

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.

www.engineeringuk.com

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The state of engineering Key facts 2018



Engineering is of vital importance to UK's economy



27%
of enterprises
in the UK are
engineering-related

Figure 2.6, page 38 Engineering UK 2018 Report



29%
Information and
communication



19%
Manufacturing



26%
Construction



25%
Other engineering

Figure 2.7, page 39

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

Figure 2.4, page 37

Engineering generates

23%
of the UK's
total turnover



Figure 2.12, page 42

Engineering employs **5.6 million** people in the UK

↑ 5.1%

increase in employment
over the last five years

Figure 7.8, page 175



Every time a **new job** is created in engineering, **1.74 jobs are created elsewhere** Page 35

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



engineering employers surveyed report recruitment difficulties

Page 20

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

129,059

engineering-related apprenticeship starts across England, Scotland and Wales

Page 9

37,335

first year engineering and technology undergraduates in the UK

Figure 6.10, page 145

10% decrease

GCSE entries for biology, chemistry and physics between 2012 and 2017

Page 87

Proportion female:

GCSE Physics entrants

50%

Figure 4.4, page 92

A level Physics entrants

22%

Figure 3.20, page 82

Engineering and technology undergraduate entrants

16%

Figure 6.10, page 145

Engineering apprenticeship starts (England only)

8%

Figure 5.8, page 116

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

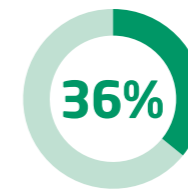
We need to improve awareness of engineering and the different routes into the profession



27%

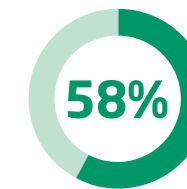
11 to 14 year olds in 2017 know what engineers do compared to just 15% in 2013

Fig 3.11, page 66



11 to 14 year olds know what to do next to become an engineer

Page 86



11 to 14 year olds know almost nothing or just a little about what apprentices do and the different types of apprenticeships available

Raising understanding among key influencers is critical

Who would you consider going to for careers advice?

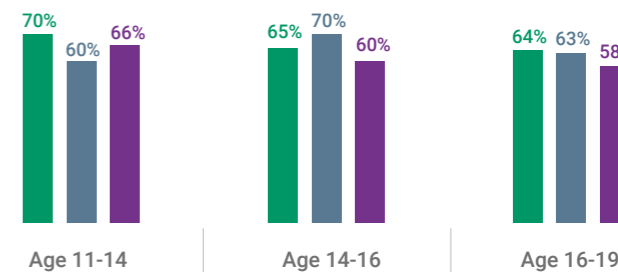


Fig 3.14, page 68

31%
parents know what engineers do



Fig 3.11, page 66



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

Page 86