THIS IS A FUTURE FOR ENGINEERING

A 10-POINT ACTION PLAN INFORMED BY YOUNG PEOPLE

***This is Engineering*, led by the Royal Academy of Engineering in collaboration with EngineeringUK, is a campaign to bring engineering to life for young people, and give more people the opportunity to pursue a career that is rewarding, future-shaping, varied, well-paid and in-demand.**

Our aim is to show more young people what engineering really looks like, and how it could be an exciting and rewarding path for them in the future.

Engineering demand

- **There are 4.5 million engineers and technicians employed in the UK.**
- **They work across all sectors of the economy, from manufacturing construction, healthcare, media and entertainment, to banking and finance, consultancy and retail.**
- **There is an annual demand for at least 124,000 engineers and technicians with core engineering skills.**
- **There is an additional demand of 79,000 STEM roles that require engineering knowledge and skills alongside other skill sets such as environmental science, architecture, quantity surveying and project management.**

Subject choices for engineering

In 2017

- Around 650,000 students across parts of the UK sat GCSE exams across a broad range of subjects
- 66,000 students took computing GCSE (with only 20% girls)
- 132,000 students took physics GCSE (50% girls)
- 165,000 students took design and technology GCSE (40% girls)
- 8,000 students took computing A level (only 10% girls)
- 36,000 students took physics A level (21% girls)
- 12,000 students took design and technology A level (35% girls)
- 95,000 students took mathematics A level (38% girls)
- 14,500 young people (under 19) started intermediate (level 2) apprenticeships in engineering and manufacturing, construction and ICT
- 13,100 young people started advanced (level 3) apprenticeships in engineering and manufacturing, construction and ICT
- 1,250 young people started high (level 4+) apprenticeships in engineering and manufacturing, construction and ICT

Making career choices

Research conducted by YouGov on behalf of *This is Engineering* shows that nearly two-thirds of young people (aged 13 to 18) think that they will have a career that taps into their existing passions (63%). The results also found that:

- young people would prefer to talk to their parents about their current interests, rather than what they want to be when they grow up
- young people are not inspired by talking to parents about their jobs
- only 35% of young people believe their parents are working in careers that they are passionate about
- young people are turning to the internet for information about careers (52%), with search engines overtaking conversations with parents (41%) and teachers (37%) as a source of advice and inspiration.

10-POINT ACTION PLAN

In collaboration with school students from Greater Manchester, *This is Engineering* has developed an action plan to help inspire future generations of engineers. This is the first set of recommendations from *This is Engineering* with more to come in coming months.

Young students (between 13 and 16 years old) were asked their views on a number of areas including: careers advice, work experience and further education. Each student suggested an ask to government and industry on each area, these were then prioritised and the following calls to action are based on areas of common agreement.

Careers advice and work experience

Careers advice and work experience are crucial in providing young people with information, advice and guidance to help them make decisions about their future learning, jobs and training. Evidence shows that undertaking relevant work experience increases the subsequent likelihood of joining the relevant profession.

When questioned on how they would improve careers advice and work experience, students emphasised that they wished to be 'respected like an adult' and 'taken seriously'. They highlighted how much they enjoyed careers advice and, in particular, careers fairs and recommended that they are held more often.

Students also discussed the best age for work experience to be introduced: many argued it should start earlier, with some suggesting introduction in Year 8 before choosing GCSE options. All agreed that work experience should be practical and engaging and there were passionate discussions about whether students should be paid, with students evenly divided.

A strong theme that emerged during the discussions was the variation between work experience – seeing what work is really like – and placements – short-term employment for students.

A number of students suggested that they would find taster days – a shorter version of work experience – beneficial as they would provide a flavour of how their subject choices relate to future work opportunities. This is especially important to engineering, as it will help students realise they can make a significant contribution within engineering even if they do not excel in academic subjects.

Action plan:

1. The government should **tie 'taster days' into the upcoming careers strategy** and raise awareness that the most important part of careers guidance is work experience.
2. Businesses should **pledge to run 'taster days'** to help young people understand the varied role of engineering and how a job works in practice.
3. Politicians should continue to **champion work experience placements** in their constituencies.
4. Politicians, education providers and the wider business community should **support and promote local careers fairs** in their constituencies. Careers fairs need to be high-quality, inspiring and provide clear information on local engineering employment opportunities. Guidance is provided on the back of this action plan.
5. As more young people are turning to the internet for information on careers, more supplementary **careers information should be hosted online and in an accessible way.**
6. The government should create **additional funding for students** who are required to travel out of area or live away from home to gain access to effective work experience opportunities.

Further education

The UK has long suffered from a perception that vocational pathways are less valuable than academic routes. This has given rise to a historic lack of investment in apprenticeships and further education provision.

When questioned, students said they believed a pathway in further education would make them less valuable to employers compared with taking a higher education route. These comments emphasise the importance of improving the perception of vocational pathways and technician roles and we welcome the government's recent focus on this.

In fact, a workforce with a strong technical foundation is vital for the development of practical solutions within the engineering industry. Further education allows those who do not shine in an academic environment, but who have intuitive engineering ability and excellent practical engineering skills, to excel.

It has been widely documented that the further education sector needs further long-term investment, as well as incentives to promote provision of high-cost subjects such as engineering. The time for action is now.

Action plan:

7. Politicians should proactively and passionately **champion further education colleges** when talking to schools and constituents and meet with further education providers to discuss the challenges they face.
8. Businesses need to continue to **work closely with local further education providers** to co-develop high-profile work placement opportunities.
9. There should be a focused effort by government and the industry on **providing better information about further education** and the careers opportunities for technicians through careers fairs and online.

Practical learning

STEM subjects are critically important to the UK's economic success, but for engineering both academic and creative disciplines are key. It is important that students are given the opportunity to apply technical skills to practical and real-world challenges.

Students were vocal in calling for more interactive learning, and more opportunities to use technical skills and to understand the tangible applications of what they are learning.

Design and technology provides opportunities for students to develop design solutions, informed by their understanding and application of science, mathematics and computing, to solve everyday problems in a practical way.

However, in 2017 figures revealed that GCSE courses in design and technology have disappeared from nearly half of schools. This is amidst an ongoing decline since 2005/6 when it was withdrawn as a compulsory Key Stage 4 subject. Many teachers feel this decline has been exacerbated in recent years because of the English Baccalaureate accountability measure on schools, which focuses attention on a narrow set of academic subjects at GCSE.

Action plan:

10. Politicians and businesses should proactively **champion design and technology in their local schools** and talk to school leaders about how the subject can be better supported and delivered.

TIPS ON HOW TO RUN A SUCCESSFUL STEM CAREERS EVENT

First check to see if there is an event running in your region: it is better to support and collaborate with existing careers fairs rather than create new ones in your area. Bring new employers to the fairs to improve the student experience.

If there aren't careers fairs in your area:

Find a suitable venue at a time that works:

On school days we've found that between 10am – 2:30pm works best. Consider hosting at a local school or university, and ensure you check term dates in your constituency.

Promote the date and how to register:

Use your networks to advertise the event, working with schools and local STEM clubs in the area to encourage attendance. Ensure it's easy, and free, for schools to book.

Work with local businesses:

Encourage local engineering and STEM companies to get involved, providing activities, prizes, giveaways and the opportunity for young people to learn about the STEM careers available on their doorstep.

Involve local STEM Ambassadors:

Contact your local STEM Ambassador Hub for more information on the support they could offer for your event, including volunteer support.

Find your hands-on activities:

Allow visitors to get hands-on with short (5-10 minute) STEM activities. For example, set them creative challenges such as discovering the science behind cooking and robot coding. Your event will need a range of activities to cover different topics and learning styles as well as individual and group formats.

Ensure your activities have a strong careers link:

The best activities demonstrate a real-world application of STEM and can link to a career in the sector.

Consider your event logistics and visitor health and safety:

Have a plan to manage checking in visitors, sufficient catering outlets or picnic spaces, an information point and suitable accessible facilities. With an event designed for young people, it's important that you have considered their safety at your event. We recommend a no lone-child policy and establishing a good lost-persons procedure, as well as considering any guidance around photography for vulnerable children. We recommend that you collect risk assessments from all activity providers and review them to ensure that all activities will be run in a safe manner. We recommend that you have a first aid provision at your venue.

Have fun and share the visitor experience on social media!

Don't forget to use **#ThisIsEngineering** on Twitter.

Contact info@thebigbangfair.co.uk for further guidance and support with careers fairs.

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