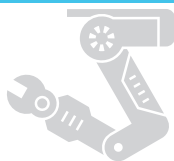




# Engineering Work Experience for **ALL**



**A MANIFESTO FOR CHANGE**



# INTRODUCTION

The IET has launched a new campaign, Engineering Work Experience for All, to highlight the importance of more universities and employers coming together to offer quality work experience, including work placements and internships, to engineering students. The campaign is also about championing the value of all types of work experience, including for school children.



**Employers have repeatedly told us over the years that graduates and school leavers don't have the skills they need for today's engineering workforce. This includes not having the right attitude to work**

**and not being able to apply technical knowledge in a workplace context. They have also said that offering students practical work experience is an effective way of tackling this problem – and crucially they are willing to do more in this area.**

Our 2016 Skills & Demand in Industry report found that 97% of employers agreed that businesses need to help the transition from education and training to the workplace if they are to ultimately get people with the right skills. Additionally, 91% agreed that to improve the supply of engineers and technicians, more employers need to provide work experience for those in education or training.

The IET's Engineering Work Experience for All campaign aims to bring together employers, universities, further education colleges and policy-makers to collaborate on improving the quality of work experience opportunities available to engineering students. This is particularly timely in a post-Brexit climate where developing 'home grown' engineering talent will become increasingly important.

At the launch of our 2016 Skills & Demand in Industry report we ran a panel workshop which focused on the work experience theme. This briefing paper brings together the perspectives of businesses and educators for change in the way that work experience schemes are offered to engineering students.

Recommendations include developing a Government-led national framework for work experience, which might also include some provision for financial support for employers

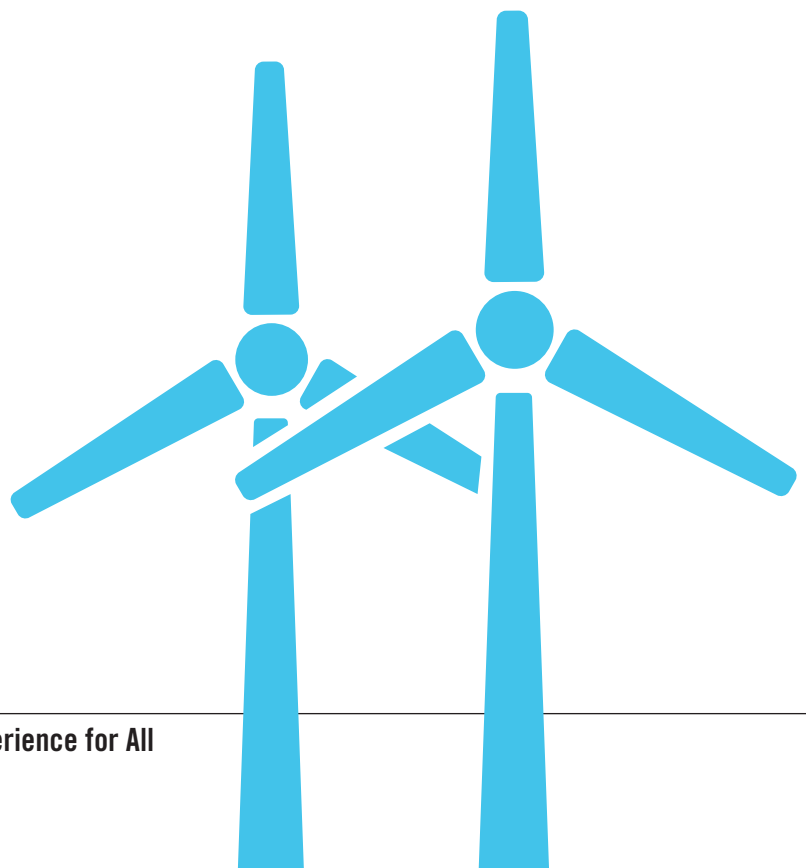
offering students this experience. There is also a need for more locally driven university and industry partnerships – and to enable more students to find their own work experience opportunities. Initiatives such as these would be a welcome part of the new Industrial Strategy for the UK.

More broadly, practical engineering-related subjects like design and technology are disappearing from the national curriculum, which goes against employers' experience that practical skills rather than academic ones are the real issue at stake. Finally, there is still more work to be done to engage teachers and parents in understanding the value and diversity of engineering careers.

We hope you will support the IET's campaign.



**Nigel Fine,**  
Chief Executive,  
Institution of Engineering and Technology



# WHAT EMPLOYERS SAY

The IET undertakes an annual Skills and Demand Survey. The statistics below, taken from the 2016 survey, highlight some of the issues relating to skills gaps and how work experience could be a mitigating factor.

91%

of employers agree that to improve the supply of engineers and technicians in the UK, more employers need to provide work experience for those in education or training



76%

agree that compelling all engineering and technology companies to provide work experience would improve the pool of engineering talent



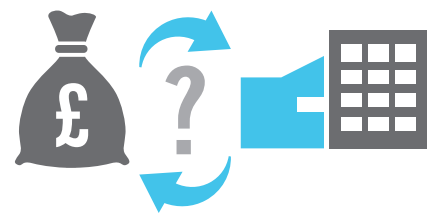
62%

of engineering employers say graduates don't have the right skills for today's workplace



53%

of employers don't know how the apprentice levy can benefit their organisation



50%

find that a typical new engineering and technology recruit does not meet their reasonable expectations



# 1. NATIONAL FRAMEWORK WITH REGIONAL PRIORITIES

**Universities and employers are calling for a Government-led national work experience framework which allows flexibility to support local and regional needs – and could form an integral part of the UK's new Industrial Strategy.**

This would see a region, city or town's major Higher Education provider building a work experience 'supply chain' with large, medium-sized and small businesses, as well as with local schools and further education providers.

As part of this, the framework would consider the different levels of work experience required by students at different stages of their development – school pupils, apprentices, university students, in-work professionals, returners etc.

This would also help to mitigate a concern raised by universities that there is no co-ordinated approach to getting SMEs in front of their students.

Institutions are reporting that many students are being lost to other sectors post-degree if they can't get into bigger engineering companies – because there is no way of sourcing opportunities with smaller firms.

The Government has already demonstrated that it values technical and professional learning by introducing the apprenticeship levy to help companies offset the cost of employing apprentices. It should consider extending this levy to include internships and work placements. This would be particularly valuable for SMEs, who typically struggle with the time and cost implications of offering work experience opportunities.

# 2. MORE LOCALLY-DRIVEN INDUSTRY PARTNERSHIPS

**Universities say they are unable to give their students practical experience as part of their degree programmes because they rarely have access to specialist facilities and machinery on campus that is used by specialist companies.**

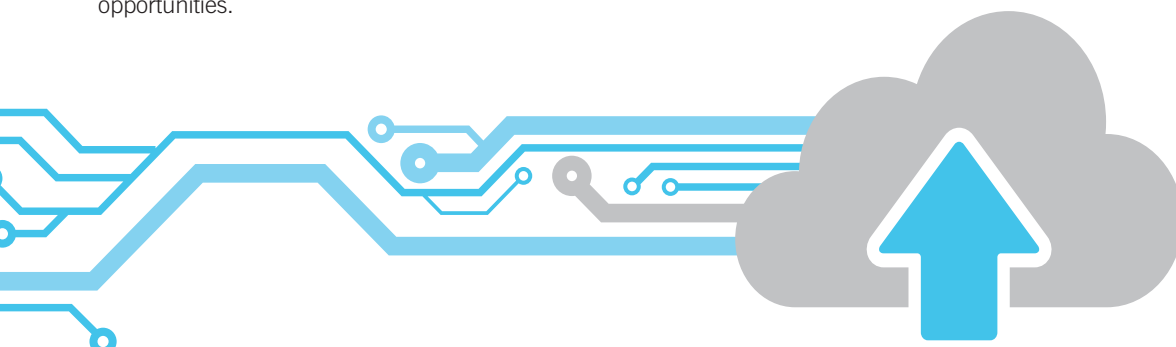
There is therefore a need for more bespoke, and local, university-industry partnerships to provide opportunities for students to gain hands-on experience of equipment used in the workplace.

There are pockets of best practice, including the partnership between Coventry University and Unipart Powertrain Applications (UPA) to offer B/MEng Manufacturing Students workplace experiences. This sees students underpinning their academic knowledge through live industrial projects at UPA's site every week throughout the three-year degree programme. There is also a summer internship to further immerse students within an engineering role.

More partnerships like these need to be developed.

Generally, universities are asking more companies to open their doors and give students an insight into what engineers do in the workplace, as well as deliver lectures, seminars, workshops, and hands-on coaching and mentoring.

This, in turn, has the potential to create more sustainable university-industry partnerships, as with Coventry-Unipart, whose relationship also includes R&D, technology and skills development alongside the teaching programmes.



### 3. PROMOTING A WORK PLACEMENTS REGISTER

**Universities in some regions have highlighted that not enough companies on their doorstep are offering work experience placements.**

A definitive register of work experience placements so that universities and students can see, at-a-glance, the opportunities available to them in engineering and technology firms regionally and nationally would be a very welcome step forward.

This initiative would need to be promoted directly to university careers and placement teams as well as students – because research suggests that the provision of work experience directly leads to greater retention of students in the sector.

Employers would also need to be encouraged to use the register framework for offering and promoting work experience placements in their firms.

Ideally, the register should offer the ability to set a standard for work experience based on the length of placement. For example, what can be learned and what is achievable over two weeks is different to that over six months.

The National Centre for Universities and Business has created a website <http://workwith.online/engineering> with information and advice for universities and businesses looking to offer work experience, and has plans to develop a register in the coming months.

Organisations like the IET are also well placed to promote closer working relationships between universities and industry, either via the register or by introducing complementary initiatives to broker new relationships.



### 4. HELPING STUDENTS MEET THE COSTS OF WORK EXPERIENCE

**Universities are reporting that many students choose not to take on work experience placements outside of their locality because of the related costs of living, especially in London and the South East, which are not covered by their institution or the individual company.**

Higher Education is calling on industry to step up and offer accommodation as part of its work experience package. Employers acknowledge they should make the work experience salary sufficient to support students during their placements – but they are also concerned that every placement must deliver ‘value’ for them.

Given the Government’s existing initiatives to support technical and professional learning, not least through its target of three million apprenticeships by 2020 and the apprenticeship levy, employers are seeking further support for work experience.

Extending the apprenticeship levy to include internships or work placements would enable companies to help students meet the costs of work experience placements.



## 5. SHAPING THE CURRICULUM AROUND ENGINEERING

**Employers claim that it is only graduates who are really being encouraged into engineering.**

There are currently around 600 engineering initiatives in schools but the proportion of students applying for these is unchanged because of the wider rhetoric around curriculum priorities.

Since 2000, when design and technology stopped being a compulsory GCSE subject, there has been a steady decline in the number of pupils achieving a GCSE in the subject. There is a lack of foundation courses in the subjects and, with the focus on engineering exclusively on science and mathematics, the emphasis on creating ‘something new’ has gone say employers. Instead, there is too much focus on passing exams through rote learning, rather than understanding the principles and application – which is crucial for developing engineering skills.

Employers also feel that changes to the national curriculum have resulted in a significant loss of teachers with the ability to teach the skills they need, including creativity and ingenuity.

Industry says it needs to contribute more fully to curriculum discussions because education is not well set up to drive the agenda on its own.

The Department for Education should consider how industry perspectives can be incorporated into a review of the curriculum, and there is a major opportunity for it to do so as part of developing the UK's new Industrial Strategy.

## 6. ENGAGING TEACHERS IN THE VALUE OF ENGINEERING

**Employers are suggesting that school teachers, as well as pupils and their parents, need to be engaged in engineering at a much earlier stage.**

Businesses are calling for a co-ordinated teacher engagement programme in primary and secondary education to help teachers understand what engineering is (and isn't) so they have a better grasp of what types of initial work experience placements to seek for their pupils.

The engagement programme should move to providing engineering content as part of the national curriculum and in resulting exam questions. Practically, this should involve giving time-pressed teachers materials they can use in class.

There should also be more teacher industrial placements in engineering as part of their own professional development. The IET is working with the National Science Learning Centre and the Institution of Mechanical Engineers to provide mathematics, science, design and technology, and computing teachers with the opportunity to gain practical experience through collaboration with employers from industry. The Teacher Industrial Partners' Scheme provides a cohesive link to their teaching and relevant promotion of engineering to students.

Additionally, there remains a broader need to demonstrate to pupils from an early age the vast career opportunities available in engineering.



## 7. OFFERING WORK EXPERIENCE EARLIER ON

**Students in the first and second years of their university degree report particular challenges in gaining work experience opportunities, as they don't have previous experience to offer an employer.**

Employers need to invest time in engaging with and offering work experience to students earlier on in their university career – otherwise the risk is that these students are more likely to pursue careers outside engineering. This could include offering feedback on why students' applications for work experience are not successful.

Similarly, work experience for school children – before they decide on their GCSE or A Level subject – would be likely to improve the chances of children opting to study STEM subjects.



## 8. EMPOWERING STUDENTS TO BECOME 'WORK-READY'

**Students should be encouraged to take a proactive approach to finding work experience and developing the skills needed for today's engineering workforce.**

There are various resources available to help students who want to take action to become more 'work ready'. For example, the IET On Campus programme gives IET student members access to practical, technical and career-related resources, as well as helping them to create links with industry and other universities. The ultimate aim is to help students demonstrate their skills and raise their profile. The IET also plays a role in introducing students to alternative ways to look for work experience opportunities, such as contacting businesses directly or attending networking events.

If there are obstacles to finding a work experience placement, students should be encouraged to find other ways to develop the soft skills that many employers seek. This might include getting involved in university societies or attending industry site visits. Employers have made it very clear that students who have pursued these kinds of activities will be more likely to find jobs and fit into the workplace than those who have only gained academic qualifications.

# THE FINAL WORD

Our 2016 Skills & Demand in Industry report shone a light on the need to raise awareness of the value of quality work experience for those in education if we want to develop future engineers with the skills industry needs.



**Our associated Engineering Work Experience for All campaign launch, which included a panel discussion workshop, highlighted the personal experiences of students,**

**industry and academia around what is and isn't working in terms of work experience.**

It is abundantly clear that whilst there are pockets of best practice, including from Coventry University and Unipart, the IET Power Academy and Siemens, there is no definitive and co-ordinated nationwide approach to creating successful work experience, intern and work placement programmes for engineering students or school pupils.

The campaign launch also provided an opportunity for interested parties to propose change and reform, and the eight areas identified in this report represent the collective views of over 100 engineering representatives who participated in the panel discussion workshop.

It is important that these eight individual areas are not seen in isolation, as they are not independent of each other. But together these areas provide a much-needed manifesto for change – and could form the impetus to create a national framework for work experience, ideally as part of the UK's future Industrial Strategy.

From our perspective, we will open discussions with policy-makers and work in collaboration with relevant parties including employers, universities, further education colleges, schools and students to seek a step-change in offering quality work experience opportunities for current and potential engineers.

We will also showcase best practice in engineering work experience from an employer, university and student perspective on a new digital platform **[www.theiet.org/work-experience](http://www.theiet.org/work-experience)**

*Stephanie Fernandes*

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