Does Mobile Learning Foster Self-directed Learning?

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Abstract: With the ever-evolving educational technology trends, distance learning is now able to provide tremendous opportunities of learning that were barely possible before. Despite that, distance education institutions are still continuing the battle with one of their most challenging issue, which is high learner dropout. There is a notion that learners will be more successful and less prone to dropout when their learning is self-directed (Uba, 1997). Recently, research showed that mobile learning encouraged learners to be self-directed and there was a substantial decline in dropouts (Attewell, Savill-Smith, Douch, 2009). This paper is a further effort to investigate the potential of mobile learning to support self-directed learning and aims to highlight the effect of mobile learning using short messaging services (SMS) on learners' self-direction for learning. In the study, SMS text messages were sent to mobile phones of science teachers who were undertaking the Bachelor of Teaching Program at Open University Malaysia. Data was collected using survey questionnaire as well as interview method whereby 35 participants responded to the questionnaire and two were interviewed. The assessment of self-directed learning was based on the theories of self-directed learning suggested by Brockett and Hiemstra (1991) and Candy (1991). The findings show how learners exhibited ownership of learning due to mobile learning through their goals and plans for learning, strategies and processes of learning and self-evaluation of their learning. The study also discusses issues that these teachers faced when using mobile technologies for self-directed learning.

Introduction

The rapid growth of information communications technology in today's society has provided a climate where the concept of self-directed learning is receiving more attention. There is a notion that learners will be more successful in their learning and less prone to dropout when their learning is self-directed which is now easily accomplished by the aid of technology (Uba, 1997). The development of technology and media such as television, radio, computer and recently mobile devices has made learning accessible to learners at a distance. Despite the fact that information technology has made access to distance education much easier, the battle against attrition rate continues to prevail. There is enough evidence in literature that reports attrition rates as one of the main challenges in distance learning. Studies have shown that a substantial number of learners dropout from the learning process and attrition rates of distance learners are higher than campus-based learners (Murray, 2001).

Lowe (2005) alleged that appropriate support must be provided to ensure distance learners achieve the academic success that eventually leads to program completion. According to Tinto (1975), a learner's decision to drop-out from studies depends on how the learner interacts with the social and academic environment of the institution. This means that by providing active and robust support to student learning, it will improve learner retention (Ashby, 2004).

The ever changing needs of modern learners are now compelling educational organizations to move from didactic to a more learner-centered approach. And with these reasons, this research was conducted to explore the potential of how mobile phones which are one of the most highly engaged technology currently used by mankind is able to infuse learning ownership among distance learners.

Mobile phones for learning

A known fact is that more people have more mobile phones than computers. In 2010, there were 5.3 billion mobile phone subscribers which represent 77% of the world population and in Malaysia, penetration rate of mobile phone subscription was reported at 127.7% (MCMC, 2012).

Mobile learning refers to usage of mobile digital tools, which are small size, with ubiquity and functional convergence, enabling learning (Pachler, 2009). Cock, Pachler and Bradley (2008) stated that activities with, and supported by mobile devices have the

potential to meet the conditions required for effective learning. Mobile learning has been described as both the subset of distance education (Keegan, 2005) and a subset of e-learning (Mellow, 2005).

A study by Chyung (2001) found that telephone intervention can yield positive retention. Frequent contact with distance learners helps to improve retention (Catchpole, 1992, and Simpson, 2004). Mackay (2007) discovered that the use of short messaging system (SMS) fosters a sense of connectivity between the learner and facilitator. According to Attewell, Savill-Smith, Douch (2009), mobile learning promotes independent work outside lessons and has helped to increase retention rates.

Self-directed learning

The concept of self directed learning is related to self-teaching and learner autonomy (Knowles, Holton & Swenson, 1998). Self-directed learning is a process that naturally takes place while one is learning (Gibbons, 2002). Learning is a self-reliance process that does not just happen in the classroom but also occurs in daily life activities. According to Gibbon (2002), self-directed learning impresses the importance of developing ownership of learning as it will motivate the learner to pursue a learning goal and persist in the learning process. Learners with high levels of self-directed learning are resilient learners who have intense interest for learning, able to use learning skills to engage in independent learning activities, and autonomously mange their own learning (Knowles, 1975; Brockett & Hiemstra, 1991; Candy, 1991; Merriam & Caffarella, 1991; Guglielmino & Guglelmino, 1991; Gibbons, 2002).

Self-directed learning has been in the limelight, partly due to the research trends in adult learning (Roberson, 2005). In the literature, self-directed learning had shown to be a reliable indicator for predicting academic success in traditional learning settings or non-web-based distance learning (Long, 1991).

While recognizing that institutions and their instructors play a vital role in addressing the attrition problem, particularly in distance learning, it is also equally high responsibility of the adult learners to understand their conception of learning from being dependent to a self-directed learner. Tinto (1987) confirms this same point when he contended that, "To single out the institution as being solely responsible for student departure, as do many critics, is to deny an essential principle of effective education, namely that students must themselves become responsible for their own learning."

(p.181).

According to researchers (Brockett and Hiemstra, 1991 and Guiglielmino, Long & Hiemstra, 2004) self-directed learning occurs when a learner assumes the primary responsibility for planning, implementing and evaluating the learning process. As such, in this study an investigation will be done on how the mobile learning instructions designed to trigger self-directed learning involved in all three components of the self directed learning process of the learners, namely planning, implementing and evaluating of learning.

Purpose and methodology of the study

This study was conducted as part of a larger research study on developing and validating a pedagogical model for mobile learning. The main purpose of this study was to examine the effect of mobile learning SMS on learners' self-direction for learning. Thirty-five participants received Short Messaging Service (SMS) text messages related to a course called Teaching and Learning of Science (with course code HBSC1103) on their mobile phones. These undergraduate learners are in-service teachers undertaking the Bachelor of Teaching Program at Open University Malaysia. The sample was represented by 32 females and 3 males, and a majority of them were from the 30-39 age group (77.1 %) followed by 20-29 age-group (17.1 %). Close to 57% of the participants reported to have 5-9 years of working experience followed by about 37% having 10-14 years of teaching experience Data collection was based on the responses to questionnaire from all 35 participants, as well as interview with 2 participants. A basic-interpretive and semi-structured interview was conducted using the online chat.

Findings

According to the questionnaire data, 29 (82.9%) of the respondents believed that it is possible to learn through mobile phone and only 2 (5.7%) thought it is not possible to learn using mobile phone while 4 participants were not sure if it is possible to learn using mobile phone after all.

In response to what reasons were considered the strengths of mobile learning, it was found that the top voted reason was that SMS encouraged them to be self-directed in their own learning with 62.9% agreeing to this, followed by the 60% responses for agreeing that tutor replied to them instantly. Thirdly, participants felt that the SMS motivated them to read the course module with 54.3% of participants agreeing to this. 37.1% of the participants indicated that the SMSs had interesting facts that attract their

attention. Other reasons that were equally interesting and were recorded by 28.6% of participants were "I enjoy working on the exercises given in the SMS" and "I can reply to the message at anytime and anywhere".

On the whole, most participants rated their learning experience through mobile learning as 7 on a scaled of 1 to 10, with a mean score was 6.1. Five participants gave a rating less than 5 and these participants had indicated that they disliked working on the exercises given in the SMS, were not motivated to read the course module and found that the SMS did not encourage them to do their own learning. Two participants even mentioned that they tend to get confused when the next topic's SMS comes in.

The assessment of self-directed learning was based on the theories of self-directed learning suggested by Brockett and Hiemstra (1991) and Candy (1991). Three aspects were looked at during the interview sessions, which are planning, implementing and evaluating of learning. From the qualitative analysis of the interview data, it was discovered that the learners exhibited ownership of learning due to mobile learning through the three phases of self directed learning process: (a) goals and plans for learning, (b) strategies and processes of learning and (c) self-evaluation of their learning.

However, each learner had unique plans and strategies applied for their learning despite the fact that they received similar instructions on their mobile phones. To illustrate this fact, the interview excerpts are provided below.

When the learners were asked whether they had any plans or goals for their learning after receiving the mobile learning instructions, the responses were:
Student A: "*Yes, I followed what the SMS wanted so I can cover all the topics. My aim is to comprehend the course module in preparation for the examinations*".
Student B: "*I will try to answer the questions if I have the time and if I don't have the time, I'll keep it on the phone and try it later as revision for my studies*".

As seen from their responses, Student A preferred to act on the activities in the mobile phone in the anticipation of receiving immediate response from the instructor and aimed to comprehend the module content. In the case of Student B, she prioritized her job and family matters first and left the mobile learning activities only for her revision purposes. In both cases, the learners had a single ultimate goal that is to achieve the learning of

course undertaken.

When asked what were the learning strategies applied after receiving the mobile learning instructions, the responses were:

Student A: "*Referred to the module immediately*".
Student B: "*I'll start to study the module, then answer questions from module, or question posed on my mobile phone or past year question*".

Student A was motivated to response to the mobile learning instruction immediately. In the interview she also indicated that by using such strategy actually impelled her to allocate time for reading her module despite being busy with her responsibilities at school and home. This was because she wanted to respond to the mobile learning instructions and receive feedback from the instructor. She also reported that she did not do regular reading of her modules belonging to other courses and made last-minute revisions for her examination preparations for those courses.

In contrast, Student B strategized her learning towards the end of the semester before the examinations. Through the interview it was found that she has been doing group discussion with another peer for all her courses except for HBSC1103 course because her peer did not take the course. She revealed that she felt lucky to have an additional mobile learning support as a substitute for the lack of group discussion and she has kept all the messages that she had received for her revision in preparation of the examinations. However, due to her job and family commitment, she was unable to actively respond to the mobile learning activities and was apologetic about it as demonstrated by the following SMS received from her.

("*Good day Ms... I'm very appreciate you're concern and take care of me. I'm sorry didn't reply to you all the time. The reason is I'm busy in school every day. I'm teaching 2 main subjects(... n ...) wit 50 pupils, and I have to do a lot on-line work. I also take part in co-curriculum activities,, school meetings etc. As a mother, my children need my attention. I try my best to complete 3 subject of assignment before due date. I promise I'll do revision with your sms after I settle all my assignments. I never delete all the sms because I need it when I doing revision. Sorry that I always disappoint you.*"

In both cases, Student A and Student B had preferred ways of carrying out their learning

process for the HBSC1103 course. Where, Student A had actively participated in responding to all the mobile learning activities by replying with 18 SMS as compared to Student B who only replied 3 SMS to the instructor.

The other aspect that was investigated was whether mobile learning had triggered self-evaluation of learning and the replies were:

Student A: "*I practiced questions in the module*".
Student B: "*Yes, as I completed answering all the activities received through mobile learning*".

Both Student A and Student B made sure that they had completed all the activities through mobile learning, and also the exercise questions that were available in the module. This shows both students were self aware of the importance of assessing their knowledge and understanding in the HBSC1103 course.

From the interview it was discovered that these in-service teachers had a very busy lifestyle and it was a huge challenge for them to allocate some time for their studies. They had to submit assignments for at least three courses and it was a great challenge for them to have any additional task of learning such as the mobile learning. Moreover the requirement of keeping a mobile learning journal also demanded much of their time. While student A enjoyed her journey of mobile learning experience in the midst of demanding lifestyle, Student B who also had to struggle with her time preferred to capitalize on the mobile learning instructions during the revision period for examinations.

Discussion
The goal of this study was to explore whether mobile learning can foster self-directed learning.
The results showed that the participants experienced self-directed learning through mobile learning. The findings of this study entail that mobile learning instructions have generally cultivated an ownership of learning and a three phase process was observed where the learner begins with a learning goal in mind and later used different learning strategies to capitalize on learning through mobile technologies and finally reviewed their understanding through assessment methodologies.

In addition, the findings also imply that due to the fact that learners have varied set of attitudes, characteristics, cognitive, psychological and social behaviors, it is therefore imperative that the instructor design the mobile learning instructions that serve the diverse preferred ways of learning. However, at times, it is not the instruction that fails the acceptance of the technology but the characteristics of media itself hold a significant bearing for triggering learning. In the case of this study while a majority of the learners were satisfied and convinced with mobile learning, there was a small number of learners who just could not accept the idea of learning through mobile phones, in particular to using SMS. Hence, it can be deduced that the learner decides and controls how he/she wish to further interact with the mobile learning content. This of course remains true for all other media and modes of learning.

It was evident that the mobile instructions had to some extend generated interest and encouraged learners to be self aware of their learning needs. Qualitative data showed that mobile learning to some extend has encouraged in bringing about the need to self-structure learning through methods that employ planning, implementing and evaluating of learning.

Conclusion
This study showed some pedagogical possibilities of mobile learning in promoting self-directedness of distance learners. And, mobile learning had made the learners appreciate the connectivity they had with their instructor for this course.

However, as the study was conducted within a short period of time with a rather small number of students in an in-service program, there is need to carry out further studies that allow longer experimental period and invite more participants across various study fields. It will also be interesting to research   how learners' social believes interact with their acceptance of using mobile technology as a means for learning, in particular to distance education.

References
Ashby, A. (2004). Monitoring student retention in the Open University: Definition, measurement, interpretation and action. *Open Learning, 19*(1), 65–77. doi: 10.1080/0268051042000177854

Attewell, J., Savill-Smith, C. and Douch, R., (2009). *The impact of mobile learning; Examining what it means for teaching and learning.* LSN, London, UK. Retrieved from: https://crm.lsnlearning.org.uk/user/order.aspx?code=090068

Brockett, R G, Hiemstra, R. (1991). *Self-direction in Learning: Perspectives in Theory, Research, and Practice*. London, UK: Routledge

Candy, P. C. (1991). *Self-direction for Lifelong Learning*. San Francisco, California: Jossey-Bass Publishers

Catchpole, M. (1992). Classroom, open, and distance teaching: A faculty view. *The American Journal of Distance Education, 6 (3)*, 41-51

Chyung, S. Y. (2001) Systematic and systemic approaches to reducing attrition rates in online higher education, *American Journal of Distance Education*, 15(3), 36–49

Cook, J., Pachler, N. and Bradley, C. (2008). Bridging the Gap? Mobile Phones at the Interface between Informal and Formal Learning. *Journal of the Research Center for Educational Technology, Spring.* Retrieved from: http://www.rcetj.org/index.php/rcetj/article/view/34

Gibbons, M. (2002). *The self-directed learning handbook: Challenging adolescent students to excel*. San Francisco, CA: Jossey-Bass.

Guglielmino, L. M., & Guglielmino, P. J. (1991). *Expanding your readiness for self-directed learning*. Don Mills, Ontario: Organization Design and Development Inc.

Guglielmino, L.M., Long, H.B., & Hiemstra, R. (2004). "Self-direction in learning in the United States". *International Journal of Self Directed Learning* 1 (1): 1-19. Retrieved from: http://sdlglobal.com/journal.htm

Keegan, D. (2005). The incorporation of mobile learning into mainstream education and training. Paper presented at the 4th World Conference on m-Learning (m-Learn 2005), Cape Town, South Africa. Retrieved from: http://www.mlearn.org.za/CD/papers/keegan1.pdf

Knowles, M., Holton, E., & Swanson, R. (1998). The adult learner: The definitive classic in adult education and human resource development (5th ed.). Houston, TX: Gulf Publishing Co.

Knowles, M. S. (1975). Self-directed Learning: A Guide for Learners and Teachers. New York: Cambridge Book Co.

Long, H. B. (1991). College students' self-directed learning readiness and educational achievement. In H. B. Long & Associates (Eds.), *Self-directed learning: Consensus and conflict* (pp. 107-122). Oklahoma, OK: Oklahoma Research Center for Continuing Professional and Higher Education of The University of Oklahoma

Lowe, S. D. (2005). Responding to learner needs in distance education: Providing academic and relational support (PARS). In S. J. Levine (Ed.), *Making distance education work: Understanding learning and learners at a distance* (pp. 73-87). Okemos, MI: LearnerAssociates.net

Mackay, B.J. (2007). Using SMS mobile technology to M-Support nursing students in clinical placements. Proceedings of the *eFest Conference*, Wellington, New Zealand. Available: http://www.coda.ac.nz/cgi/viewcontent.cgi?article=1000&context=northtec_nh_cp

Malaysia Commission and Multimedia Commission (MCMC). (2012 May 20). MCMC Annual Report 2010. Retrieved from:
http://www.skmm.gov.my/About-Us/Annual-Report-2010/

Mellow, P. (2005). The media generation: Maximise learning by getting mobile. *Proceedings of ASCILITE 2005*. Retrieved from:
http://www.ascilite.org.au/conferences/brisbane05/blogs/proceedings/53_Mellow.pdf

Merriam, S. B., & Caffarella, R. S. (1991). *Learning in adulthood: A comprehensive guide*. San Francisco, CA: Jossey-Bass, Pfeiffer.

Murray, B. (2001). What makes students stay. Retrieved from:
http://elearnmag.org/subpage/sub_page.cfm?article_pk=1301&page_number_nb=1&title=FEATURE%20STORY

Pachler, N. (2009). Research methods in mobile and informal learning: Some issues. In Vavoula, Pachler &Kukulsha-Hulme (eds), Researching mobile learning. Germany: Peter Lang, pp. 1-13

Roberson, D. N. (2005). *Self-directed learning--Past and present*. (ERIC Document No. ED490435)

Simpson, O. (2004). The impact on retention of interventions to support distance learning students. *Open Learning,* 19 (1), 79-95

Spender, D., & Stewart, F. (2002). Embracing e-learning in Australian schools, Brisbane, commonwealth Bank.

Tinto, V (1987). *Increasing student retention*. San Francisco:Jossey Bass.

Uba, L. (1997). Educating for success: a strategy to motivate independent learners. Retrieved from: http://www.collegeguaterly.org/CQ.html/HHH.073.Sum.97.htrnl