

## **Report on Principal's Teaching Award Scheme project: 'PALMS: Promoting Autonomous Learning through Mobile Phone Based Self-Assessment'.**

The proposal aimed to evaluate "smartphones" as a time-and location-independent platform for enhancing engagement and academic learning. It had three aims:

1. to establish a suitable question bank on the QMP server from which students can access short tests either by computer or mobile phone;
2. to establish an openly accessible, formative self-assessment strategy, with in-built automated prompting. This should assist concept clarification, such that students would show higher success rates in subsequent test sets. Thus, it would help students develop a strong 'feed-back: feed-forward' loop;
3. to evaluate behaviourally (and to an extent numerically) whether ease of accessibility encourages frequent self-testing via mobile phone; frequent usage would be expected to promote autonomous learning. (See also METHODOLOGY diagram for fuller procedural details).

### **OUTCOME AND REFLECTIONS**

#### **Achievement of Aims 1 and 2**

A suitable bank of questions, with prompts, was established which allowed students to access short tests by computer or mobile phone. These were arranged such that they related to appropriate stages of the course in order to encourage continuous revision.

The bank is in the third year of its operation and continues to receive substantial use. It is of note, however, that despite clearly conveying the purpose of this arrangement, the student body still request that the questions should be provided openly throughout the semester. Academically this would lower the likely value of encouraging on-going revision.

In terms of the nature of the questions, it became apparent that some questions were inappropriate for use with phones, either because they were too long (the preamble) or because they contained diagrams that were difficult to read by phone. These questions were therefore only provided by computer.

Did it stimulate improved performance? Spearman coefficient analysis of the data from the first year of use, showed a very strong correlation between frequency of use and improvement in both the summative assessment, at the end of the course (which was of the same nature as the QMP tests), but also the overall ranking in the course. Thus, the feed-back, feed-forward link appears to hold true, based on this evidence.

We use this finding to promote the use of the system to the students now at the start of the course. It is of note however, that the students showed much reduced engagement with the system in year two and the link between use and improved ranking was not as apparent. We suspect this is likely to be a blip, reflecting the batch of students.

### **Achievement of Aim 3.**

Only a minority of students used their mobile phones to access the quizzes, however, among these students slightly more of them tended to use the apps rather than the phone web browsers. Frequency of access fluctuated in line with periods of major course work submission (reduced access) and with approach to the summative exam (increased access).

It is of note that for both androids and iPhones, there were template limitations (e.g. in terms of ability or not for scrolling and for screen expansion). As a work around, separate sets of questions were prepared for the type of phone being used (android or iPhone). An alternative template has now been developed which negates this limitation and can be commonly used.

### **Additional benefits**

As well as providing educational flexibility for students, a major advantage of the process was that our Theory of Practical exam was restructured to meet with QMP format. Whilst this was highly labour-intensive, it relieves staff time at a busy period where substantial marking of other exams is on-going. Moreover, the system lends itself to a prompt (next-day; once the exam has been checked for flaws) feedback of marks to students which they value.

### **Outputs**

A fuller analysis of the study is described in the attached poster which was presented at the University's e- learning day (attached).

A talk was also provided at the annual PTAS meeting in the University

A paper was accepted and published at the 2013 2nd Journal Conference on Social Science and Humanity (JCSSH 2013 2nd) in Beijing, September, 2013 (attached).

As a mechanism to promote dissemination and implementation in other course, a QMP workshop and training session was run in August 2013 at KB, which attracted approximately 20 academic or academic-related staff from the School of Biological Sciences and other Colleges.