Challenges and recommendations

If modern engineering is to continue to provide its enormous economic and social contributions to the United Kingdom, it is of critical importance that the engineering community work alongside the government and educational sector to address the skills shortage.

**Challenges**
- Too few STEM teachers
- Limited access to STEM careers activity
- Too few women becoming engineers
- Too little home grown talent
- Too little understanding of apprenticeships

**Recommendations**
1. Streamline the STEM outreach landscape to make it simpler for schools to connect with employers and other providers to access high quality, engineering focused STEM engagement activity
2. Develop a better understanding of what engineering-focused careers interventions work so we can direct our resources to the most effective methods to inspire young people to study STEM and pursue engineering careers
3. Increase the supply and retention of specialist STEM teachers, who have a vital role in shaping the aspirations and career trajectories of young people
4. Actively safeguard and enhance the status of the UK’s higher education sector as world-class and welcoming to talent from across the world
5. Raise awareness of apprenticeships among young people and their influencers – and ensure the apprenticeships on offer are of high quality
6. Ensure young people have a full understanding of the excitement and variety a career in engineering offers, and the potential contribution they can make as an engineer
7. Improve our understanding of the barriers for women, black and minority ethnic communities and people from disadvantaged backgrounds to pursue pathways into, and careers in, engineering

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EngineeringUK is a not-for-profit organisation, which works in partnership with the engineering community to promote the vital role of engineers and engineering and to inspire the next generation. EngineeringUK leads engagement programmes The Big Bang and Tomorrow’s Engineers, produces the annual State of Engineering report and the Engineering Brand Monitor.

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Engineering is of vital importance to UK’s economy

27% of enterprises in the UK are engineering-related

27% of enterprises in the UK are engineering-related

Figure 2.6, page 38 Engineering UK 2018 Report

Engineering skills are in short supply

New industries and technologies are emerging, adding to already significant demand for engineering skills

124,000 engineers and technicians with core engineering skills required per year

79,000 engineering-related roles to arise per year

203,000 people with Level 3+ engineering skills needed every year to meet demand

Figure 10.21, page 270

Annual shortfall of up to 59,000 engineering graduates and technicians to fill core engineering roles

Figure 10.21, page 270

46% engineering employers surveyed report recruitment difficulties

It is essential more young people - particularly girls - study STEM

129,059 engineering-related apprenticeship starts across England, Scotland and Wales

37,335 first year engineering and technology undergraduates in the UK

10% decrease GCSE entries for biology, chemistry and physics between 2012 and 2017

Figure 6.10, page 145

Proportion female:

GCSE Physics entrants

50% Figure 4.4, page 92

Engineering and technology undergraduate entrants

16% Figure 6.10, page 145

A level Physics entrants

22% Figure 3.20, page 82

Engineering apprenticeship starts (England only)

8% Figure 5.8, page 116

Figure 3.11, page 66

Demand and shortfall figures presented here are not directly comparable to previous editions due to the use of a revised engineering footprint.

Figure 4.4, page 92

We need to improve awareness of engineering and the different routes into the profession

Raising understanding among key influencers is critical

Who would you consider going to for careers advice?

31% parents know what engineers do

36% of parents and 58% of teachers feel confident giving careers advice about engineering

Figure 3.11, page 66

Figure 3.11, page 66

Page 96

Page 87

Page 91

5.6 million people in the UK

Engineering employs 5.6 million people in the UK

5.6 million people in the UK

5.6 million people in the UK

5.6 million people in the UK

Increase in employment over the last five years

5.1% increase in employment over the last five years

5.1% increase in employment over the last five years

5.1% increase in employment over the last five years

Every time a new job is created in engineering, 1.74 jobs are created elsewhere

Figure 2.12, page 42

Figure 2.4, page 37

Between 2015 and 2016 the number of engineering enterprises in the UK grew by 5.6%