



## DESIGN AND IMPLEMENTATION OF MOBILE LEARNING AT OPEN UNIVERSITY MALAYSIA

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**ABSTRACT.** With learners going mobile, supporting their learning through mobile phones appears to be timely and appropriate, especially for learners in an open and distance learning environment. Mobile learning in the form of short messaging service was piloted with one of the University's first semester compulsory courses in May 2009. The course, "Learning Skills for Open and Distance Learners" was selected on the basis of its importance in preparing learners for the learning environment at the University. At the end of the course the students are expected to be able to have been able to manage their learning better and to benefit from the blend of pedagogies. The text messages were designed in such a way as to prompt learners to apply principles related to, among others, the study skills, time management, stress management and use the university's learning management system, digital library collection and participate in the online forums. The approach taken was to ensure that learners were prompted to think, read, practice or discuss issues during the class tutorials or forums. The five types of text messages were those related to forum, content, tips, motivation and course management. The paper describes the design and implementation of the mobile learning initiative at OUM. Feedback from 712 students using a questionnaire is also included in the paper.

### INTRODUCTION

Since its inception in 2001, OUM has been practicing blended learning. The blended mode comprises face-to-face learning, self-managed learning and online learning. With recent advances in information and communication technologies (ICT) that have resulted in the proliferation of affordable portable and mobile devices such as mobile phones, it was timely for OUM to explore the use of mobile learning (m-learning) as one of the ways to support and enrich learning and more importantly to engage learners in the learning process.

As reported in BuddeComm's Annual Publication for Malaysia titled, "Telecoms, Mobile and Broadband," there are 27 million mobile service subscriptions for a population of 26 million people. Malaysia, in fact, has the second highest mobile penetration in South East Asia after Singapore. Malaysians are noted to have been big adopters of SMS, what with 73 billion SMS sent during 2008 (Bharat Book Bureau, 2009). In view of the fact that about 99 percent of OUM's learners have a mobile phone (Abas, Chn'g & Mansor, 2009), the use of SMS to support learning was explored.

One of the main objectives of m-learning is to reach as many learners as possible. Hence, naturally SMS tutoring is selected as a next m-learning method to improve learners learning experience. SMS tutoring is based on the Short Messaging System technology to deliver the messages to the learners. SMS tutoring can be considered a complement to the face-to-face tutorials in open and distance learning (ODL) mode of which the meeting time between the tutors and learners is limited to ten hours per semester.

### LITERATURE REVIEW

Although there are some drawbacks by using mobile phones for learning such as the small screen size for viewing, the advantages of mobile learning compared to e-learning cannot be ignored. Among others these are:

1. Majority of learners have mobile phone compared to PC or laptop (MCMC, 2008).

2. Most of the mobile phones are cheaper than PC or laptop, that explain why high penetration rate among Malaysian.
3. Mobile phones are of smaller size and lighter in weight and therefore can be carried around to learn at anytime anywhere.
4. High mobile phone penetration rate ensure most learners engage in mobile learning based on ‘technological push’ pedagogy.

In discussing the design of mobile learning environments, Valentine (2004) emphasized that it needs to be considered within a blended learning mode in the same way as other learning delivery mode. Further, she noted that mobile learning is meant to enhance learners’ learning experience, and ought not to be used as a primary method for delivering a course. Valentine stressed that m-learning is a very powerful method for engaging learners especially for ODL learners which face-to-face meeting is very limited. Mellow (2005) concurred and opined that the use of learning management systems to complement face-to-face interactions “may not be enough to fully engage our students or offer them the flexibility in their study life that is recognised as being important to provide an environment for deep learning and understanding to take place ... (but) the integration of mobile devices will offer true flexibility for our students and fit in with their digital lifestyle” (p. 469).

Learning anytime anywhere, accessible to the masses, but tailored to the individual (Thomas, 2005) is considered a desirable environment for learning in the digital age. This is particularly crucial in ODL. The flexibility offered by m-learning can support self-managed learning, an important component of the OUM blended learning mode. It has the potential to support the learning process and engages the learner in specified activities. According to Keegan (2007), the use of SMS messaging for tutoring is well-established as a form of academic support that is successful in enabling students to focus on the academic content, to come better prepared for tutorials and to be more ready to participate actively in discussions. When learners receive SMSes ahead of their tutorials, there is an “expansion of time” in that students have more time to reflect and react to the information they receive. Further, nuggets of content sent via SMS are more easily absorbed and have been found to be effective in helping learners learn facts (Uday Bhaskar & Govindarajulu, 2008).

In addition, effective and efficient blended learning that is able to engage the learners is very important. Field (2005) said that in order for learning to be effective, the learner needs to engage with module content and concepts. The use of m-learning such as SMS tutoring can support such engagement by providing tips and course summary. According to Ryu & Parsons (2009), m-learning also supports collaborative activities by “strengthening the organization of the learning material and information, supporting communication among group members, and helping the co-ordination between learning activities” (p. 10). This is of particular importance to distance learning programmes that offer blended learning pedagogies. Research has also indicated that SMSes sent in a timely manner to remind learners about administrative matters such as examination dates, contact session dates and registration deadline are successful in reducing the drop-out rate of distance learners (Ericsson Global, n.d.; Keegan, Kismihok, Mileva & Rekkedal, 2009).

## THE MOBILE LEARNING INITIATIVE

The pilot project for mobile learning via SMS tutoring involved 74 tutors and 1863 first-semester students who were enrolled in a course titled, “Learning Skills for Open and Distance Learners” during the May 2009 semester. Several meetings and a workshop were held prior to the start of the May semester to plan and discuss implementation strategies. The objectives of the mobile learning project were to:

- (1) enhance the blend of learning modes currently used at OUM;
- (2) increase the flexibility of learning; and
- (3) encourage and support ubiquitous learning.

**Table 1. Categories of SMS, Their Purpose, Examples and Quantity**

Category	Purpose	Example	Quantity
Content	To help learners locate/remember important course facts easily	There are 4 pairs of learning styles: Active/Reflective; Sensing/Intuitive; Visual/Verbal; Sequential/Global. Which is yours? See Appendix 1.1	15
Forum	To remind and motivate learners to participate in discussion forums	What are the strategies & advantages of OUM blended learning modes? Discuss in myLMS forum.	4
Tips	To provide hints/strategies to learners on how to do well in their studies	Do you know you can change your password in myLMS? Try or ask your tutor	4
Motivation	To motivate learners to persevere in the learning process	Motivation Quote: "The man who can drive himself further once the effort gets painful is the man who will win" by Roger Bannister	2
Course management	To provide timely announcements/reminders on tutorial dates, assessments and other aspects related to course management	Mid-sem exam on 16/7 at 4.00-4.45 pm. Topics 1-4. 25 multiple choice questions. Sample & practise questions may be downloaded thru myLMS	6

In the duration of 11 weeks, a total of 31 SMSes were sent free-of-charge to tutors and students. The maximum number of characters available was 145. The five categories of SMS together with the purposes, the number sent and examples are shown in Table 1.

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. Facebook and Twitter were also used to support this initiative. The use of Facebook enabled the community of learners to interact with each other as well as with the mobile learning team members while Twitter was used to archive the SMSes sent.

### **Implementation of the Initiative**

At the start of the May semester, tutors involved in the course were informed about the initiative via a series of emails. Tutors were informed of the objectives of the initiative and their roles. They were also provided with a schedule for SMSes before the project started so that they knew ahead of their students the SMSes that will be sent. The tutors were also encouraged to explain the initiative to their students and to inform them to update their mobile phone numbers in the learning management system as some students had given their home or office phone numbers only when they registered for the course.

Generally, two or three messages were sent every week. An option to unsubscribe from the SMS tutoring was offered to all students via SMS at mid-project. This was done so that students had the choice of discontinuing the SMS tutoring service if they felt that they did not need it or that it was an intrusion on personal space. Only 11 students wrote in via email to request they be dropped from the

list of recipients; one had dropped out of the programme and another two had thought that they were charged for the service. The rest did not give any reasons for unsubscribing to the SMSes.

## EVALUATION OF THE INITIATIVE

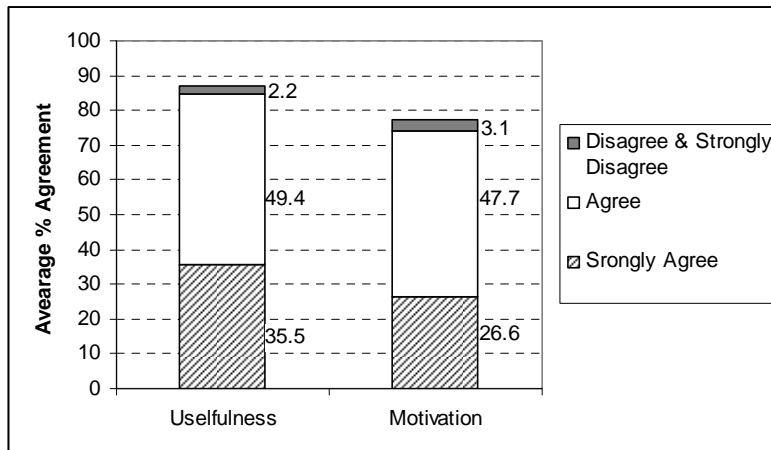
### Formative Evaluation

Feedback was obtained at mid-project through focus group discussions that were held at six OUM learning centres representing the six geographical zones in Malaysia namely North, Central, South, East, Sabah and Sarawak. A total of 51 students and 12 tutors participated in the discussions which were based on four aspects: (a) the students' 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. Based on the feedback obtained, implementation of the initiative for the second half of the semester was fine-tuned in terms of simplifying the language used for motivation quotes and increasing tips and content-related SMSes.

### Summative Evaluation

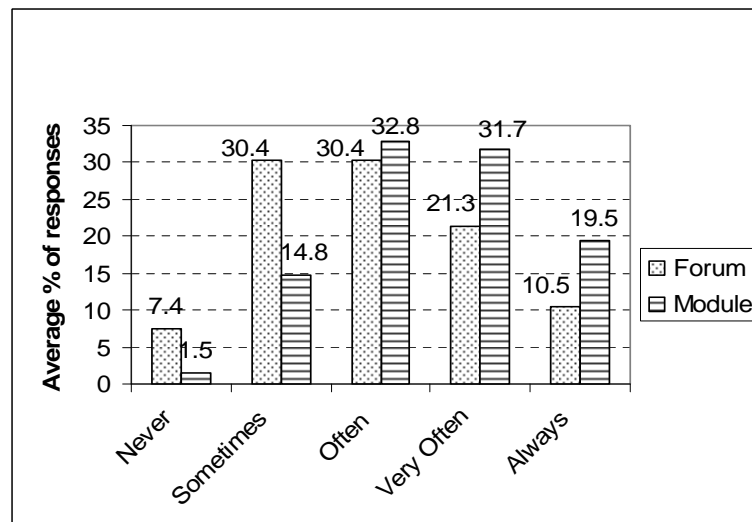
At the last tutorial for the semester, a summative evaluation was conducted using a survey. Questionnaires were sent to all learning centres by post and they were administered by the tutors involved. The questionnaire was bilingual and comprised four sections with a total of 35 items including three open-ended questions. The four sections are: (1) Demographic data, (2) Perceptions, (3) Impact on learning and (4) Overall impression. The Cronbach alpha coefficient obtained for the instrument during a pilot test was found to be .98 with the corrected item-total correlations ranging from +.48 to +.93. A five-point Likert scale was utilized for 16 items with 1 for Strongly Disagree, 2 for Disagree, 3 for Neutral, 4 for Agree and 5 for Strongly Agree. Five items relating to learner response to SMSes for asking them to participate in online forums and to reading the course module, were on a frequency scale comprising 1 for Never, 2 for Sometimes, 3 for Often, 4 for Very Often and 5 for Always. Two items on whether SMS tutoring ought to be continued for the course and other courses were yes/no response type. A total of 712 completed questionnaires were returned and used for data analysis, meeting a 99 percent confidence level and 4 percent margin of error. Of the total number of respondents, 56.9 percent were females and 43.1 percent were males. The majority, that is, 59.9 percent of the respondents were below 30 years old, 29.5 percent were between 30 and 40 years old while the rest (10.6 %) were older than 40 years of age.

Findings from this study indicated that the majority of the respondents perceived mobile learning using SMS technology to have been useful in their learning and had motivated them to learn with an average percentage agreement of 84.9 percent and 74.3 percent, respectively (Figure 1). Respondents agreed that the SMSes were useful in that they had guided them to refer to the module, gave them useful information and were good reminders to focus on their studies. Meanwhile, respondents felt motivated as the SMSes had kept their interest in the course, excited them to participate in the online forums and generally made learning interesting. Not indicated in Figure 1 were those who remained neutral, that is, 12.9 percent for usefulness and 22.6 percent for motivation. Interestingly, learners perceived the usefulness of the SMSes very highly with 35.5 percent strongly agreeing as compared to 26.6 percent strongly agreeing for motivation.



**Figure 1.** Learners' Perception of Usefulness and Motivation

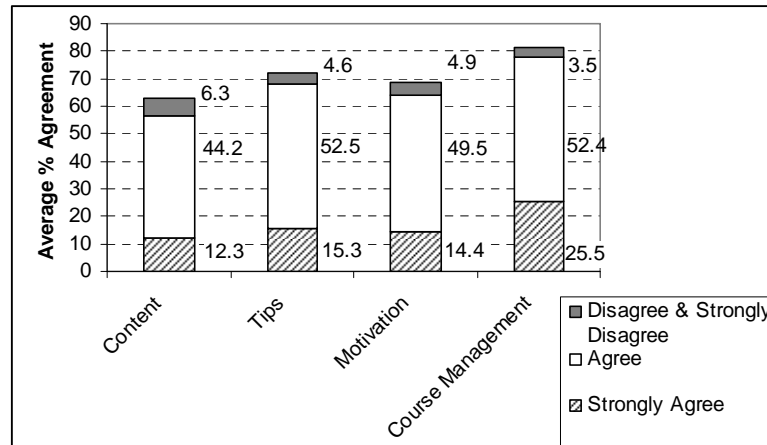
As shown in Figure 2, overall the SMSes were reported to be more effective in getting learners to refer to the course module as compared to getting them to go online to participate in forums. It was found that 19.5 percent of the learners said they always referred to the course module after receiving the relevant SMSes, 31.7 percent very often, 32.8 percent often, 14.8 percent sometimes and 1.5 never. In comparison, 10.5 percent of the respondents reported that they always accessed the online forum after receiving SMSes asking them to go online, 21.3 percent very often, 30.4 percent often, another 30.4 percent sometimes and 7.4 percent never.



**Figure 2.** Learner Response to SMSes for Forum Participation and Reading Module

As shown in Figure 3, more than 50 percent of respondents indicated that each of the various SMS categories, that is, 'content', 'tips', 'motivation' and 'course management' had served the intended purposes. The findings showed 56.5 percent of the respondents agreed or strongly agreed that they remembered facts easily (Content), 67.8 percent implied that they got useful hints/strategies on how to proceed with their learning (Tips), 63.9 percent felt encouraged after reading the motivation quotes (Motivation) and 77.9 percent reported that they were reminded of important details related to the course (Course Management). These findings are reassuring because learners seemed to be satisfied with the SMS tutoring service, particularly with the Course Management text messages, of

which 25.5 percent strongly agreed. The percentages of those who remained neutral were: 37.2 for Content, 27.6 for Tips, 31.2 for Motivation, 18.6 for Course Management.



**Figure 3** Perceived Effectiveness of the Various SMS Categories

As for the extent to which the initiative has impacted learners, 77.7 percent felt it had given flexibility to their learning, 77.5 percent thought it had sustained their interest in the course, 76.3 percent were encouraged to be focused in their learning, 74.1 percent agreed that it had added value to their learning experience and 73.9 percent believed that it had assisted them to become better self-managed learners.

Overall feedback from the questionnaire indicated that 81.4 percent of the learners thought that the mobile learning experience had created a good impression of OUM. In addition 77.3 percent indicated that it had made a positive impact to their learning experience and 72.5 percent of the learners felt more satisfied with the learning experience using SMS tutoring as compared to their other course(s).

When asked if SMS tutoring ought to be extended to other courses in the future 94.9 percent of the learners in the study said “yes”. Meanwhile 95.2 percent felt that the SMS tutoring project should be maintained for OUMH 1103 (Learning Skills for Open and Distance Learners).

## CONCLUSION

In general, it may be concluded that SMS tutoring has been found to be well-received by learners and effective in achieving its intended purposes of helping learners locate/remember important course facts easily, reminding and motivating learners to participate in discussion forums, providing useful hints/strategies to learners on how to do well in their studies, motivating learners to persevere in the learning process and providing timely announcements/reminders on aspects related to course management. It is evident from this study that this pilot mobile learning project is a sure step towards enhancing the blend of learning modes currently used at OUM and that it has the capacity to increase the flexibility of learning and to support ubiquitous learning.

Due to the success of this initiative, OUM has decided that mobile learning for OUMH 1103 will be continued for the September 2009 semester with the new batch of students. In addition, the May 2009 semester batch will experience mobile-learning for another compulsory course, that is, OUMH 1203 entitled English for Written Communication. Other plans for the use of SMS in OUM include mobile learning for courses offered by the School of Nursing and Allied Health Sciences and mobile counseling by the Centre for Student Management to support their counseling activities. It appears that OUM is set to be a leader in flexible open and distance learning in Malaysia. This study has found that the learning experience can be enhanced through SMS and for learners receiving the SMS, it is like having a tutor-on-the-go or a tutor-in-the-pocket.

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