Innovation Fund (HEIF), has been successful in stimulating knowledge exchange, business links and other forms of employer engagement such as continuing professional education.

There is little doubt that research in our universities underpins science and innovation. The challenge going forward will be to sustain the momentum of recent years and further strengthen our universities, in all their diversity. This will require ongoing political commitment. For their part the universities are committed to excel in all that they do and play a leading role in meeting the needs and challenges of the UK in the 21st century.

Diana Warwick (Baroness Warwick of Undercliffe) has been a Member of the House of Lords since 1999 and Chief Executive of Universities UK since 1995.

Engineering Skills: Investing in Tomorrow

Dr David Brown

Chief Executive, Institution of Chemical Engineers (IChemE)

For the past year or more, something of a wind of change has been blowing through the once-dusty corridors of the UK's engineering profession. Under a new generation of management, the professional institutions, once jealous of their independence and separation, have now come to work together – joining forces on a number of issues of common concern and common importance.

Uppermost among those issues is securing the 'talent pipeline' which underpins the current and future success of much of UK industry and provides a powerful magnet for exactly the kind of knowledge-based inward investment that Government has rightly made a priority.

Chemical Engineers are supposed to know about pipelines, and we in IChemE – The Institution of Chemical Engineers – have taken a lead in addressing this particular pipeline. In doing so we are building on a successful foundation: the 'WhyNotChemEng' campaign to promote chemical, biochemical and process engineering to young people has helped to increase application rates to universities by over 70% over a five-year period. Now, we have joined with the other engineering institutions under the auspices of the 'G15' group of Chief Executives, to develop a common understanding of the challenges at the 'upstream' end of the talent pipeline – the supply of young people trained in the science, technology, engineering and mathematics subjects – the STEM disciplines. Together, we have called for action on four specific topics.

Firstly, it's time that policy makers explicitly recognised that young people at secondary school should be taught STEM subjects by staff thoroughly trained and well-versed in the subjects that they are teaching – so physics is taught by a physicist, chemistry by chemists and so on. That of course means improved incentives to attract talented people into STEM subject teaching, including both financial incentives and other levers such as first-rate laboratories and physical resources, provision for continuing professional development and so on.

Secondly, we have called for increased incentives for young people not simply to take STEM subjects at university but subsequently to enter relevant careers. We have proposed that this could be achieved by a progressive write-off of student debt for those young people who enter appropriate industrial careers or indeed choose, ideally after a period of industrial experience, to move into teaching themselves. We are not averse to some graduates also going into general management and financial careers, since their skills are immensely valuable there and businesses by and large are likely to be better run with more engineering and technical understanding in the board room and through the management structure. But it's a supply of skill to technology-based industry and to education that most concerns us.

Thirdly, it is time for solid benchmark standards for careers support. If someone purporting to give you financial advice has to meet recognised standards that are properly enforced, how much more important is it that reliable standards of advice should also be available where advice concerns young people's careers?

Fourthly, and perhaps longest-term, we believe there should be a science 'spearhead' in every substantial primary school. Science co-ordinators are of course already in place, but they are not always science or engineering graduates, and we believe they should be. It's gratifying to see this latter proposal supported by the recent Conservative party policy paper on Innovation in the UK.

Meeting these requirements will not be cheap, nor will it be easily or quickly achieved. But the consequences of failure to invest in STEM education are, we submit, far more costly – and there is already evidence from research for UK Trade and Investment that the UK is losing ground in this vital area.+

+ Perceptions of the UK as a Science and Technology Partner, report by consultants Arthur D Little Ltd for UK TI, 2006