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MOBILE LEARNING PORTAL FOR COMPUTING STUDENTS

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ABSTRACT

While mobile devices may be ubiquitous, increasingly powerful and portable, and equipped with features that may make learning easier and perhaps more interesting on the face of it, there are crucial requirements for effective and successful use in teaching and learning. This study presents a progress report on the development of a mobile learning portal at University of East London (UEL). The study builds on previous studies in this area which have developed systems related to supporting classroom interaction with mobile phones.

KEYWORDS

Mobile learning, mobile technologies in learning and teaching.

1. INTRODUCTION

In recent years, there have been significant investments into the use of mobile and wireless technologies in learning and teaching in the United Kingdom (UK). For example, the Learning and Skills Council (LSC) invested a considerable amount of capital (12 million) to fund Mobile Learning Network (MoleNET) during 2007-2009. MoleNET was primarily tasked with implementation of mobile learning in Further Education (FE). Between 2007/08, 32 projects and about 10,000 learners in various schools and colleges participated in trials all over the UK (Attewell et al. 2009, p. 1). A report on these trials published by the Learning Skills Network (LSN), concludes that the success and findings of the projects provided more than enough justification for the funding (Attewell et al. 2009, p. 11).

However, introducing mobile and wireless technologies in learning and teaching is not without some challenges. For instance, in the MoleNET trials, it was found that “there seemed to be a shortage of mobile learning experts, experienced practitioners and good practice exemplars”. The report also points that careful planning and preparation is required as well as “a differentiated approach, in terms of both pedagogy and the technology used” (Attewell et al. 2009, p. 4). Murray (2008) supports this view, stating that technology should fulfill learners’ aims first and foremost, warning against introducing technology “just for the sake of it”. Moreover, while some students may be in possession of powerful mobile handsets, accessing content with these handsets may require that they have for example, Internet / WiFi enabled network connections which may lead to incurring additional cost(s) and impacting negatively on inclusiveness.

Mobile and wireless devices can be used for a variety of purposes in learning. These range from supporting students via SMS messages to providing programme content and assessment through a web interface which can be accessed on compatible mobile devices (JISC 2005; Kukulska-Hulme & Traxler 2005; Litchfield et al. 2007; Naismith et. al. 2004). Each of these uses may require varied combinations of technologies and different pedagogical processes. It is also important to bear in mind that teaching staff may require additional training in the use of mobile technologies and in providing mobile content for learners. A

previous research carried out at UEL indicates that some academics may be unwilling to adopt mobile technologies in teaching and / or are unconvinced of the benefits to students of using such technologies (Arreymbi & Draganova 2008).

However, many research findings have established that mobile learning has potential benefits for students; especially those who may be struggling with their studies (e.g. Attewell et al. 2009, Dyson et al. 2009, JISC 2005, Kukulska-Hulme & Traxler 2005, Litchfield et al. 2007; Milner 2009; Naismith et al. 2004, Peng et al. 2009, Arreymbi & Draganova 2008). In this study we propose a mobile learning portal for computing students which provides content, activities and access to materials that enhance and reinforce students' learning. Through the mobile learning portal students are also able to contact their tutors to request further support.

2. MOBILE LEARNING AT UEL

The mobile learning portal is part of a research project into the use of mobile technology with computing students at UEL. The project was launched in July 2009, building on work done in previous projects which involved the use of web-based systems in various teaching and learning contexts. The portal incorporates these systems namely: SMS – Edutxt system, UEL uHavePassed system and Web-based mobile self-assessment system and adds additional content, activities and relevant links. The following sub-sections give details about the mobile portal and the incorporated systems.

2.1 The mobile learning portal

The portal is currently being piloted with content from some computing modules, but it is anticipated that more will be added in future phases of the development. Once completed, it is envisaged that the portal will be used to support and engage students in their learning by providing structured, timely and accessible content, formative assessments, appropriate activities and forums for collaboration. Trials with students will begin next semester when a series of evaluation will be carried out for effectiveness and learning gains.

Key features of the portal include:

1. **Module and course content:** This section consists of content optimised for access and download using some of the most popular personal digital assistants (PDAs), mobile handsets, smartphones, MP3 / MP4 players (e.g. iPODs), and other handheld devices.
2. **Learning activities and demos:** This section provides learning activities and demonstrations to reinforce module and course content.
3. **Test question database:** This section provides access to several question databases on the UEL uHavePassed system. This is used as a formative assessment, providing instant feedback to each question.
5. **Link to texting and feedback system:** This provides a link to the SMS – Edutxt system which allows tutors to text a group of (or individual) learners and vice versa, for further support. The system also provides timely feedback and tailor-made support to individual learners who may be struggling and perhaps unable or unwilling to communicate their difficulties in a classroom setting.
4. **Link to the social networking community on 'Facebook':** This section is used to encourage collaboration and peer learning.

Future phases of the development will incorporate integration with the virtual learning environment (VLE) which allows students to access other content optimised for mobile devices. The portal incorporates features to enable easy maintenance and addition of new content; hence it could be rolled out and used as a template by other schools and units within UEL.

2.2 SMS – Edutxt system

As mentioned above, the portal provides a link to the SMS – Edutxt texting system. “Edutxt” (www.txttools.co.uk) is an online application developed and supported by texttools.co.uk, which allows the sending and receiving of SMS text messages from a desktop to a large group or single mobile phone

instantly. “Edutxt” is currently being used in a large number of colleges and universities across the UK to support marketing, recruitment, student services, learning and teaching.

“Edutxt” was introduced to students in a lecture session for “Information Systems Modelling and Design” module. The students were asked to submit answers to three multiple choice questions via SMS at the end of a lecture session. Students were also encouraged to use the “Edutxt” to submit comments, suggestions and questions related to the module.

Although a preliminary survey has indicated that students are positive about the use of the mobile phones in learning and teaching (Arreymbi & Draganova, 2008), only very few took part in this experiment. However, the students commented that they like to have the option to send a text message to the tutor about the module. Subsequently, some students used the system to send questions related to the submission of the assignment and comments related to the tutorials.

2.3 UEL uHavePassed system

A link will also be provided to “UELuHavePassed” system, which is a Java application for mobile phones developed by Luzia research (luziaresearch.com). The application allows lecturers to upload question banks onto a web-based platform and make it available for download and installation, which can subsequently be used as formative assessment. The application is free of cost for the students and content is suitable for majority of the students’ mobile devices.

Approximately 80 multiple choice questions from different topics related to the “Information Systems Modelling and Design” module were uploaded for students. The main benefit of this system is the potential any time and anywhere (and perhaps just-in-time) access it provides. The system provides instant feedback to each question, which helps to reinforce learning. However, the system is more appropriate for supporting independent study rather than classroom interaction. Students, who downloaded the application gave positive feedbacks

2.4 Web-based mobile self-assessment system

The possibility of using web applications to support classroom interaction is another viable option. In many university campuses, WiFi networks are available and students can use free broadband connections on their mobile phones. This makes it possible to have web applications that implement mobile services related to classroom interaction. Such solutions offer free-of-cost connections and make use of the modern capabilities of mobile phone devices.

It is also possible to automatically collate students’ messages and to make intelligent interpretation of the students’ answers. Having such capabilities in a system would enable sending appropriate automatic individual feedback to the students’ mobile phones and providing the teacher with an idea of the students’ misunderstandings (Lee et al., 2008). This was trialed in this system which provides online access to self-assessment multiple choice questions.

This system incorporates a neural network model that categorises the learner's responses as having a significant level of similarity with a subset of answers it has previously categorised. Each category is associated with feedback composed by the lecturer on the basis of the level of understanding and predominant misconceptions of that category-group of answers. In this way the feedback addresses the level of knowledge of the individual and guides them towards a greater understanding of particular concepts.

This approach allows data capture if students’ responses / answers when they attempt on-line formative assessments. The data can provide lecturers with a detailed picture of the learning gain / level of the students. Since this system is accessible via the web it can be utilised in classroom sessions to support interaction and active participation, provided students have mobile devices / technology with WiFi capabilities, or other types of Internet connectivity (Lee et al., 2008).

3. CONCLUSION

The pilot experiments carried out at UEL and other researches mentioned above demonstrate the potential of mobile technologies to support learning and teaching in variety of contexts, including classroom

interaction, independent study, collaborative work and communication with tutors and peers. The main benefit of incorporating systems that support such functionalities in the mobile learning portal is giving the students a one-stop access to learning materials and activities at anytime and anywhere.

The mobile learning portal provides learners with additional learning support and additional means of communication supporting both synchronous and asynchronous interaction. Linking with social networking and collaborative sites provides a framework to support group work and peer assisted learning.

The mobile portal is an excellent vehicle to evaluate and assess in a larger scale, the critical requirements for successful implementation of mobile technologies in learning and teaching and the related pedagogical issues.

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