CETL-MSOR Conference 2015

Hannah Bartholomew: Developing a Foundation Maths Module to Improve Student Engagement and Achievement.

Foundation Mathematics 1 is a core module on the Extended Degree in Engineering and Mathematics (prep year), a level 3 course at Sheffield Hallam University. It attracts 60 - 80 students per year, and most students completing this course go on to an engineering or mathematics degree course at Hallam. The module runs in the first semester, and covers a range of secondary school mathematics topics including: fractions, decimals and rounding numbers; working with algebraic expressions to solve equations and transpose formulae; linear and quadratic functions and graphs; right angled triangle trigonometry; and vectors. Most students who pass this module go on to take Foundation Maths 2 in the second semester, which includes calculus, exponential and log functions and further trigonometry.

I have been the module leader for this module for the last 4 years, during which time I have become increasingly frustrated with aspects of the way it is structured and assessed. In particular:

- The assessment was insufficiently varied. Students' marks were based on the best 8 out 10 weekly homework tasks (50%) a phase test half way through the semester (25%) and a final exam (25%). The style of questions in all of these assessments was similar, and many of the skills that we might hope to develop in students were not assessed. Additionally, there was often a significant mismatch between the marks students obtained in their coursework and those they obtained in the phase test and exam, raising suspicions that the coursework was not always students' own, unaided, work.
- I struggled to adequately engage the full range of students taking the module. Their mathematics background typically ranges from a weak GCSE pass to a good maths A level, and the highly content driven approach made it very hard to pitch my teaching at a level that suited everyone. Furthermore, many students on this course are coming back into formal study after a long break, and may have family and work commitments to juggle around their studies. Many, it seemed, decided early on that the module was very easy, became poor attenders and then struggled later on as we moved onto more advanced material.

This year I have made significant changes to the assessment of the module, with concomitant changes to the module delivery, in the hope of ameliorating some of these problems. In this talk I will describe the changes that I have made to the assessment of this module, explaining the rationale behind them, and discussing the parallel changes that I made to the way that I deliver the module. I will then draw some preliminary conclusions about the impact these have had on students' engagement and performance in the module.