Mobile Learning Initiative through SMS: A Formative Evaluation

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ABSTRACT

Mobile technologies such as mobile phones are becoming cheaper and easy to use. Almost all learners enrolled at the Open University Malaysia (OUM) own mobile phones. In a 2008 study to determine learners' perceptions toward mobile learning, most (82.8 percent) indicated that they could imagine themselves learning through mobile devices. Hence, in mid-2009, a mobile learning initiative via text messaging was piloted for one of OUM's first semester courses entitled, "Learning Skills for Open and Distance Learning." The initiative was expected to provide learners with an enhanced learning environment that will, among others, spur them to perform various learning tasks in a timely manner, feel guided on what or how to learn as well as be reminded on certain aspects of the course. In addition, some of the messages sent were designed to motivate the learners. The main objective of the mobile learning initiative was to complement the print module and the two main modes of learning: face-to-face tutorials and online discussions. To determine learners' response to the Short Message Service (SMS) messages, a formative evaluation through focus group discussions at six learning centres in the middle of the semester. Feedback and suggestions given were considered and adjustments were made in the implementation of the initiative for the second half of the semester.

INTRODUCTION

Keegan, Kismihok, Mileva & Rekkedal (2009) reported that one and a half years ago, there were 3.3 billion mobile subscriptions in the world. ETForecasts.com (cited in Motlik, 2008) proclaimed that mobile phone usage would continue to expand by as much as over 45 percent by 2010. The immense popularity of mobile devices has been attributed to "decreasing cost and increasing social currency" (Herrington & Herrington, 2007). With respect to that, a report released by the Malaysian Communications and Multimedia Commission in 2007 stated that the penetration rate for cellular phones increased from 21.8 per 100 population in 2000 to an amazing 85.1 per 100 population

in 2007 (Department of Statistics Malaysia, 2009). In the most recent report released for the first quarter of 2009, subscriptions stood at 28,914 million (Malaysian Communications and Multimedia Commission, 2009) and this was for a nation with a population of only approximately 26 million.

Like all other technologies that seem to trigger the development of educational innovations, mobile information and communication technologies look set to transform the delivery of education. Ryu and Parsons (2009) firmly believed that advances in mobile information and communication technologies would "lead to new types of education systems that are not restricted to traditional education providers. They seemingly heighten both the effects and expectations of the advent of new pedagogies" (p. 1). Thus, it is not surprising that mobile learning, also known as m-learning, has emerged and quickly taken root in the education arena.

According to Hayes, Joyce and Pathak (2004), m-learning refers to the use of mobile devices in teaching and learning. Many consider it a natural extension of e-learning while others label it as a new frontier in e-learning and claim it holds great promise (Caudill, 2007). Features inherent in mobile learning that seem to endear educators, practitioners, designers and developers of instruction include the fact that it is a convenient form for learning as the devices are portable, easy to use, cost-effective and efficient.

In addition, Caudill noted that mobile learning could be utilized on different scales and for different purposes such as administrative and academic support. The range of uses of mobile devices for learning that has been documented include the use of SMS, MMS, mobile games, podcasts, interactive resources, real-time collaborative learning and laboratory data analysis. This new mode of learning has been used for courses ranging from yoga and personal health to languages, mathematics and science.

In discussing theoretical frameworks applicable to mobile learning, Tetard, Patokorpi & Carlsson (2008) were of the opinion that the pedagogical approach chosen would impact how mobile information and communication technologies are used to support learning. The main approaches cited include the behaviorist approach, the constructivist approach, situated learning, collaborative learning and informal learning. Tetard et al. further emphasized that the type of application used depended on four factors:

(1) The place and time;

(2) The learner;

(3) The subject matter to be learned; and

(4) The skills that need to be applied.

USE OF SMS FOR LEARNING

Of all the applications that have been developed for mobile phones, the most useful and most used is the Short Message Service (more commonly known as SMS), also known as text messaging. According to Markett, Sanchez, Weber and Tangney (2006), the SMS has been labelled the "killer" application of mobile phones as its usage has surpassed all expectations. It is then only natural that SMS is incorporated into mobile learning as it is one of the simplest and most user-friendly applications compared to other mobile technologies.

SMS has been used as a stand-alone application in mobile learning as well as in tandem with other applications. The most basic functions are for communication and information delivery and retrieval. It can be used as a push only mechanism (for example, communicating about studies) or as a push and pull mechanism (as when there is interactivity; education providers send out content and learners reply to teaching servers with questions or requests for assistance, which are then converted into data requests).

Notable achievements in the use of SMS for higher education include the immense impact of administrative support using SMS in the University of Pretoria, South Africa in motivating distance learners for various aspects such as reminding them of contact session dates and registration deadline. The initiative was hugely successful in reducing "perceptual distance between learners and the university" and in reducing the drop-out rate of at-risk learners (Ericsson Global, n.d.). Similarly, the University of Ulster was able to reduce learner drop-out by sending timely SMS to learners who had not been attending classes and largely had the misperception that nobody cared (Keegan et al., 2009).

As for academic support, Markett et al. (2006) reported that learners asked more questions, and more freely at that, in an in-class SMS system while Motiwalla (2007) noted that content delivery is more effective when a combination of push and pull mechanisms are used. This is due to the fact that there is an "expansion of time" in that learners have more time to reflect and react to the information they receive. Another advantage related to academic support is the effectiveness of delivering content in "nuggets" or small chunks that are more easily absorbed as was achieved by the Sheffield Halam University of India for their undergraduate degree programmes (Uday Bhaskar & Govindarajulu, 2008).

MOBILE LEARNING INITIATIVE AT OPEN UNIVERSITY MALAYSIA

The vision of Open University Malaysia (OUM) is to be the leading provider of flexible learning. In order to realize this vision, its mission is "to widen access to quality education and provide lifelong learning opportunities by leveraging on technology, adopting a flexible mode of learning and providing a conducive and engaging learning environment of competitive and affordable cost." Its current blended mode of pedagogies include use of various technologies such as a learning management system, multimedia courseware, web-based learning objects and podcasts to support its primary learning material, the print module. In addition, learners are generally provided with two hours of face-to-face tutorials every fortnight for a total of 10 hours. Through the learning management system, learners have the opportunity to participate in online forums where discussions of academic and administrative matters are conducted. This is the typical mode of delivery to the learners. On average, OUM has an active enrolment of between 30,000 and 40,000 learners each semester.

A study led by the Institute of Quality, Research and Innovation (IQRI) at OUM in late 2008 (Abas, Ch'ng & Mansor, 2009) indicated that 98.91 percent of OUM learners had a mobile phone and 82.84 percent could imagine themselves learning through a mobile device. In order to provide more learning opportunities and to take advantage of the proliferation of mobile phones, it was decided that mobile learning through SMS messages be implemented for one of OUM's first semester courses, OUMH1103,

entitled "Learning Skills for Open and Distance Learners." About 2,000 learners were enrolled in the course during the May 2009 semester.

Planning for the initiative and its implementation started with a workshop to develop the SMS content. During the workshop, categories of SMSes were identified as well as the timing and frequency of messages to be sent out per week. An action plan for implementation was developed and views from OUM learners and tutors about mobile learning via SMS were sought.

Five categories of SMS were developed, namely, forum, content, tips, motivation and course management (see Table 1 for examples of SMS sent in the respective categories). Messages from each category were designed for a specific purpose. Text messages from the "forum" category, for example, were aimed at stimulating online forum discussions. The SMSes in the "content" category were at providing snippets of important content found in the print module. In the "tips" category, SMSes were aimed to provide pointers to the learner. This includes study tips and tips for understanding specific concepts. SMSes on "motivation" were meant to help learners stay on course and remind them to persevere, one of the more important characteristics of successful online distant learners. SMS messages from the "course management" category dealt with administrative issues.

Table 1: Categories of SMS Messages and Examples

Category	***Example***
Forum	*What are the strategies & advantages of OUM blended learning modes? Discuss in myLMS forum.*
Content	*There are 4 pairs of learning styles: Active/Reflective; Sensing/Intuitive; Visual/Verbal; Sequential/Global. Which is yours? See Appendix 1.1*
Tips	*Do you know you can change your password in myLMS? Try or ask your tutor*
Motivation	*Motivation Quote: "The man who can drive himself further once the effort gets painful is the man who will win" by Roger Bannister*
Course Management	*Hi there! Warm greetings from OUM Mobile Learning Team. For your info, you may view previous SMSes online at http://twitter.com/oumh1103*

In general, the messages were designed to enhance learning by triggering learners to perform specific learning tasks related to the print module, face-to-face tutorials or online discussions. In short, the messages were designed to complement the three primary learning modes, which were, reading the module, interacting during face-to-face tutorials and discussing in online forums. The messages were also archived in Twitter (http://twitter.com/oumh1103) to enable learners to view all previous messages.

The SMS messages for each week came from a mixture of categories and were planned according to what would be most relevant at the time they were sent out. Each message was pre-set to go out at 8 p.m. to OUMH 1103 tutors' and learners' mobile phone numbers. All learners and tutors were sent an average of three SMS messages every week, starting on the eve of their first face-to-face tutorial.

FORMATIVE EVALUATION OF THE INITIATIVE

In order to help understand the extent to which the innovation was accepted by learners and tutors and to improve on it, a formative evaluation was conducted at mid-project, that is, after a period of approximately six weeks. The two basic questions that guided the evaluation were "How well did it work?" and "How can it be improved?"

In order to capture the perceptions and feelings of learners regarding receiving SMS, focus group discussions were held at six OUM learning centres during the learners' third face-to-face tutorial with their respective tutors. A total of 51 learners and 12 tutors participated in the discussions. Interviews were conducted at the learning centres, in small groups of around seven to 11. After being duly informed about the purpose of the interview and assured of confidentiality, the learners were asked if they were willing to participate in the discussion, in line with the principle of informed consent.

At each of the learning centres, the interview process proceeded smoothly, with the researchers engaged in active note-taking as learners shared their perceptions and viewpoints. The interviews were recorded via digital smart pens, and in one centre, a digital audio recorder. This provided the raw data which were then transcribed the next day and triangulated with field notes.

FEEDBACK FROM LEARNERS

The discussions focused on four broad categories: (a) the learners' feelings about receiving SMS, (b) their actions upon receiving SMS, (c) their views regarding the frequency and timing of the messages, and (d) their perceptions of the usefulness of the SMS.

Feelings about receiving SMS

After the initial shock of getting the first SMS – "*termenung sekejap*" (dazed for a while), most of the learners got over their "*perasaan cemas*" (panicky feeling) and found the SMS useful. Generally, the learners claimed to "feel good" about getting SMS throughout the course. One even gave it a "*5-star rating*."

There were several learners who remained ambivalent about receiving SMS. One commented: "*Saya tak kisah, terima saja* (*I don't care, just accept it*)."

A few learners pointed out the motivational value of receiving SMS when they admitted feeling cared for and appreciated upon getting the text messages:

> *"U rasa OUM beri perhatian, saya rasa dihargai, saya suka terima SMS" (You feel that OUM is showing concern, I feel appreciated, I like to receive SMS);*
>
> *"Saya rasa gembira tapi tak boleh balas" (I felt happy but couldn't reply to the SMS).*

Many learners assumed the SMS came from their tutors and that made them "*feel secure*" as if "*they know about us*." On receiving the welcome message, one learner said: "*Kita rasa kita ini so special*" (*We felt like we were so special*).

The motivational dimension of text messages has been documented by researchers like Horstmanshof (2004) and Harley, Winn, Pemberton, and Wilcox (2007) who found that the personal tone of such messages made recipients feel in touch with their tutors and the learning agenda.

Actions upon receiving SMS

Most of the learners said they looked forward to receiving SMS and promptly checked the SMS upon hearing the arrival tone. However, some learners reported uncertainty about what to do with the SMS, especially after getting the first message. One learner described his feelings:

> *"What to do with the SMS? Just as a sense of information … good information (but) what to do with it? Do I need to respond to this?"*

One of the learners actually tried replying to the SMS:

> *"The first time, I tried to reply but there was no response. The second time, I did not reply. My friends say (sic), just information … just leave it. I keep all the SMS, takut hilang (scared I'll lose it)… copy down in my diary… I refer from time to time (but) didn't know what to do, how to do…"*

For SMSes to be more effective, learners need to be provided with guidelines so that they know what to do after getting the messages. Alternatively, the text messages can be directive (if there are specific learning outcomes to be achieved) as sometimes, learners feel more secure if they are explicitly told what to do: "*Then, I received this SMS: Please discuss in the forum… Ok, now I know what to do…*"

The lack of guidelines or instructions on what learners were to do led to some feelings of frustration – "*Saya gembira terima SMS tapi tidak boleh reply. Penat tak tahu macam mana nak reply.*" (*I was happy to get the SMS but didn't know how to reply. It was tiring, not knowing how to reply*).

When asked if they acted accordingly upon receiving the messages, they said most of the time they did but their actions were delayed. For example, one student said, "*if on forum, wait till got time.*" Another learner said, "*biasanya dua hari selepas* (*usually after two days*)" and when asked if he could remember what to do, he said: "*boleh… sebab tak delete, kalau sudah buat baru delete* (*can remember … because I do not delete the message, I only delete it after I have taken action*)"

Timing and frequency

Some were not particular about when they received the SMS – "*Siang dan malam* (*day and night*)*… 7pm*, *anytime…* ."

Others, however, were not keen to receive the messages late at night as had occurred once when the telecommunication service provider experienced a technical glitch.

> *"SMS waktu malam memang tak sesuai, saya terima 11 malam, lewat ... sebelum 10 malam okay." (SMSes at night are not suitable, I received at 11pm, late… before 10pm, okay).*

The frequency of the SMS also did not appear to trouble the learners – "*If it's beneficial, why not every day?*" However, the general consensus for an acceptable number of text messages was about three times a week.

A learner also pointed out that text messages should be spaced out to avoid creating unnecessary anxiety for the recipients: "*If one (SMS) on Monday and one on Thursday, it is ok but if one on Monday, next one on Tuesday… that(sic) one definitely upset.*"

A tutor felt the frequency of the SMS sent depended on other factors, for instance, learners might not mind getting SMS more frequently, especially those offering revision tips, as the date of the examinations approaches: "*It's mechanical if frequency is set at two times or three times a week. Should have more frequent discussions nearer the exam.*"

Usefulness of the SMS

The perception of the usefulness of these SMSes varied. The majority of the learners were enthusiastic about SMS that conveyed information on course management – like scheduling and time-tabling – but less keen on receiving SMSes on motivation and tips. Several said they could not understand the motivational quote sent and wanted simpler ones. One learner explained: "*Every person has personal goals. That quote is (applicable) for everybody but maybe not for me.*" However, another learner expressed happiness in receiving the motivational quote: "*I think this (sic) kind of words really motivate.*"

One learner commented: "*It's alright; a good reminder. (It's) useful for revision … (helps me) get ready for tutorial.*" Another described the SMSes as "*a good reminder that I need to study,*" adding that "*When I receive it in the morning, it sort of helps me to plan for the evening.*"

An enthusiastic learner likened it to an alarm clock: "*Ia macam jam tidur (It's like an alarm clock)*. *We doze off sometimes, talking about studies, I mean, so it's like a wake-up call.*"

The majority of the learners seemed to welcome receiving the SMSes, especially if they were reminders about deadlines, changes in times of meetings, etc. One said: "*SMS is helpful if it gives information like changes in timetable and schedule,*" while another mentioned that he was happy to get "*notifications*."

To the learners, SMSes on questions related to course content were only useful if answers were provided: *"Kalau ada soalan, ada jawapan lebih bagus... dapat membantu kami" (If there are questions, they should provide answers … can help us)*.

A tutor reporting on response from her class: "*I got a flood of students coming into the forum responding (sic), I was very surprised myself. A good number of them joined the discussion, overall it shows they are thinking. It was good in a way I think because they extend their (students') thinking and they are sharing with the rest ... collaborating online… I think it is good… generally students are happy, they look forward to more …*" Although many learners described SMSes pertaining to the forum as useful, not all entered the forum after receiving the text messages. Likewise, not all learners referred

back to the module to check on course content after receiving such SMS either. A learner highlighted: "*If, by a stroke of luck, the module is in my hand, yes, I will refer to module after getting the SMS. It is useful if it gives pointers related to tutorial.*"

Several learners were of the opinion that SMSes ought to have some "value." One said:

> *"I would do that (locate content in module after getting SMS) if I receive SMS on time or if I know I have to do something by a certain time... But it is not worth it. I think I won't respond (because there is) no value to the effort."*

One of the tutors suggested that the SMSes be interactive in nature and that learners be given extrinsic rewards when they respond:

> *"Learners ask, what to do with the SMS, do they reply? Whether they get a prize… (We) should make it interactive, more commercial, for example, how many times you reply, how fast you reply, then give them a prize. (We should) make it more rewarding…"*

Another tutor supported the suggestion that OUM provide two-way communication as it would be more effective:

> *"If SMS is unidirectional, very soon, the novelty wears off… They will see it (SMS) and say, "Oh!" That's all. If they want to go into the forum, they would have done so a long time ago (even without receiving the SMS)."*

As for incentives, one learner voiced her opinion: "*OUM should make it worth our effort to respond, example, if can get marks (for responding), give us a Blueberry perhaps … lucky draw, spot prize … that kind of thing.*"

Although not all learners expected prizes and rewards for responding to the SMS, many said they were more likely to participate in the online forum if marks were allocated for this. Without this incentive, other activities take priority.

When asked if the initiative ought to be expanded to other courses, the majority of the students interviewed were rather enthusiastic about it and said it was good. One learner explained: "*I like … I think can continue ... because sometimes I feel lazy, it remind me like when exam (sic) … it gives me positive stress.*"

Another comment given was: "*for me this system should be continued because as a new student I am not that familiar with OUM yet ... so I think SMS is … ah ... SMS is important for me.*"

Based on the feedback obtained, implementation of the initiative for the second half of the semester was fine-tuned. This included (a) providing motivation quotes that were easier to understand, (b) sending tips related to examination, and (c) planning for more content-related SMSes to be sent near to examination dates. The timing and frequency of sending SMSes were maintained. Other feedback such as the need for guidelines for learners and tutors would be looked into in future implementation.

In addition, a summative evaluation using a survey would be conducted among all OUMH learners at the end of this initiative to determine the impact and effectiveness of this innovation.

CONCLUSION

Findings from the formative evaluation of the OUM mobile learning initiative indicated that learners and tutors were generally receptive to receiving SMSes to enhance learning. Suggestions obtained would be taken into consideration for future implementation.

As a learning innovation, mobile learning has the potential to contribute to the existing blend of pedagogies at OUM. It is useful for just-in-time review of content to enhance learner-centred learning. Mobile learning offers a unique opportunity for OUM to better integrate face-to-face tutorials, online discussions and print modules. This allows learners to make meaningful connections.

To sum up, clearly, mobile learning has the capacity to contribute to the flexibility of learning in ODL institutions. It can take learning right into the home, workplace and community. It can be spontaneous and portable, unobtrusive and ubiquitous. Most of all, it can take educators in the ODL environment one step nearer to achieving "any time, anywhere" learning.

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The authors would like to acknowledge members of the OUM mobile learning team, OUMH 1103 tutors and learners who were involved in the workshop. Thank you also to those who assisted in the implementation of the initiative and in facilitating the focus group discussions: Christine Ling, Danny Ch'ng, Harvinder Kaur, Nagarajah Lee, Norazniza Ismail, Norziati Mansor, Rosmah Mohamed and Ruzita Ramly.