

SOCIAL MOBILITY

AND THE ENGINEERING PROFESSION

Institution of
**MECHANICAL
ENGINEERS**

All major political parties subscribe to social mobility and its value to the UK. But translating lofty ideals into meaningful policies, appears a little more challenging, with recent trends indicating a slowing of upward movement through the ranks. Research carried out for The Social Mobility and Child Poverty Commission shows that elite UK companies are drawing from a small pool of middle-class graduates. The study concludes that accountancy, law and financial services firms are “systematically excluding bright working-class applicants” from their workforce.¹ Historically, engineering has always presented opportunities for talented people from all backgrounds and social class. How can we ensure this continues, and how can government, schools and employers safeguard future access to the profession?

The Institution of Mechanical Engineers recommends that:

1. Government makes schools and colleges fully accountable for the provision of structured careers advice through the compulsory publication of student destinations.
2. Government undertakes a review of the options for changing the structure of post-16 education, specifically exploring the consequences of introducing a Baccalaureate-style approach on both academic and vocational routes, especially for economically vital sectors such as engineering.
3. Government compels its careers and enterprise company to source, promote and record industry placements for teachers alongside meaningful work experience for pupils.
4. The engineering community unites in highlighting to school senior leaders and governors, the financial and personal benefit of pursuing engineering training and study, to pupils of all types and from all backgrounds.

Improving the world through engineering

SOCIAL MOBILITY AND THE ENGINEERING PROFESSION

We judge all sorts of policies by how equitable their outcomes are, across all strata and sub-groups. The doctrine that mobility is not only socially desirable, but economically valuable too, has become well established.

The professions in general, and particularly engineering, can play a significant role in helping with social mobility. Engineering is intrinsically meritocratic – a successful technology is determined by its efficiency and effectiveness alone – independent of provenance. Few sectors, disciplines or careers appear so well attuned to social mobility; not the law, medicine or politics, and certainly not the arts (in spite of their socially progressive credentials).

Regardless of the entry point, technician or graduate, engineering offers exciting and rewarding careers, which contribute to the wealth of the country and offer the opportunity for career progression to the most senior roles, and hence social mobility. Young people, regardless of their background, should have a full knowledge of the career options open to them, including the potential for advancement.

The Institution believes that by raising the profile of the multiple routes to entry for engineering, more young people will be encouraged to enter the profession, as apprentices, technicians or graduates, and have a fulfilling career. This opportunity for social mobility could be further enhanced by making structural changes to the education system, not relying simply on finding new ways of marketing the current arrangements.

THE ECONOMIC AND SOCIAL CASE FOR PROMOTING SOCIAL MOBILITY

“Our education system should help children out of the circumstances in which they were born, not lock them into the circumstances in which they were born. We need them to fly as high as their luck, their ability and their sheer hard graft can actually take them. And it isn't going to happen magically.”^[2]
Former Prime Minister, Sir John Major, 2013

Advocating social mobility reflects the importance our society places on the wider principle of valuing each and every individual. A report by the all-party parliamentary Social Mobility group states that, “*mobility matters both for fairness and for efficiency*”, and that reaching international benchmarks could be worth the equivalent of £150bn a year on national income – corresponding to 4% of GDP^[3,4]. If it also brings about social stability, and even greater happiness, then better still.

They emphasised a need for action to address the UK's poor showing, citing an OECD report^[5] on intergenerational social mobility, which showed the extent to which earnings of a younger generation could be explained in terms of parental income. The UK fares badly, displaying the highest levels of ‘social inelasticity’. Some 50% of variability of an individual's earnings can be explained by parents' lifetime earnings. The figure was just 30% for Germany, and in Finland and Denmark, 20% and 15% respectively.

UK business leaders continue to express concern over how the nation will develop the skills needed for full economic recovery. The CBI states that lack of skills is seen as the biggest threat to the UK's competitiveness. But the skills gap is not evenly distributed, with 61% of businesses confirming that their workforce did not reflect society.^[6] Encouraging social mobility almost certainly means greater opportunities for women, members of minority and otherwise disadvantaged groups.

Getting it right will release latent talent, boost the economy and generate an expanded skilled technical community within our society – social mobility. Continuing to get it wrong will result in a persistent mismatch between the training and study choices made by young people and the real job opportunities – an ongoing skills gap and social stagnation.

THE ENGINEERING PROFESSION IS UNIQUELY PLACED TO PROMOTE SOCIAL MOBILITY

Engineering is unique among the professions – unlike law, medicine and accountancy – in having a vocational route to registration that runs alongside the academic option. Most professions require a university degree (which in turn demands high-stakes performance at pre-university stage) followed by practical experience. Engineering apprenticeships, on the other hand, offer a practical experience route where academic achievement grows alongside, and as a result of, the acquiring of professional skills. They are also a way for companies to develop a workforce with the precise skills that they require to meet the business need.

Since the late 1990s, Governments have woken up to the importance of technical training and increasingly understood the value of rigorous apprenticeships both for boosting the economy and as a means of providing paths to fulfilling careers for all. The number of people starting apprenticeships has risen dramatically since 2002, in 2013–14, 440,000 apprenticeships started, made up of 126,000 in business, law and administration; 109,000 in health, public service and care; 87,000 in retail and commercial; and 65,000 in engineering and manufacturing.

THE SHIFT TOWARDS ACADEMIA AND AWAY FROM VOCATIONAL TRAINING

In England and Wales, the Education Act of 1944 was seen as a triumph for progressive reform. It provided free secondary education for all pupils and set the scene for changes in the payment of student fees for higher education and national mandatory student grants. Though further developments and legislation have refined the system, and outside Scotland state-funded fees and grants have largely disappeared, the principle of an entitlement to, and indeed desirability of, a full university education has remained. Young people, their parents and their teachers strive for them to go to university, but once there, many students do not flourish, or they may find themselves studying subjects that do not help the subsequent transition into work.

Alongside the growth of more equitable higher education, the post-war period initially saw a massive expansion in skilled technical training. In an era described as ‘a zenith for apprenticeships’, as many as 33% of male school leavers became apprentices. A significant number of today’s industrial leaders and senior engineers embarked on their careers through this route. But the failure to modernise and reform apprenticeships in the 1970s and 1980s led to a serious decline in numbers, and apprenticeships became synonymous with old technology and industrial practices.

The consequence of widely available higher education and a loss of confidence in industry and vocational training, has been a surfeit of graduates with non-vocational qualifications and a reduced number of skilled trained technicians. The oversupply of well-educated, graduates in the arts and humanities has often displaced less well-qualified colleagues from entry-level jobs. Meanwhile, the reduced number of skilled technicians is proving a continuing problem for UK industry, so we need more apprentice engineers being given the opportunity to build a successful career.

Currently, the number of undergraduate places far exceeds the number of apprenticeship places in engineering, which does not reflect the balance of demand. Even if the supply of undergraduate engineers is adequate to fill the current graduate-level engineering jobs, it is predicted not to be enough over the next five to ten years as ‘baby boomers’ retire. There is already a marked shortfall in the supply of highly skilled technicians and apprentices. This means that both for national economic growth and individual opportunity, young people need to be encouraged into the engineering profession, using either academic or vocational routes.

“The UK has longstanding problems in building a vocational route that is high volume, and commands parity of esteem with academic pathways. Whereas countries like Germany and Australia accord high status to vocational education and apprenticeships as a route into employment, the UK has placed its bets on higher education – rather than vocational routes.”
State of the Nation 2013^[7]

SCHOOLS NEED TO GIVE BETTER CAREERS ADVICE AND INFORMATION

Engineering careers, particularly vocational and apprenticeship options, are not widely promoted by teachers. Engineering itself is often poorly understood, and not being a 'taught' subject does not gain its followers easily. Indeed, according to the Edge Foundation, many young people are being actively discouraged from opting for vocational education – with only 27% of parents judging it to be worthwhile. Results published in 2014, showed that 65% of students pursuing an academic route felt supported by their school, whereas only 35% of the vocational cohort felt able to say the same. Indeed some 22% were told that they were 'too clever' for vocational education.

Yet the reality tells a different story. Modern apprenticeships are highly valued by companies; they give options for further study, nurture young talent and build flexible skills within the workplace, but this message is not being conveyed to teachers and pupils. Schools are largely judged on academic achievement, so that is where they focus. To address this, schools must be incentivised, properly resourced and supported to provide high-quality professional careers advice.

Conservative MP Graham Stuart, while Chair of the Commons Education Select Committee, advocated the need to offer comprehensive careers advice, including non-academic routes, which in fact was an explicit requirement within the 2011 Education Act: *"The heart of the problem is a simple one, in my opinion... The problem is there are insufficient incentives for schools to take it seriously."*^[8]

The Gatsby Charity has identified and costed benchmarks of good careers guidance which, if implemented in all schools, would contribute to a fairer society, through better informing all young people about career options. According to the report's author, Sir John Holman: *"Good career guidance... is important for social mobility because it helps open pupils' eyes to careers they may not have considered."*^[9]

At present careers guidance is rarely an intrinsic part of school education. It is often a series of interventions or activities, not a planned programme of information, and is almost exclusively about funnelling as many children as possible towards university. Our education system fails to deliver sufficient people into technician and apprentice based engineering careers, and therefore is not delivering the social mobility benefits traditionally associated with engineering.

"We have shown that engineering enterprises will need to recruit around 56,000 engineering technicians per year between 2012 and 2022. Apprentices form an important part of meeting this demand for technicians. However, with the number of level 3 apprenticeship achievements from England, Scotland and Wales at just 25,978 in 2012/13, there is a shortfall of 30,000."^[10] To emphasise these options may need changes to the way we are taught.

COMPANIES AND SCHOOLS MUST BUILD LINKS

Through all this, teachers remain a major source of information for their pupils about the world beyond the classroom. Often, however, they themselves have followed the academic excellence route to develop their own careers. Much more surely needs to be done to ensure that they are familiar with how work is done in modern companies – especially in engineering, as the knowledge deficit is so great here. They need to understand the different career paths that exist in organisations, not just graduate entry, and that for many pupils these may well be the most appropriate and the most likely to lead to their long-term personal success.

CHANGE OF EMPHASIS IN EDUCATION

The time may also be right to look again at assessment structures and how we might allow more teenagers to study more subjects for longer before having to make irreversible career decisions. Youngsters who are not obviously academically 'high flying' are tacitly (and too often, explicitly) discouraged from continuing the very subjects (like maths and physics) that would be useful for practical, vocational careers, including engineering. Equally, those deemed academic are often forced to make tough decisions not to continue with vocational subjects, when in reality they might wish to follow more than a single path. We should be doing more to help youngsters understand the value of developing professional skills alongside academic attainment, rather than as an afterthought. The nature of work has changed, with lifelong learning and adaptability seen as essential features of employment. If we are to encourage true social mobility, schools and employers must embed and value authentic learning experiences in real-world contexts – including opportunities for pupils to carry out investigations where the answers are unknown. This philosophy underpins the emerging University Technical Colleges, but it should be more prevalent in all schools and colleges. Equally Government and the education community must resolve the challenges of assessing performance in practical contexts. The inability to find new ways to test individual skills in teams and in non-trivial exercises undermines the value of all practical activity for pupils, parents and teachers.

The engineering profession obsesses about when is the best time to intervene with attractions to influence decision-making, when arguably it should focus its attention more on influencing the structure of the education system and how this affects the choices young people make. For policymakers, the emphasis of school success on examinations skews value heavily towards academic achievement, while assigning lesser value to vocational paths and the ultimate destination of young people in schools. of pupil destinations data after they have left, make schools and colleges more accountable for the careers advice they offer since careers information, advice and guidance both channels young people into the professions, while being a powerful driver of social mobility.

RECOMMENDATIONS

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Getting it right will release latent talent, boost the economy and generate an expanded skilled technical community within our society.