Harmonising Learning and Graduate Skills in the Mathematical Sciences

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This article provides a brief background to the increasing importance for the MSOR community to enhance and better articulate to students, their prospective employers and to funding bodies of the skills developed in the study of mathematics-based undergraduate and postgraduate courses. Future development in mathematics curricula may also benefit from the integrative learning of subject-specific and wider skills to help ensure mathematics graduates are well positioned in their early careers or further studies. Success would be to encourage more students to take degrees involving mathematics, a more varied learning environment for mathematics and for students to gain a greater awareness of their employability competencies.

It is proposed to run an Inaugural Workshop in Autumn 2006 jointly between the Maths, Stats & OR Network and the CETL – Centre for Integrative Learning at Nottingham. Expressions of interest are sought from interested individuals to join a working group for a first planning meeting (to be held on Friday 23 June). It is anticipated that the Autumn workshop will be the first in a series of activities focussing upon graduate employability skills, and funding will be made available for community-wide activity in this area. If you are interested in joining this working group, please email: stephen.hibberd@nottingham.ac.uk

There is an increasing expectation from Government, employers and students that undergraduate and postgraduate courses will provide graduates with enhanced skills and attributes for future economic and other benefits. In particular, the Robert’s report ‘SET for Success’ [1], highlights serious implications for UK Science and Engineering:

“graduates and postgraduates in these strongly numerical subjects are in increasing demand in the economy – to work in R&D, but also to work in other sectors (such as financial services or ICT) where there is a strong demand for their skills.”

Recent responses include the publication of a Government long-term strategy ‘Science and Innovation Investment Framework 2004-2014’ [2] that includes a proposal to increase in the number of young people taking A-levels in mathematics by about 10,000 entries per annum by 2014 and a proposal to HEFCE to increase the supply of Mathematical Science Graduates [3].

However, HE is also coming under increasing pressure that graduates should possess enhanced skills alongside a strong tradition of provision in knowledge and understanding, indeed the Robert’s report notes:

“Furthermore, there are mismatches between the skills of graduates and postgraduates and the skills required by employers (for example, many have difficulty in applying their technical knowledge in a practical environment and are seen to lack strong transferable skills”).

The Benchmark Statement is (appropriately) very upbeat on the topic of career opportunities for mathematics graduates however there remains a significant lack of detailed study and not all readily justifiable. The release this Session of additional post-graduation data on the HERO website [9] identifies mathematics graduates as the least satisfied over all subjects in terms of personal development (based on responses to: helped me to present myself with confidence; my communications skills have improved; I feel confident in tackling unfamiliar problems).

There is an ongoing need for academic staff and employers to understand and integrate the skills that are, and could be, developed during the learning process for mathematics and statistics. This may involve more innovative individual or group based project activities, vocationally orientated experiences, interdisciplinary seminars and case studies. Personal attainment can be identified through peer-assessment, reflective logs and personal development portfolios.

The areas of employment (careers) and employability skills are not sufficiently articulated and promoted as many mathematics graduates move seamlessly into multi-disciplinary teams. There is a priority case to review the existing student employability profiles in terms of relevance and completeness. Liaison will need to be maintained with the professional bodies within mathematics and other ongoing initiatives.

References