Foreword

I can understand those of my colleagues who tell me that the best thing I could do for our excellent research department is to stop trying to change our teaching methods. I can sympathise with devoted academics who believe that by remaining constant to their way of teaching they will be in the forefront of the revolution after next. I am aware that even changes for the better are not painless. Unfortunately, by now we should all know that 'if we want things to stay as they are, things will have to change'.

It is a widely held view that our ivory towers insulate us from the real world environment and hence from the direct pressures for change. Therefore, the argument goes, those pressures must be created for us. This leads to the imposition of crude, centrally directed management through targets, through funding tied to specific, often inappropriate objectives, and all the associated unproductive administrative burdens, which signal a lack of trust and undermine the professionalism of academics as teachers.

The premise is quite wrong. The Physical Sciences, along with a number of similar subjects, are subject to real external pressures built into the system. Because of the way research is funded in the UK, largely through university departments on the back of teaching income, the support of an international level research base requires a healthy throughput of physical science graduates. Any argument about whether such graduates are needed is looking through the wrong end of the telescope. These graduates have to be needed; that is, their courses have to be such as to make them needed. It is said, indeed, that it is already the case that more than half of physics graduates go into jobs that are not directly physics-related. (I guess this means jobs in which knowing how to solve the Schrödinger equation is not part of the person specification). There is a similar movement in Chemistry. We have to ensure that they have the graduate skills to be good at those jobs.

Of course, our various departments and universities experience both similar and different pressures, for example the so-called 'maths problem' on the one hand and too many or too few students on the other. But the challenge is largely the same: to produce an output of new generations of students each better equipped than their predecessors, and to do this whatever the input. And, furthermore, to do it in a way that is less disruptive of overall research effort than the centrally directed chasing of targets.

It would also be quite wrong to believe that physics and chemistry are not responding to this challenge at various levels. Courses are indeed changing from the inside in a variety of ways. This very variety means that we have much to learn from each other – not to copy – but to short-circuit the process of invention ab initio. This publication will seek to enable us to share much of our innovation and good practice in an informal way. My hope is that it will develop to be of interest not only to those already committed, but that we can share with those who influence policy, the strength of innovation amongst academics who, given adequate resources and backing, are then just left to get on with the business of improving learning.

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