



Levelling up engineering skills: widening opportunities for young people

As the levelling up white paper approaches, this briefing puts a spotlight on engineering skills and vocational pathways through the lens of young people and parents. Regional insights from our latest Engineering Brand Monitor survey are used throughout the briefing and we finish by highlighting 7 questions for policymakers.

Introduction

Engineers matter. They provide the ideas, innovations and solutions needed to meet the challenges faced by people and communities across the country. Take climate change - the UK needs a diverse and thriving engineering workforce right at the forefront of ground-breaking green solutions in the fight against global warming - from carbon capture to green transport, renewable energy to sustainable food.

The UK has an ongoing shortage of engineers¹ and with the government's drive to 'build, back, better' through infrastructure, innovation and green technologies, the demand for engineering skills is only likely to increase. Engineering can also unlock opportunities for young people to work in good quality, stimulating jobs, using their skills and passions to make a difference.

It is essential that all young people, whatever their background and wherever they live, have the chance to consider and access career opportunities in science and engineering - from Bolton to Brighton, Newcastle to Newquay. This means making sure young people can get information on the full breadth of vocational and academic pathways into engineering, ranging from long-established routes like apprenticeships and A levels through to newer pathways in the skills landscape such as T levels and degree apprenticeships.

This briefing provides an overview of young people's and their parents' knowledge and perceptions of the different routes into engineering careers, based on findings from our Engineering Brand Monitor (EBM) survey.² For the purposes of this paper we also wanted to delve deeper into some of the regional variations (within England) - looking for example at how knowledge of vocational pathways into engineering varies geographically. The findings raise a number of questions that are worthy of further exploration in light of the forthcoming levelling up white paper.

Levelling up skills - the story so far

The Conservative Party 2019 manifesto promised 'an agenda for levelling up every part of the UK'. This policy thread now runs through the Prime Minister's ambitions, including a goal to level up education and skills. Last year the Queen's Speech briefing published by the government stated that levelling up was about "increasing and spreading opportunity, because while talent is evenly distributed, opportunity is not".³ Andy Haldane, the former Bank of England chief economist who has been appointed as the head of the government's levelling up taskforce describes it "one of the signature challenges of our time". His appointment came alongside a departmental rebrand, with Cabinet member Michael Gove at the helm of the Department for Levelling Up, Housing & Communities.

It will be interesting to see what steps will be taken to knit together the work of the Department for Education and Michael Gove's vision for levelling up and to what extent policy solutions will enable place-based approaches to boosting skills to take root across the country.

"It is in post-16 education where the differences across our society are the starkest. It cannot be right that Bath has 78% with a level 3 or a level equivalent qualification and Bradford has only 42%. That is why this government is obsessed with skilling up our population." (Boris Johnson, Speech, Coventry, July 2021).⁴

Knowledge of vocational pathways

It is not enough to have educational and skills pathways into engineering and science careers. Young people need to know about them. Our EBM survey results suggests more needs to be done to increase young people's awareness and understanding of vocational pathways, including apprenticeships and T levels. Throughout this paper we have highlighted some interesting highlights from our survey but full regional breakdowns can also be found in the appendix.

¹ EngineeringUK. 'Educational Pathways into Engineering', 2020.

² The [Engineering Brand Monitor](#) is a UK wide survey. Figures presented in this paper are UK wide unless otherwise stated (e.g. specific region).

³ HMG. 'The Queen's Speech 2021: Background Briefing', May 2021.

⁴ Prime Minister's [Levelling Up speech](#), July 2021.

Less than half of young people know about the apprenticeship options available to them

Highlights (Table 1)

- 43% of young people across the UK (aged 11 to 19) said they knew about the apprenticeship options available to them.
- 63% of young people (aged 11 to 19) in London said they knew about apprenticeship options available to them, which was the highest across all English regions. This compares to just 34% in Yorkshire and the Humber.

The government continues to emphasise that apprenticeships are one of the central pillars of their ambitions to level up skills across regions and sectors. The fact that our findings show that the majority of young people surveyed did not appear to know about the apprenticeship options open to them should be a cause for concern.

The results also suggest that there are some significant regional disparities. Knowledge of apprenticeship options is highest in London (63%) and lowest in Yorkshire and the Humber (34%), with the South West (35%) and the West Midlands and East Midlands not faring much better (36% and 37%). Young people in the South East were less likely to know about apprenticeship options than those in the North West (37% compared to 50%). (Table 1)

The findings appear to be another reminder of the importance of high-quality and impartial careers information, advice and guidance for all young people. EngineeringUK explores these issues further in our 2021 report - *Securing the Future: STEM careers provision in schools and colleges in England*.⁵

Most young people don't yet know what T levels are

Highlights (Table 2)

- 37% young people in England (aged 11 to 19) know what T levels are.
- Young people in London were most likely to know what T levels are (49%).
- Young people in Yorkshire and the Humber were least likely across the UK to know what T levels are (29%).

T levels continue to play an important part in the government's aspirations for vocational qualifications in England. These 2-year courses have been developed in collaboration with employers, helping to ensure that content reflects skills in demand in the labour market. Subjects in the pipeline for 2022 include design and development for engineering and manufacturing, as well as engineering, manufacturing, processing and control.

Our findings suggest that young people's knowledge of what T levels are varies widely by region, with young people (aged 11-19) in London most likely to say they know what they are (49%) and those in Yorkshire and the Humber least likely (29%). In the West Midlands, levels of awareness were also low with less than a third of young people (30%) saying they knew what T levels are. Knowledge of T levels among young people in the North West and North East was similar (43% and 42%). (Table 2)

As a new qualification it will inevitably take time for T levels to become a recognised 'brand' among young people, parents, teachers and employers. Having said that, our findings suggest there is some way to go in levelling up awareness of T levels in the coming months and years. Our evidence also raises the question of why awareness of T levels among young people is not more evenly spread across regions, with knowledge being greatest in London.

⁵ EngineeringUK. 'Securing the Future: STEM careers provision in schools and colleges in England', 2021.

Young people's knowledge of pathways into engineering differs by region but it is not a clear-cut north/south divide

Highlights⁶ (Table 3)

- Young people in London (aged 7 to 13) were **two and a half times more likely** than those in the East Midlands to say they knew what subjects they would need to become an engineer in the future (**69%**, compared to **27%**).
- Only **25%** of young people (aged 7 to 13) in the South East knew what subjects they would need to become an engineer. This was lower than any other English region.
- When looking at the results for older age groups, young people (aged 13 to 19) in London were **twice as likely** to know what subjects or qualifications they needed to become an engineer than young people in the West Midlands. (**60%** compared to **30%**).

Our results paint an interesting picture in the context of the levelling up debate. While London stands out in terms of knowledge amongst young people of the different pathways into engineering, the overall figures do not point to a clear-cut north/south divide. For example, knowledge of the subjects needed (among 7 to 13 year olds) was only 25% in the South East, lower than any other region, and about half of that in the North East and North West (47%). Furthermore, only 30% of young people (aged 13 to 19) in the West Midlands know what subjects they need to take to become an engineer compared with 60% for London

Looking at the results for older age groups, knowledge across the Midlands was also low. Just 30% of young people (aged 13 to 19) in the West Midlands and 27% of young people in the East Midlands knew what subjects or qualifications they would need to take to become an engineer. This should be ringing alarm bells with policymakers as it suggests that in one of the parts of the country experiencing high demand for engineering skills in sectors such as net zero, aerospace, digital and automotive there are low levels of awareness among young people about pathways into engineering. (Table 3)

The role of parents

Evidence tells us that parents play an important role in shaping the education and career pathways of children.⁷ If parents are not able to confidently answer questions about the different vocational and academic routes into engineering, or if parents' knowledge across the country is patchy, this could have consequences for the government's ambitions to levelling up skills opportunities for all young people.

Parents are more likely to know about university than vocational routes

Highlights (Table 4)

- **52%** of parents were knowledgeable or very knowledgeable about university.
- **41%** of parents were knowledgeable or very knowledgeable about vocational routes.
- Parents' knowledge of university was highest in London where **73%** of parents said they were knowledgeable or very knowledgeable. This compares to only **41%** for parents in the South West.

The skills for jobs white paper and the Skills and Post-16 Education Bill both designed to help build greater parity of esteem between vocational and academic pathways. The government's skills for jobs white paper states that "too many people believe that studying for a degree at university is the only worthwhile marker of success."⁸

Parents play an important role in the skills agenda as they are seen as key influencers in the context of young people's careers choices. Their understanding of the different pathways is therefore vital to ensure that young people know about and feel confident to access different routes.

Our survey results suggest that there is some way to go in achieving parity of knowledge between vocational and academic routes among parents, with parents being more knowledgeable about university than vocational pathways. There are also some stark differences in knowledge and perceptions across England, complicating the picture.

⁶ Note: Younger age groups surveyed (aged 7 to 13) were asked about 'subjects' needed to become an engineer. Older aged groups (aged 13 to 19) were asked about 'subjects and qualifications' needed to become an engineer.

⁷ The Gatsby Foundation, 'Parents' engagement in the career guidance of their children', 2020.

⁸ Department for Education. 'Skills for Jobs: Lifelong learning for Opportunity and Growth', 2021.

Highlights continued

- Parents in London were most knowledgeable about apprenticeships (62%). Parents in the South West were least knowledgeable (33%).
- Over 1 in 5 parents across all regions would recommend a combined route, such as a degree apprenticeship ranging from 20% in the South West to 28% in the North East and East Midlands.

Parents in London are twice as likely to recommend an academic route (into engineering) to their child as parents in the North East (46% compared with 23%).

Our survey also found that young people (aged 11 to 19) in London were most likely to consider an academic route (38%) and young people in the North East were least likely to do so (22%). This raises questions in the context of the wider levelling up agenda, but also has implications for the engineering sector's ability to improve its diversity at all levels. It also poses questions about why these differences exist and what we can do to address them. (Table 4)

Opportunity is not just about where you live

Socio-economic background appears to play a role in shaping young people's knowledge and perceptions of education and skills pathways

Highlights

- 35% of young people (aged 13 to 19) in lower income households⁹ know what subjects they would need to become an engineer. This compares to 52% of young people in higher income households. (Table 5)
- 44% of parents in lower income households said they were knowledgeable or very knowledgeable about university as a route, compared to 67% of parents on higher incomes. (Table 6)
- Higher income household parents are more likely to recommend an academic route (35%, compared with parents with lower incomes 28%). (Table 7)
- 30% of young people (aged 13 to 19) of parents without a degree know what subjects they would need to take next to become an engineer, compared to 57% of young people of parents with a degree. (Table 5)
- 28% of young people of parents without a degree know what T levels are. 43% of young people of parents with a degree know what T levels are. (Table 8)

To address the skills shortage and reap the benefits a more diverse engineering workforce can offer, more must be done to support young people from under-represented groups to study and succeed in STEM pathways. We therefore need to work to identify and tackle barriers that may inhibit them from pursuing engineering as a career.

Our findings show that only 35% of young people from lower income households know what subjects or qualifications they would need to become an engineer, compared with 52% of young people from higher income households (Table 5). While both figures are disappointing and need to improve, the data suggests that socio-economically advantaged young people may already be a step ahead at an early age in terms of their understanding of the educational pathways available into engineering roles.

Parents' knowledge too appears to differ when comparing household incomes levels. Parents in higher income households are more likely to know about university routes and more likely recommend an academic route to their child than those from lower income backgrounds.

Our findings raise questions about how schools can be best supported to provide impartial STEM careers advice and guidance, and what steps are being taken to ensure that young people under-represented in science and engineering pathways are able to make informed choices about their future.

⁹ For the purposes of this paper the terms 'lower income' and 'higher income' relate to our Engineering Brand Monitor survey results where respondents are asked whether their household income is below £40k or above £40k.

Discussion

The regional dimension

Our Engineering Brand Monitor reveals some quite stark and concerning differences across the country particularly in young people's knowledge and awareness of different educational and skills pathways available to them. Parents' awareness of skills routes and preference for academic or vocational pathways also varies considerably by region. That said, it is important to recognise that there will also be wide variation within each region. Further research at a more granular geographic level is required to hone in on particular sub-regions for which enhanced support may be needed to 'level up'.

Socio-economic factors

While our evidence reveals some of the regional disparities that exist in knowledge and perceptions of skills routes across England, it is clear that where a young person lives is not the only factor at play here. The regional disparities we highlight are likely to be reflective of many factors including the distribution of social and economic disadvantage. Our EBM results suggest that advice from parents can also play an important part in the choices young people make when they consider education or skills pathways. While there is clearly a very strong emphasis on 'place' in government's levelling up policy agenda, recent announcements from the DfE also underline the importance of social mobility as part of the government's vision for levelling up educational outcomes for young people.

Careers information, advice and guidance

It is clear from our findings that more needs to be done to increase young people's knowledge of the routes available into science and engineering careers. Careers advice and guidance has a key part to play but it will only succeed if schools and colleges across the country have the right resources and support. As our recent report 'Securing the Future'¹⁰ shows, policy approaches like careers hubs appear to be having a positive impact but they are not available to all schools and colleges yet. A refreshed careers strategy (replacing the government strategy which came to an end in 2020) could help to drive forward action across government departments. Such a strategy could encompass for example careers learning in the curriculum, greater parental involvement in careers information activities, an accelerated careers hub rollout programme and enhanced teacher training drawing on labour market information and other relevant data.

Higher education

While we undoubtedly need to widen participation in vocational pathways, we also need to ensure that young people from lower socio-economic backgrounds know about and can access pathways into university. Our findings highlight that there is currently a regional and socio-economic split in terms of aspirations for different routes into engineering. If we are to level up engineering skills and increase diversity in engineering at all levels, we need to ensure that all young people, whatever their gender, socio-economic background or ethnicity have the opportunity to access and succeed in different pathways into science and engineering careers.

What next for devolution?

With the levelling up white paper approaching and a new Skills Bill, alongside a reshuffled DfE frontbench - are we going to witness a transformation of the skills system, starting in 2022? We have seen part of the government's approach to this in proposals to create local skills improvement plans, soon to be enshrined in legislation. These are central to the government's determination to tailor further education in a way that better reflects and responds to local skills needs - with employers in the driving seat. But to what extent will skills policies, powers and purse-strings be devolved to local and regional government as part of the levelling up agenda? For example, should metro mayors have a stronger role in developing and delivering tailored careers services, skills outreach activities and targeted public awareness programmes in their areas?

¹⁰ EngineeringUK. 'Securing the Future: STEM careers provision in schools and colleges in England', 2021.

Levelling up skills - 7 questions for policymakers

Young people wherever they live and whatever their background should know about the career opportunities in the science and engineering sectors. If they want to follow a STEM pathway then a lack of information, support or access to certain routes into these sectors where they live should not hold them back.

While the Skills and Post-16 Education Bill is a welcome step, there is still some way to go on the journey of levelling up skills across the country, including engineering skills. A whole-systems approach to improve skills outcomes for young people is needed. Not only will this benefit young people themselves and open up pathways into high-quality jobs, but it will also help to address the engineering skills shortage thereby helping to solve some of the biggest challenges we face from net zero, to health innovation and sustainable farming. Below we pose 7 questions for policymakers as the levelling up white paper approaches:

1. **Places and people** - What is the interplay between the place-based objectives for levelling up and the government's social mobility goals? What can and should the government do to address both?
2. **Empowering local solutions** - What role is envisaged for local government and regional government in levelling up skills, including combined authority mayors?
3. **Widening participation** - How will the levelling up white paper help to widen participation for young people from disadvantaged socio-economic backgrounds in vocational, academic and combined routes into science and engineering?
4. **Increasing awareness of vocational pathways** - What steps will the government take to help level up knowledge and awareness of vocational routes into science and engineering, including apprenticeships and T levels?
5. **Careers provision** - What steps are the government taking to increase investment in careers information, advice and guidance in schools and colleges as part of the drive to level up skills? Will the roll out of careers hubs be accelerated for example?
6. **Cross-departmental working** - How will government departments work together to ensure an integrated approach on areas like skills, careers provision, youth unemployment and future workforce planning?
7. **Measuring success** - How will the government measure success in levelling up skills outcomes for young people, including widening opportunities in STEM?

About EngineeringUK

Established in 2001, EngineeringUK is a not-for-profit organisation, funded predominantly via the professional registration fees of individual engineers, as well as the support of a range of businesses, trusts and foundations, and a corporate membership scheme. Our ambition is to inform and inspire young people and grow the number and diversity of tomorrow's engineers.

We work locally, regionally and nationally with a wide range of organisations across business and industry, education, professional institutions and the third sector to understand the engineering skills required by engineering companies and in the wider economy, and work in partnership to develop and promote effective initiatives to inspire young people to consider a career in engineering. www.engineeringuk.com

Appendix

Table 1

How knowledgeable are you about the different apprenticeship options available to you?

% of young people aged 11 to 19

Region	Not Knowledgeable	Somewhat Knowledgeable	Knowledgeable	Very knowledgeable	Sum of knowledgeable and very knowledgeable
North East	25%	30%	25%	20%	45%
North West	20%	30%	29%	21%	50%
Yorkshire & Humber	27%	39%	24%	10%	34%
East Midlands	32%	31%	26%	11%	37%
West Midlands	28%	36%	25%	11%	36%
East of England	28%	32%	28%	12%	40%
South East	32%	31%	23%	14%	37%
London	18%	19%	30%	33%	63%
South West	29%	35%	29%	6%	35%
Northern Ireland	31%	20%	28%	22%	50%
Wales	37%	30%	25%	7%	33%
Scotland	34%	28%	26%	11%	38%
Total	27%	30%	27%	16%	42%

Table 2

Do you know what T levels are?

% of young people aged 11 to 19 who said they know that they know what T levels are

Region	% yes
North East	42%
North West	43%
Yorkshire & Humber	29%
East Midlands	33%
West Midlands	30%
East of England	35%
South East	34%
London	49%
South West	33%
Northern Ireland	29%
Wales	15%
Scotland	17%
Total	34%

Table 3

Question for young people aged 7 to 13: Do you know what subjects you would need to take next to become an engineer in the future?

Question for young people aged 13 to 19: Do you know what subjects or qualifications you would need to take next to become an engineer in the future? (age 13-19)

% of young people age 7 to 13 and 13 to 19 who answered yes

Region	Age 7-13	Age 13-19
North East	47%	43%
North West	47%	41%
Yorkshire & Humber	31%	32%
East Midlands	27%	39%
West Midlands	30%	30%
East of England	36%	33%
South East	25%	42%
London	69%	60%
South West	31%	34%
Northern Ireland	34%	56%
Wales	29%	33%
Scotland	33%	46%
Total	38%	41%

Table 4

How knowledgeable are you about the following education and training options available to your child after they finish compulsory schooling?

% of parents who said they were knowledgeable or very knowledgeable

Region	University	Apprenticeships	Vocational routes	Sample size
North East	56%	46%	47%	213
North West	57%	48%	49%	521
Yorkshire & Humber	51%	39%	37%	366
East Midlands	52%	45%	35%	291
West Midlands	50%	41%	38%	348
East of England	44%	39%	37%	323
South East	44%	41%	39%	498
London	73%	62%	61%	570
South West	41%	33%	33%	334
Northern Ireland	56%	33%	33%	131
Wales	42%	35%	34%	115
Scotland	49%	32%	29%	203
Total	52%	43%	41%	404

Table 5

Question for young people aged 7 to 13: Do you know what subjects you would need to take next to become an engineer in the future?

Question for young people aged 13 to 19: Do you know what subjects or qualifications you would need to take next to become an engineer in the future?

% young people aged 7 to 13 and 13 to 19 who said yes

	age 7-13	age 13-19
no degree	26%	30%
degree	52%	57%
household income <£40k	30%	35%
household income £40k+	54%	52%

Table 6

How knowledgeable are you about the following education and training options available to your child after they finish compulsory schooling?

% of parents who said they were very knowledgeable and knowledgeable by household income

	<£40k	£40k+
University	44%	67%
Apprenticeships	39%	51%
Vocational or technical education	37%	51%

Table 7

If you were going to pursue a career in engineering, which of the following routes would you be most likely to consider?

% of young people most likely to consider specified routes into engineering based on their parents' education/income

	Parent education		Parent income	
	no degree	degree	income <£40k	income £40k+
A vocational route	35%	22%	32%	25%
An academic route	25%	38%	28%	35%
A combination of the two	19%	27%	20%	27%
Not sure or no preference	21%	13%	20%	13%

Table 8

Do you know what T levels are?

% of young people aged 11 to 19 who said they know what T levels are by parental education level/
household income

	% agree
no degree	28%
degree	43%
income <£40k	31%
income £40k+	43%