

LMS vs. Smartphone: Opportunities and Challenges

Bader Alfelajj

Researcher
Ministry of Education, Kuwait
Email: balfelajj [AT] gmail.com

ABSTRACT— *In this paper, I have attempted to compare the smartphone and a learning management system (LMS), looking at their respective advantages and challenges in terms of their integration into an educational context. The purpose of this was to offer a clearer vision and broaden understanding amongst teachers, educators and policy-makers in Kuwait, as regards these advantages and challenges. This could then help them decide which technology might best serve their learners.*

A great deal of literature and many projects (articles and theses) in higher education institutions (HEIs) and schools around the world have been analyzed using document analysis (DA) and this is the method applied in the current study. The results show that both technologies, i.e. the smartphone and an LMS hold many advantages and pedagogical affordances, besides presenting challenges. Nevertheless, the literature shows that smartphones have unique advantages which make them more promising/serviceable than any LMS; for example, but not limited to, ubiquity, portability, individuality, familiarity and ease of use. This study finishes by presenting some noteworthy recommendations.

Keywords— Smartphone, LMS, HEI's, Community of Practice (CoP)

1. INTRODUCTION

It has been recognized by many researchers and educators through their experiences around the globe how sometimes, different LMSs can be complex and difficult to implement in real settings. In particular, they might not be in the local language, or they might require a high speed Internet connection see e.g. [1], [2] and [3]. The latter researcher identifies critical factors influencing the success of LMSs, which include “actual usage, perceived usefulness, perceived ease of use, and user satisfaction from the learners’ perspective” (p. 12). In fact, Al-Fadhli [4] found that more than 55% of 45 participants from amongst Kuwait University students faced technical problems when trying to access an LMS.

Furthermore, in Saudi Arabia (KSA), Al-Jarf [5] reported that two groups out of three, from a total of 150 female freshman students enrolled on three online courses, found Moodle and WebCT to be complex systems with many course tools to deal with. For instance, when attempting to log into WebCT, the participants were obliged to access it via the King Saud University (KSU) website, followed by having to pass through several pages. On the other hand, logging into Moodle entailed going through the Online Writing Collaboration Project OWCP main page (online courses offered in Jeddah and the Women's College in Makkah), also followed by further webpages. The students complained that the WebCT and Moodle main pages were confusing, with too much information on them. They also stated that the discussion forums, resources and personal messaging tools were difficult to access and complex, because the students themselves lacked the necessary IT skills. Teachers who lack relevant expertise may find it difficult to use an LMS and so they require appropriate training, which can be time-consuming and demanding. In addition, they might not have the flexibility required to satisfy the increasing demands of their students for knowledge [6]. The most worthwhile LMSs (e.g. Blackboard and WebCT) commonly serve a large population and offer many useful functions, which are costly. According to Walsh [7] blog, “Blackboard is sort of the “Rolls Royce” of today’s LMS”.

Generally speaking, buying or renting an LMS that needs regular updates and maintenance will exceed the financial resources of even the most enthusiastic teacher. This does not mean, however, that there are no other open source LMS products (e.g. Moodle, Haiku), but that such open and free LMS source products are either not designed to serve a large population, or else need a rented domain name, which means more money invested. Arguably, even if HEIs or schools offer training courses on using the suggested LMSs, the question remains of who will train the community of practice (CoP). How are we going to convince, first the teachers and then the students to participate in such training courses, especially if there is no financial payoff? What is worse, what language will the courses be in, since most of the effective training resources are in English? Unfortunately, most students in tertiary education and schools suffer due to their low

English language proficiency [4], [8] and [9].

According to Al-Ali [10], an E-learning project was not received with open arms by all staff members at PAAET, in Kuwait. She found that transforming a traditional course into a blended one and providing instant and constant feedback to every student can be time-consuming and a major challenge [10], which in the end, increases resistance. We cannot simply claim we have been successful if all we have done is transform printed material into an electronic form and presented it in an LMS environment. The process is more complicated than this, which is one of the reasons why Kuwait University, for instance, suffers due to its lack of E-learning courses see e.g. [4]. Furthermore, the Arab Open University in Kuwait (AOU) does not have enough supplementary course material, such as recorded online lectures on CD [11].

It is important that we, as teachers, educators and policy-makers in the Kuwaiti context remember that students prefer a flexible environment that can be accessed at any time and from anywhere, as well as being available in Arabic see [12]. Therefore, it is time to offer a technological alternative to the LMS being offered by Kuwait University and PAAET. In other words, why do we not exploit the students' own devices (i.e. smartphones) to offer new and effective pedagogy? It is worth mentioning that mobile devices can expose students to more informal learning activities: "[the] association between the use of mobile devices and informal learning was salient because learners often find their informal learning activities more motivating than learning in formal settings such as schools because they have the freedom to define tasks and relate activities to their own goals and control over their goals." [13: p.18].

The problem is that most schools and HEIs are not familiar with and so do not encourage informal learning activities; they do not consider them to be part of legitimate learning [14]. According to the latter author, schools and HEIs prohibit students from bringing their mobile devices and personal computers into the classroom. This can lead to further conflict between the informal activities which students perform outside the classroom using their own powerful devices, or the information they can acquire and the technologies which schools can offer.

1.1 Significance of the Study

To my knowledge, in this context (i.e. Kuwait), no study or paper has previously tried to compare the advantages and challenges of smartphones and an LMS. This comparison study is part of an extended project to develop more understanding of the use and integration of technology among Kuwaiti teachers and students: the so-called CoP. Additionally, the CoP is encouraged to use the newest, easiest and most widespread technology, like smartphones, in order to enhance their teaching and learning. Beddall-Hill and Raper [15] note that getting students to use their own devices can save them time and their departments, money, while they come to grips with the various functions of the devices. Earlier, I carried out an exploratory study to understand why integrating technology has been unsuccessful at PAAET in Kuwait and I discovered that there were many challenges (i.e. cultural, technical and general challenges, e.g. the large number of students and the shortage of staff members) that contribute to this failure see e.g. [10]. In this study, I will compare two technological artefacts: the smartphone and an LMS, namely Blackboard, in an attempt to open the eyes of the CoP to the new opportunities that smartphones can provide. Furthermore, the extent to which smartphones are a ready-made and instantly accessible alternative technology will be investigated, which can prove helpful to the CoP in overcoming some of the technical complexities of the LMS.

2.1 Aim of the Study

The aim of this study is to achieve a clear vision of what technology (i.e. the LMS: Blackboard, WebCT or smartphones) can better serve Kuwaiti teachers' and students' teaching and learning methods. The answer to this significant question can be obtained by analyzing a broad range of literature/projects (articles and theses) at HEIs and in schools around the world, drawing upon document analysis method. It is hoped that the results of this study will lead to the initiation of new action research to verify whether my theory is valid and the smartphone is indeed more promising/serviceable than an LMS. If this proves to be the case, it will add to our understanding and encourage the CoP in Kuwait to use smartphones as part of their teaching and learning methods.

2. METHODOLOGY

In this study, qualitative research has been used to comprehend what has been published or stated about smartphones and the LMSs opportunities/advantages and challenges. The aim of qualitative research methods is mainly to identify the individual experience and attitude of a participant or subject in a study. In other words, the questions being addressed are 'What?', 'How?' or 'Why?', as opposed to 'How many?', or 'How much?', which are better dealt with using quantitative methods [16].

2.1 Data collection & Analysis

In general, common modes of collecting data when using qualitative methods are interviews, focus groups and participant observation [17]. Here, I will use the document analysis (DA) method to collect and analyze easily accessible

articles and theses content that deals with smartphone and LMS implementation. The articles selected will be drawn from the international sphere, with more focus on the Arabic and Kuwaiti context, if applicable, in addition to what has recently been published. According to Bowen [18] DA is a systematic process which can be used to review and evaluate printed and electronic materials. It is usually combined with other methods as a means of triangulation - "the combination of methodologies in the study of the same phenomenon" Denzin [19: p.291], in order to seek credibility and validity. However, in this investigation, I will use DA alone as an initial phase - of a comprehensive and long-term study, to be completed at a later date. The aim of this is to discover some of the opportunities/advantages and challenges talked about earlier, to find solutions and to make recommendations. Light et al. [20: p.213] argues that, "no design is ever so complete that it cannot be improved by a prior, small-scale exploratory study".

Mogalakwe [21: p.221] illustrates that, "this method is just as good and sometimes even more cost effective than social surveys, in-depth interviews or participant observation". He adds that researchers can use this method with confidence as it is a scientific approach, useful for consolidating evidence from other sources. According to Payne and Payne [22], it is a technique utilised to classify, explore, interpret and identify the limitations of written documents. Moreover, both [23] and [24] emphasize that DA is applicable for rigorous qualitative case studies that offer rich descriptions of an event or phenomenon. Hakim [25] points out that original research can be completed by utilizing old data.

According to Bowen [18], the process of DA involves finding, choosing, evaluating (making sense of) and summarizing data from documents. To follow such an analytical process, I adopted a thematic analysis approach, since Braun and Clarke [26] consider it as a method in its own right and moreover, a flexible one. Furthermore, they define thematic analysis as "a method for identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail" [26: p.6]. The later authors argue that thematic analysis commonly focuses on one level - a semantic approach, with the themes being identified within the explicit or superficial meanings of the data, or at a latent level, which "goes beyond the semantic content of the data, and starts to identify or examine the underlying ideas, [and] assumptions" [26: p.13]. From a constructionist perspective, I am focusing on a latent level, since I am eager to theorize on the socio-cultural context and on the structural conditions surrounding the Kuwaiti environment.

However, because of the lack of explicit guidelines for adopting thematic analysis, the 'anything goes' critique of qualitative research [27] might be an accurate assessment. Braun and Clarke [26] suggest six clear and workable phases observed in this type of investigation: Phase 1: familiarizing yourself with the data, Phase 2: generating initial codes. I used QSR NVivo10 to produce initial codes from the data by tagging and naming a selection of texts. Phase 3: searching for themes; sorting the different codes into potential themes and collating all the relevant coded data extracts within the identified themes. Phase 4: reviewing themes; candidate themes are valid and have enough data to support them rather than being too diverse. Phase 5: defining and naming themes. Phase 6: producing the report.

3. FINDINGS

After collecting and coding the data, relevant themes emerged. I will start with those themes that deal with smartphones which possess features that influence their use, the authors who discuss them, and what they consist of. This is followed by exploring the LMS's unique pedagogical affordances, advantages and challenges.

Table 1: Features influencing the use of smartphones

Features influencing the use of smartphones	Authors	What the authors say
Ubiquity	Naismith, Lonsdale, Vavoula & Sharples [28]; Kukulaska-Hulme & Traxler [29]	Benefit university students; enhance the capability for rich social interaction; enhance context awareness and Internet connectivity.
Ease of use	Traxler [30]; Welsh & France [31]; Donohue [32]; Mehdipour & Zerehkafi [33]	Most of the necessary technological knowledge is often already instilled in the student user simply because M-technologies are now, "woven into all times and places of student lives" [30: p.5]. The mobile version of Evernote is very simple to use and requires no more knowledge than a smartphone user would have already. When a learner searches for new technological tools and apps for himself or to integrate into classroom he will choose something which is free and easy to use. M-technologies should be easily comprehended and navigated by people

		with no previous experience of using them.
Novelty effect	Ekanyake & Wishart [34]; Moura [35]; Banks [36]	As a result of novelty effects, mobile phones can attract students' attention to, e.g. a science lesson. There is some novelty in integrating mobile devices as tools to support learning activities. Everyone is still excited
Privacy	Raftree [37]; Zheng & Ni [38]	Mobiles or tablets can actually create an opportunity for privacy. Privacy, identity and anonymity are not guaranteed with M-technology.

As we can see from the Tables above, there are many features that smartphones (otherwise sometimes referred to as M-technologies) possess, particularly for educational purposes. Most importantly, M-technologies support collaborative learning (CL) [39]. In addition, M-learning is ideal for assisting collaboration and communication [40] and [41]. Furthermore, “Mobile learning is not just about learning using portable devices, but learning across contexts” [42: p.5]. Klopfer et al. [43: p.95] specifies five pedagogical affordances of PDAs as hand-held devices: “portability, social interactivity, context sensitivity, connectivity and individuality”.

What is more, smartphones, in the hands of Kuwaiti students, may overcome certain cultural barriers. For instance, Heble (2007), cited in [44] — an educator at Sultan Qaboos University in Oman (from the same GCC region) — asserts that female students can be encouraged to overcome their traditional reticence in mixed-gender groups if online tools are used. Heble states; “The use of on-line tools certainly seems to have encouraged [my female Omani students] to formulate and express their opinions and to communicate with their male counterparts at a level that would probably be unthinkable in a face-to-face educational situation” cited in [44: p.5]. However, in KSA, another country in the GCC region, Al-Jarf [45] found that the virtual environment may not be considered by Saudi female students. Al-Jarf noted her female students being shy, more anxious and hesitant to register in the LMS she had implemented (i.e. Moodle). Furthermore, others sought to hide their “identity by registering using a male’s name, using their first name and initials, deleting their e-mails, or using “anonymous” instead of their real names.” [45: p. 6].

Nevertheless, smartphones are subject to criticism. They are usually very expensive (even for the population of a wealthy country like Kuwait) and may distract students. Besides, the “text-based message lacks inflection, lacking interactive multimedia, interaction can be clumpy and stilted, everything has to be short and small making meaningful interaction difficult” [46: p.148], and there are certainly worries about health problems, such as backache and eye strain due to excessive use of devices see [47], [33], [48] and [49].

There are also technical challenges; for instance, connectivity and battery life, key size, and screen size, which may inhibit video-based learning [50]. As with PCs, viruses may spread through handheld phones and memory is often limited [51]. Authors like Xing et al. [1], [52], [34], [53], [48] and [54] have summarized most of the technical challenges. For example, there will always be the risk of sudden obsolescence, a lack of data input capability, standardization, or availability of Wi-Fi in many locations. There may also be the problem of low bandwidth and screen resolution, limited interoperability and processor speed. Files may even be lost. All these problems could drive teachers to believe that such handheld devices are unreliable. Technical challenges of this nature may therefore have an undesirable influence on their use and acceptance [55].

3.1 Do LMSs Also Hold Unique Pedagogical Affordances and Advantages?

Certainly, every technological tool has its own unique pedagogical affordances and constraints, rendering it more appropriate for certain tasks than others [56]. For instance, according to Koehler and Mishra [56], email affords asynchronous (e.g. easy storage of exchanges), but not synchronous communication (instant contact), as do phone calls, instant messages, or face-to-face dialogue. Furthermore, they “do not afford the conveyance of subtleties of tone, intent, or mood possible with face-to-face communication” [56: p.61]. Likewise, most LMSs offer many features in one package, e.g. E-content, exam solution keys, classroom announcements, grades, blogs, group discussions and tasks, amongst others [1]. Furthermore, once E-content is created, it can be used repeatedly by different teachers at the same, or in different schools or HEIs. What is more, an LMS can display ‘Test Statistics’ (i.e. GradeQuick can offer instant analysis of any test/task a teacher has assigned without having to calculate it by her/himself) and display Student Statistics (i.e. to help the teacher measure a student’s relative performance, percentage of engagement, and the log-in and log-out times of individual students). This can alleviate some of the teacher’s tasks and workload.

However, the challenge is that different types of LMS (e.g. Blackboard, WebCT, Moodle, etc.) are designed to be used by PCs and laptops. Most LMS features (e.g. reading the course content announcements, grades and even chatting with others on the Discussion Board) demand that members/participants sit in front of a desktop PC or laptop. Nevertheless, Blackboard recently launched the BML platform that can be accessed by nearly all smartphones. Still, Xing et al. [1] faced problems when trying to use BML. For example, since there were difficulties in initially establishing the

M-technology environment, not all BML's functions were implemented, but were postponed till the spring semester, 2011. This meant the students had very limited time to integrate BML into their learning. It is therefore unclear as to whether BML contributed to their motivation and learning.

For my part, I was unsuccessful in my previous experiences with Blackboard as an LMS, because of slow browsing speeds and the complexity of some of the components, from the point of view of the students. Thus, I decided to replace it with another simpler and faster LMS called Haiku (this was done earlier in my PhD thesis). Haiku-LMS offers fewer, but more effective features and it is easy to browse with and use. What is more, it offers links which can display content, syllabi, grades and discussion boards, while also demonstrating pronunciation. Furthermore, there is the facility to add other participants, like parents. I combined the Haiku LMS (to deliver E-content, grades and course announcements) with students' own smartphones (to enhance interaction and communication among them).

Once again, I found that students (i.e. pre-service teachers) were more eager and enthusiastic about using their own smartphones, but not the Haiku LMS. Students searched for information and exchanged it with their peers. They discussed, interacted and communicated via their smartphones and neglected the Haiku LMS. This was due to a number of reasons. For instance, students found and explicitly expressed that the Haiku LMS is a complex system which requires registration and it can only be accessed using a desktop PC or laptop. However, it appeared to me that some of the students did not own either of these, not because they could not afford them, but because they saw them as outdated and unnecessary. Furthermore, their own smartphones are more accessible, easier to use and have the capacity for communication with colleagues at their convenience (in the context of informal learning activities). Additionally, they were already familiar with their smartphones and such hand-held devices offer a higher level of privacy and individuality. This indicates that an LMS cannot compete on many counts with the advantages of the smartphone or other mobile devices, at least regarding what the youth are looking for in this technological era.

4. DISCUSSION, CONCLUSION AND SUGGESTIONS

Compared to traditional PCs and laptops, mobile phones are cheaper and offer permanent ubiquity (Masters, 2005). Laptops, however, unlike other mobile devices, do not "fit easily into the vision of the mobile device in m-learning: a handheld device that can be used for communication while mobile" Nyíri, (2002), cited in [57: p.4]. Furthermore, accompanying apps, like WhatsApp, Twitter and BlackBerry are usually free of charge and most students already use them to communicate socially with friends and family.

Sharma and Kitchens [58] emphasized that mobile devices can make learning even more broadly available and accessible; they are a natural extension of E-learning. The difference between M-learning and E-learning, however, is discussed and demonstrated by Mehdi-pour and Zerehkafi [33], who argue that E-learning can be real-time or self-paced, synchronous or asynchronous, as well as being considered as tethered (connected to something), with a formal structure. In contrast, M-learning is usually self-paced, informal and untethered. Education scholars have implicitly differentiated between E-learning and M-learning with the passage of time, which indicates that M-learning is for the most part, not a sub-set of E-learning.

As an educator, researcher and teacher in HEIs, I found that the smartphone's advantages overshadow the advantages of the LMS. Most LMSs need qualified human resources and sufficient financial resources to mobilize them, as well as sufficient time. As is to be expected, this will have a negative influence on teaching and learning methods for both the teacher and the students. In addition, such challenges can minimize the expected benefits. For example, an LMS does not have the capacity to place students directly in the field of practice or expose them to the risks and so forth of a real-life setting [59]. In contrast, hand-held devices are very useful for fieldwork [60], where they can maximize their educational benefits and offer opportunities for more informal learning activities outside lecture halls and classrooms. Informal learning activities can support Social Constructivist Theory, which tells us that learning is a social process.

The question here is why we (i.e. Kuwaiti educators, teachers and policy-makers) do not start to think outside the box, being practical and avoiding the mistakes and challenges encountered elsewhere. Why do we not start a national campaign in schools and HEIs in Kuwait to encourage teachers to use and get their students to use their own mobile devices? In particular, in such a wealthy country like Kuwait (despite the fact that we in Kuwait suffer from the lack of valid and fresh statistical data), nearly all the youth and most school children aged between 6 and 18 (as I have witnessed as a member of that community) possess smartphones. Furthermore, the ubiquity of this technology in that context rules out the issue of the cost of the device [57].

What is more, literacy and numeracy may improve as a result of using mobile devices, while encouraging independence and collaborative learning. Mobile devices can also be used to highlight those areas where learners need help and support. In addition to these pedagogical affordances, there is also the potential for mobile devices to overcome resistance to E-learning by using ICT, which could get less enthusiastic learners on board. The appeal of the medium would then also promote greater focus, higher self-esteem and more self-confidence in the educational context [61].

Despite the positive outcomes achieved when integrating M-technology in education, many factors and even possible dangers remain, which must be addressed. For instance, "viruses may spread through cell phones" [1: p.2]. Moreover, video-material is limited by the small screen on a mobile device, which impacts on video-learning. Therefore, it is ultimately unclear as to how effective mobile devices are in terms of effective teaching and learning [1].

Nevertheless, we need to rethink new tools and new models for teaching and learning, in order to meet the needs of today's students, who are eager for "greater autonomy, connectivity and socio-experiential learning" [62: p. 667]. New tools promise pedagogical affordances and can be carried in the hand, offering privacy and enabling a connection to other devices and networks at any time and from any location. Additionally, there are solutions which could be suitable for the Kuwaiti context, such as the more familiar and widely distributed smartphones (i.e. iPhone, Samsung Galaxy and BlackBerry).

As a result I recommend allowing Kuwaiti teachers and students, in particular those in HEIs to use their own smartphones (or supply them with one), as a means of supporting their teaching and learning. I believe that, by allowing them to do this, the teachers' workload can be alleviated. Additionally, their efforts, time and expenses can be dramatically reduced. I also recommend a practical investigation to follow up this study (e.g. Action research or Design-based Research), in order to validate the above claims.

Worth to mention, document analysis method helped me answer my exploratory questions and saved a great deal of effort and time. It allowed me to discover what other researchers have said about smartphones and LMS implementation. However, it is difficult to count on it beyond the exploratory stage. This kind of analysis needs triangulation in order to be successful in future studies.

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