lives at individual and societal level. Universities worldwide are among the first to embrace these changes and prepare their students with the appropriate tools to enter the 'real' world of work. Two decades ago the technological advancements infiltrated the traditional classrooms with the introduction of e-learning. The extensive use of Information and Communication Technologies (ICTs) – especially the use of the Internet – revolutionized and changed for good the design and delivery of curricula in universities around the world. During the last decade, an unseen 'revolution' emerged from the introduction of e-learning and even more recently of m-learning tools in the

classroom. The magnitude of these information technology developments is still not very well understood, simply because practice has run well ahead theory. In addition, many argue that the m-learning community is still fragmented among the various stakeholders, with different national perspectives, differences between academia and industry, and between the school, higher education and lifelong learning sectors (Al Saadat, 2009). Whether one looks at this phenomenon of e-learning and m-learning as a fad, threat, or a solution to educators' problems in delivering mainstream learning in higher education (Peters, 2009), it is currently a hot issue that needs our attention.

The emergence of the World Wide Web supported the development and the popularity of e-learning (Peng, Su, Chou, & Tsai, 2009). In addition, mobile devices such as mobile phones, laptops have increased drastically and are widely used in e-learning (Iqbal & Qureshi, 2012; Koszalka & Ntloedibe-Kuswani, 2010). The use of e-learning in higher education has grown in the past two decades, transforming the nature of higher education, as the technologies are supplementing the course delivery (Bharuthram & Kies, 2013). There are ongoing debate and criticisms on using e-learning, nevertheless most of the literature has shown a positive impact of e-learning in educational contexts, as the drastic developments in technologies have produced a new revolution in education.

Nevertheless, most studies in e-learning and m-learning focus on its acceptance by students in developing countries (i.e. Rhema & Sztendur, 2013; Wang, 2011), on the challenges and opportunities from the adoption of e and m-learning, but very few focus on its acceptance by instructors or on their perceptions of m-learning and its future potential. Therefore, this chapter discusses the origins of m-learning, its pedagogical value and the current developments and challenges in higher education context; in addition, it presents the instructors' perceptions of m-learning in general

in the Middle East and more specifically in the Kingdom of Bahrain. The chapter is organized as follows: the first part provides a summary of the origins and concepts of e-learning and m-learning. The following section explores the opportunities and challenges from the use of m-learning in higher education, as well the instructors' perception and use of m-learning via the survey results. The final part discusses the current and future status of m-learning followed by the conclusions.

THE ORIGINS AND CONCEPTS OF E-LEARNING AND M-LEARNING

E-Learning in Higher Education

Despite the relative recent appearance in literature, the concept of e-learning has fueled a number of debates regarding its usefulness in higher education and more particular, in the development of learning and teaching strategies. The few theoretical models describing this concept are still not adequate to capture the dynamics of the e-learning and m-learning proliferation in universities globally. The growing body of literature is still too narrow and short-sighted to capture the changes that currently take place in higher education. Nevertheless, the future is here, at least from a technological perspective.

In fact, practice has understandably run well ahead of theory, and in some issues and approaches away from theory, for example, the use of virtual learning environments (VLEs) and the use of applications to support them in mobile devices. A VLE is a set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the learning process (Demian & Morrice, 2012). The principal components of a VLE package include curriculum mapping (breaking curriculum into sections that can be assigned and assessed), student tracking, online support for both teacher and student, electronic communication (e-mail,

threaded discussions, chat, Web publishing), and Internet links to outside curriculum resources. There are a number of commercial and customized VLE software packages available, including Blackboard, Moodle and WebCT. A quick search on the Internet reveals that commercial and customized VLEs have introduced e-learning and m-learning applications to allow ubiquitous access for users (i.e. http://www.blackboard.com/platforms/mobile/products/ mobile-learn. aspx). Big search engines for academic content also adopt and follow this trend (i.e. EBSCO, Science Direct, Emerald) as well as international publishers (i.e. Prentice Hall, McGraw Hill, Springer).

Another recent important development is the use of tablet PCs and e-books as integral parts of the m-learning pedagogy. The optimization of mobile devices such as smart phones, e-book readers and tablet PCs, in conjunction with the digitalization of university libraries currently based mainly on e-books in PDF format, has changed for good the way we perceive study in a university environment. The classic view of a university student spending valuable time in a campus library struggling to borrow the last short-loan copies of the books s/he needs, tends to be an image of the past: virtual or e-libraries allow university students access content and borrow e-books for literary anywhere, anytime they wish for. A recent study undertaken as part of the project of the Open University's Building Mobile Capacity initiative, provides strong indications that e-learning is here for good. Despite the various issues reported in this project, it was found that when combined synergistically, the functionality, portability and comprehensiveness of resources offered by e-books, Internet access and mobile group learning, together facilitate rich learning experiences for students (Smith & Kukulska-Hulme, 2012).

As it has been previously discussed, the availability of mobile and wireless devices enables different ways of course contents delivery in higher education. It has also changed the communication between the teacher and the learner, as teachers nowadays are confronted with digitally literate students. In addition, these devices have created learning opportunities different to those provided by e-learning (Peters, 2009). E-learning is also changing by providing instructors and students with a different educational environment that is enabled with the use of mobile devices such as PDAs, mobile phones and other. According to Sarrab, Al-Shihi, and Rehman (2013) e-learning offers two main facilities to improve the educational system. E-learning happens anywhere anytime where learning and educational activities are offered the individuals and groups the opportunity to work online or offline, synchronously and asynchronously via networked or standalone computers and other mobile devices. The main drawback of e-learning according to Sarrab et al. (2013) is that it is bound to the location of personal computers or laptops, hence there is an issue with usability. Therefore, m-learning has been integrated to help make learning more interesting, widely available, more interactive and flexible.

The Emerging Concept of m-Learning

M-learning or mobile learning is an evolving phase of e-learning (Peng et al., 2009), as e-learning is dependent on desktop computers, whereas m-learning is dependent on mobile devices (Orr, 2010). There are a variety of definitions of m-learning, partly because m-learning is a new concept. Most studies define m-learning as an extension of e-learning which is performed using mobile devices such as PDA, mobile phones, laptops etc. (Sad & Goktas, 2013; Motiwalla, 2007). Others highlight certain characteristics of m-learning including portability through mobile devices, wireless Internet connection and ubiquity. For example Hoppe et al. (2003 in Iqbal & Qureshi, 2012), define m-learning as "using mobile devices and wireless transmission" (p.148). Kukulska-Hulme and Traxler (2007, p.35) suggest that "m-learning emphasizes the ability to facilitate the

Table 1. Difference between normal learning and m-learning

Normal Learning Style	Mobile Learning
Individual assessment, group projects, group discussions and project presentations will be done through quizzes and tutorials.	The use of multimedia elements in conveying information and receive online feedback.
Students will go to a class or lecture hall to attend the lecture.	The learning process can be done anywhere and at any time.
Students will interact face to face to allow them to communicate effectively.	Able to organize meetings and schedules of all team members at the same time.
Using chalk and talk method in delivering information.	Students can get the lecture notes quickly without copying from the board.

Source: Devinder & Zaitun (2006)

learning process without being tied to a physical location". In the higher education context, the term mobile learning (m-learning) refers to the use of mobile and handheld devices, such as smart phones, laptops and tablet PCs, in the delivery of teaching and learning. Simply put, m-learning is defined as "the process of learning mediated by a mobile device" (Kearney, Schuck, Burden, & Aubusson, 2012). M-learning can be thought of as a subset of e-learning, which is the "the use of computer network technology, primarily through the Internet, to deliver information and instruction to individuals" (Welsh, Wanberg, Brown, & Simmering, 2003).
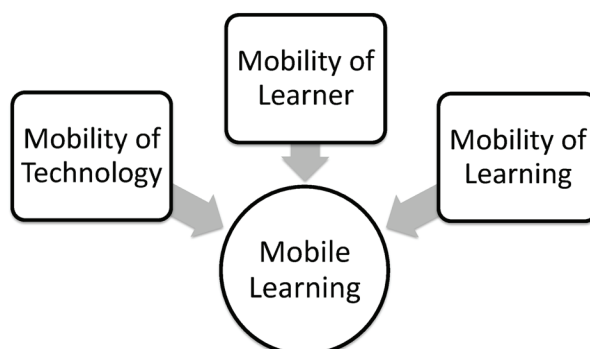
Brink (2011) divided m-learning in three main types, formal, informal and well-directed or self-directed. Formal learning includes normal learning, which is triggered by notifications and reminders such as short messages. Informal learning encompasses two-way message exchange, hence an interactive relationship, such as Facebook, blogs, Twitter etc. Finally well-directed or self-directed learning uses reference and media-based materials such as videos and podcasts. For example, Table 1 shows the differences between normal and m-learning.

Although, in higher education, students are regarded as pioneers in forcing the faculty to change and adapt m-learning, the literature suggests that there are significant positive outcomes (Sad & Goktas, 2013). The literature suggests that there are several factors that influence readiness

for m-learning. For example, demographic influences on users' readiness for m-learning such as gender, age and educational level. Others refer to technology acceptance, ease of use, perceived usefulness, quality of services and cultural factors.

A prerequisite for the delivery of e-learning programmes is the use of fixed locations i.e. in a classroom or where a desktop PC and an Internet connection are available. The remedy to this significant e-learning limitation appeared in the mid-2000s with the advent of m-learning applications for a wide variety of uses such as workplace learning, teaching and social networking. Quinn (2001) argues that m-learning intersects mobile computing with e-learning. The unique features of the new mobile technologies and the unlimited potential they offer in terms of flexibility and customization to individual needs, place it also in the framework of flexible learning (Peters, 2009; Sarrab et al., 2013). In this context, students expect training that is "just in time, just enough and just for me" (Rosenberg, 2001), and that can be delivered and supported beyond the boundaries of traditional classroom settings (Kearney et al., 2012). M-learning emphasizes the *mobility* of learning, whereas others place emphasis on the mobility of learners, and the experiences of learners as they learn by means of mobile devices (El-Hussein & Cronje, 2010, p.14). Similarly, Traxler (2007) claims that m-learning is not about 'mobile' or about 'learning' but is part of a new mobile conception of society. Hence, the

Figure 1. Mobile learning
Source: El-Hussein and Cronje (2010, p. 17)

definition of m-learning depends on how each member of the society understands and explains mobile learning. For example, other definitions refer to the physical way in which technology is used and others emphasize on what learners experience when they use mobile technologies in education, whereas others refer to how it can be used to make unique contribution to education and e-learning (El-Hussein & Cronje, 2010, p. 14). Figure 1 illustrates the above view.

The mobility of technology refers to the mobile cellular devices that link to the internet and deliver content and instruction and can enable learning to learn at anytime and anywhere in a form that is culturally prestigious among people in the same group (King, 2006; El-Hussein & Cronje, 2010). The mobility of learners is linked to the mobility of the devices and the fact that the learner is connected to the internet, hence learning can occur at any time and any place (Traxler, 2009). Finally, the mobility of learning is unique as it is "received and processed withing the context in which the learner is situated" (El-Hussein & Cronje, 2010, p. 19).

While the technical advancements in m-learning progress rapidly by satisfying a consumer driven demand, there are still many barriers in the development of an appropriate pedagogical framework for its application in teaching and learning. The aging instructor population is ap-

parently one of the primary barriers in the smooth transition to the new era in higher education. The well-established learning theories of the past are based on teaching by the textbook and memorizing information. Educating and persuading older instructors to use m-learning as part of their learning and teaching approach poses as one of the most difficult challenges. Another issue in the use of m-learning in higher education programmes is that learning practices are changing while learning theories that support them are not (El-Hussein & Cronje, 2010). In addition, Wang (2011) found that e-learning (including m-learning) development tends to focus on technical issues of design and ignores organizational, social, and pedagogical aspects that are necessary for effective e-learning programmes in the workplace. Most applications are lacking of pedagogical underpins on the use of m-learning, and fail to understand learning behavior that takes place in the organizational and social context. It is also suggested that locating distinctive features of learning with mobile devices is an evolving process interwoven with the maturation of the relevant technologies (Kearney et al., 2012). The design of m-learning content for higher education is a complex and difficult task. Account still needs to be taken of learner's and instructors' specific needs as well as the environment which learning takes place. What also needs to be done is to include appraisal and evaluation for

each programme, tailored to the different cultural and organisational needs (El-Hussein & Cronje, 2010). The way that people and organisations perceive this new era in teaching and learning is the key to shape the new curricula in higher education. Sharples, Taylor, and Vavoula (2007) identify two layers of m-learning, the semiotic (socio-cultural) and technological; they argue that these two layers will eventually converge. This convergence requires though a total rethink and redesign of formal learning as we know it: a more open and collaborative model which places educators as facilitators of learning in a connected and mobile world, where students participate actively in the learning creation process. On the other hand, others believe that m-learning will never fully replace classroom or other electronic learning approaches (Liaw, Hatala, & Huang, 2010). However, if leveraged properly, mobile devices can complement and add value to the existing learning models and frameworks.

M-learning and e-learning also differentiate from a pedagogical perspective in the learning approach. While e-learning is based primarily on the objectivist learning model (Wang, 2011), m-learning is building on a *constructivist* approach. The objectivist approach is based on the transfer of knowledge from the instructor to the learner; on the other hand the constructivist approach views learning as a process in which learners actively construct or build new ideas or concepts based upon current and past knowledge. In this interactive environment, instructors should let learners participate in meaningful activities so that they can generate their own knowledge (Brown & Campione, 1996). M-learning is also linked with the theory of *connectivism* which states that learners are actively attempting to create meaning through engagement in networks; learning is the process of creating connections and developing a network (Siemens, 2005). King (2006) proposes that the use of m-learning in higher education, reduces the physical walls of the classroom and replaces them with virtual, as the content of the

education it delivered by means of a radical new technology, and he adds that "by breaking down the assumptions and process behind writing and speaking, we can go beyond them and find new ways of thinking about the world" (King, 2006, p. 171). Herrington, Herrington, Mantei, Olney, and Ferry (2009) placed m-learning in the context of the *authentic learning* approach. Authentic learning situates students in learning contexts where they encounter activities that involve problems and investigations reflective of those they are likely to face in their real world professional contexts.

Researchers have also explored m-learning perspectives from a wider socio-cultural view. Traxler (2009) described m-learning as noisy and problematic, featuring three essential elements: the personal, contextual and situated. Klopfer, Squire, and Jenkins (2002) propose that mobile devices (handheld computers) "produce unique educational affordances," which are: portability, social interactivity, context sensitivity, connectivity and individuality. Based on the activity theory approach Liaw et al. (2010) investigated the acceptance toward to m-learning as a means to enhance individual knowledge management. They found that factors such as enhancing learners' satisfaction, encouraging learners' autonomy, empowering system functions and enriching interaction and communication activities, have a significant positive influence on the acceptance of m-learning systems. More recently Kearney et al. (2012) presented a framework, which highlights three central features of m-learning: authenticity, collaboration and personalization, embedded in the unique time-space contexts of mobile learning. Sharples et al. (2007, p.4) provide more details on the convergence between learning and technology as shown in the Table 2.

M-learning has attracted attention due to the increasing number of available mobile devices, which are affordable and their costs are increasingly decreasing making them more accessible to people. At the same time these devices have multiple features and capabilities, such as making

Table 2. Convergence between learning and technology

New Learning	New Technology
Personalised	Personal
Learner-centered	User-centered
Situated	Mobile
Collaborative	Networked
Ubiquitous	Ubiquitous
Lifelong	Durable

Source: Sharples, Taylor, and Vavoula (2007, p.4)

phone calls, taking pictures and making videos, storing data and of course accessing the internet (Sarrab, Al-Shihi, & Rehman, 2013). Maccallum and Jeffery (2009) propose that all these capabilities may be used in teaching and learning, for example for classroom activities (Dawabi., 2003). These mobile devices can be used for learning purposes via interactive games, for brainstorming, quizzing and are widely used to support and develop students' own learning and collaborative learning (Iqbal & Qureshi, 2012). Moreover, they are available to users at any time and all time (Giousmpasoglou & Marinakou, 2013). Kukulska-Hulme and Traxler (2007) present several case studies that report and support the experience of educators with mobile technologies in universities. Zawacki-Richter, Brown, and Delport (2009) claim that e-learning and m-learning provide a wide range of opportunities for learners and teachers. However, as it has been previously discussed, Herrington, Mantei, Olney, and Ferry (2009, p.1) claim that it is not still clear whether "m-learning is used in pedagogically appropriate ways".

M-learning is widely used in distance learning as it supports the access to the teaching material for a large number of students, independent of time and space, at low costs. Moura and Carvalho (2009, p.90) suggest that "the development of m-learning as a new strategy for education has implications on the way students learn, on the role of the teachers as well as in the educational

institution". Hence, for the purpose of this chapter m-learning is studied as an element of e-learning and blended learning in general not necessarily as a tool for distance learning, as it also helps in constructing problem-based learning as well as any related assignments and projects that meets the students' interest (Kukulska-Hulme & Traxler, 2007). M-learning allows student-centered learning in which students are able to modify the access and transfer of information to strengthen the knowledge and skills of students to meet their educational goals (Giousmpasoglou & Marinakou, 2013; Sharples et al., 2007). In addition, it can support ubiquitous learning and can make the educational process more comfortable and flexible (Sarrab et al., 2013, p. 828).

Higher education may be presented in a more interactive ways as m-learning provides the support for learning and training. Although, technological developments have made mobile devices strategic tools to the delivery of higher education instruction, these fundamental changes pose new problems, challenges as well as opportunities to the instructors and students as they are discussed in the following.

Opportunities and Challenges from the Use of m-Learning in Higher Education

The introduction of m-learning in universities change radically the way we perceive, design and deliver higher education programmes. In this mobile and always connected world, a number of benefits and challenges arise for both educators and students. Literature indicates that three features are most cited by researchers, practitioners and users: mobility/ ubiquity (anytime, anywhere), personalization, and collaboration. Current technology allows learners to disseminate information and complete coursework even when they are away from their desktop PCs and hard-wired Internet connections. A wireless device has the potential to give instant gratification to students by allowing

them to interact with the instructors, other students in the course, and access course related content from anywhere wireless connectivity is available. BenMoussa (2003) identifies three key benefits of mobile connectivity for the users. Firstly, mobile devices offer personalized and/or individualized connectivity. Liaw et al. (2010) also suggest that the relationship between the owner and the mobile/handheld device provides a 'one-to-one' interaction in a personalized manner. Secondly, mobile connectivity improves collaboration via real-time or instant interactivity that may lead to better decision-making. And third, mobile connectivity enhances users' orientation or direction. Kearney et al. (2012) argue that m-learners can enjoy a high degree of collaboration by making rich connections to other people and resources mediated by a mobile device. This often-reported high level of networking creates shared, socially interactive environments so m-learners can readily communicate multi-modally with peers, educators and other experts, and exchange information. Learners consume, produce and exchange an array of "content", sharing information and artefacts across time and place. In addition, Motiwalla (2007) suggests that access to information at the point of relevance may make it possible for m-learners to minimize their unproductive time, which may enhance their work-life-education balance.

The challenges generated from the advent of m-learning in higher education programmes affect mostly those responsible for the design and delivery and evaluation of teaching and learning. Wang (2011) argues that the emergence of Web 2.0. related technologies, brought a radical transformation in e-learning (and thus m-learning) environment: the largely central controlled education system turned to an interactive and conversational learning network. As a direct consequence we observe that learning practices are changing very fast (i.e introduction of e-books instead of traditional textbooks), while the learning theories that support educational practices are not (El-Hussein & Cronje, 2010). Educators are currently unable

to follow the needs of the younger generations of learners described as digital natives (Corbeil & Valdes-Corbeil, 2007). These learners do not see technology as something foreign: they readily accept it and consider it as part of their everyday lives; they are totally immersed and addicted to mobile technologies. Young learners also created and use their own language and signs when communicating either via Short Message Service (SMS), e-mail or live chat through a mobile Internet or Wi-Fi connection (El-Hussein & Cronje, 2010); this is how they were called the text generation. Overall, the traditional teacher-centered, classroom situated learning environment, is now challenged by the digitally literate students who view learning as an open collaborate process without boundaries (Peters, 2009).

M-learning provides flexibility in higher education programmes that may result in some challenges that learners may not have imagined (Motiwalla, 2007). For example, a serious implication from the continuous exposure to information and interaction in a connected world can be the creation of confusion and disorientation to m-learners. Then various security issues regarding the information privacy of the users are raised as in any other commercial application. Mobile devices are currently appear to be more vulnerable than PCs, thus personal data are easily traceable for mobile users (Okazaki, 2011). Finally, there are ethical issues reading the use of m-learning in student assessment, where cheating cannot be easily prevented or traced based on the current technologies and learning philosophies (Banyard, Underwood, & Twiner, 2006).

The challenges of the use of m-learning are many for all stakeholders as it may have many technological restrictions. For instructors, m-learning is a challenge as they should be familiar with technology, not only to use it for teaching and learning but also to support developers who are challenged by the limited memory, the lack of keyboard, the small displays especially when compared to computers and laptops (Iqbal &

Qureshi, 2012; Wang et al., 2009). Instructors should adapt the design of the courses to integrate ICT; this design should be dynamic, easily scalable and should be applied at all times and places (Marwan, Madar, & Fuad, 2013). Moreover, Marwan et al. (2013) suggest that instructors face the lack of time to prepare for class. There is also concern on the educators' ability to understand and respond to digital learning opportunities, as in many cases they are challenged by the need "to collaborate with a wide range of people such as web developers and programmers to deliver successful web-based education" (Peters, 2007). It is a fact that m-learning enables learning to occur at a less formal setting that is teacher-mediated, hence technical skills are required (Kearney et al., 2012). In addition, m-learning experiences can be customized for the learner to meet different learning styles and approaches, they may provide a high degree of collaboration and making connections to other people, creating further challenges to educators whose roles are changing (Mohammad & Job, 2013; Kearney et al., 2012). Thus, educators should be able to understand and analyze the unique challenges in emerging m-learning environments and facilitate insights to support their design and use of m-learning resources.

Students usually have access to the Internet and other applications via their mobile devices such as Facebook, YouTube, MySpace and other. They are also familiar with its use, hence being well introduced to m-learning may lead to its wide use in their own learning. Nowadays students are active and innovative in terms of their learning, they expect a quick response from the tutor and want an interactive learning, student-centered, authentic, collaborative and effective learning with the use of ICT (Marwan et al., 2013). According to Mirza and Al-Abdulkareem (2011, p. 88) "the learner's attitude and lack of prior knowledge of IT use are major factors that affect the acceptance of e-learning by students".

Previous research suggests that there are various factors that contribute to the adoption of m-learning by instructors and students. Ju, Sriprapaipong, and Minh (2007) claim that the perceived usefulness influences the intention to adopt m-learning. On top of usefulness, Wang et al. (2009) and Sarrab et al. (2013) identified other factors such as the self-managed pace of learning, the social influence, the performance and the effort expectancy. Venkatesh, Morris, Davis, and Davis (2003) added the available infrastructure to support the use of any m-learning system, and Liu and Li (2010) add the playfulness. The interface makes the use of mobile devices more interesting for students, as the learning is personalized, more fun, spontaneous, and engaging users to contribute and share (Sarrab et al., 2013). Marwan et al. (2013) add the interactive learning process, the integrated learning information and the high learning needs. Thornton and Houser (2002 in Moura & Carvalho, 2009) propose that recordings, communication and access to information in the local set, sending reminders or relevant information for students are good options of the use of m-learning. Attewell (2011) propose that m-learning assists in the development of the learners' literacy and numerical skills. In addition, m-learning students are able to experience a dynamic class via interaction. To understand the factors that contribute to the adoption of m-learning will help stakeholders (educators, software developers and technicians) to incorporate these factors into the design of the m-learning systems.

Challenges and restrictions of the use of m-learning include the lack of standardization, the low bandwidth, the limited processor speed and small screen size, low storage, short battery life, lack of data input capability (Sarrab et al., 2013; Maniar & Bennett, 2002), low display resolution, limited memory and less computational power (Shiau, Lim, & Shen, 2001). Marwan et al. (2013) claim that classes are difficult to be rescheduled with m-learning. All of the above benefits and

challenges of m-learning could be summarized in Table 3.

If students are provided with the educational context in an appropriate and challenging manner, which is exciting and novel, they will be more inclined to use all these mobile devices and m-learning. M-learning has been considered to be a promising approach to complement student learning. At the same time, instructors cannot just be provided with the technology and left on their own; they should be provided with a vision and the necessary resources and support to use e-learning and m-learning.

E-Learning and M-Learning in the Middle East (ME) and Bahrain

Although e-learning has been growing rapidly in the Middle East (ME), North Africa (MENA) region and the Gulf Co-operation Council (GCC) countries, m-learning has been considered as an alternative learning style and a new fashion. In these countries, according to Hamou, Anwar and Benhadria (2012) several initiatives have been introduced such as proliferation of e-books and e-learning devices, as well as flexible access to distance learning. In fact, the Arab region witnesses an increasing penetration of mobile phones and much faster Internet (Muttoo, 2011). However, these initiatives do not show a clear shift towards e-learning and m-learning in the region.

Nevertheless, there are some good examples and initiatives of educational institutions that have contributed to the development of e-learning and m-learning. For example, Hamdan Bin Mohammed e-University (HBMeU) in the UAE has introduced an effective architecture for e-learning, and also contributed to the development of standards for e-learning programme accreditation (Hadj-Hamou, Anwar, & Benhadria, 2012). The *e-learning Declaration* was drafted at the 2008 e-learning Forum in Dubai, providing a new educational model, which is based on research on active research changing teaching

and learning from the traditional approach to the student-oriented approach. In addition, they have launched an e-book and e-reader device to help learners use their iPad/iPhone for their learning. They support the blended learning approach, where they integrate the face-to-face learning with online collaborative learning and self-paced learning, as they make effective use of ICT to support delivery of the courses. They use Moodle, which enables the online collaborative learning, and asynchronous study is enabled by interactions with the professors via virtual classrooms (with the use of Wimba) and access to electronic teaching material.

Moreover, in Saudi Arabia, the rapid advancement in mobile technologies, wireless networks and the acceptance of new smart devices have increased the interest in m-learning. In fact, the Ministry of Higher Education (MOHE) has launched a national project "AAFQ" to develop a long-term plan for HE in order to address future challenges including m-learning (Garg, 2013). They have also established other projects such as the National Centre for E-learning and Distance Education (NCELDE) with its own learning portal, the Saudi Digital Library and the Saudi Centre for Support and Counseling to all beneficiaries of e-learning among others. The aim of the center is to become "an international leader in research, development and implementation of an e-learning architecture and infrastructure using open standards" (Mirza & Al-Abdulkareem, 2011, p. 91). Many universities in Saudi Arabia are utilizing distance-learning technologies. For example, King Saud University has recently initiated a new service that offers users with the ability to send text messages directly from a PC to a mobile phone (Altameem, 2011, p. 22). There is also the Knowledge International University (http://www.kiu.com.sa/website/index.php) established in Saudi Arabia in 2007, which specializes in online degrees programmes in Islamic studies (Mirza & Al-Abdulkareem, 2011).

Table 3. Benefits and challenges of m-learning

Benefits of M-Learning	Challenges of M-Learning
Great for people on the go.	May make it easier to cheat.
Anytime, anywhere access to content.	Could give tech-savvy students an advantage over non-technical students.
Can enhance interaction between and among students and instructors.	Can create a feeling of isolation or of being out-of-the-loop for non-techies.
Great for just-in-time training or review of content.	May require media to be reformatted or offered in multiple formats.
Can enhance student-centered learning.	Might render some content outdated because of rapid upgrades – here today, outdated tomorrow.
Can appeal to tech-savvy students because of the media-rich environment.	Could require additional learning curve for non-technical students and faculty.
Support differentiation of student learning needs and personalized learning.	Many be used by a new high-tech package for the same old dull and boring content.
Reduce cultural and communication barriers between faculty and students by using communication channels that students like.	There are different mobile platforms such as iOS, Android etc.
Facilitate collaboration through synchronous and asynchronous communication.	The wireless network trust ability.
Supports distance learning.	

Source: Corbeil and Valdes-Corbeil (2007, p. 54); Sarrab et al. (2013, p. 835-836)

In Oman, the Ministry of Education has established ongoing relations with Edutech Middle East to integrate 590 schools around the country with e-learning solutions (Mirza & Al-Abdulkareem, 2011). They also state that the Syrian Virtual University offers various degrees including diplomas, bachelor's and master's in business, technology and quality management.

As the GCC countries are endowed with oil and gas reserves they have turned their attention to education and to the improvement of the quality of education (World Economic Forum, 2010). Although education is a high priority in the GCC countries, considerable ground has to be covered to make progress in terms of enrolment and quality enhancement (Hadj-Hamou et al., 2012, p. 57). Education has strategic significance in the Arab world, but still there are great variations among the Arab states in their literacy rates. In addition, there is limited financial support for education in a large number of Arab countries. According to the World Bank (2007) the rate of total expenditure in education relative to GDP in all Arab countries is nearly 1.3%.

Table 4 shows the education rank of GCC countries among 134 countries.

The same study reports that there is low quality of research, and low number of publications in the GCC countries in comparison to those from fast developing countries. Most universities are teaching-oriented, rather than research-oriented; the rate of researchers in Arab universities as compared with employees is 2.7 per 10.000. Moreover, the report suggests that there is lack of planning and strategies for education at all levels, lack of information and communications technology (ICT) integration into education, there is centralization of education, intellectual migration and weaker linkages between education and labour markets. Hence, decision-makers can respond to these challenges by exploring the potential of electronic communication for spreading education in the countries (Hadj-Hamou et al., 2012, p.60).

Bahrain is one of the countries in the Arab world that have recently considered the potential

Table 4. Education rank of GCC countries

Country	Quality of Primary Education	Secondary Enrolment	Tertiary Enrolment	Quality of Educational System
Bahrain	41	36	74	38
Kuwait	79	62	92	88
Oman	48	70	81	43
Qatar	5	49	106	4
Saudi Arabia	54	43	75	41
UAE	29	46	84	27

Source: World Economic Forum (2010)

of distance education with the use of e-learning. A study in the Middle East reveals that only 49% of society members are aware of e-learning (CITC, 2007) and the main reason for the limited use of e-learning and m-learning in the region is the low public and teachers' esteem for online learning (Mirza & Al-Abdulkareem, 2011). The first e-learning project in Bahrain was the Future Project at His Majesty King Hamad's Schools, which was established on January 2005 to serve the public secondary education and at a later level to include the private schools as well. There is also the e-learning center at the University of Bahrain, opened in March 2007 under the patronage of the King's wife, Her Majesty Shaikha Sabeeka Bint Ibrahim Al Khalifa, who is also the President of the Supreme Council for Women. The e-learning center plays a significant role in Bahrain's development as the government of Bahrain takes a regional lead in the launch of a range of egovernment services. The center focuses on promoting the adoption of wireless technology to support teaching and learning programmes across eight university departments. It can be accessed by 8000 students, and both staff and students are benefiting with 145 teaching modules already tailored for delivery on the university's network. The center's facilities include a range of e-learning tools including email, and online university chat and discussion rooms, which enable 24-hour interactivity and access to information for academic staff and

students. It ultimately aims to support all University of Bahrain students to become proficient in the use of modern technology in their learning and to develop valuable employment skills. The center has a broader remit to cascade and share the knowledge and expertise acquired through the e-learning and e-teaching with other academic institutes and professionals throughout Bahrain (Albardooli, Alobaidli, & Alyousha, 2006, p. 15).

Moreover, universities in the oil-rich GCC have shown particular interest in m-learning, which currently is treated as fashion (Mohammad & Job, 2013), but at the same time is considered by corporations and educational institutions to be very promising (Sharrab et al., 2013; Unesco, 2012). Nevertheless, there are many challenges identified in the adoption of e-learning and m-learning in the region. Weber (2011) suggests that there are some cultural concerns in the use of the Internet in the region. More specifically, he proposes that cultural taboos prevent or restrict the social interaction of unmarried men and women; hence some of the collaborative tools in the use of e-learning and m-learning "may be at variance with Islamic customs" (Weber, 2011, p. 1). He continues that there might be cultural bias such as language, as in many universities nowadays the communication and teaching and learning language is English. Even the fact that people in this culture are used to communicate mainly orally creates some challenges for the use

of m-learning. In his study, Weber (2011) identified women and the issue of literacy as another challenge. He suggests that women's illiteracy in the Arab world is a major concern for women's education and development. Traditional, social and religious affiliations are impacting on women, as they cannot physically attend classes in traditional universities. However, the use of m-learning could be a potential solution to this issue as proposed by Tubaishat (2008) in his study of Zayed University, an all girl university in the UAE.

Finally, Weber (2011) claims that the issue of privacy is also a challenge. Censorship in most ME countries is common practice. There is the fear of misuse of student information similar to this of the use of Facebook. He adds that "Arabian Gulf traditions emphasize the privacy and sanctity of the home and the potential for misuse of online information used in an educational setting is immense" (2011, p. 2). Weber (2011) supports that in the MENA region instructors are concerned about the security of the educational data, and parents are concerned about the use of chats and the safety of the online environment. Mirza and Al-Abdulkareem (2011, p.84) add that exposure to material from the internet "could be considered dangerous to youths and to the religious moral values of those nations".

Moreover, Mirza and Al-Abdulkareem (2011) provide another barrier to e-learning adoption in the ME. They include the passive attitude that some governments took in response to e-learning and the low Internet penetration rate by the general public. They also comment on the conservative religious clerics who were warning of the dangers of the Internet, nevertheless, many adhered to the warning. The low public esteem for online learning was among the reasons for hesitation of many academics to resort to e-learning. This barrier impacted on the lack of online repositories that contain educational material in the Arabic language (Al-Khalifa, 2008).

Although, there is increased interest in m-learning adoption in teaching and learning in the

region, there is limited research conducted (Iqbal & Qureshi, 2012; Mirza & Al-Abdulkareem, 2011). Most studies focus on the learners' perceptions and use of m-learning with very little research conducted in the instructors' views (Mirza & Al-Abdulkareem, 2011). Hence, the authors decided to investigate the adoption of m-learning at universities in the Kingdom of Bahrain, and explore the educators' views and perception of m-learning, their intention to use it, as well as its future potential in higher education. This chapter aims to provide an overview of the challenges that instructors face with the use of m-learning and of insights and recommendations on strategies for the use of mobile learning to change and enhance the pedagogies in HE.

SURVEY IN M-LEARNING

This chapter presents the findings of the pilot study of the questionnaire conducted in four out of eight universities in Bahrain; both private and public universities were included in the survey. In order to address the aim and the research questions of the study, Zawachi-Richter, Brown, and Delport (2009) questionnaire titled 'Mobile Learning: From single project status into the mainstream?' was used after having acquired the authors' permission for its use. Instructors were asked to rate the mobile learning and teaching experience of distance educators, the development and growth of mobile learning, the impact of mobile technologies on teaching and learning, mobile learning applications and mobile learning activities, mobile learning and access to (higher) education, and the future development of mobile learning with a 5 Likert scale from (1) strongly disagree to (5) strongly agree.

For the pilot study, a total of 45 questionnaires were collected between April and June 2013, in which educators were asked to provide their attitudes regarding m-learning as a tool in their teaching. The participants in the study were

from different faculties such as Business, ICT, Humanities, Art and Design, and from different academic rankings, with the majority being PhD holders (53.3%). 35.6% were female and 64.4% were male.

In order to identify the instructors' perceptions of m-learning frequencies, means and standard deviations were calculated. Moreover to identify the main ideas about the future of m-learning the frequencies of responses were calculated.

M-Learning Survey Results in Bahrain

The current status of the use of m-learning at the institutional level was identified and the results are shown in Table 5. For the purpose of this paper the authors present the most frequent answers or the majority of answers.

It is evident from the above that the majority of the institutions in the study were face-to-face with limited use of e-learning. M-learning was non-existent and most did not have any plans in

developing m-learning. In addition, there was no technical support or in the cases that there was, it was limited. However, 31.1% claimed that a new unit within the organisation has been created for the purpose of m-learning. In reference to the current status on m-learning the participants expressed their opinions on their knowledge on m-learning and on the use of mobile devices. The results are shown in Table 6.

Interestingly, most respondents are aware of m-learning, but only 15.6% are currently doing research and only 4.4% are involved in projects relevant to m-learning. Similarly, 15.6% of the respondents have not heard about mobile learning. The use of mobile devices is shown in Figure 2.

Most of the respondents (43.52%) used a laptop for connecting to the internet, and then their smartphone (22.27%), 16.20% use a tablet PC and only 1.1% use PDAs. Moreover the participants were asked to evaluate their experience in m-learning. The results are shown in Figure 3.

The majority of the responses to this question were towards the strongly disagree (1) area. 28% of

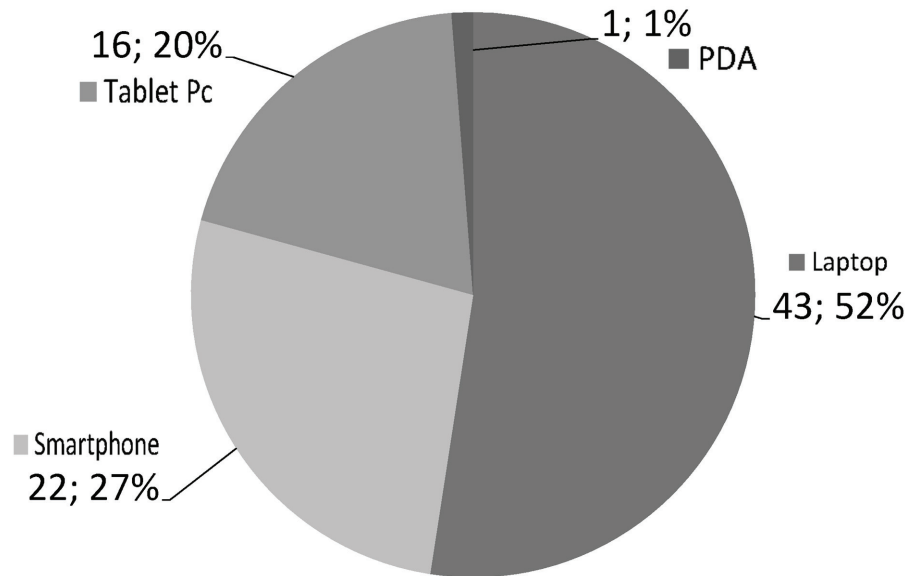*Table 5. M-learning status at institution level*

	Response (N=45)	Frequency (%)
C1	A traditional face-to-face or contact-based teaching institution	34 (75.6)
C2	Non-existent	27 (60)
C3	No, there are no institutional plans for developing course materials for use on mobile devices	27 (60)
C4.1	No, there is no institutional support.	14 (31.1)
C4.2	Yes, a new unit at the organisation/institution has been created for this purpose.	14 (31.1)

Table 6. Current personal status

	Response (N=45)	Frequency (%)
B1.1	Yes, I am personally doing research on mobile learning	7 (15.6)
B1.2	Yes, but I am not personally doing research on mobile learning	11 (24.4)
B1.3	Yes, I am involved in mobile learning projects	2 (4.4)
B1.4	I have read a number of articles and papers on mobile learning.	4 (8.9)
B1.5	No, but other persons in my institution are knowledgeable.	14 (31.1)
B1.6	No, I have not heard about mobile learning.	7 (15.6)

Figure 2. Mobile devices

the participants have been involved in m-learning projects, however, 22% of them state that these projects are not within their universities. 14% of the participants were not involved in projects on m-learning but were aware of others who were, and still 20% were not exposed to m-learning at all.

Further, respondents were asked to rate the importance of learning tools for students, the learning activities that are appropriate for mobile devices and the importance of applications. The findings are shown in Table 7. The results suggest that the respondents found very important 'being connected anywhere, anytime' (B4.5), and 'sharing texts, notes and documents' (B4.4), hence they did not find the text messaging or voice calls and e-mails as highly important tools for students. Moreover, they identified as appropriate learning activities for mobile devices 'coursework' (B5.1), 'collaborative learning' (B5.3) and 'information retrieval' (B5.5). The applications found to be more important were all those included in the questionnaire such as mobile office (B6.1), diary and scheduling (B6.2), audio and video applications (B6.3), imaging (B6.4), other accessories

(B6.5) and online data services (B6.6). Finally, the most useful tools were accessing information such as notes, documents etc (B7.2) and again 'being connected anywhere, anytime' (B7.5).

The respondents were asked to rate the new strategies and methodologies that are facilitated by m-learning. The results are shown in Table 8.

Except the 'assessment' (B8.2, Mean=2.69), the rest of the variables were rated close to agree and strongly agree responses. It was evident that they would use m-learning mainly to assess students' knowledge short time before a lecture or a discussion. Interaction (B8.4, Mean=4.02) was the most important of all the strategies that are facilitated by m-learning. Hence, the respondents suggested that m-learning provides more support for collaboration, more support for bottom-up content creation and could be used to consult peers. Next important strategy for m-learning was the resources for m-learning (B8.3, M=3.84). The participants use it for generating information, sharing resources, navigation and other. The major weaknesses of mobile devices that might hinder m-learning were also rated by the respondents as shown in Figure 4.
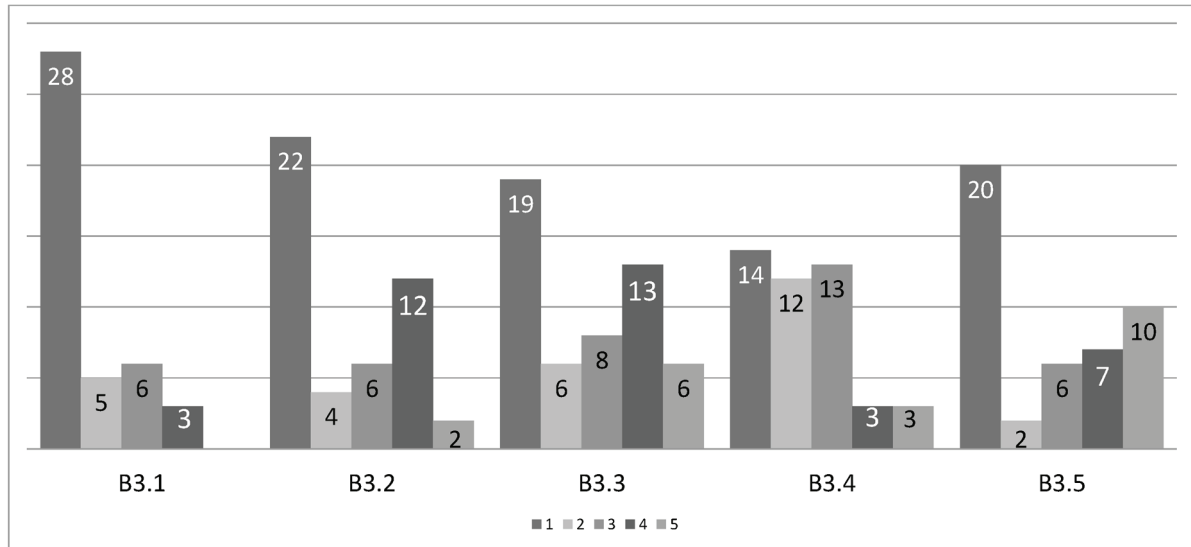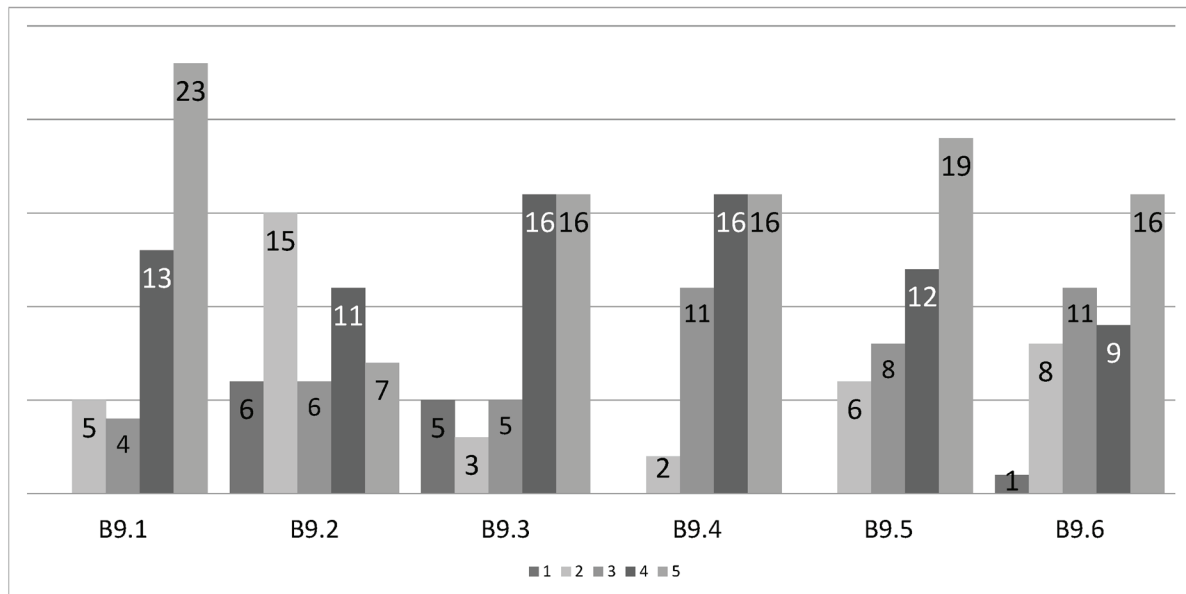
Figure 3. Experience in m-learning

Table 7. Importance rating of importance for tools (B4), learning activities (B5), applications (B6) and learning tools (B7)

Item (N=45)	1 (Freq)	2 (Freq)	3 (Freq)	4 (Freq)	5 (Freq)
B4.1	7 (15.6)	7 (15.6)	10 (22.2)	10 (22.2)	11 (24.4)
B4.2	7 (15.6)	8 (17.8)	13 (28.9)	10 (22.2)	7 (15.6)
B4.3		5 (11.1)	12 (26.7)	18 (40.0)	10 (22.2)
B4.4	3 (6.7)	1 (2.2)	5 (11.1)	18 (40.0)	18 (40.0)
B4.5	3 (6.7)	1 (2.2)	3 (6.7)	14 (31.1)	24 (53.3)
B5.1	6 (13.3)	7 (15.6)	10 (22.2)	6 (13.3)	16 (35.6)
B5.2	3 (6.7)	12 (26.7)	5 (11.1)	12 (26.7)	13 (28.9)
B5.3	2 (4.4)	3 (6.7)	7 (15.6)	19 (42.2)	14 (31.1)
B5.4		5 (11.1)	12 (26.7)	18 (40.0)	10 (22.2)
B5.5		4 (8.9)	10 (22.2)	10 (22.2)	21 (46.7)
B6.1	5 (11.1)	5 (11.1)	7 (15.6)	9 (20.0)	19 (42.2)
B6.2	2 (4.4)	6 (13.3)	8 (17.8)	10 (22.2)	19 (42.2)
B6.3	2 (4.4)	4 (8.9)	15 (33.3)	7 (15.6)	17 (37.8)
B6.4	2 (4.4)	7 (15.6)	10 (22.2)	12 (26.7)	14 (31.1)
B6.5	2 (4.4)	1 (2.2)	11 (24.4)	15 (33.3)	16 (35.6)
B6.6	2 (4.4)		2 (4.4)	7 (15.6)	34 (75.6)
B7.1	1 (2.2)	7 (15.6)	12 (26.7)	11 (24.4)	14 (31.1)
B7.2	2 (4.4)	3 (6.7)	11 (24.4)	15 (33.3)	14 (31.3)
B7.3	1 (2.2)	9 (20.0)	10 (22.2)	12 (26.7)	13 (28.9)
B7.4	1 (2.2)	8 (17.8)	8 (17.8)	15 (33.3)	13 (28.9)
B7.5	1 (2.2)	1 (2.2)	5 (11.1)	10 (22.2)	28 (62.2)

Table 8. Strategies and methodologies

Category	Typical Examples	Mean	SD
B8.1 Learning Activities	(Inter)active learning, authentic learning, explorative learning, project orientated learning, situated and informal learning, Qs & As.	3.60	1.286
B8.2 Assessment	Security for testing and evaluation procedures, assessment to determine students' knowledge a day or two before a lecture/discussion to determine which topics need more attention.	2.69	1.411
B8.3 Resources	Generation of information, sharing resources, data sourcing, access to information, navigation, m-library.	3.84	1.127
B8.4 Interaction	More support for collaboration, more support for bottom-up content creation, enhanced social support, consulting peers & experts. Distance Educators will teach again instead of providing teaching material only.	4.02	1.033
B8.5 Personalisation & Individualisation	New strategies might emerge from better knowledge of learner behaviours and study patterns with technology, which were never examined that closely before, just-in-time learning, addressing learner styles or needs, keeping it simple, focus on small 'chunks' of learning, just-in-time support/job aids.	3.76	.957

Figure 4. Major weaknesses

Most of the respondents agreed or strongly agreed with all the variables except the screen size (B9.2). This showed that the size of the screen of mobile devices was not considered to be a hindering factor for m-learning. On the contrary, the small size of the displays was found to be a challenge for m-learning activities. Similarly, the costs of network, the memory size, the device capabilities and the limited battery time were among the most important challenges for applying m-learning.

When respondents were asked their views on the latest trends and developments in teaching and learning as well as on when m-learning will be an integral part of mainstream in HE, this is reflected in Table 9.

Table 9. Respondents' views on trends and developments in m-learning (and in years)

Responses	Technology changes should not have an impact on our teaching & learning strategies and methodologies.	Technology changes should have an impact on our teaching & learning strategies and methodologies, but this is currently not the case at present.	Teaching and learning strategies and methodologies adapt continuously due to new affordances that technology provides.	Technology changes bring about radical changes to our teaching & learning strategies and methodologies.
Frequency	2	23	12	8
(Percent)	(4.4)	(51.1)	(26.7)	(17.8)

Table 10. Future trends of m-learning

Statement	Frequency N=45	Percent
Teaching and learning theories in 20 years…		
In essence remain the same, but new learning paradigms and learning strategies will emerge because of technological developments.	25	55.6
Change completely with new learning theories replacing behaviourism and constructivism due to the radical impact of future technologies.	15	33.3
The attributes and opportunities that mobile technologies afford will…		
Be very helpful in enhancing teaching and learning independent of time and space.	33	73.3
Mobile devices and applications will in future be…		
Only one of many types of computing devices used.	22	48.9
The preferred access and learning device for any type of learning.	15	33.3
The development of m-learning will have an impact on HE		
It will widen access to (higher) education, because of the proliferation of mobile phones and wireless infrastructure – especially in developing countries.	29	64.4
The ideal mobile devices in the future will be…		
Small but still laptop sized devices because of its all-in-one device nature.	12	26.7

Most of the respondents (51.1%) supported the view that although the technology should impact on the teaching and learning, currently this was not the case. 26.7% agreed that teaching and learning strategies and methodologies adapt to the constant changes in technology. In addition, most of the respondents (75.6%) believed that m-learning will become an integral part of mainstream HE within 5 years.

Finally the participants were asked to present their views on the future trends of m-learning. For the purpose of this paper only the majority of responses are illustrated in Table 10.

The majority of the respondents (55.6%) supported the view that new teaching and learning strategies will emerge due to IT developments. In addition, they proposed that they will enhance the teaching and learning, nevertheless, they proposed that the mobile devices will be the preferred device for learning. They also supported that m-learning will widen access to HE, because of the profileration of mobile phones and wireless infrastructure and the devices are expected to be small in size. Most of the respondents (84.4%) agreed that m-learning will facilitate new strategies and methodologies for learner support.

CONCLUSION

M-learning as a relatively recent phenomenon in higher education, enjoys high popularity among university students globally. In the ME region change has already started and e-learning and m-learning are becoming part of the educational system. Some may still be unfamiliar with the technical advancements in e-learning and m-learning, but plans are in place to make these technologies widely known and usable in the near future.

The key opportunity identified in this chapter is the ability of m-learning to provide learning that is "just in time". Mobile devices have the potential to deliver the kind of learning that is embedded in our daily lives, as the use of these devices is well established. Many instructors in higher education, including Bahrain, recognize the benefits of m-learning, but there is limited adoption for educational use. The main challenge identified in the chapter is the age and ability of instructors to use these mobile devices and technologies.

In order to support a strategic response to the opportunities and demands of mobile learners, the higher education sector needs to be informed about the actual use of mobile devices, and about potential future trends in mobile learning. This requires the re-examination and re-design of the foundational assumptions and presuppositions on which all previous understandings of the term "higher education" are constructed. It is imperative that this process foregrounds pedagogy rather than technology. In addition, these on-going structural changes in higher education, provide the potential to make learning more efficient, personal and culturally acceptable for learners. Training and workshops should be provided to increase faculty perception of e-learning and m-learning. This change and the integration of m-learning requires a change in the pedagogical paradigm in agreement with Moura and Calvalho (2009). The authors propose that this change should include transformation in the design and the development of teaching material.

It is also important to introduce by laws that governs the e-learning and distance learning which encourages students to participate at this type of learning. Regardless criticisms and debates, m-learning is now part of the academic curricula; what remains to see is how smooth the transition from the traditional to the contemporary teaching and learning environment can be.

IMPLICATIONS FOR FUTURE RESEARCH

The purpose of this chapter was to investigate the instructors' views on m-learning and its use in teaching and learning in higher education in Bahrain. It is evident from the above that m-learning plays an important role in teaching and learning strategies. Although, most of the participants work in institutions that do not offer m-learning strategies and they use face-to-face teaching, the instructors are considering its use, and some already conduct research in m-learning. Students and faculty will find ways to integrate m-learning in all aspects of their lives including the tasks of teaching and learning. Nevertheless, educational systems should not assume that instructors are proficient in using new technologies. Similarly to Ferry (2008), this chapter proposes that there is a need to integrate appropriate technologies into existing education systems. Professional development programmes should focus not only on the technology, skills and knowledge required to implement m-learning strategies, but also on the targeted use of technologies that support overall learning goals. Hence, further research is required to identify and determine such professional development programmes for instructors in higher education, especially in the Kingdom of Bahrain and the region.

Moreover, it was interesting that the majority of the respondents have not heard of m-learning.

The findings proposed that m-learning could be considered a continuation of traditional learning

methods as well as an alternative to the methods of effective learning. It is mainly used for coursework, information retrieval and collaborative learning. The most important elements of m-learning included the fact that instructors are connected anywhere anytime, and they can share texts with their students, supporting the view of Giousmpasoglou and Marinakou (2013). Hence, instructors should be cautious when including e-learning as part of their assessment as the infrastructure and the support is not available at the institutions in the study. This study agrees with Venkatesh et al. (2003) that the available support and infrastructure are important for the use of e-learning and m-learning. Similarly to Sarrab et al. (2013), the main weaknesses identified include the small size of displays, the cost of network, the memory size and the mobile devices capabilities. However, the participants proposed that the new technologies should have an impact on teaching and learning in HE, and they believed that new may emerge, as they may enhance the learning and the teaching strategies. Macallum and Jeffery (2009) also propose that mobile devices may enhance m-learning, and the teaching and learning pedagogies.

Understanding the factors that contribute to the effective use of m-learning may help stakeholders to incorporate those in the design and implementation of m-learning. It is necessary to identify the practices in terms of instructional design and adapt them to reflect the number of changes that have taken place in education from the use of e-learning and m-learning. A transformation towards m-learning requires not only the use of the devices but also awareness and familiarity with new technologies (Wang, 2011), hence mobile tools should be aligned with the course objectives, and instructors should be aligned with m-learning requirements. M-learning should be used appropriately in order to be effective (Herrington et al., 2009), thus instructors should have the technical know-how as they are an essential part of m-learning.

This study proposes that informative meetings and instructors' training on m-learning can enhance the perception and the use of m-learning in higher education in Bahrain. Nevertheless, more empirical research is required to test the effectiveness of e-learning. Future studies can focus on identifying the factors, challenges and weaknesses in specific disciplines as the use of technology varies depending on the field of study for example it can be limited in liberal arts. It would also be interesting to explore the above findings in terms of gender differences.

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KEY TERMS AND DEFINITIONS

Bahrain: The Kingdom of Bahrain is a small island country in the Persian Gulf. Since 2012 was ranked 48th in the world in the Human Development Index, and was recognized by the World Bank as a high income economy. Currently, there are 12 universities.

Blended Learning: A method of learning which uses a combination of different resources, especially a mixture of classroom sessions and online learning materials.

Collaboration (Collaborative Learning): Learners making rich connections and sharing resources to other learners and/or educators; this type of communication is mediated by a mobile device.

E-Learning: Any type of learning conducted via electronic media using specialized software, typically on the Internet.

Higher Education: The education offered after secondary education, usually available through colleges, universities, including vocational training, trade schools and other professional certifications.

Information and Communication Technologies (ICTs): The term stresses the role and importance of unified communications and the integration of telecommunications with computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.

M-Learning (Mobile Learning): Any activity that allows learners to be more productive when interacting with, or creating information, mediated through a mobile device that the learner carries on a regular basis, has reliable connectivity, and fits in a pocket, a purse or a handbag.

Teaching and Learning: Teaching is undertaking certain ethical tasks or activities the intention of which is to induce learning, to impact knowledge of or skill of. Learning is the act or process of acquiring knowledge or skill.

Ubiquity: The ability of users to access content "anytime – anywhere" though the use of mobile devices.

Virtual Learning Environments (VLEs): A set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the learning process.