University	Glasgow Caledonian
Department	Caledonian Business School
Module	Economics, Markets & Enterprise
Overview	Economics, Markets and Enterprise is a level 1 core module in the Caledonian Business School (CBS) and is taken by 500 students (each semester) from a wide range of programmes. Teaching is undertaken by a team of 11 full time staff in the pattern of 2 one-hour lectures and 2 one-hour seminars for 22 sections each week. Summative assessment comprises a group project (25%), an individual essay (25%) and a two hour final examination (50%). Formative assessment comprises a 'mock' exam and online objective testing released on a weekly basis.
Drivers for change	As student numbers have increased and class sizes have grown, efficiencies have been achieved in teaching by increasing the reliance on lectures and decreasing smaller group activities. In this situation, opportunities to provide useful, timely feedback to individual students on their learning is severely constrained. 1. by shifting the emphasis in assessment from assessment *of* learning (staff centred) to assessment *for* learning (student centred) e.g. employing peer and self assessment processes; developing the self regulating learner 2. by integrating assessment with teaching and learning e.g. re-thinking the traditional didactic lecture experience through the use of electronic voting systems (EVS) so that it facilitates three-way interaction and feedback in real time. i.e. increasing formative assessment and feedback opportunities for students and lecturers.
Intervention	Electronic voting systems (EVS) were introduced in lectures in order to: 1. allow the tutor to pick up on any conceptual misunderstandings at an early stage and address these directly in seminars 2. encourage students to engage in a more timely and effective way with the MCQ quizzes and other resources provided The students were encouraged to listen and reflect carefully before responding using EVS. For example, a short video clip illustrating a key concept such as 'Public Goods' was played early in the lecture. One or two fairly open questions were posed, but students were not required to answer till later in the lecture. Where there was evidence of misunderstanding the lecturer could address this immediately, and/or refer the students to the online MCQ quiz as a follow up activity. The topic could also be taken forward in a subsequent seminar.

PROCESS	EMPOWER-MENT	NICOL'S 7 PRINCIPLES OF GOOD ASSESSMENT DESIGN		**Activities**
			Principle 1 (clarify criteria)	1) Not undertaken
			Principle 2 (self-assess, reflect)	1) Increased self-reflection through access to class responses and through discussion. Students had increased opportunities to reflect on their learning through EVS prompted discussion and from being able to access other students' responses, which they could compare to their own. 2) Increased opportunity to grade own work through EVS link to Blackboard. Since the EVS responses are sent to the VLE Blackboard system, students could pose themselves the questions from the lectures, attempt to answer them and then compare their answers with the correct responses as well as with the class response. This provided them with an opportunity to be able to grade their own responses in their own time. 3) Increased opportunity to generate explanations and increase self-assessment through debate. Since many of the course leaders have chosen to use the EVS to facilitate debate or discussion, students have an opportunity to generate and defend their own explanations, which enables them to self-assess their responses and knowledge compared to both peer responses and tutor guidance
			Principle 3 (tutor feedback)	1) Blackboard has generally facilitated the delivery of generic feedback on assignments while EVS is useful for frequent, immediate formative feedback on lecture content.

		Principle 4 (peer feedback)	1) Increased peer discussion, peer assessment and formative feedback through electronic handset voting. Ambiguous style EVS MCQs were particularly useful for promoting peer discussion and debate among students. The anonymity provided by the EVS appeared to engender confidence in the students to offer their opinion and engage more in peer dialogue. The EVS system has been used by most of the course leaders to promote increased peer discussion and formative feedback.
		Principle 5 (motivation)	1) With EVS students reported increased motivation and engagement compared to traditional passive lectures. *"I think that the clicker was useful at all time, as lectures can sometimes becoming dull with all the talking. The use of the clicker allowed us to participate therefore keeping us interacting with our course, which I think is essential."* Student comment
		Principle 6 (close feedback loop)	1) Students were sometimes asked several iterations of EVS question based on one concept therefore providing an immediate opportunity to apply what is learning in new tasks. 2) Students also were able to close the feedback loop if they regardless to whether or not they got the EVS question correct *"Most beneficial when you got the question wrong and the lecturer would subsequently explain why the correct answer was the one that should have been chosen".* Student comment
		Principle 7 (shape teaching)	1) Increased opportunity for staff to receive feedback in order to shape lecture content. Staff highlighted that EVS was useful as diagnostic tool in order to shape lecture content and to gain some insight to the students' comprehension in general. While not quite at a Just in Time lecture level, can go over information about students' misconceptions and cover it in next lecture. Questions were included as a consequence of lecture delivery and thus were material driven rather than technology driven 2) Staff recommended that the lecture content be manipulated around the EVS questions rather than them being tagged on to existing material. This way, tutors can use them when they required or are most productive for learning without having to compromise their lecture material. 3) The EVS was considered by staff to be very useful in some cases as a diagnostic tool, providing student feedback to staff in order to facilitate staff action in shaping the lecture content in a more educationally targeted approach. 4) EVS responses can be monitored in some modules/classes but it cannot be used diagnostically in all instances since it is often best used with ambiguous questions, thus cannot provide information correct or incorrect data. However, if tit is used to promote discussion, this in itself can inform the lecturer of the level of content understanding. 5) Although tutor to tutor feedback at the moment relies on direct communication, there has been significant interest among staff in developing an e-mail feedback template that can be distributed throughout staff on the module or between modules to maximise continuity and efficiency of targeted content delivery
ENGAGEMENT	GIBBS & SIMPSON'S 4 CONDITIONS OF TIME & EFFORT ON TASK	**Condition 1** (in and out of class)	1) Increased access to generic feedback campus wide & beyond. Students had the opportunity to communicate with each other throughout the campus and from outside using the Blackboard VLE system. The specific redesign issues this year have added an extra dimension to this facility by using it to deliver class EVS responses, thereby providing tutor and peer feedback that is available from anywhere in or out of the campus.
		Condition 2 (spread evenly)	1) By design EVS can be spread both throughout a lecture and throughout a semester
		Condition 3 (deep not surface)	1) Deep learning was promoted through reinforcement of concepts by presentation of EVS questions, cues and testing. 2) Students were sometimes asked several iterations of one EVS question, which helped to facilitate a deeper understanding on the students' behalf through the requirement of increased reflection of the content. 3) Some lectures, were linked to multimedia resources, such as videos in order to quickly illustrate concepts. Cues were then presented during the lecture, again with EVS questions at the end. Contrasting the video scenario with the lecture concepts helped to promote a deeper approach to student reflection about the content.
		Condition 4 (high expectations)	1) By posing EVS questions taken from past exam papers or by the lecture identifying them as key concepts expected standards were reinforced *"It's best used to go through past exam questions so you can get an idea of how well you're doing"* Student comment

OUTCOME	**Efficiencies**	1) The main efficiency has been in terms of the student learning gains, which may potentially increase retention and progression rates.
	Informal Learning Gains	Anecdotal evidence from staff focus group. 1) There was a feeling among staff that students appeared to significantly benefit from being able to see their peer's responses and receive immediate feedback. 2) Increased tutor engagement. Students appeared to engage better with the tutor through increased opportunities for open discussion 3) Increased peer engagement. Students appeared to engage better with the peers through increased open discussion arising from EVS use 4) Increased lecture material engagement. Students appeared to engage better with the material through increased opportunities for reflection, discussion and peer response comparison 5) Increased enjoyment of lectures. Outcomes of discussion with seminar students suggested that they did generally enjoy the experience although there was a feeling that this may have been particularly the case for the less able students, while the more successful students seemed to become a little more agitated by technical problems and any loss of lecture material as a result. 6) Increased understanding of core concepts. There was a perception among the staff that the use of EVS appears to has deepened understanding of concepts through increased opportunity for discussion and reflection and in some cases where for example several iterations of a single question have been posed, the students are taken beyond a superficial analysis by having to think about alternative perspectives, and layers to a problem. Quantitative evidence from staff & student questionnaires revealed that using the EVS in lectures 1) Increased student understanding of course content - staff (66%) students (65%) 2) Increased student concentration in lectures – staff (66%) students (76%) 3) Increased student interest in lecture content – staff (67%) students (60%) 4) Increased the opportunity for staff to gain feedback from students about their understanding – staff (100%) students (90%) 5) Increased student engagement with staff – staff (100%) students (79%) 6) Increased student engagement with peers – staff (83%) students (56%) 7) Had been beneficial to students learning – staff (100%) students (84%)
	Formal Learning Gains	N/A