EngineeringUK's written evidence to the Education Committee Inquiry on CEIAG

1. About EngineeringUK

EngineeringUK is a not-for-profit organisation, which works in partnership with the engineering community and engineering employers to inspire tomorrow's engineers and increase the number and diversity of young people choosing academic and vocational pathways into engineering via programmes designed to excite young people about the variety and opportunity presented by a career in modern engineering**.** We also undertake research and work with partners in the engineering sector to inform government thinking in relation to the educational pipeline into engineering, and what systems, structures and funding need to be in place to enable all young people to decide whether a career in engineering is for them.

2. About this response

This response should be read in conjunction with the joint response submitted to this inquiry by EngineeringUK together with Careers England, Campaign for Science and Engineering, Careers Development Institute, Engineering Professors' Council, Institution of Civil Engineers, Institution of Engineering and Technology, Institution of Mechanical Engineers, The Royal Academy of Engineering. We would be happy to brief the committee on the evidence mentioned in this response in more detail. In the meantime, we have outlined our policy recommendations below alongside some of our key research findings.

3. Key points and policy recommendations

The policy recommendations below build on the findings from the 'Securing the future[1]' report as well as EngineeringUK's 'Engineering Brand Monitor' and 'Levelling up engineering skills' briefing and hope to bring us a step closer to opening up STEM, and engineering careers specifically, to a more diverse group of young people. They are designed to enable a whole school / whole college approach to careers provision that will ensure that teachers and careers leaders are able to complement the work of impartial and professional careers advisers, who should be available to all schools and colleges, enabling young people to experience and get inspired by the world of work.

We need a new cohesive and ambitious government vision for careers provision in schools, with the funding to make it happen and employers linked into all schools and colleges around the country to address the fact that:

- One in five young people have not taken part in any careers activities in the past 12 months.
- Just two in five young people said they know what subjects or qualifications they would need to take next to become an engineer.
- Over a quarter of young people said they were not knowledgeable at all about the different apprenticeship options available to them.
- The majority of young people did not know what T levels are.[2]

Not addressing these issues risks limiting STEM employment opportunities for young people at a time when the UK needs scientists, technicians, technologists and engineers more than ever. This is why we at EngineeringUK recommend the following:

[1] EngineeringUK. 'Securing the future: STEM careers provision in schools and colleges in England', June 2021.
[2] Findings from the Engineering Brand Monitor by EngineeringUK (due spring 2022)

1. We ask the government to urgently publish **a new careers strategy** for England.
2. We ask that **careers hubs** are rapidly expanded to cover all secondary schools in England.
3. We recommend that there is a **dedicated STEM leader** within each careers hub.
4. We recommend that government provide additional funding of at least **£40 million** to support careers activities in schools.
    - around £30 million annually to ensure that schools are better resourced to support all young people with their careers choices.
    - £3.5 million annually to pay for STEM leaders in careers hubs.
    - £10 million annually for a 'STEM Diversity Fund'.
5. We ask that the government urgently develops a fully funded **digital learning strategy** for schools.
6. We ask that the government **embeds careers** into the subject content of **the STEM curriculum** and ensures that it highlights the diverse range of roles and people in science and engineering.
7. We ask that **teacher training and continuous professional development** includes information and training on STEM careers, including careers in modern engineering.

In addition, we would like to see employers and the wider STEM community support schools and colleges by:

- working to promote engineering as an inclusive and diverse environment.
- having sustained and targeted engagement with, and ongoing investment in, STEM careers provision in schools and colleges across the country, to showcase the breadth of jobs available in the sector
- build on this and develop ongoing relationships with schools in their area in order to support careers advisers and educators.

4. STEM careers provision in schools and colleges and why it matters

At EngineeringUK we believe that supporting young people to make informed careers choices and equipping them with the skills, experience and opportunity to implement those choices is a win-win situation. It ensures that young people can take up the employment opportunities on offer for example in the engineering sector. At the same time, it secures the future workforce needed to achieve the government's ambitions around net zero, economic growth, science superpower and levelling up.

Research conducted by EngineeringUK clearly shows that young people who know more about what engineers do are more likely to perceive the profession in a positive way and to consider a career in engineering[3]. The research also shows that STEM outreach and education activities is linked to careers aspiration. Pupils who had attended any (one or more) STEM careers activity, were 3.5 times more likely than those who hadn't attended any to know about what people working in engineering did. They were also 3.4 times more likely than those who hadn't attended a STEM careers activity, to consider a career in engineering[4].

There is no doubt that progress has been made in developing careers programmes in line with the Gatsby benchmarks and with the support of the Careers and Enterprise Company (CEC) and many hundreds of organisations and employers. However, our research suggests that many schools are still struggling to deliver comprehensive careers provision, including STEM careers education, information, advice and guidance. EngineeringUK, together with a range of leading bodies in the fields of STEM and careers, published a report in 2021[5] drawing on **findings from a survey of around 200 teachers and careers leaders in secondary schools and colleges in England** as well relevant literature and evidence. The report examines the ability of schools and colleges to make STEM careers learning available to students in light of the pandemic and beyond, and highlights the particular barriers experienced by young people currently under-represented in the engineering sector in accessing such provision.

[3] EngineeringUK 'Engineering Brand Monitor', 2020
[4] ibid
[5] EngineeringUK. 'Securing the Future: STEM careers provision in schools and colleges in England', June 2021.

In order to be effective in supporting young people's choices and pathways, careers education needs to start early and be maintained continuously, building incrementally, throughout education. For example, in order to study Engineering at degree level, while level 3 Maths and Physics are not required, they are useful and a good predictor of both interest and success. While most sixth form provision offers Maths, the same is not true of Physics. Timely careers interventions might support choices about education providers and courses at level 3 that would mitigate the number of students leaving schools without the qualifications to pursue an engineering career. There is a similar issue at level 2 because of the advice about and availability of 'triple science' GCSEs. This is sometimes seen a supply-side issue (availability of teachers and facilities). However, it is also a demand-side issue in that if young people better understood the careers options that are opened by opting for triple science, schools would be more inclined to direct the necessary resources.

5. Research insights

5.1 Engineering Brand Monitoring Survey – CEIAG insights

In addition to the Securing the future report, EngineeringUK is also able to draw on the Engineering Brand Monitor (EBM) to evidence the need for STEM careers provision in schools and colleges. The EBM survey is an annual publication which asks young people aged 7 to 19, parents and STEM secondary school teachers about their perceptions, understanding, and knowledge of STEM and engineering. Outlined below are some of the key findings in advance of our next EBM publication (due in Spring 2022).

Young people – key findings

- One in five young people had not taken part in any careers activities in the past 12 months.
- Just two in five young people said they know what subjects or qualifications they would need to take next to become an engineer.
- Over a quarter of young people said they were not knowledgeable at all about the different apprenticeship options available to them.
- The majority of young people did not know what T levels were at all.
- Higher proportions of young people who had engaged with careers activities said they know about the different types of things engineers can do. Just 36% of young people who chose 'none of the above' in the list of careers activities (which included 'other') said they knew what engineers can do in their jobs.

Parents – key findings

- Parent engagement with STEM careers activities was strongly associated with their child's interest. 70% of young people whose parents felt it was important that their child engages with STEM activities outside of school, and 78% of young people whose parents said they regularly do STEM activities with their child, said they were interested in a career in engineering.
- Of those young people whose parents disagreed that they know what engineers can do in their jobs, just 31% said they were interested in a career in engineering, compared to 66% of young people whose parents knew what engineers could do.
- 79% of young people whose parents were confident giving careers advice in engineering said they know what engineers do, compared to just 33% of young people whose parents were not confident. Nearly 9 in 10 young people whose parents said they were confident giving their child advice about careers in engineering said they were interested in a career in engineering.

Teachers – key findings

- Through the EBM Teachers Survey[6], we were encouraged to find that 85% of teachers agreed that it was part of their role to help students understand what STEM careers they could pursue, with just 6% indicating that careers outreach was not relevant for them and their students.

[6] https://www.engineeringuk.com/media/286250/euk2708-teachers-report-fv.pdf

- We also asked teachers their opinions on the opportunities they have within the curriculum to link information about careers into their lessons and 59% agreed that they do have the opportunity to do so. Around three quarters of teachers (73%) agreed that their school supports students to develop the skills they would need to pursue engineering if they wanted to.
- When asked to what extent they agreed they know what engineering careers outreach was available to them and their students, just **29%** agreed or strongly agreed and **43%** disagreed or strongly disagreed.

5.2 Levelling up engineering skills - the regional dimension and CEIAG

EngineeringUK recently published a briefing entitled 'Levelling up engineering skills: widening opportunities for young people'[7]. This publication delves deeper into some of our Engineering Brand Monitor (EBM) survey results with a specific focus on regional variations (within England) – looking, for example, at how knowledge of vocational pathways into engineering varies geographically. Key findings include:

- **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 lowest of all English regions.
- Young people in London were most likely to know what T levels are (**49%**). Young people in Yorkshire and the Humber were least to know what T levels are (**29%**).
- 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%**).

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 where they live should not hold them back. The briefing poses a series of questions in the context of the government levelling up white paper including: 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? What steps are the government taking to increase investment in CEIAG in schools and colleges? How will government departments work together to ensure an integrated approach on areas like skills, careers provision and future workforce planning?

5.3 Key findings from 'Securing the future' report

Schools and colleges which took part in our research reported experiencing various challenges with delivering comprehensive careers provision to young people. **70%** of respondents said that **lack of staff time** was a barrier to delivering STEM careers provision. **46%** of respondents said that '**lack of funding** for STEM careers provision' affected their school's ability to deliver STEM careers provision. We were interested to see many of the same themes echoed by the Sutton Trust in their recent report 'Paving the Way'[8] which also highlights time and funding as two of the key barriers facing schools in delivering effective careers support.

When asked how, if at all, the Covid-19 pandemic has caused challenges for careers provision at their school, **91%** of respondents said, 'lack of opportunity to organise in-person visits' and **86%** selected 'lack of opportunities to organise work experience'. A further **76%** told us that it had become 'more difficult to engage with employers' and **49%** of respondents said that pupils not being able to access online or virtual careers provision due to lack of technology or internet at home was a barrier.

Insights from our survey suggest that for a variety of reasons many schools and colleges offer STEM careers education as an extra-curricular activity, with participation being optional and for a small group of

[7] EngineeringUK. 'Levelling up engineering skills: widening opportunities for young people', 2022.
[8] The Sutton Trust. 'Paving the Way: Careers Guidance in secondary schools', March 2022.

pupils rather than available to all. Some schools and colleges taking part in our research highlighted the potential issues associated with offering 'opt-in' STEM careers activities, which can tend to attract those pupils with an existing interest in STEM.

Diversity and Inclusion

It is more important than ever that the engineering sector is able to attract a diverse range of young people into the profession. Yet most recent data suggest this still presents a huge challenge with, for example, only 16.5% of engineering roles currently undertaken by women[9], just 24% of those working in engineering coming from lower socio-economic backgrounds[10] and only 10% of those in engineering occupations being of minority ethnic heritage compared with 13% of the total labour force. Good careers provision is one important part of the puzzle to opening up STEM and more specifically engineering roles to a more diverse group of young people. However, our 'Securing the future' report highlighted a variety of barriers[11] to accessing STEM careers provision in schools for young people from groups currently underrepresented in STEM sectors, which need to be addressed:

- **Lack of awareness of STEM careers provision available** - It was clear that respondents also felt more could be done to promote STEM careers provision to diverse groups, with a lack of awareness of what was available featuring in the top five reported barriers to the participation of pupils with SEND (38%), from lower socioeconomic backgrounds (37%), or minority ethnic backgrounds (30%).
- **Role models** - The most frequently cited barrier for girls (at 46% respondents) and pupils from minority ethnic backgrounds (38%) is the lack of visible role models. 38% of respondents also reported a lack of role models to be a barrier for pupils with special educational needs and disabilities (SEND) and a third said the same for pupils from lower socioeconomic backgrounds.
- **Understanding of STEM careers** - A limited understanding of what STEM careers could entail ranked in the top 5 barriers for all groups, with more than two in five respondents perceiving this to be the case for pupils from lower socioeconomic backgrounds (45%) or with SEND (44%) and just over a third for girls or boys from minority ethnic backgrounds (34% respectively).
- **Confidence and encouragement** - A lack of confidence in their abilities to pursue relevant pathways into STEM careers was commonly cited by respondents as a barrier to participation in STEM careers provision for certain groups. Almost half of all respondents (48%) said that this was the case for young people with SEND, 46% said this in relation to young people from lower socio-economic backgrounds and 39% about girls.
- **Unique barriers** - Although a number of barriers were felt to be challenges to the participation of girls, pupils with SEND, or those from lower socioeconomic or minority ethnic backgrounds alike, respondents also identified particular challenges for certain groups. For example, 39% reported the perceived cost of pursuing pathways into STEM careers to be a barrier for pupils from lower socioeconomic backgrounds taking up related careers provision opportunities, and a similar proportion noted perceived difficulties in physical accessibility of STEM careers to be a barrier for those with SEND (38%).

6. Does the Skills for Jobs White Paper effectively address CEIAG?

The government's previous careers strategy (and associated action plan) came to an end in 2020. The Skills for Jobs white paper offers only limited insights into what the government wants to do next to support careers provision in schools and colleges. It contains no information about the funding that will be made available for careers provision in schools, nor does it provide any timelines for delivery and there is no detail about STEM specific careers provision and the government's plans to improve this across all secondary education.

[9] EngineeringUK, 'Trends in women in engineering', February 2022.
[10] EngineeringUK. 'Social Mobility in engineering briefing', 2018.
[11] All findings are taken from EngineeringUK, Securing the future: STEM careers provision in schools and colleges in England, 2021.

Much has changed since the previous government's careers strategy was developed in 2016-17. The way young people learn and engage with their future options has evolved. The world of work too has had to adapt, and the policy landscape has witnessed significant changes including reforms to post-16 education. A new careers strategy could help to prioritise careers support for young people across key departments, setting out a clear future path to resourcing effective CEIAG in all schools and colleges and knitting together several strands of current policy more effectively. For example, it is important that CEIAG is a central feature of the **DfE's sustainability and climate change strategy.** With a commitment to a **Future Skills Unit**, as outlined in the levelling up white paper there may also be opportunities to develop greater connectivity between careers delivery and workforce skills planning – a wider issue highlighted by the House of Lords Youth Unemployment Committee[12]. Rapid growth areas can and do emerge quickly in sectors such as engineering. In this context it is worth remembering the inevitable time-lag between first engaging young people about STEM career possibilities and ultimately employing them. The newly established **Future Skills Unit** could be well-placed to consider these issues further.

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[12] House of Lords Youth Unemployment Committee. 'Skills for every young person', November 2021.