How things have changed: A personal reflection on the last 25 years

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This short article contains a highly personal and totally subjective view of changes in higher education over the last 25 years. It also includes a reflection on the role played by the MSOR Network throughout the 21st century. This does not purport to be an independent evaluation of the Network’s contribution since the author has been intimately involved with the Network since 2005, first as Mathematics Consultant, then Deputy Director and finally as Director.

I began my career in Higher Education on 2 September 1987 as a Senior Lecturer in Mathematics at Coventry Polytechnic. I turned up for work on the first day and, in the absence of the Head of Department, was given my ‘induction’ by the departmental timetabler. This consisted of being shown how to use the photocopier, where the toilets were and being introduced to a few colleagues including, most importantly, the departmental secretary. The final part of this induction outlined my teaching duties: “you will be teaching the second year module for mechanical engineers, one of the groups for the first year module in numerical methods for maths and combined science students and the second year mathematical modelling module for the part-time course – that’s on Tuesday evening”.

I was given the syllabus documents for each module and that was that – four weeks before term started so plenty of time to get ready! I should perhaps give some background information at this point. I had studied for my BA and DPhil at Oxford University. During this time I had marked problem sheets and taken some small group (2-4 students) tutorials – by a strange coincidence it turned out that the colleague I was sharing an office with was married to one of the students I had tutored, but that’s another story. After University I had worked for British Gas for three years as a mathematical modeller carrying out safety studies by modelling a range of hazardous situations. Now I had rejoined academia. It would be fair to say that I had very limited experience of teaching, certainly none of lecturing - but the assumption was that I clearly knew the maths, that I was fairly intelligent and so I would have no problems teaching. Consequently, I was left to get on with it.

The one exception was the numerical methods course. I had one of three groups, all of which were taught at the same time. The module leader had prepared (several years previously) a week by week plan related to the course text (which coincidentally he had written) and all groups followed this plan – but it was up to each group’s lecturer quite how they did this. For the other two modules I was, quite literally, on my own. I had to interpret the syllabus, decide what I was going to cover each week and to what depth. All I was given from the previous year was the exam for the mechanical engineering module and the coursework assignments for the modelling (which was
coursework only) with the instruction not to use the same assignments again this year. When it came to setting the exam for the mechanical engineering module, colleagues gave me two pieces of advice: don’t make it too different from last year’s paper because that will throw the students and, when I had set the exam, if I could answer the questions in around one third of the time that was allocated to the students then I had probably got it about right.

The complete autonomy came as a revelation to me. In industry I had been required to write a monthly report covering progress on the projects on which I was working. These reports were then followed up with a one to one meeting with my manager. At the Polytechnic, provided I turned up for all my teaching sessions then no-one would ask any questions of what I was doing. Indeed, colleagues would have been seriously offended if they thought that anyone was checking up on them.

To those who have entered HE in the last few years this may sound like a department that did not care about teaching. But that would be a completely false impression. The Head of Department had instigated conferences on the teaching of mathematical modelling and colleagues in the department were developing courses built around Matlab and were amongst the first in the country to do so. In many ways this department was among the more forward looking in terms of the importance of teaching, but the overwhelming culture of the sector was one where the individual lecturer was not accountable to anyone and where those who were good at their subject would, with the odd exception, be competent at teaching.

How things have changed - in some ways for the better and in other ways for the worse. These changes have been brought about by a mixture of carrots and sticks. One of the most significant sticks has been the QAA. Subject Review of Mathematics, Statistics and Operational Research over the period 1998-2000 prompted huge changes in the practice of most departments. Like many departments, Coventry chose to nominate someone to be trained as a Subject Specialist Reviewer so that they would get the inside track on the process and therefore be able to prepare better for their own review. Because I had shown a significant interest in developing new approaches to teaching and because I had voiced surprise at the lack of any accountability, their nominee was me. To many of my colleagues, initially at least, having QA processes was an insult to their professionalism – an indication that someone did not trust to do their job. This led to some cynicism and going through the motions so that there were immaculate paper trails but no real change. One of the ‘innovations’ that I introduced was a peer observation of teaching scheme. I believe that, if approached in a constructive manner, such observations can have great benefits – not just for the observed colleague but also for the observer. I have seen several completed forms where the observer has noted ideas that they would take away and implement in their own practice. However, not all colleagues were quite as positive. One experienced colleague said to me that she would go through the process because it was required but wondered if I seriously thought that there was any point to it. When I asked her if she thought there was no way that her teaching could be improved she responded “I’m sure there is scope for improvement – but you have to be realistic, if I haven’t made those improvements yet after over 20 years in the business then I’m not going to make them now just because someone else tells me to”.

On the carrot side, there was firstly CTI Maths and Stats (Computers in Teaching Initiative) then the Learning and Teaching Support Network (LTSN) with its subject centres and, in particular, the MSOR Network. LTSN was succeeded by the Higher Education Academy. The MSOR Network provided an opportunity to network with colleagues from a variety of institutions who were experimenting with a wide range of innovations in the teaching and learning of mathematics. During my early years as a lecturer I had made some attempts to enhance student learning through, for example, the use of software such as David Tall’s GCAL package (A Graphical Introduction to the Calculus) and DERIVE, a computer algebra system. The MSOR Network provided a much appreciated means of learning from and interacting with staff from institutions across the country who, like me, had a passion for enhancing their teaching.

The newsletter that the MSOR Network produced (which evolved into MSOR Connections) was a real boon to this community. It provided a means of learning about what was happening elsewhere and it also provided an opportunity for practice-based publication. This ability to share one’s work, and receive feedback from other interested parties, has no doubt enabled many to refine and improve their innovations. The existence of items to add to one’s list of publications (even though not fully peer-reviewed) has also helped to give some academic standing to teaching development.

Another key activity of the MSOR Network (that also helped with academic credibility) was their mini-project funding. The ability to bring in external income, even though it was not a huge amount, contributed to strengthening one’s CV. In 2001, I was successful in securing a mini-project award to investigate the nature and extent of mathematics support provision across the sector. In many ways that was the first significant step on my teaching development and pedagogic research career.

The increased emphasis on quality assurance that external review had precipitated led to many institutions developing induction courses focused on issues relating to teaching. Over time these induction courses evolved into Post-graduate Certificates which many institutions have now made compulsory for new appointees with no previous teaching experience. My experience of turning up and being left to get on with it has become a thing of
The MSOR Network was an early leader in the provision of initial training for new lecturers. Over ten years ago, it developed a two-day residential course for new mathematical sciences lecturers. The course was delivered by experienced mathematical sciences lecturers. It was by practitioners for practitioners. Within the mathematical sciences community, the university-wide courses have often been derided as being of little benefit to mathematicians. Complaints about such courses have been a common feature of the annual HoDoMS (Heads of Departments of Mathematical Sciences) conference and the MSOR Network Induction Course has repeatedly been praised as filling an important gap.

Building on the success of the Induction Course, a few years ago the Network developed a one day workshop for post-graduate students who teach. Many mathematics PhD students are given teaching duties such as running examples classes, marking problem sheets and leading tutorials. The workshops, delivered by colleagues involved with the Induction Course, focus on those aspects that are particular to mathematics. These workshops seemed to have tapped into a real need in the community as the demand for them has increased year on year until it outstripped the capacity of the Network to deliver and we were forced to put a cap on the number of workshops we could offer each year.

From a teaching development perspective, the first decade of this century may be regarded as something of a golden age – at least when considering funding. The FDTL (Fund for the Development of Teaching and Learning) grants that followed subject review were generous and then after this there was the CETL (Centres for Excellence in Teaching and Learning) initiative. It has been said that Subject Centres were threatened by or jealous of the CETLs in their discipline. This was never the case in the mathematical sciences and the Network worked closely with the three principal CETLs in our disciplines: sigma at Loughborough and Coventry, Post-graduate Statistics Centre at Lancaster and COLMSCT at the Open University. It was out of these relationships that the CETL-MSOR (Continuing Excellence in Teaching and Learning in Maths, Stats and OR) Conference emerged. This annual conference has established itself as the UK's primary event focused on the teaching of the mathematical sciences in HE.

The MSOR Network achieved many other things which space does not permit me to recount here. However, one thing I would mention is the role the Network played in facilitating the sometimes fractured mathematical sciences community to work together. We led the delivery of the More Maths Grads project, a £3 million programme aimed at stimulating demand for mathematical sciences courses in HE. The project was overseen by an Executive group with representatives of the five key HE organisations: HoDoMS, IMA, LMS, RSS and the Network itself. This group functioned in a highly collaborative and effective manner making More Maths Grads a huge success. The Network also co-ordinated the same five organisations in reviewing the MSOR Subject Benchmark and developing the MMath benchmark addendum.

I am utterly convinced that there is a need for support and leadership at the level of the discipline and I am pleased that the restructured Higher Education Academy is continuing to work in this way. It is particularly heartening to see that many of the initiatives that the Network developed and which the community has indicated it values are to be continued – as outlined in an article by Mary McAlinden elsewhere in this issue.

I am proud to have been associated with the MSOR Network – from my biased perspective I believe that it achieved a great deal which has benefitted colleagues and most importantly student learning. I am sure its influence will continue long after it has gone.