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Technology-enhanced learning and teaching in mathematics; enhancing feedback and promoting self reflection (CLARITI)

Day 1 – Parallel III (16.00-16.30)

The CLARITI project utilises technology to enhance the learning and teaching of mathematics. Its overall aim is to enhance student learning using technology by actively involving students in the assessment and feedback process. The project encourages self-assessment and reflection of marked work, provides rich, varied and meaningful feedback to improve student learning, and diagnoses efficiently and effectively areas in which students are having difficulties.

Traditionally coursework is submitted, marked with annotated feedback, and returned to the student with a grade and a model answer. The difficulties with this approach are that there is no efficient and effective mechanism in which a tutor can know whether a student has reviewed their work, understood their feedback and took action to improve their work. Also, with this approach there is no method for determining whether students' perceived judgment of their submitted assessment was the same as the tutor, or for advising if they need further support.

This presentation will share the journey and findings of an action research project endeavouring to address such difficulties. In the first instance, a paper-based "feedback and progress review" form was used, in which students outlined actions that needed to be taken to improve their learning or continue achieving in the topic being assessed. The form was handed back to the tutor, who copied it, annotated it and returned it. The positive outcomes of this cycle were that students were able to reflect and identify errors in their work and by writing this reflection down they had some record of their reflection. However, from an administration point of view, the process was difficult and time-consuming to manage. There were still the problems of uncollected work and work not being reflected upon.

A further research cycle to address this challenge was implemented in collaboration with Technology Facilitated Learning (TFL) as the research project was successful in a bid to receive support from the 2012-13 TFL Development Programme <http://www.ulster.ac.uk/centrehep/tfldevprog.html>. In this new approach, students submit as normal and are given corrective feedback and model solutions using the University of Ulster's Blackboard VLE, FAN system and a new bespoke application.

The project has been evaluating the benefits of initially withholding students' marks while students are asked to reflect and indicate what score they think they deserve and what action they think they need to take to improve their learning. The student scores, reflections and action plans are collected electronically via a "Learner Score" quiz on the VLE. A new application creates a template of the "Coursework Feedback and Summary Progress" report; automatically retrieves and merges the learner score and comments data from Blackboard; allows a tutor to engage with the student feedback and return a tutor score; and automatically generates an advisability for further support response, depending on the tutor's scores. Each student receives an email with a link to their individual "Coursework Feedback and Summary Progress" report.

During this paper the researchers will demonstrate the new approach developed, share evaluation findings and benefits from both the learner and tutor perspectives.