Using mobile phones in lectures: SMS

Purpose:

To increase engagement and interactivity

Method:

During lectures, students can send texts to a PAYG phone linked via Bluetooth to the presentation PC. The texts can either be dealt with periodically as the lecture progresses, at the end of the lecture, in seminar time or through VLE discussion fora. In dual display lecture theatres incoming text messages could be displayed on one screen, using Nokia PC Suite, whilst lecture resources could be displayed on the second. In single display theatres the presenter can periodically switch between lecture resources and text messages so that students can see their questions are being received.

Texting will be anonymous to encourage participation from all students and their phone numbers will not be stored or shared

"…to improve… the quality of the feedback in the session, encourage people in the session to connect with each other and extend the learning to beyond the face to face session"
"…over a lecture series, when you clearly use the feedback then students would warm to it as a communication tool."

From http://tinyurl.com/7zsqct

Assumptions:

Research by Ofcom suggests 16-24 year olds regard mobile phones as their primary telecoms platform and send significantly more SMS than other age groups (Ofcom, 2006) and Microsoft find that for 42% of young people their mobile phone is the last thing they check at night and the first thing they check in the morning (Microsoft, 2007) – therefore a high level of mobile phone ownership and usage among students can be assumed. A survey of first year Business School students carried out in 2008 (n=224) found nearly 99% of students used a mobile phone in their personal life and of those 97% used them daily.

Students will use their own mobile equipment and will bear costs of sending SMS. It is likely students will have mobile phone contracts with unlimited SMS messaging although cannot be assumed. Participation will be optional although for it to work successfully lecturers must respond to the messages.

Constraints:

Mobile phone signal in lecture theatres.
Presentation PC must have software installed (e.g. Nokia PC Suite with Nokia Communication Centre).

Technology requirements and costs:

PAYG handset capable of interfacing with PC (e.g. Nokia 5200) - £29.50 inc. £10 airtime
Bluetooth dongle - £4

Experiment One – Philosophy of Economics (Juliette Stephenson):

Students (n=42) were asked to text in responses to two questions – 'is economics a science' and 'what is science?' In this case the receiving phone was in a remote location and the signal strength was between one and two bars. The experiment was carried out asynchronously with the collated responses presented to students in seminar time. The questions were asked close together in the lecture and within five minutes 51 text messages were received, demonstrating a fairly good throughput of messages and few bottlenecks. 29 responses were received for the first question and the responses are represented in the following word cloud[1]:

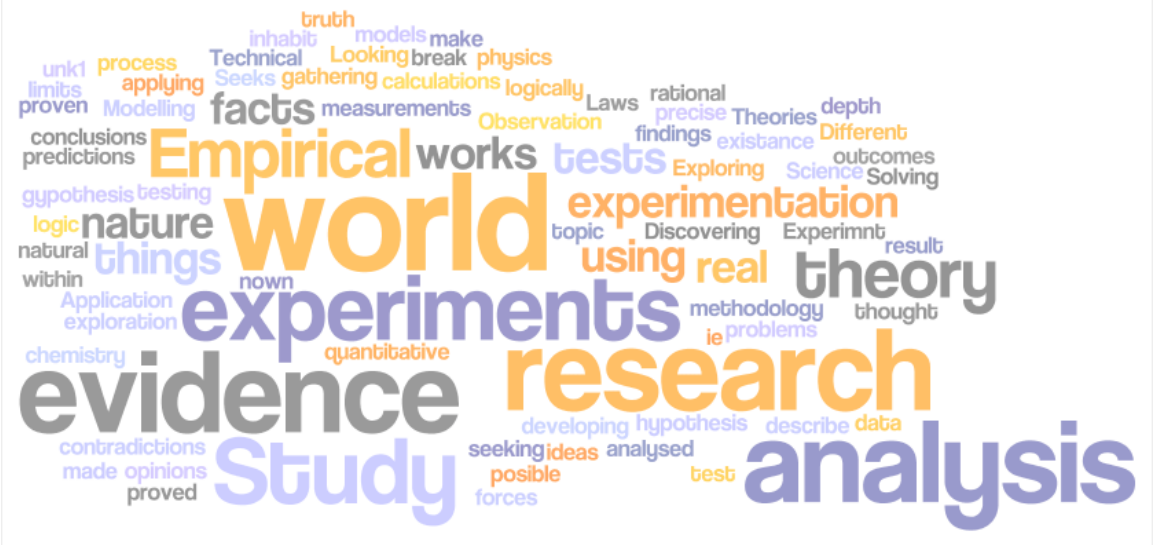
Yes n=19, no n=6

Four free text responses were also received:

…At the moment economics is a science, but it need not be…
…Maybe…
…only to an extent…
…Partially…

The second question, 'what is science?' received 27 free-text responses. The responses were analysed using a word cloud to pick out common themes:

[1] See http://www.wordle.net/ for word cloud generator



The free-form nature of the texts meant that lots of words were included, including misspelt words and plurals of other words also texted in, but the overall picture shows six or seven common themes. The free nature of SMS allows a much richer picture of student understanding to be explored than would be allowed by audience response systems (ARS), where the responses are effectively constrained to agreement with a number of different responses. In this experiment all of the messages received were on topic, the students had clearly gone to some effort to use complete words and not text message shorthand and no derogatory messages were received. A natural extension to this experiment would be to show the texts received as they come in within lecture time. The risks for this type of intervention are far greater as it's possible students may see the opportunity to see their messages displayed by data projector in a different light to that intended by their lecturer. Using Nokia PC Suite inappropriate messages must be filtered out by hand, but more sophisticated software may have dictionary capabilities whereby messages could be displayed or rejected based upon their content.

In this case use of SMS can be seen to be improving the quality of feedback received during the lecture – a question requiring a verbal response would have been unlikely to have generated such a large number of responses. Producing a word cloud during lecture time would be possible if the students were engaged in another task as you simply need to paste the received messages into the word cloud generator. The cloud could then be displayed directly from the website, or a screen grab taken for use later.

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Experiment Two – Intermediate Microeconomics 2 (Dieter Balkenborg):

This experiment happened during lecture time and the results were delivered synchronously to students within lecture time. Ali Press, e-Learning Advisor, was present to collate the responses. The lecture, on the topic of game theory, used the example of the Battle of Bismarck Sea, where the Japanese forces' dilemma was how to get their ships from Turvurvur, on the island of New Britain, to the port of Lae in Papua New Guinea – they could either travel north or south around

the island to reach their destination. Similarly, the allied forces had the dilemma of whether to search to the north or the south of the island in order to intercept and bomb the Japanese fleet. There is also a storm to the north of the island offering protection to the fleet. Each strategy, sail north / sail south or search north / search south, holds benefits and costs to each side. The students (n≈120) were asked to send texts in a prescribed format to the PAYG handset voting for their preferred scenario.

In this case 67 text messages were received in a five minute period, 56 of which were useable (inappropriate messages and those not following the prescribed format were rejected). The texts arrived in batches with small gaps between them and although only a handful more texts were received in five minutes than the first experiment (67 compared to 51) the 'live' nature of the test made the receipt of the messages seem a lot slower. Once received, the messages needed to be filtered, collated and then exported to Excel for counting. During the collation and analysis of results the lecturer introduced and played another economics-based game with the students and once counted, the results of the first game were reported back to students in a matrix on a whiteboard:

	Japanese Sail North	Sail South
Search North	43	6
Allied forces Search South	3	3

Two students were chosen at random to receive a prize, weighted according to the answer they gave, for their contribution – at this point it seemed the students understood the game was live, was real and was really influenced by their input.

The live nature of this experiment meant five texts were not used due to their content. It's possible the idea of the messages being received in the same room was enough of an impetus to send proportionally more inappropriate responses than during the first experiment even though once again the messages were not being displayed. Equally this could have been a result of group dynamics or simply because the texts were being received and processed by a person, not a machine. As soon as the phone number was revealed to students someone rang it. The handset was on silent and the call was immediately dropped by Ali, but perhaps the call was a test and was actually a way of finding out of the experiment was live or not? Is there perhaps a way to use this positively?

Feedback from the lecturer afterwards suggested that this wasn't a successful use of SMS technology as, under normal circumstances, the lecturer would be on their own and wouldn't have dedicated support from someone who could manage the receipt and collation of messages. In this case, where a prescribed response from a number of options and a quick turnaround between receipt, collation and display of responses are required and extra layer of software to count responses is required. In this situation ARS technology would be more appropriate. The lecturer also did not progress as far through the material he needed to deliver in the session due in part to the amount of time required to run the SMS game and in part to technology problems at the start of the session.

Experiment Three – Philosophy of Economics (Juliette Stephenson):

This experiment happened during lecture time. Students were asked to do a worksheet and answer eight questions. Students were asked to text their response to the PAYG handset in the following format: ax bx cx dx ex fx gx where a-g denotes the question being answered and x denotes the answer to the question. Spaces are required so the answers to each question can be separated in MS Excel and analysed. The responses were slower to arrive than in previous experiments as the students were completing the worksheets in their own time and texting responses once they'd finished. In the first ten minutes 20 messages were received. In total xx messages were received, xx were unusable, xx were off topic/inappropriate.

The Technology:

Nokia PC Suite works well for displaying messages and has a very simple to use export function that outputs a csv file, allowing messages to be collated or analysed. The Bluetooth connection is not always as good as it might be. Sometimes Nokia PC Suite says the phone is connected, but the connection has been dropped and text messages received by the phone are not displayed either in PC Suite or Communication Centre. It's unclear if the problem lies with the phone, the Bluetooth radio or PC Suite. Once connected to PC Suite the connection is dropped – the phone displays a 'disconnected' message but PC Suite still shows the phone as being connected. However, text messages are not displayed as they are received.

A useful workaround is to delete the Bluetooth pairing from the phone and restart it. Nokia PC Suite then tries to connect to the phone automatically. Once the connection is re-established PC Suite should display any messages received by the phone again, although on one occasion this process needed to be undertaken twice before the connection was established and maintained. Plugging in another Bluetooth radio so the phone can communicate with a laptop (a second connection) seems to affect the already working connection on my desktop PC. Interference comes from other Bluetooth radios and seems to interrupt the communication. Now tried hiding the phone's Bluetooth visibility….. Have tried again with two radios plugged in to different machines….. now desktop happy with connection, but laptop still not…. Only PC Bluetooth shows up in active connections – will try re-pairing with laptop…..