The use of Short Messaging System (SMS) as a supplementary learning tool in Open University Malaysia (OUM)

Nurhizam Safie
Faculty of Information Technology and Multimedia Communication
Open University Malaysia
nurhizams@oum.edu.my

Abstract

The objective of the research is to investigate the effectiveness usages of Short Messaging System (SMS) as a supplementary learning tool in Open University Malaysia (OUM). The focus is on the project called mySMS, a service provide to the learners in the coming 2004 August Semester. This pilot project will involve 50 learners. Learners who are registered to Management Information Systems, Strategic Information Systems and Human-Computer Interaction shall involve as participants in this project. The learners will be provided with self-learning modules, access to web-based Learning Management System (LMS), namely myLMS. The web-based LMS consists of the following components: e-mail, chatting room, online forum and digital library will assist learners in their learning activities during the semester period. Three tutors will be assigned to facilitate and monitor the academic progress of the learners. These tutors shall use mySMS service as a structured academic notification mechanism in which they can monitor the academic progress of the learners. SMS services which will be provided to learners are as follows :- multiple choice questions with feedback, pre and post self-test, quizzes and assignment notification, crucial assignment reminders, access to examination and test marks, fact of the week, web links, reading material lists, course schedule and calendar as well as access to financial statements and courses registration. The mySMS service is provided as a supplementary component of myLMS offered to learners since 90% of the 24,000 learners owned mobile phones. Moreover, most of them are working in a mobile environment. mySMS has the ability to make learning more widely available and accessible than learners are used to in existing web-based learning environments, i.e. LMS. The prime benefit of using mySMS is its potential in increasing productivity by making learning processes available anywhere and anytime, allowing learners to participate in academic activities without the time and place barriers. mySMS can be used by learners to obtain information such as assignment deadlines and quizzes more easily and quickly than phone calls or e-mail. mySMS could be the first step towards lessons which are truly just-in-time (JIT) where learners could actually access education material at the place and time that they need it. mySMS provides more flexibility, mobility, convenience and seamless integration of messaging services and data access than the online learning environment. This increases routine attention to self-learning modules, makes learning pervasive and might boost the learner's motivation for lifelong learning.

Keywords : SMS, LMS, m-learning, e-learning

A full paper presented for the 18th Annual Conference Association of Asian Open Universities (AAOU) Shanghai, China from 27 -30 November 2004

1.0 Introduction

Mobile learning or m-learning is a new learning phenomenon in the open and distance learning environments. Although a lot of research have been conducted or still being conduct on the new method of learning, particularly on SMS technology (Bollen, 2004, Mitchell & Doherty 2003, Attewell 2002, Ketamo 2002, Seppala 2002, Stone 2002) however in Malaysia, the mobile learning paradigm is still in an embryonic stage. Mobile learning is a field which synchronizes two promising field namely the mobile computing and e-learning (Trifonova, 2002).

It is a technology which covers the spectrum of mobile devices ranging from as simple as by using mobile phones up to high specification PDAs (Personal Digital Assistants) with pedagogic applications. The educational content can be delivered via medium such as SMS, MMS or WAP portal. It has the potential to further expand where to learn, how to learn, when to learn and perform in all aspect of life long learning in an open and distance learning environment. The following are some of the definitions of mobile learning :-

1. M-learning is the intersection of mobile computing and e-learning: accessible resources wherever you are, Strong search capabilities, rich interaction, powerful support for effective learning and performance-based assessment. E-learning independent of location, time or space (Quinn,2000).

2. A new m-learning architecture will support creation, brokerage, delivery and tracking of learning and information contents, using ambient intelligence, location-dependence, personalization, multimedia, instant messaging (text, video) and distributed databases. (Mobilearn,2003)

The evolution of education in an open and distance learning (ODL) environment can be characterized as a continuum and evolution from distance learning (d-learning) to electronic learning (e-learning) to mobile learning (m-learning) (Brown,2003).

M-learning is unique because learners can access the course material, instructions and other course related applications anytime and anywhere. This increases daily attention to learning material, makes learning pervasive as well as boost the learner's motivation for lifelong learning. Moving from stationary to mobile learning allows ad hoc collaboration and interaction between learners. (Wierzbicki, 2002)

At the Open University Malaysia (OUM), we see the potential of using SMS in supporting learners learning activities. Our arguments are based on three main factors:-

1.1 Uses and ownership among learners in Open University Malaysia (OUM)

It is based on initial findings from a study of uses and ownership of mobile phones among learners in Open University Malaysia. 90 % of the learners' population owned mobile phones (OUM, 2004). Statistic shown that in recent years, ownership and uses of

mobile phones is increasing. The use of SMS messaging has grown at a phenomenal rate. In 2003, 6.16 billion text messages transactions were made by mobile phone subscribers in Malaysia. (Malaysia Communication and Multimedia Commissioner, 2003). Moreover, over 50 percent of all employees spend up to half of their time outside office. (empowering technologies.com, 2002)

1.2 Diffusion of mobile technology in Malaysia

Our prediction of the use of mobile phones in supporting mobile learning activities is based on the diffusion of the mobile technology in Malaysia. With the successful development of technologies such as SMS (Short Message System), MMS (Multimedia Messaging System), Bluetooth, GPRS (General Packet Radio System), UMTS (Universal Mobile Telecommunications System) and WAP (Wireless Application Protocol), the technological framework for wireless telephony and wireless computing are now firmly in place.

1.3 Mobile phone adoption in Malaysia

The adoption of mobile phones in Malaysia has shown a significant growth. The evident shows that Malaysian is keen at owning and using cellular phone, in which in 2003 alone 11 millions of the population owned mobile phones. (Malaysia Communication and Multimedia Commissioner, 2003).

Therefore, as the pioneering step towards the mobile learning adoption in the Open and Distance Learning environments in Malaysia, the Open University Malaysia (OUM) has took the initiative to experimenting SMS as the supplementary learning tools. We started with SMS technology since 90 % of the 24,000 learners owned mobile phones. (OUM, 2004). Moreover, the technology is cheap to manipulate, it is not so complicated to operate and easy to use since most of Malaysian are familiar with the SMS technology.

In this pilot project, 50 learners who are registered to the following courses, namely Management Information Systems, Strategic Information Systems and Human-Computer Interaction willing to participate. These learners can access the SMS quizzes via their mobile phones. On top of the accessibility to the SMS self-test quiz, eventually, the learners being provided with access to the Learning Management System, namely the myLMS. myLMS is consists of e-mail, online forum, digital content as well as digital library. The pilot test was conducted through out the September Semester 2004.

By looking at several teaching applications and mobile learning which are currently being deployed and evaluated, one can conclude that m-learning can compliment the e-learning platform, i.e. the LMS by creating an additional channel of access for mobile users with mobile devices such as mobile phone, PDAs or Pocket PC. (Luchini et al. 2002, Mifsud 2002).

2.0 Background of the University

The Open University Malaysia (OUM) is an open and distance learning (ODL) private university established by a consortium of eleven Malaysia public universities. It thrives on its motto of a "University for All" as it believes in the philosophy of education for all.

This philosophy implies that education should be made available to all, regardless of time, place and age.

Since its establishment in 2000, the number of learners enrolled at the University has increases from 400 to over 24,000 and the number of academic programs from 4 to 17. Currently OUM employs 1,700 tutors and tutorial sessions are conducted at 31 University Learning Centers (ULC) serving 24,000 learners throughout the country. Only suitable and qualified academicians and practitioners from the industry are short listed and appointed as the tutor.

Through its innovative teaching methods, OUM prepares learners to meet the demands and challenges of Malaysia's growing economy as well as to provide a basis for lifelong learning. Its strengths span a wide range of disciplines, from Information Technology, Multimedia Communication, Engineering, Business and Management as well as Science.

In order to develop a learning system that is on par or better than the conventional learning method, OUM has adopted a multi-mode learning approach. The university's adoption of blended pedagogy provide renewed opportunity to working adults wishing to work for an emerging skill or for an academic degree without having to leave their jobs. The blended pedagogy consists of the following respective components namely the self-learning modules, e-learning and face to face tutorial sessions fortnightly. To better understand the context of blended pedagogy in OUM, see Diagram 1.

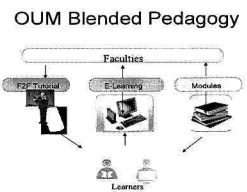


Diagram 1 (Source: OUM 2000)

2.1 Self-Learning Modules (SLM)

Self-managed learning requires learners to study independently according to their time availability. Teaching materials provided include specially developed printed learning modules. These modules are prepared by the Centre for Instructional Design and Technology (CiDT) as the main source of learning material. This is supplemented with

other reading materials and assignments. In addition to that, the learning process also takes place via audio/video tapes, CD-ROMs and laboratory experiments if necessary.

2.2 E-Learning

The learning management system known as MyLMS is use as the e-learning platform. Through the mediation of MyLMS learners are able to control their learning at their own pace and convenience. MyLMS is packed with e-learning tools enablers such digital library, e-mail, chat, online forum, academic links as well as course information. Electronic communication tools such as e-mail, online forum and chat rooms are provided to facilitate interaction among learners, tutors and Subject Matter Expert (SME).

2.3 Face to face tutorial session

Face-to-face tutorial sessions are conducted by the tutors at University Learning Centres (ULC) established throughout the country. Five tutorial sessions are conducted during the weekends fortnightly throughout the semester. The ratio of tutors to learners is kept low to ensure the quality of the sessions.

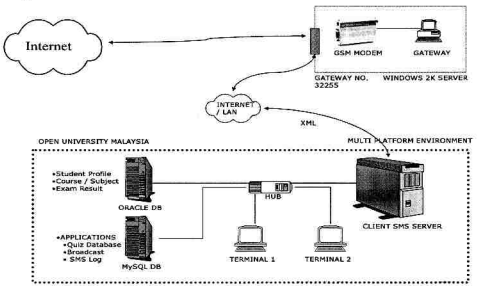
3.0 SMS Pilot Test

In conjunction with the University mission to use multi mode technology and as to compliment the e-learning component of the blended pedagogy, OUM has took the initiative by introducing SMS quiz to the learners. The university is currently in the process of implementing m-learning by using SMS support for learners, tightly integrated with the Learning Management System (LMS) namely myLMS. The lessons learned by OUM in this pilot test are essential to inform the optimal development of the project - we present a brief summary of a selection of recent activities, as this may assist others undertaking similar work.

The SMS act as the learning tools to enhance learners understanding of the printed modules. OUM had chose SMS as the first step pioneering platform in mobile learning because the technology is relatively cost-effective, reliable and majority of learners owned mobile phones. We believe that SMS have the potential to be an additional driver to support the self-learning processes. We consider the SMS technology to be a catalyst for potential mobile learning and SMS to be another supporting learning tool to be used in the suite of technologies and practices which are being implemented in a variety of learning scenarios where the shared objective is to develop self-learning concept taking place not only online, but is also supported face-to-face tutorial sessions as well as whilst students are mobile.

The SMS system architecture are as follows :-

SMS System Architecture



The Subject Matter Expert (SME) of the courses have creates the SMS quizzes based on the printed modules. 15 multiple choices questions (MCQ) have been created. Questions were developed accordingly based from the modules. Three courses were identified for the pilot test. Fifty (50) learner were available to access the SMS quizzes throughout the semester. Courses which are involves in the pilot project are as follows:-

- Management Information Systems
- Strategic Information Systems
- Human-Computer Interaction

The ICT Services Department of the university has developed an SMS application generator program. The application was developed by using Microsoft Visual Basic. Diagram 3 shown the snapshot of the interface of the SMS quizzes administration.

Interface for SMS quizzes administration

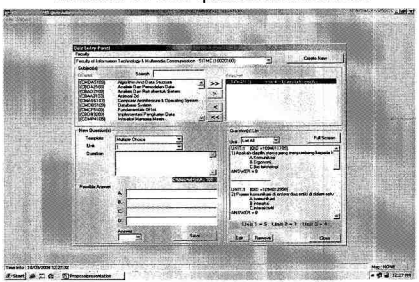


Diagram 2

Data sources

Participants gave their consent for the evaluation that was undertaken. Data for the evaluation were collected from :-

1. Interviews with the Subject Matter Expert (SME) at the beginning and end of semester.
2. Interviews with ten (10) out of fifty(50) learners registered on the courses.
3. Comments exchanged among learners by e-mail and online forum in the e-learning platform (myLMS).
4. Questionnaires sent via e-mail to all participants at the end of semester.
5. Logs of access on the server during the semester were analysed.

The survey was conducted via e-mail. The e-mail questionnaire was made of 22 simple questions, all of them related to the SMS services. Learners were given 1 month to respond

The findings and some conclusions are drawn in the following pages.

4.0 FINDINGS

The findings from the pilot study consisted of 50 learners registered to five IT courses are as follows:-

4.1 Age distribution of learners

16 % were below 24 years of age; 54% were between 25 -29; 28 % were between 30 -40, 2 % were between 41 -50 and none were above 50 years of age.

4.2 SMS reminder preference

94 % of the learners prefer to receive reminder messaging such as dates of examination and assignment deadlines, while 6 % of them reluctant to receives such reminders.

4.3 Benefits of SMS quizzes

88 % of the learners think that SMS academic quizzes benefit them a lot during revisions while 12 % of them think that they do not gain any benefit from the SMS quizzes.

4.4 Understand of SMS instructions

90 % of the learners claimed that they understood the instructions on how to use the SMS quizzes while 10 % of the respondents claimed that they do not understood.

4.5 Ample time to answer quizzes

80 % of them said that the time given to answer the questions were sufficient while 20 % said the time given is insufficient.

4.6 Problem while taking break in between answering quizzes

86 % of the respondents said that them do not encounter any problem while taking break before answering the next SMS question ,while 14 % said they having some problem while taking break before answering the next SMS questions.

4.7 SMS query easiness

76 % of the learners found that it was easy to query the SMS questions by using SMS via their mobile phone while the rest, 24% found that it was difficult to query the questions.

4.8 Easy to read from the mobile phone screen

76 % of the respondents said that it is easy to read the questions on their mobile phone screen while the balance, 24% said that it is relatively uneasy to read the quizzes.

From the findings, shows that it is feasible for Open University Malaysia (OUM) to implement the SMS quizzes across all faculties.

6.0 CONCLUSION

In conclusion, there will always be new emerging technologies on the way to improve the learning supporting tools . Today, our electronic learning method in Open University Malaysia uses the Internet through myLMS . Mean time, with the diffusion of mobile phone among the learners, we have a supplementary option to vary our pedagogical strategies to enhance learners' performance via the utilization of appropriate technologies. As learners and faculty members become more comfortable with the technology and because technology is fast becoming a necessary part of routine life, learners' expectations become clearer. Learning systems must be able to evolve with the changing needs of its learners and this is more and more felt in the field of Open and Distance Learning (ODL) environment where delivery platform work in tandem with ICT. Although the research is a pilot project on using SMS as a supporting tools, the results or feedback from learners are encouraging and remarkable. There are no major drawbacks or serious shortcomings during the trial period throughout semester.

The mobile phone is one of the most successful new technologies of the past two decades (Nyiri, 2003). In addition to high rates of ownership by users, users typically have mobiles at hand or in-the-pocket the majority of the time with access rate to mobile phones well beyond the typical work or study day (Cereijo-Roibas & Arnedillo-Sanchez, 2002). As the learners are mobile, the quizzes act as supplementary to them, where ever they are away from the stationary based computers. Some reasons given for the huge growth of SMS usages include low cost, asynchronous nature in which they can reflect before sending a reply and reply at their leisure time and potential for private or quiet use (Mitchell, 2002).

6.0 REFERENCES

Abfalter Dagmar, Mirski Peter,Hitz Martin (2004). Mobile Learning – Knowledge Enhancement and Vocational Training on the Move

Alsop, G., Brigg, J., Stone, A. and Tompsett, C. (2002)., "M-learning as a Means of of Supporting Learners: Tomorrow's Technologies Are Already Here, How Can We Most Effectively Use Them in The E-learning Age?" Networked Learning 2002, Proceedings of The Third International Conference on e-learning in Higher Education and Life Long Learning, Sheffield...

Bentley, T. Learning Beyond the Classroom. Education for a Changing World (1998) 177 -193.

Bollen, L., Eimler, S., & Hoppe, H. U. (2004). SMS-Based Discussions: Technology Enhanced Collaboration for a Literature Course. Poster session presented at 2nd IEEE International Workshop on Wireless and Mobile Technology in Education, 23-25 March 2004, Taoyuan, Taiwan.

B. Tom (2004). The role of m-learning in Africa. University of Pretoria, South Africa. ICDE 2004. Proceeding of The 21st ICDE World Conference, Hong Kong.

Cereijo-Roibas, A., & Arnedillo-Sanchez, I. (2002, June 2002). Pathway to m-learning. Paper presented at the European Workshop on Mobile & Contextual Learning, Birmingham, UK.

Charney, B. (2003). Cell phone use to double. CNETNews.com, http://news.com.com/2100-1039-5060745.html.

Divitini, M., Haugalokken, O. K., & Norevik, P.-A. (2002). Improving Communication Through Mobile Technologies: Which Possibilities? In Milrad, M, Hoppe, H.U., and Kinshuk (Eds.), Proceedings IEEE International Workshop on Wireless and Mobile Technologies in Education, August 29-30, 2002, Vaxjo, Sweden (pp. 86-90), IEEE Computer Society.

Grinter, R. E. and M. Eldridge: (2001): 'y do tngrs luv 2 txt msg?', in W. Prinz, M. Jarke, Y. Rogers, K. Schmidt and V. Wulf (eds.): Proceedings of the Seventh European Conference on Computer- Supported Cooperative Work ECSCW '01, Bonn, Germany. Dordrecht, Netherlands: Kluwer Academic Publishers, pp. 219-238.

Goh T. & Kinshuk (2004). Getting Ready for Mobile Learning. In L. Cantoni & C. McLoughin (Eds.) Proceeding of ED-MEDIA 2004 – World Conference on Educational, Hypermedia & Telecommunication , Lugano, Switzerland

A full paper presented for the 18th Annual Conference Association of Asian Open Universities (AAOU) Shanghai, China from 27 -30 November 2004

Keegan D. (2003). The future of Learning : From e-learning to m-learning. Hagen: fernstudienforchung, Germany

Kukulska-Hulme, A., (2002) 'Cognitive, Ergonomic and Affective Aspects of PDA Use for Learning', Proceedings of MLearn 2002, European Workshop on Mobile and Contextual Learning, Educational Research Papers of the University of Birmingham, NO.14, Birmingham, 2002 ISSN 1463-9408

Mitchell, A., & Doherty, M. (2003). M-Learning Support for Disadvantaged Youth: Mid-Stage Review. Anglia: Ultralab.

Mitchell, A., Heppel, S., & Kadirire, J. (2002). Technology Watch Research Report. Anglia: UltraLab.

Mifsud, L. (2002). Alternative Learning Arenas - Pedagogical Challenges to Mobile Learning Technology in Education. In Milrad, M, Hoppe, H.U., and Kinshuk (Eds.), Proceedings IEEE International Workshop on Wireless and Mobile Technologies in Education, August 29-30, 2002, Vaxjo, Sweden (pp. 112-116), IEEE Computer Society.

Nyiri, K. (2003). Mobile Communication: Essays on Cognition and Community. Vienna: Passagen Verlag.

Nyiri, K (2002). Towards a philosophy of m-learning. Paper delivered at the IEEE International workshop on wireless and mobile technologies in education. Vaxjo Universitty, Sweden.

Stone, A. and Briggs, J.(2002). "ITZ GD2 TXT – How To Use SMS Effectively in M-Learning", MLearn 2002, Proceedings of the European Workshop on Mobile and Contextual Learning, Birmingham.

Trifonova, Anna (2003). Mobile Learning – Review of The Literature .University of Trento, Italy.

Wierzbicki Robert J. (2002). Emerging Issues in m-Learning WIERZBICKI.ORG - eLearning Solutions, Erlangen, Germany