



## Support and promotion of mobile learning strategies

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The Mobile Learning Project at The Chinese University of Hong Kong (CUHK) started in 2010 as an initiative to promote mobile learning (mLearning) among teachers at the university. The paper describes the strategies employed by the project in supporting the promotion of a range of mobile learning activities at the university, and reviews factors in relation to challenges and success.

Keywords: mobile learning, mobile learning strategies, mobile learning promotion

### Promotion of mobile learning to teachers

Mobile technology has been advancing at great speed over recent years. Nowadays, mobile devices that are priced at middle-level of the market, such as mobile phones and light-weight notebook computers, are often equipped with internet-connection tools (e.g. Wi-Fi or GPRS). Modern mobile devices do not only enable users to perform work-based activities such as opening/editing Word documents, Excel spreadsheets and PowerPoint slides, but also engage them in various leisure activities, such as communicating with other people via channels that generate immediate responses (e.g. voice/ video phone call, mobile MSN), web-surfing, uploading and downloading of information, eBooks and film-watching (Holdener, 2008).

Mobile devices outperform desktop computers in terms of portability. The 'potentiality' (Georgiev, Georgieva & Smrikarov, 2004) of using mobile devices as a device for learning 'anytime, anywhere' is significant. Some even argue that learning anytime anywhere is the more natural way to learn: "learning has always been mobile: we all learn as we go about our lives, with inherent dynamism and personal mobility" (Low & O'Connell, 2006; p.2). Mobile learning has attracted the attention of many practitioners. Ho and Ali (2008), for example, made an effort in establishing the right environment for mobile learning in Singapore. They regarded such establishment to be a nearly-necessary task as "one of the nation's most important educational goals is to produce students adequately prepared for life and work in the 21<sup>st</sup> century" (p. 6). Besides, in Taiwan, Wu and Chao (2008) envisaged that future mobile learning activities are likely to be incorporated into learning activities, which require a higher degree of interactivity, such as online tests and exercises, and mobile communications.

It is our belief that teachers should play an active role in facilitating this potentially new environment of teaching and learning. Mobile learning should not merely be a tool for self-learning, but instead it can be used to facilitate fundamental changes in various aspects of the teaching and learning environment. Yet, it is challenging to promote the adoption of mLearning strategies among teachers. In fact, the adoption of new technologies at universities has always been regarded as challenging. Rogers (2003) proposed a five-stage adoption model, which illustrates the process of adoption or acceptance of technology overtime. One of the key features of this model is that adoption of any innovations does not happen automatically. At an initial stage, only a small portion of “innovators” would be willing to try out a new technology. Much has to be done to spread the message about new technologies across. The considerations involved in facilitating mLearning thus should not be underestimated (Keegan, 2002). While supporting units of teaching at universities are still at times struggling with the promotion of eLearning strategies to teachers, the promotion of the even more advanced mLearning ideas to teachers should be planned and administered skillfully.

## Mobile learning project

There have been individual efforts at The Chinese University of Hong Kong (CUHK) in testing and using scattered mLearning strategies: for example, eBooks (as reported in Lam, Lam & McNaught, 2008), and SMS quizzes (as reported in Clarke, Keing, Lam & McNaught, 2008). However, practices of these strategies are yet not available in large-scale. The Mobile Learning Project at CUHK was devised in 2010 to take up the challenge in promoting mLearning to all teachers. The paper describes the strategies employed by the project in supporting the promotion of a range of mobile learning activities at the university, and reviews factors in relation to challenges and success.

The project explored potential mobile learning strategies that teachers would find immediately useful at the university. Usefulness was judged with respect to three criteria: 1) whether the strategy requires minimum level of technical knowledge, 2) whether the strategy requires hardware and software that are likely to be owned by students now or soon, 3) whether the strategy has the potential to bring upon more effective learning. As a result of this exploration, the project has identified the following mobile learning strategies:

*eBooks:* The project offered strategies that allow teachers to easily convert learning materials into eBooks, multimedia resources or interactive exercises that can be used on a variety of mobile devices. The project provided support in areas of the following: 1) provided suggestion on how eBooks can be used to enhance teaching and learning particularly in blended learning context, 2) offered training to teachers so that they can handle conversion of eBooks on their own, and 3) provided support in conversion once teachers sent us the materials in the correctWord format.

*QR codes:* QR codes are two-dimensional bar codes that can be read or decoded on many mobile devices with a built-in camera. Once the code is accessed, it allows users to read text, link to a web page, dial a phone number, or text messages, etc. The technology is not new in the business world, but we regard that it actually can also be used for teaching and learning. For example, QR codes can be adopted in learning to display printed materials such as lecture notes, descriptions of exhibits in a museum, or labels of equipment in a science laboratory. The project provided the following support: 1) provided suggestions to teachers on how this technology can be used in various teaching and learning contexts, 2) offered training to teachers so that they could handle the creation of QR codes on their own, and 3) created QR codes for teachers if necessary.

*Classroom communication such as web-based ‘Clickers’:* Mobile technology may be used to facilitate interactions in a classroom. The concept is in fact similar to the traditional tool ‘clickers’ – teacher asks a question and each of the students then has the chance to key in their responses on a ‘clicker’ keypad device. The difference now is students input answers via their own mobile devices. Moreover, the new web-based system is capable of handling sophisticated questions and feedback better than that of traditional clickers because mobile devices allow for both input and display of text. The project supported teachers in using a web-based ‘clicker’ solution called ResponseWare.

*Mobile learning management system (LMS):* Typical LMS user interfaces are difficult to be viewed and used in a mobile device because monitors in mobiles tend to be small in size. The project tested the feasibility of adopting the Moodle Mobile solution over the past year.

To disseminate the above mobile learning strategies, the project developed a website called Mobile Learning @ CUHK (<http://www.cuhk.edu.hk/mllearning>). Teachers are able to get ideas and tips on how to integrate mobile

devices into their teaching on the 'I teach' section of the site. The 'I learn' section, on the other hand, assists students at CUHK to make better use of the mobile technology as a tool for learning. The 'Mobile CUHK life' section provides teachers and students important and handy information of the University such as shuttle bus time table, campus maps and current events of the University. The project also actively disseminated ideas and services through workshops and expositions. About 10 workshops were held last year in which 6 of them attempted to promote mLearning among teachers at CUHK whereas the rest of 4 targeted among visitors from mainland China. The project team took part and presented a poster at the Teaching and Learning Innovation Expo 2010 on 22 October 2010 (<http://www.cuhk.edu.hk/elearning/expo>).

## Evaluation/ reflection

*eBook:* The service to create eBooks was used by teachers from various disciplines such as Chinese Medicine, Law, Physiology, and Biochemistry. The project created at least thirty eBooks for teachers of a group of more than ten. The most difficult part of creating eBooks was to identify teachers who had copyright-free materials and were willing to share these materials via converting them into eBooks with the project team. Some of these eBooks were full-length reference materials such as medical dictionaries/ glossaries, while some were simply teachers' notes. Very few of the teachers we served at the end were committed to acquire the skill to create eBooks for themselves. Teachers did not seem to be motivated to learn the procedures in developing their own eBooks; instead, they would value a care-free eBook creation service.

*Classroom communication system:* The project supported five teachers in using web-based 'clickers' in real classes. They were from the Faculty of Mechanical Automation Engineering, Business and Pharmacy. The challenges to adopt web-based 'clickers' included the issues of both hardware and the soft skills. For the former, the majority of students did not have mobile devices that could readily enable them to go online. More interestingly, even though some of them had the right hardware, many of them lacked the habit of using these devices to surf the Internet within the campus of CUHK. As a result, the project team paid substantial effort in teaching students how to switch on the Wi-Fi on their mobiles and then to connect these mobiles to the campus Wi-Fi when the web-based 'clicker' was first introduced to each class. Teachers were often even less skilled than the students in operating mobile devices – they could not help students with resolving technical problems. The project team realized that the service should not be limited to training teachers how to use web-based 'clickers' (i.e. creating questions on the ppts, and the operations of the questioning sessions), but to provide support and training to both teachers and students.

*QR Codes:* The QR codes service has been incorporated into part of the Green Education Project (<http://www.greeneducationcuhk.net/>) - QR codes were added to name plates of trees in the campus. The Green Education Project spent years in building an online website, which contained descriptions, pictures and audio supplementary in relation to individual trees at CUHK. All they had to do was to merely affixing those QR codes with corresponding urls of their website. The QR codes lead students to rich information about a particular tree on the Green Education Project website when students take a photo of (and decode) the QR codes with their mobile phones right on the spot. The use of QR codes in the Green Education Project was reported in a number of local newspapers. Please refer to the following links for more information:

- a. <http://www.singtao.com/yesterday/edu/1006go02.html>
- b. [http://hk.apple.nextmedia.com/template/apple/art\\_main.php?iss\\_id=20101006&sec\\_id=4104&subsec\\_id=11867&art\\_id=14524012](http://hk.apple.nextmedia.com/template/apple/art_main.php?iss_id=20101006&sec_id=4104&subsec_id=11867&art_id=14524012)
- c. [http://the-sun.on.cc/cnt/news/20101006/00407\\_080.html](http://the-sun.on.cc/cnt/news/20101006/00407_080.html)
- d. <http://hk.news.yahoo.com/article/101005/4/kker.html>
- e. [http://orientaldaily.on.cc/cnt/news/20101006/00176\\_016.html](http://orientaldaily.on.cc/cnt/news/20101006/00176_016.html)
- f. <http://www.mingpaotor.com/htm/News/20101006/HK-gfa1.htm>
- g. <http://www.cuhk.edu.hk/cpr/pressrelease/101005c.htm>

*Mobile Moodle:* One teacher from the School of Law piloted the Mobile Moodle system in distributing academic materials. The record of web logs revealed that out of approximately 200 students in the course, only about 4 to 5 of them regularly downloaded materials with their mobile phones via Mobile Moodle. It was quite obvious that students were not yet ready to use this technology. More trials are needed. More support and promotion will be given to teachers and students in the later pilot runs.

*The mLearning @ CUHK website:* Access logs of the project website were collected and evaluated with the help of Google Analytics which was installed as early as the website was first launched (ten months ago). The total number of visits was around 1800 whereas the number of visits to individual page was close to 8000. The

number of access climbed in November and December 2010 when many of the services provided by the website became fully available. According to the analysis of IP addresses, the majority of the visitors were from Hong Kong (85%) whereas we also attracted audience from the US (6%), UK (2%), China (1%) and other places in South East Asia. The analysis revealed that a considerable number of visitors accessed the site via mobile devices – 12.7% of the total number of page visits was generated through a mobile device. Among those who visited the site with mobile devices (224 in total), most of them were users of Apple products (iPhone, iTouch and iPad) whereas less than 40 of them were users of Andriod and SymbianOS. The analysis of the log data also revealed a number of interesting site viewing patterns. Firstly, we noticed that teachers were interested in learning about the details of a number of mobile learning strategies. In particular, strategies which involved QR codes and eBooks had attracted the biggest number of visits. Secondly, many of the visitors viewed the handy information about the University on the site. Such access was particularly high when they were using mobile devices.

## Conclusion and future direction

The paper reports strategies that the Mobile Learning Project employed to promote and support a range of mobile learning activities for teachers at CUHK. The various mLearning strategies have attracted substantial attention from a diverse number of users. Considerable growth was recorded in the number of requests made by teachers for support in the adoption of web-based ‘clickers’ as well as that of eBooks. All in all, the experience ascertained that the project is on the right track as at least some of the teachers (early adopters) do see the benefits in incorporating this latest mobile technology in teaching and learning.

However, we are aware of the fact that these needs now are more or less restrained to a small portion of pioneering teachers. We had the following reflections upon our experiences in promoting mLearning to teachers in the hope that the understanding would improve our services in the future. Firstly, teachers in general were not technically capable to implement mLearning strategy on their own, especially in the start-up stage. The project attempted to transfer various technologies to pioneering teachers and yet failed in many instances. For example, none of the teachers for whom we have created eBooks were at the end able to (or willing to?) convert plain texts into eBook all by themselves. In the case of using web-based ‘clickers’, many of our teachers failed to learn quickly the process to create the special ppts that have the interactive questions integrated. The project team had to provide these teachers with one-to-one trainings as well as frequent phone consultations before teachers were able to create all the materials on their own. Continuous support thus was a key success factor.

In addition, many students were not ready to use their mobile devices for learning. Some of them did not have the appropriate hardware as the project team had expected. To the surprise of the project team, many of the students were not able to use the more advanced functions of their devices even though they possessed a better piece of equipment. Students’ motivation to change was not high too – for example, instead of feeling the urge to learn more about accessing campus Wi-Fi via mobile phones, they opted out for other means. Some students would ask teachers to provide the traditional ‘clicker’ keypads. We regard that increasing the degree of readiness among students in adopting mobile technology may be a new objective in the next phase of the project.

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