

# Our careers, our future

STEM careers provision and young people



## Foreword

**At EngineeringUK we work in partnership with the engineering community to inform and inspire young people and grow the number and diversity of tomorrow's engineers. It is our ambition to help young people understand what engineering is and what they need to do to be able to access the educational and training initiatives that will enable them to move into an engineering career. We work with employers, schools and the wider engineering community to create events and opportunities that allow young people to meet the engineers of today, in the hope of motivating them to become the engineers of tomorrow.**

Engineering, manufacturing and technology provide a breadth of exciting careers that will be at the heart of rebuilding the UK economy post Covid-19. Many thousands of engineers will be needed in new jobs in infrastructure, decarbonisation and maintenance projects to upgrade our hospitals, schools and road network, make public buildings greener and help the UK achieve its aspirations of achieving Net Zero by 2050.

We have welcomed the focus on careers education, information, advice and guidance across the UK over the last few years, which we believe is a vital part of education as a whole. Having a clear strategy to improve young people's understanding of what the world of work looks like, bringing to life subjects such as maths and science, means that young people will be able to make informed decisions about their future.

With young people trying to navigate a post-pandemic, post-Brexit education and training landscape, we believe that now more than ever, they will need support in building their capabilities and insights into different careers. This is why we want governments across the UK reviewing and refreshing their careers strategies to ensure that young people have the opportunity to learn about STEM careers and the variety of educational pathways into them.

This report is intended to provide a starting point for discussion about what's next for careers strategies and in particular careers information, advice and guidance related to STEM. It offers insight into how young people see current provision, and the impact it can have, as well as an overview of what has and has not worked well in relation to delivering advice and guidance in schools. It raises questions as to what more needs to be done to ensure that formal STEM careers provision is made available to all, particularly those from lower socioeconomic backgrounds, minority ethnic students and girls, whom we know are often less likely to access formal provision or less likely to go into engineering, or both.

Engineering is a varied, stimulating and valuable career and we need to guarantee that it is accessible for today's young people – both for their own life chances and to create a diverse and insightful workforce that enables the UK to thrive. Ensuring that young people across the UK, whatever their gender, ethnicity or socioeconomic background, are aware of the opportunities that exist in this sector is a vital part of this effort.



A handwritten signature in black ink that reads "Hilary Leever".

**Dr Hilary Leever**  
**Chief Executive,**  
**EngineeringUK**

## Executive summary

**This briefing provides an overview of young people's experiences and perspectives on careers provision, including their access to careers activities since school closures in March 2020, drawing on the most recent results from EngineeringUK's Engineering Brand Monitor (EBM) and Young People and Covid-19 Survey. It summarises current provision of careers education in schools and colleges, evidencing gaps in access and quality.**

**In doing so, it highlights the importance of engineering and STEM careers provision in the context of the pandemic and rapidly changing economic, technical and social environment. Uncertainty about their future has already affected young people's educational and career aspirations and it is ever more important that their opportunities to learn about and pursue educational and career pathways into engineering are made more accessible and equitable.**

## The importance of careers provision for engineering

Knowledge of engineering among young people remains limited and often distorted by negative perceptions and gendered stereotypes of who can be an engineer. These perceptions can be detrimental for young people, especially those underrepresented in the sector, who do not see engineering as an option that is open to them. For example, girls remain less likely to find engineering appealing and less likely to say they would choose a career in it.

- 33% of girls age 11 to 19 found engineering appealing, compared to 61% of their male peers.
- 24% of girls age 11 to 19 said they would be likely to choose a career in engineering, compared to 44% of their male peers.

There is a clear link between knowledge of engineering and the extent to which young people would consider a career in the profession. Young people who know a lot about engineering are far more likely to consider it as a possible job, highlighting the importance of improving engineering careers provision among young people.

- 82% of young people aged 11 to 19 who said they knew quite a lot or a lot about engineering would consider a career in the sector (compared to just 40% of 11 to 19 year olds who reported not knowing a lot about engineering).

STEM careers activities play an important role in improving knowledge of engineering, with participation in such initiatives found to increase the chances of considering a career in the sector.

- After controlling for gender and enjoyment of STEM subjects, young people aged 11 to 19 who attended a STEM careers activity in the past 12 months were 3.5 times more likely to know 'quite a lot' or 'a lot' about what engineers do and 3.4 times more likely to consider a career in engineering (compared to those who had not attended a STEM career activity).

## Current provision

Renewed effort to improve STEM outreach is especially important given the context of current careers provision. While progress has been made in this area, gaps remain in terms of the access to and quality of the information, advice and guidance that young people receive in schools and colleges. In addition, careers provision overall continues to be underfunded. Research by ASPIRES 2 suggests that that careers provision in England is 'patterned' around social inequalities, as students who are most in need are least likely to receive careers education.

- 15 to 16 year old boys in Year 11 were 1.3 times more likely to receive careers guidance than girls.
- Compared to Year 11 students (aged 15 to 16) from most disadvantaged social backgrounds, those from most advantaged social backgrounds were 1.5 times more likely to receive careers education.

Further, findings from Youth Employment UK suggest the information, advice and guidance that young people receive about educational and career options varies depending on their gender, race, eligibility for free school meals or additional needs.

These findings are critical to consider in reviewing careers provision, raising questions on the availability of relevant and sufficient funding for schools and of the right support, training and resources for career leaders to implement an equitable career plan for their students. For STEM specifically, it is necessary to understand the support teachers and career leaders could receive to address narrow perceptions and gendered stereotypes of STEM.

## Careers provision in the context of the pandemic

Concerningly, since school closures in March 2020, over three quarters of 11 to 19 year olds have not accessed formal careers activities. Young people who did not participate in careers related activities have turned instead to parents and online resources for support – yet we know from our research that parents, especially those with lower socioeconomic backgrounds, have limited knowledge and confidence in giving careers advice on engineering. This suggests that young people may be missing out on impartial and high-quality careers information, advice and guidance.

- 76% of young people had not taken part in any formal careers activity, such as a careers guidance session or an online work experience since March 2020.
- 37% of 11 to 19 year olds stated they 'discussed my career options with my parents' and 23% 'searched for careers information online'.
- Among parents from lower socioeconomic backgrounds, 23% knew what engineers do and 27% felt confident in giving engineering careers advice (compared to 43% and 46% respectively among parents from higher socioeconomic backgrounds).

It is critical that we address these challenges in access related to the pandemic. While teachers, employers and STEM outreach providers have adapted and developed innovative solutions to continue engaging young people, these have often relied on digital resources and virtual experiences. However, with over a fifth of the UK population affected by digital exclusion (22%), it is possible such delivery can exacerbate inequalities already present.

Yet while the pandemic has brought with it many challenges, it also represents an opportunity for the engineering sector to engage and attract more young people to the engineering talent pool. Our findings show that the pandemic has affected the factors young people consider in making career choices, elevating the importance of security and availability of jobs, as well the extent to which a particular profession would enable them to make a positive societal contribution.

- When considering career choices, 'having a job that you can be certain you can keep' (44%), 'availability of jobs' (41%), 'having a positive impact on society' (36%) and 'helping people with the work you do' (34%) have become more important among 11 to 19 year olds since the pandemic.

It is important that the engineering community renews its efforts to provide information on the variety of careers within the sector, the transferability of skills and the security of engineering roles – highlighting also the benefits that engineering can contribute to making a difference in society.

## Suggested improvements

When asked what could help them to better understand the careers they were interested in pursuing, the 11 to 19 year olds taking part in our Young People and Covid-19 Survey indicated they would benefit from more employer encounters and greater information on what career options were available to them and what subjects and qualifications these required.

- They were interested in learning about opportunities and engaging with employers directly to gain 'real experiences' of what their career of interest looked like (19%), for example through work experiences, job fairs or visits to businesses.
- They wanted clarity on different pathways into various professions (15%) and more support in understanding the qualifications and exams that would enable them to pursue their career of interest (4%).

Considering young people's perspectives and experiences of careers provision, alongside wider research, it is clear that there is much work to do in order to ensure all young people, regardless of their background, have accurate and compelling engineering careers information, advice and guidance. In particular, our research highlights the need for government, educational institutions and the broader STEM community to:

- **Leverage employer encounters and experiences with the world of STEM work**, actively challenging narrow perceptions of the field and gendered stereotypes
- **Tailor careers information, advice and guidance for different age groups**, linking this to the current educational stages of students and facilitating access to careers education, including engaging with STEM employers, from an earlier age
- **Provide training and support for parents, carers and teachers**, who have an important role to play in influencing the career trajectories of young people, but all too often possess limited personal connection with science and limited knowledge or skewed perceptions of engineering
- **Provide information on the variety of pathways into engineering and next steps for students** to make sure every young person, regardless of background, is aware of the many opportunities to pursue a career in the profession and is able to see them as possibilities
- Given the pandemic, government, educational institutions and the STEM community must consider what additional resources will be made available to improve access to careers education, and how to **reach young people from disadvantaged backgrounds who may be less able to access digital careers provision**.

## Introduction

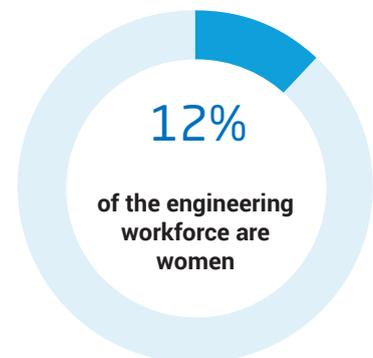
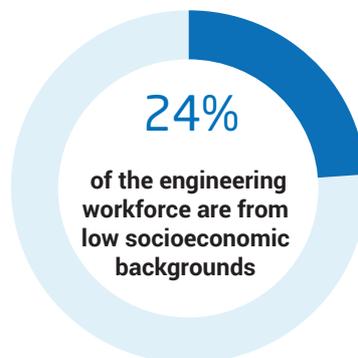
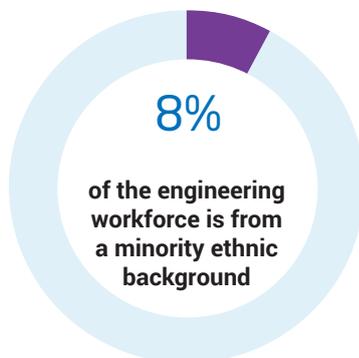
The critical need to address the UK's STEM skills gap and lack of diversity in associated industries has long been recognised as a priority.<sup>1</sup> Only 8% of the engineering workforce is from a minority ethnic background (compared to 13% of the population); 24% are from low socioeconomic backgrounds<sup>2</sup> and only 12% are women.<sup>3</sup> These inequalities are not only present but often worsen as careers progress. For example, in STEM-based careers, just 13% of roles at a managerial level are held by women.<sup>4</sup> Further, women, ethnic minorities and those from disadvantaged backgrounds are significantly underrepresented at senior levels within STEM sectors.<sup>5</sup>

Increasing the number and diversity of young people pursuing STEM is seen as a key way not only to fill the STEM skills gap<sup>6</sup> but also to foster greater innovation and creativity<sup>7</sup> – and, in doing so, tackle the societal and environmental challenges that we face and realise the government's 'levelling up' agenda and vision of becoming a scientific superpower.

Since 2015, careers strategies across the UK have committed to provide better careers education. However, relative implementation has been criticised for being patchy and

inconsistent.<sup>8</sup> To lessen inequalities as well as to develop the necessary talent pool for STEM careers, there have been calls to do more to ensure both equality and equity<sup>9</sup> in accessing quality careers education.<sup>10</sup>

With current careers strategies in all constituent nations of the UK with the exception of Scotland coming to an end in 2020, this is a key moment to reflect on the experiences and views of young people in terms of careers provision and identify where improvements can be made going forward. This is especially important in the context of significant change and uncertainty – with the Covid-19 pandemic in particular, together with the UK's exit from the European Union and the rapid technological development which is shifting the economic, political and societal landscape. Now more than ever, young people need access to high quality careers provision, including via STEM outreach activities, to help them navigate this complex landscape and make informed educational and career decisions for their future; decisions which will also be vital for the economic recovery of this country.



<sup>1</sup> National Audit Office. 'Delivering STEM (science, technology, engineering & mathematics) skills for the economy', 2018.

<sup>2</sup> Source: Warwick Institute for Employment Research and Cambridge Econometrics. 'Working Futures 2014 – 2024', 2016.

<sup>3</sup> EngineeringUK. 'Gender disparity in engineering', 2018.

<sup>4</sup> Sundorph, E. 'Missing elements: why 'STEMinism' matters in the classroom and beyond', 2020.

<sup>5</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on equity in STEM education', 2020.

<sup>6</sup> EngineeringUK. 'Social mobility in engineering', 2018.

<sup>7</sup> Ibid.

<sup>8</sup> EngineeringUK. 'Educational pathways into engineering', 2020.

<sup>9</sup> Equality and equity are two concepts linked to 'fairness' that are often thought to mean the same thing and used interchangeably but the two terms have important distinctions. Equality is about ensuring that everyone has the same opportunities and receives the same treatment and support regardless of personal characteristics or circumstances. Equity is about ensuring that everyone can achieve the same outcomes regardless of personal characteristics or circumstances. It requires taking into consideration historical and current differences in dynamics related to power, access, opportunities and treatment for underrepresented or disadvantaged groups. Achieving equity requires deliberate measures, such as the creation of opportunities, removal of barriers and redistribution of resources, in order to reduce outcome gaps for those underrepresented or disadvantaged groups.

<sup>10</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on equity in STEM education', 2020.

## About the data

The findings presented in this briefing are derived from two main sources of data:

### **EngineeringUK Young People and Covid-19**

**Survey, 2020:** In June 2020, EngineeringUK commissioned Ipsos MORI to carry out an online panel survey of over 1,100 young people aged 11 to 19 across the UK. The aim of the survey was to find out about their attitudes towards STEM and the degree to which their educational and career aspirations have been affected by the pandemic. Fieldwork took place between 30 June and 9 July 2020. Data in this survey has been weighted by gender (male and female), age groups (11 – 13; 14 – 16; 17 – 19), and region. With regard to gender and age, responses have been given equal weight (50% for each gender and 33.3% for each age group), preventing data being skewed towards responses from one gender or age category. To weight the survey responses by region, each region was assigned a target weight that is equal to regional population in the UK. For example, we know that 4% of the UK population lives in the North East, so the data in the survey reflects this, and, after weighting has been applied, responses from young people from the North East make up 4% of total responses.

### **EngineeringUK Engineering Brand Monitor (EBM),**

**2019:** The EBM is a repeated cross-sectional online panel survey. The annual survey asks young people aged 7 to 19, members of the general public and STEM secondary school teachers about their perceptions, understanding and knowledge of STEM and engineering. Fieldwork for the 2019 survey took place between January and March, with a total sample of over 5,000 across the UK, of which around 1,900 were young people aged 11 to 19. Post-hoc weighting based on known characteristics of the population drawn from Office for National Statistics estimates was used to make the pupil and public surveys nationally representative.

## Terminology

There are important distinctions to keep in mind between 'careers education' and 'careers information, advice and guidance'. This briefing uses the following definitions:

**Careers education** refers to the delivery of curriculum-based programmes aimed at helping young people develop knowledge about careers and professional skills in order for them to make informed decisions about their future,<sup>11</sup> both in the short term (subject choice) or long term (career choice). Careers education is also closely related to opportunities to engage with employers and take part in experiences to learn directly from the world of work.<sup>12</sup>

**Careers information, advice and guidance** are often grouped together in discussions on careers. However, it is important to also note the differences among each element.<sup>13</sup> Careers information is the provision of resources and information regarding various occupations and career paths. Whereas, advice and guidance refer to more in-depth support, respectively further explanation of how to access and use careers information and counselling on career options that are best for an individual based on their interests and skills.

**Careers provision** or **STEM careers provision** will be used throughout the report as a broader term encompassing initiatives, activities and programmes aimed at supporting young people to learn about career opportunities and pathways to reach them. This broadly includes careers education, information, advice and guidance as well as STEM outreach activities that are aimed at supporting young people in their career choices.

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<sup>11</sup> CEC. 'The Careers & Enterprise Company toolkit' [online], accessed 03/09/2020.

<sup>12</sup> Business, Innovation and Skills and Education Committees. 'Careers education, information, advice and guidance', 2016.

<sup>13</sup> Ibid.

## The importance of careers provision for engineering

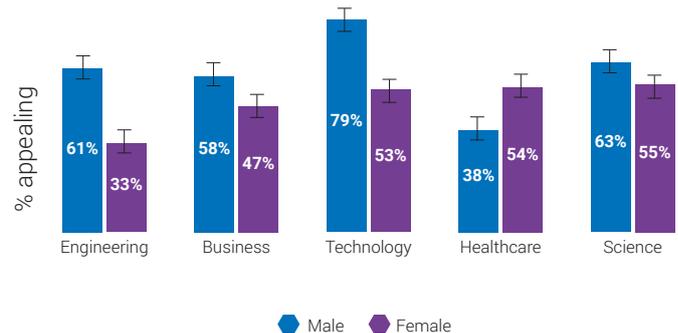
There are multiple, complex factors that enable or limit the pathways for young people into STEM, including, for example, limited knowledge or perceptions of engineering, subject choices and academic attainment, science capital<sup>14</sup> and key influencers (such as parents and teachers).<sup>15</sup> These factors broadly relate to young people's own capabilities, the opportunities they have access to and knowledge of, as well as their individual motivations.

There is a lack of knowledge about what engineering as a subject or job role encompasses. For example, among 11 to 19 year olds, almost half (47%) say they know little or almost nothing about what engineers do.<sup>16</sup>

Not only is knowledge limited, it is often distorted by negative perceptions of engineering, already formed at a young age,<sup>17</sup> as well as gendered stereotypes of who is (or can be) an engineer. STEM subjects are often considered as exclusively for clever people and as being 'more for boys and men'.<sup>18</sup> Engineering in particular tends to be viewed as being dirty, difficult or complicated.<sup>19</sup> These perceptions are particularly deterring for girls, who tend to have less confidence than their male peers in their own academic capabilities.

Findings from our Young People and Covid-19 Survey highlight that there continues to be a gender difference in the appeal (Figure 1) and likelihood (Figure 2) of girls pursuing a career in STEM, particularly in technology or engineering.

**Figure 1** Appeal of careers among 11 to 19 year olds by gender (2020) – UK



Source: Young People and Covid-19 Survey, 2020

Q. 'How appealing, if at all, would working in the following areas be to you?' Percentages represent the proportions reporting '3 – fairly appealing' or '4 – very appealing' on a 4-point Likert scale, with 1 representing 'not at all appealing' and 4 representing 'very appealing'. This figure includes confidence intervals, meaning the range of values that are believed to contain, with 95% probability, the true value.

Base: n = 1,131

## 47% of young people age 11 to 19 reported knowing little or almost nothing about what engineers do.

<sup>14</sup> The concept of 'science capital' was developed by Professor Louise Archer and colleagues from the ASPIRES (now ASPIRES 2) project in order to understand the underrepresentation of certain social groups in post-16 science and their perception of science being 'for me'. Science capital refers to the science-related knowledge, attitudes, experiences and resources one acquires in life.

<sup>15</sup> EngineeringUK. 'Educational pathways into engineering', 2020.

<sup>16</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

<sup>17</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

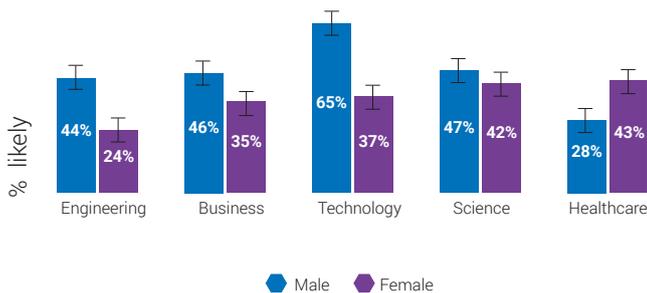
<sup>18</sup> EngineeringUK. 'Educational pathways into engineering', 2020.

<sup>19</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

Gender differences in the responses of young people between the age of 11 to 19 in the UK were significant across all the career options in **Figure 1** (engineering, business, technology, healthcare and science). As far as the least appealing career option, among girls it was engineering (which only 33% found appealing); whereas for boys it was healthcare (38%).

Similar gender differences were apparent when young people were asked how likely they would be to choose a career in these fields. Girls between the ages of 11 to 19 were less likely than their male peers to choose a career in almost all options in **Figure 2**. The only exception was for healthcare, as 43% of girls (compared to only 28% of boys) responded that they were likely to choose a career in this field. The biggest difference with regard to gender is in technology, with boys (65%) significantly more likely than girls (37%) to say they would opt for a tech-related career. Girls were also far less likely to choose a career in engineering compared to their male peers (24% and 44% respectively). Interestingly, as noted by the overlap in confidence intervals, the gender difference for science was not significant.

**Figure 2** Likelihood of career choices among 11 to 19 year olds by gender (2020) – UK



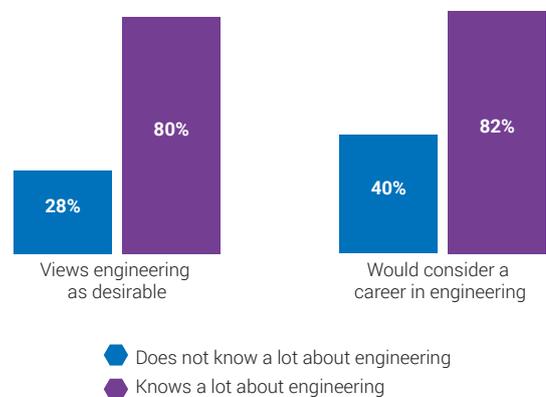
Source: Young People and Covid-19 Survey, 2020

Q. 'Thinking about your future, how likely or unlikely are you to choose a career in each of the following areas? Percentages represent the proportions reporting '4 – fairly likely' or '5 – very likely' on a 5-point Likert scale, with 1 representing 'certain not to' and 5 representing 'very likely'. This figure includes confidence intervals, meaning the range of values that are believed to contain, with 95% probability, the true value.

Base: n = 1,131

Knowledge of engineering has an important role in the consideration of it as a potential career.<sup>20</sup> Students who said they knew a lot about engineering were far more likely to view it as desirable and consider it as a possible career option (**Figure 3**). In fact, 82% of those who said they knew quite a lot or a lot about engineering would consider a career in engineering, compared with just 40% of those who did not report this level of knowledge. This finding does not necessarily indicate with any certainty that these students will pursue engineering as a career. Rather it highlights that knowledge about the sector allows them to consider it as a career option.

**Figure 3** Desirability of engineering and consideration of a career in engineering by knowledge of engineering among 11 to 19 year olds (2019) – UK



Source: EBM, 2019

Q: Desirability: 'How desirable do you believe a career in engineering to be?' Proportions presented represent the proportions reporting '4 – quite desirable' or '5 – very desirable' on a 5-point Likert scale, with 1 representing 'not at all desirable' and 5 representing 'very desirable'. Consideration of a career: 'Do you think you would ever consider a career in engineering?' Proportions presented represent the proportions reporting 'yes', with the options being 'yes' or 'no'.

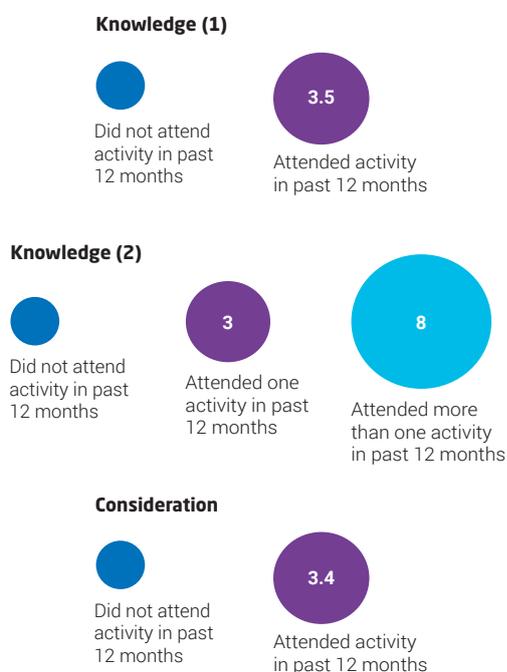
Knowledge of engineering: 'How much do you know about what people working in engineering do?' Young people 'know a lot' about engineering if they answered '4 – know quite a lot' or '5 – know a lot' on a 5-point Likert scale, with 1 representing 'know almost nothing' and 5 representing 'know a lot'.

Base: n = 1,912

<sup>20</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

Encouragingly, taking part in STEM related careers activities has the potential to impact young people's knowledge, views, desirability and capability of pursuing engineering as a career. Findings from the EBM showed that young people participated in these kinds of activities had a greater claimed knowledge and consideration of a career in engineering.<sup>21</sup> Controlling for gender and enjoyment of science, technology and maths at schools, students who did attend a STEM careers activity in the past 12 months were 3.5 times more likely to say they knew 'quite a lot' or 'a lot' about what engineers do and 3.4 times more likely to consider a career in engineering (compared to those who had not attended a similar activity) (Figure 4).

**Figure 4** Associations between attending STEM careers activity and knowledge of engineering, and consideration of a career in engineering among 11 to 19 year olds (2019) – UK



Source: EBM, 2019

This figure illustrates the outputs from logistic regressions to determine the association between attending a STEM careers activity. In all cases, we controlled for gender and enjoyment of science subjects at school.

The figures displayed in the larger bubbles represent the increased likelihood that a young person will have knowledge of engineering, or consider a career in engineering, dependent on whether they have attended one or more STEM career activities.

No single STEM outreach activity is likely to change the attitudes of young people, encouraging them to consider more seriously a career in engineering. However, EBM findings show that the number of activities young people took part in also made a difference in their knowledge of engineering. For example, after controlling for gender and enjoyment of STEM subjects, students who attended two or more activities were 8 times more likely than those not attending any activities to know 'quite a lot' or 'a lot' about engineering.

Improving knowledge of engineering through STEM careers activities can be a first step in developing capabilities, inspiring motivation and broadening the career opportunities young people consider in their decisions about the future. Early careers provision can be critical in supporting students in subject choices and decisions about future careers, especially considering the early specialisation of subjects in English schools.<sup>22,23</sup> Since engineering is not included in the national curriculum, early specialisation can be particularly detrimental for this subject.<sup>24</sup> Therefore, it is crucial that, alongside education, young people receive quality careers information, advice and guidance.

Not only is it important for young people to know about engineering opportunities for their future, they should also be informed and advised about the various pathways into a career in engineering. Further, the potential for longer-term impact can come from improved coordination throughout the engineering community to align STEM outreach and offer sustained engagement as part of broader careers provision.

**Young people who know a lot about engineering are far more likely to consider a career in the sector.**

<sup>21</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

<sup>22</sup> CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

<sup>23</sup> EngineeringUK. 'Educational pathways into engineering', 2020.

<sup>24</sup> Ibid.

## The need for STEM careers provision in the current context

It is a critical time to provide high-quality careers information, advice and guidance that empowers young people, regardless of their background, to make informed decisions about their education and careers. Given the evolving state of the world, uncertainty about the future – especially for young people – has become a characteristic of our times. Among the many consequences of the public health crisis, there will likely be ‘increased mental health or wellbeing concerns’, especially for the most vulnerable young people.<sup>25</sup> Additionally, in a recent survey for the Careers & Enterprise Company (CEC), nearly all teachers (98%) said that since lockdown their students have been anxious and uncertain about their future.<sup>26</sup>

At the same time, the pandemic has accelerated the fourth Industrial Revolution as societies and economies have relied more on technologies to address the changes brought by Covid-19.<sup>27</sup> Within a labour market that is transforming rapidly and likely to be affected further by Britain’s exit from the EU, now more than ever young people need up to date information on jobs and careers that are available and support in making decisions about their future. It is critical that they also receive advice and guidance on how to navigate the career landscape, especially as this kind of support has the potential to reduce the disconnect between young people’s aspirations and jobs available in the UK.<sup>28</sup> Thus, as current careers strategies come to an end in 2020 across most of the UK, future careers provision must take account of the changed environment it operates in.

With regard to skills and education pathways into engineering, the pandemic could potentially be limiting new talent accessing the sector, in part due to disruptions to the education system.<sup>29</sup> It is clear from the results of our Young People and Covid-19 Survey that the impact of the pandemic on their educational and career prospects is recognised by young people themselves.<sup>30</sup> In fact, 62% agreed that finding a job in the future will become more difficult because of the pandemic. Going to university or becoming an apprentice were also deemed to have become more difficult among 15 to 19 year olds, with 52% and 41% agreeing to the statements, respectively.<sup>31</sup>

## Changes to career considerations for young people

Our findings suggest that the pandemic has also affected young people’s career considerations, in particular elevating the importance of job security and availability of jobs (**Figure 5**), with 44% and 41%, respectively, indicating these factors to be more important to them when making career decisions than before the pandemic. Altogether, over one in five 11 to 19 year olds agreed that what they want to do as a career has changed (22%) and 30% agreed that what career they can do has changed, suggesting that the pandemic is affecting – and in some cases, constraining – young people’s careers aspirations.

That said, the degree to which the pandemic has affected young people’s career considerations appeared to vary by background and demographic characteristic. For example, girls were significantly more likely to consider having a job that you can be certain you can keep (50%) as an important factor, compared with boys (38%). There were also regional variations in young people’s concerns about career stability, suggesting that they are cognisant of how the economic downturn might impact on the opportunities available to them. For instance, young people in Greater London (51%) were more likely than those in the North West (36%) to say ‘availability of jobs’ had become more important to them as a factor in career choice since the pandemic, and young people in Greater London (68%) were more likely than those in the West Midlands (50%) to say ‘finding a job in the future has become more difficult.’ Further, young people in Wales (54%) were more likely than those in the South East (37%) to cite ‘having a job that you can be certain you can keep’ as more important due to the pandemic.

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**62% of young people agree that finding a job in the future has become more difficult due to the pandemic.**

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**25** UK Youth is a national charity working towards improving the lives of young people across the UK. Beyond concerns around mental health, they also rank (in order of importance) the following challenges they predict young people will face as a result of Covid-19: 2. Increased loneliness and isolation; 3. Lack of safe space – including not being able to access their youth club/ service and lack of safe spaces at home; 4. Challenging family relationships; 5. Lack of trusted relationships or someone to turn to; 6. Increased social media or online pressure; 7. Higher risk for engaging in gangs, substance misuse, carrying weapons or other harmful practices; 8. Higher risk for sexual exploitation or grooming.

**26** CEC. ‘Workplace skills now more important than exam results in post-Covid jobs market say teachers’ [online], accessed 13/07/2020.

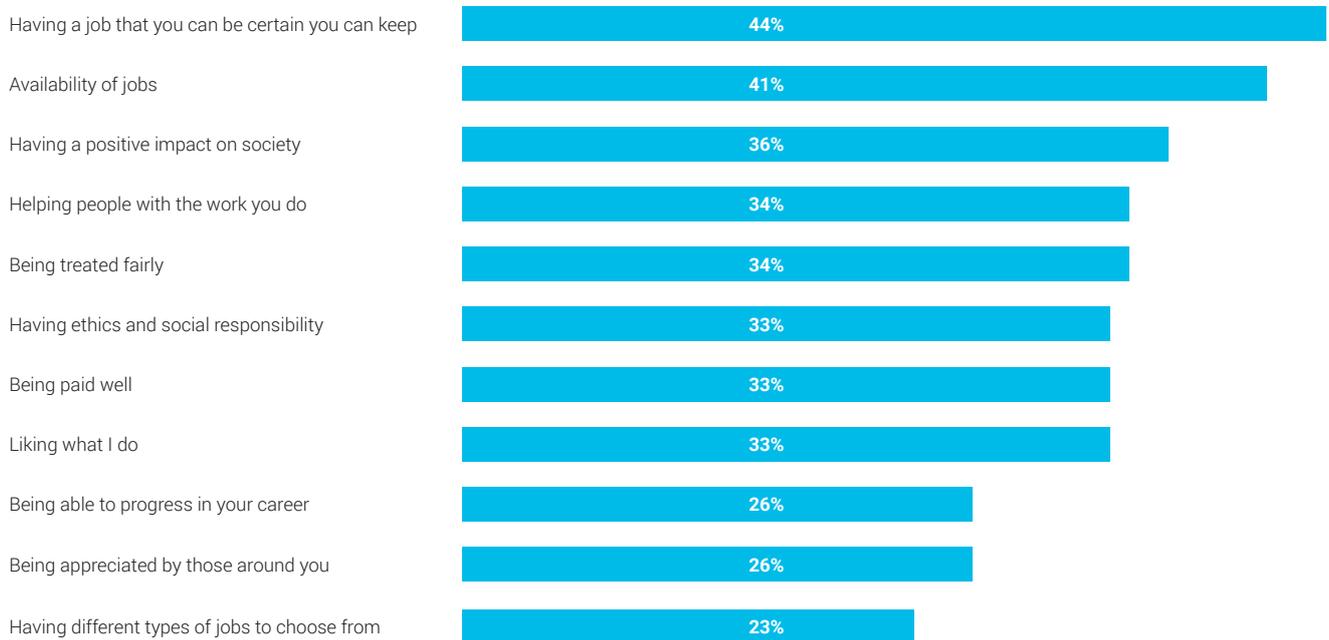
**27** The Economist Intelligence Unit. ‘Why coronavirus will accelerate the fourth industrial revolution’ [online], accessed 03/07/2020.

**28** Education and Employers. ‘Disconnected: career aspirations and jobs in the UK’ [online], accessed 03/07/2020.

**29** Royal Academy of Engineering. ‘Meeting challenges from COVID-19’, 2020.

**30** EngineeringUK. ‘Young People and Covid-19’, 2020.

**31** Base: 541 respondents aged 15 to 19 in the UK.

**Figure 5** Factors considered more important since the pandemic among 11 to 19 year olds (2020) – UK

Source: Young People and Covid-19 Survey, 2020

Q: To what extent, if at all, have these changes made each of the following factors more - or less - important to you when considering career choices? Percentages presented are those who selected the option 'More important than before' for each factor, with other options being 'About the same as before', 'Less important than before' or 'Don't know'.

Base: n=1,131.

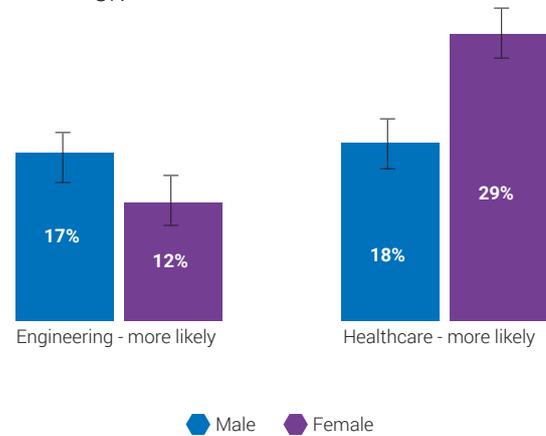
More encouragingly, however, our results also suggest that for some, the pandemic appeared to make it important to have a job that enabled them to make a positive societal contribution. Around one-third of respondents indicated that the pandemic had made 'having a positive impact on society' (36%), 'helping people with the work they do' (34%), and 'having ethics and social responsibility' (33%) more important now when considering career choices.

It is perhaps unsurprising, then, that we found increased interest among young people in careers that may be most immediately associated with these types of factors, with 24% of 11 to 19 year olds surveyed indicating the pandemic has made them more likely to choose a career in healthcare, for instance. However, our results suggest that the pandemic has not translated into a large upswing in the likelihood of young people choosing a career in engineering, with only 14% saying they were now more likely to choose a job in engineering (with 10% saying they would be less likely). Such a finding highlights the need to make young people more aware of the central role engineering has in helping people and society, including supporting the economy, building infrastructures and systems for mobility and healthcare to rely on.<sup>32</sup>

As a result of the pandemic, there was a net increase in interest for both science (22% said they would be more likely to consider a career in science due to the pandemic, compared to 9% who said they would be less likely) and technology (20% said they would be more likely to consider a career in technology due to the pandemic, compared to 8% who said they would be less likely).

Engineering was already less appealing to girls and they were less likely to pursue a career in this field. However, our findings highlight that these differences also worsened due to the pandemic, which is concerning for a sector that already has a poor record with regard to gender diversity. When asked to reflect on the career options and the impact the pandemic may have had on their choices (Figure 6), only 12% of girls said they were more likely to choose a career in engineering (compared to 17% of boys). However, girls (29%) were significantly more likely to say they would choose a career in healthcare as a result of the pandemic (compared to 18% of boys).

**Figure 6** Whether 11 to 19 year olds would be more likely to choose a career in engineering or healthcare as a result of the pandemic, by gender (2020) – UK



Source: Young People and Covid-19 Survey, 2020

Q Thinking about your career options, has the pandemic made you more or less likely, to choose a job in each of the following areas? Percentages presented represent the proportions answering 'More likely' (options 'A lot more likely to choose now than before the pandemic' and 'A little more likely to choose now than before the pandemic' on a 5-point Likert scale with the other options being 'About the same now as before the pandemic', 'A little less likely to choose now than before than pandemic', 'A lot less likely to choose now than before the pandemic' and 'Don't know'). This figure includes confidence intervals, meaning the range of values that are believed to contain, with 95% probability, the true value.

Base: n = 1,131

**36% of young people reported that, since the pandemic, having a positive impact on society has become a more important factor to consider in making career choices.**

<sup>32</sup> Royal Academy of Engineering. 'Meeting challenges from COVID-19', 2020.

Recent findings from academic researchers at Kings College London showed that gender differences had a very large effect on engineering aspirations from an early age – only 11% of 10 year old girls aspired to a career in engineering (compared with 44% of boys).<sup>33</sup> They also found that compared to the overall population of young people, young women who aspired to become engineers were especially confident in their academic abilities. These findings suggest that, to improve participation among girls, the engineering community could tailor STEM career initiatives at an early age and focus on supporting young people in building confidence in their own capabilities – especially given that girls are more likely to see engineering as ‘not for someone like me’.

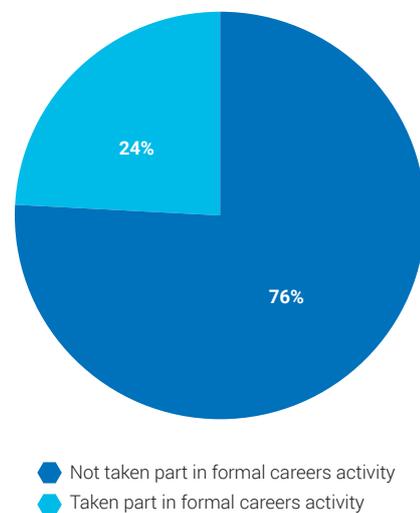
The growing interest in technology could also offer an opportunity for the engineering sector to show young people how engineering and technology are linked fields. In fact, the skills required for jobs within these sectors can be transferrable, which should be conveyed to young people when providing information and advice on various career opportunities and pathways. There is room for the engineering sector to work with schools and colleges to show the variety of jobs ‘in real life’. More importantly there is also interest from young people themselves who want to better understand their options. However, STEM outreach providers should particularly recognise the gender disparities and actively work to tackle them in order to support a more diverse talent pool for the sector.

Now more than ever, it is crucial for governments, employers and STEM outreach providers to support young people in navigating their options and guiding them in their transition into the workforce. Showing young people that engineering careers provide opportunities to bring about positive change in society through their contribution to combating the pandemic, for example, could resonate well with young people who want to make a difference. Similarly, by making clear that jobs requiring engineering skills are in high demand and are crucial for economic recovery, young people would realise that these jobs are likely to provide opportunities for long-term career stability.

## Access to formal careers activities since school closures

At a time when careers information, advice and guidance is ever more critical for young people, access to careers provision has been affected by the pandemic. Since school closures in March 2020, our findings show that just over three quarters (76%) of young people had not taken part in any formal careers activity, such as a careers guidance session or an online work experience (Figure 7).

**Figure 7** Participation in formal careers activities since March 2020 among 11 to 19 year olds (2020) – UK



Source: Young People and Covid-19 Survey, 2020

Q: ‘Since schools closed down in March 2020, have you taken part in any of the following?’

Percentages presented for ‘Taken part in formal careers activity’ include those that had claimed to have taken part in; ‘having an online careers advice session with someone from within or outside their school’, ‘taking part in work experience with an employer (either online or in person)’, ‘attending an online careers event with an employer, or another type of careers event (either online or in person)’.

Base: n = 1,131

It is imperative that young people who are not accessing formal careers activities are not left solely to rely on their own or their parents' knowledge of career options or access to resources, including, for example, knowledge of engineering or access to social networks and digital devices. Looking at the types of careers activities young people engaged in since March 2020 (Figure 8), the most frequently cited were discussing options with their parents (37%) and searching for careers information online (23%).

**Figure 8** Participation among 11 to 19 year olds in careers activities since schools closed down in March (2020) – UK



Source: Young People and Covid-19 Survey, 2020

Q: 'Since schools closed down in March 2020, have you taken part in any of the following?'

The percentages of each separate careers activity do not add up to 55% as young people were asked to select all careers they had considered pursuing (i.e. they could select more than one), or select 'none of the above'.

Base: n = 1,131

Even though none of the activity options showed significant differences between those from different social grades,<sup>34</sup> these results have implications related to social mobility. It is not surprising that out of the students who did take part in careers activities the majority discussed their options with their parents. Parents are one of the key influencers in young people's academic and career choices<sup>35</sup> however, findings from the EBM show that less than one-third of parents felt confident in giving careers advice regarding engineering, reporting they had low levels of knowledge about the field. Parents from lower socioeconomic groups were even less confident and knowledgeable (as further explored in the following section of the briefing).<sup>36</sup>

In the current climate, it is critical that young people, especially those from disadvantaged backgrounds, are provided with impartial, high-quality careers provision. Beyond challenges related to access to careers provision, learning from young people's perspectives can also be an opportunity for STEM sectors to improve how to tailor careers activities and support young people in translating interests into concrete career pathways. Making sure that these are evidence-based and tailored to young people, acknowledging diversities among them both in terms of their background and their access to resources.

## Provision of careers education

Alongside STEM subjects taught in schools, high quality careers education has the potential to be a complementary strategy in supporting young people, especially those underrepresented in engineering, to pursue a career in the sector. Growing evidence shows that careers guidance contributes to fuller knowledge and improved motivation, attitudes and aspirations.<sup>37</sup> Furthermore, more readily available careers advice has the potential to reduce inequalities related to STEM education.<sup>38</sup>

**34** Social grade is an occupation-based classification system that enables a household and its members to be classified based on the occupation of the Chief Income Earner (CIE). This is a widely used system derived from the British National Readership Survey (NRS). The six social groups include: 1 = A - Upper middle class; 2 = B - Middle class; 3 = C1 - Lower middle class; 4 = C2 - Skilled working class; 5= D - Working class; and 6 = E - Lower level of subsistence. For the purpose of analysing the results from our Young People and Covid-19 Survey, social grades were grouped into four categories: AB, C1, C2 and DE.

**35** EngineeringUK. 'Education pathways into engineering', 2020.

**36** EngineeringUK. 'Engineering Brand Monitor', 2019.

**37** Hanson, J. and Neary, S. 'The Gatsby benchmarks and social mobility: impacts to date', IAEVG, 2020.

**38** APPG on Diversity and Inclusion in STEM. 'Inquiry on equity in STEM education', 2020.

## Careers strategies across the UK

The role of careers education in addressing both the skills shortage and lack of diversity in STEM has been recognised by successive governments in both industrial and careers strategies over the last five years. However, with the exception of Scotland, careers strategies in all constituent nations of the UK are due to end in 2020.

### England

In December 2017, the Department for Education published the 'Careers Strategy: making the most of everyone's skills and talents', aimed at improving careers guidance in England.<sup>39</sup> The ambition of the policy is to improve social mobility by ensuring everyone, regardless of their background, has access to high quality careers advice. The careers strategy is built on four main areas of focus:

- Inspiring encounters with further and higher education, and with employers and workplaces
- Offering excellent advice and guidance programmes
- Providing support and guidance tailored to individual needs
- Using data and technology to help everyone make choices about careers

Based on these strands, an action plan was set out to be implemented by the end of 2020 in order to address the uneven distribution of careers advice across England. This included the intention for every child to have an encounter with an employer, including those from STEM industries, at least once a year for seven years.<sup>40</sup> The action plan also specified measures of progress towards excellent careers advice for young people (the 'Gatsby Benchmarks'<sup>41</sup>), as well as responsibilities for the Careers and Enterprise Company (CEC) to facilitate and monitor implementation of the strategy, for example by fostering collaboration between schools, colleges and employers.<sup>42</sup>

### Devolved nations

While the responsibility of providing careers education in England is in the hands of individual schools, colleges and local authorities, independent careers organisations

play this role in the devolved nations. In fact, private companies or charities in Scotland (Careers Scotland – part of Skills Development Scotland), Wales (Careers Wales/Gyrfa Cymru) and Northern Ireland (Careers Service Northern Ireland) all receive direct funding from their respective governments to provide independent careers services to schools.

### Scotland

In February 2020, Scotland published their 'Moving Forward' (2020)<sup>46</sup> careers strategy to tackle skills demands and direct inclusive growth. The government's plan is to align all careers, employability and skills support and services in order to implement a unified approach to tackle child poverty and providing lifelong careers advice. The new careers strategy aims to deliver high quality, personalised and appropriate support to individuals based on their needs, regardless of age, setting or circumstances.

### Wales

In 2017, Careers Wales (Gyrfa Cymru) developed a 'Strategic Vision' (2017 to 2020).<sup>43</sup> The aim is to prevent young people from being NEET<sup>44</sup> by increasing awareness and opportunities available via higher education, apprenticeships or trainings, and raising motivation and confidence in their personal skills. Their 'Career Discovery Model', in particular, is focused on providing digital services to support young people in key transition points in their education and to better understand the labour market.

### Northern Ireland

Northern Ireland's career strategy, 'Preparing for Success' (2015 to 2020)<sup>45</sup> aims to support young people by building the confidence and skills needed to make informed decisions about their career paths, enabling them to contribute to the communities they are part of and to participate in economic and social prosperity. This careers strategy is centred on delivering impartial careers advice and guidance especially with regard to key growth areas, including promoting STEM careers.

39 DfE. 'Careers strategy: making the most of everyone's skills and talents', 2017.

40 CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

41 In April 2014, the Gatsby Charitable Foundation released a report reviewing international best practices for careers guidance and set out benchmarks to outline good careers provision. The eight benchmarks are: 1. A stable careers programme; 2. Learning from career and labour market information; 3. Addressing the needs of each pupil; 4. Linking curriculum learning to careers; 5. Encounters with employers and employees; 6. Experiences of workplaces; 7. Encounters with further and higher education; and 8. Personal guidance.

42 Long et al., 'Careers guidance in schools, colleges and universities', 2020.

43 Careers Wales. 'Changing lives: a vision for Careers Wales 2017-20', 2016.

44 NEET refers to 'Not in Education, Employment or Training'.

45 Department for Employment and Learning (DEL) Northern Ireland and Department of Education. 'Preparing for success 2015-2020: a strategy for careers education and guidance', 2016.

46 Scottish Government. 'Scotland's careers strategy: moving forward', 2020.

However, at present there is evidence that the type of career information or advice and guidance that young people receive varies by the young person's gender, race, eligibility for free school meals or additional needs. For instance, Youth Employment UK found that, among UK students in their network, more young women were advised to pursue academic pathways over vocational routes and apprenticeships than young men; black respondents were less likely to have heard about apprenticeships or going to university compared to their white peers; students receiving free school meals were more likely to have been told about Jobcentres than those not in receipt of free school meals; and students with additional needs were twice as likely never to have had going to university discussed with them, and even less likely to hear about apprenticeships

compared with those without additional needs. Such findings resonate with Ciara's experience (case study) – Ciara, a 19-year old mechanical maintenance apprentice who was encouraged to pursue academic routes, even after sharing with her advisor that she was starting to become more interested in apprenticeship options.

Indeed, the need to reduce inequalities within current careers provision, particularly for STEM, was noted by a recent APPG on Diversity and Inclusion in STEM as a matter of urgency.<sup>47</sup> They recommended that, beyond having career leaders in schools, all those working in advisory roles for young people be further trained on addressing inequities in STEM education.

## Case study

### Ciara, Apprentice

19 years old; career interest: engineering and mechanical maintenance

#### What careers information, advice or guidance, if any, have you received?

When I was at secondary school, the main careers advice I received was from the school's careers advisor when I was in year 11. When I told the careers advisor that I was going on to do A levels, she told me that it was a good idea as it would help keep my career options open. Then when I was at college, I received careers advice from my college tutor and careers advisor, who both strongly encouraged me to go to university even after I expressed more of an interest in exploring the apprenticeship route.

#### What did you find most useful about the careers advice and guidance you received while at school?

The best careers advice I received was from some of my subject teachers at my secondary school. The main thing that my teachers would tell me is "Don't be afraid to make a change in life". This was particularly inspiring as a couple of years later I was deciding whether or not to go university and whether or not to pursue a career in engineering, which led to me coming back to this advice.

#### What more do you think can be done to help young people make decisions about their future careers?

I think that instead of waiting to only talk to older students (Year 10 and 11) about future careers, the conversation should be had with younger students as well (Year 7 onwards). This means that young people would have more time to think about potential careers and the path that they could take to get there. I also think that young people need to be involved in the conversation about reforming careers advice. At the end of the day it is young people that will be receiving it so they should be asked to help inform their schools and teachers on what changes they would like to see made.

#### Have STEM outreach activities affected the decisions you have made about the subjects you want to study or the career you are interested in?

To be honest, no. The only STEM outreach activity I remember being offered during my time at secondary school was the opportunity to take part in the Junior/Intermediate Mathematical Challenge (run by the UK Mathematics Trust). Taking part in the challenge did boost my confidence in my maths ability, but there was no follow up or any other activities on offer. This meant that I had to do my own research and had to motivate myself.

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<sup>47</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

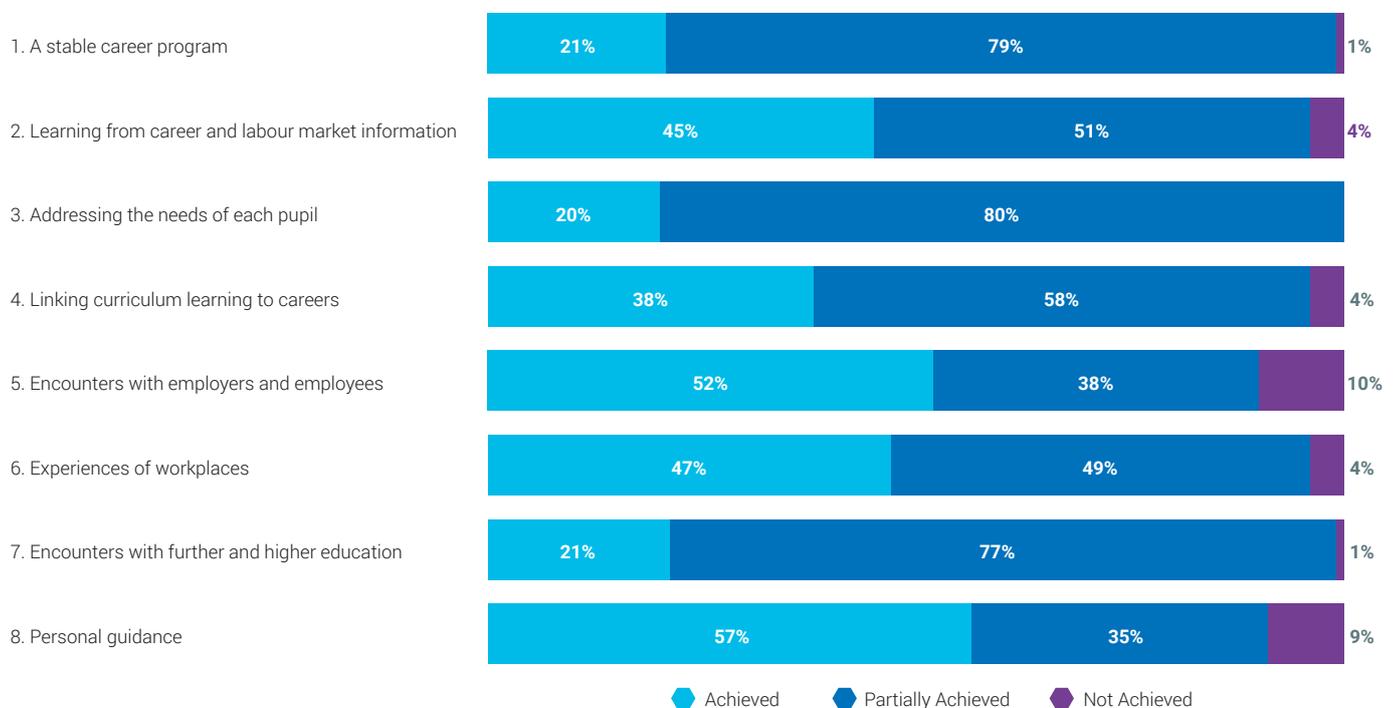
## Progress on the Careers Strategy in England

With the Careers Strategy soon to expire, it is particularly pertinent to examine the extent to which English schools have been able to implement its action plan. Research suggests that at the least, significant progress towards achieving the Gatsby Benchmarks within two years is realistic and achievable for English schools and colleges irrespective of size, location, Ofsted rating or learner makeup,<sup>48</sup> with the continued support from the CEC, access to resources and government leadership.<sup>49</sup> The CEC's State of the Nation report shows that progress has been made in England, with the average school or college achieving

3.2 out of the 8 benchmarks in 2018 to 2019, an increase from 2.1 in the previous academic year.<sup>50</sup> Especially positive has been the finding that educational institutions serving disadvantaged communities are amongst the highest performing in terms of improving their careers education.<sup>51</sup>

There has also been good progress made in the area of employer engagement – a key tenet of the Careers Strategy – with a significant increase in businesses engaging with secondary schools and further education colleges to deliver careers education in England.<sup>52</sup> As of July 2019, the CEC found 52% schools had facilitated encounters with employers and employees; four out of five young people had met employers each year during their schooling; and two out of three had had workplace experiences by the time they leave secondary education.<sup>53</sup>

**Figure 9** Achievement of each benchmark for schools and colleges (2019) - England



Source: figure taken from CEC. State of the Nation. 2019

Proportions for 'partially achieved' refer to schools and colleges that have at least achieved one sub-benchmark or provided to at least some of their students employer encounters, workplace experiences or personal guidance.

Base = 3,351

<sup>48</sup> An evaluation was conducted on a two-year pilot funded by the Gatsby Foundation in the North East of England involving sixteen schools and colleges who were tasked to implement the benchmarks. Researchers have found this to be possible 'regardless of the size, location, Ofsted rating or learner make up'.

<sup>49</sup> Hanson, J. and Neary, S. 'The Gatsby benchmarks and social mobility: impacts to date', IAEVG, 2020.

<sup>50</sup> CEC. 'State of the nation report', 2019.

<sup>51</sup> Ibid.

<sup>52</sup> CBI/Pearson. 'Education and learning for the modern world', 2019.

<sup>53</sup> CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

However, even though students are interested in and there is demand for high-quality careers education,<sup>54</sup> many benchmarks remain 'partially achieved', as **Figure 9** shows, and careers support under-funded.<sup>55</sup> There is also evidence that despite renewed government focus to promote technical education and apprenticeships, including via the introduction of the Baker Clause,<sup>56</sup> these options remain relatively less discussed in schools.

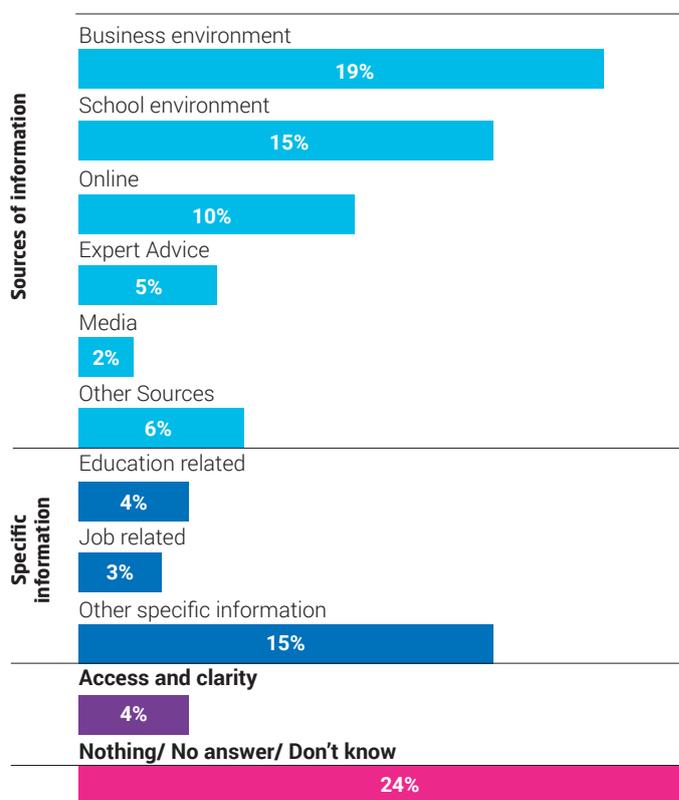
Careers education in England has been criticised for being patchy, inadequate or provided too late,<sup>57</sup> with evidence that schools may not be delivering impartial careers advice and guidance for all their students, as required in the careers strategy.<sup>58</sup> A survey of Year 11 students (aged 15 to 16) as part of the SPIRES 2 study found that careers provision is patterned around social inequalities, with those students who are most in need being the least likely to receive it.<sup>59</sup> Overall, less than two-thirds of students surveyed reported having received careers education, with boys being 1.3 times more likely to receive careers guidance compared to girls. White students were also significantly more likely to report receiving careers education and work experience compared to their minority ethnic peers. Students from the most advantaged social backgrounds were 1.5 times more likely to receive careers education compared to students from the most disadvantaged social backgrounds.

Participation in careers education also seems to vary by the aspirations of the students. Students with strong aspirations to study science, engineering or medicine were the most likely to have received relevant careers education compared to non-STEM aspirant students. Those students who planned to enter work or did not know what they wanted to do post-16 were significantly less likely to have received careers guidance compared to those going on to study A-levels or pursue an apprenticeship.

## Suggested improvements

When asked what they needed to better understand the careers they are interested in pursuing, it was evident that young people valued information from a variety of sources (**Figure 10**). Nearly half of 11 to 19 year olds (49%) across the UK commented on the need for information from businesses and schools and noted the importance of online resources, expert advice and information from the media. In addition to wanting access to a range of resources, they were also concerned with the nature of the specific information they received.

**Figure 10** What 11 to 19 year olds say they need to better understand the careers they are interested in pursuing (2020) – UK



Source: Young People and Covid-19 Survey, 2020

This is a thematic analysis of open text answers to the question 'What could help you better understand the careers you are interested in pursuing?'. Percentages presented represent the proportion of the overall sample that answered with responses relating to each category, and responses could be grouped to multiple categories. Percentages do not add up to 100% as respondents could give more than one answer in more than one category, and there are categories not included.

Base: n=1,131

<sup>54</sup> Moote, J. and Archer, L. 'Failing to deliver? Exploring the current status of career education provision in England', Research Papers in Ed., 2017.

<sup>55</sup> Long et al., 'Careers guidance in schools, colleges and universities', 2020.

<sup>56</sup> Coming into effect in 2018, the Baker Clause specifies that providers of technical education and apprenticeships should be given the opportunity to talk to all students in schools and colleges.

<sup>57</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

<sup>58</sup> Moote, J. and Archer, L. 'Failing to deliver? Exploring the current status of career education provision in England', Research Papers in Ed., 2017.

<sup>59</sup> Moote, J. and Archer, L. 'SPIRES 2 project spotlight: Year 11 students' views of careers education and work experience', 2016.

Despite the gender related differences found on the type of information received through careers provision,<sup>60</sup> our survey found there to be no significant divergence between what boys and girls felt would help them better understand the careers they were interested in. This finding suggests that students overall are keen to have access to a variety of different sources of information, specific information about education and jobs and more open access and clarity on the type of information that can help them in both subject and career choices.

However, there were dissimilarities between students from different socioeconomic backgrounds, specifically in answers relating to online careers resources. Some students did highlight the need for more relevant online materials tailored to their age group. Young people from higher social grades (AB) were significantly more likely to mention the necessity of these digital resources (12%), compared to students from the lowest social grade (DE) (with only 5% mentioning online resources). These differences by social grade are critical factors to keep in mind when designing and delivering careers related initiatives, especially with the current shift towards providing more virtual educational experiences.

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**'If there was more information on Google for younger people like me. There is a lot [of information] but for uni students, I am too young but I would like to learn more now' (Boy, 14-years old)**

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Considering the limitations of current provision of careers education as well as what young people say they need, efforts towards improving STEM careers provision should focus on the following areas: engaging employers, providing tailored careers support and more in-depth knowledge of engineering among key influencers, and discussing the variety of pathways and next steps into engineering.

## Employer engagement

Information related to the business environment was most cited by young people (**Figure 11**) as being helpful to better understand careers; this is perhaps unsurprising given the breadth of evidence highlighting the importance of exposure to the world of work in careers provision. There is an interest among the students surveyed not only in knowing the opportunities that are available, but more specifically learning more about what careers look like in practice – hearing directly from people employed in the sector of interest as well as taking part in workplace experiences. This is identified by students as an especially helpful way to get a real sense of a potential future career.

STEM outreach activities aimed at supporting young people in their career choices could be leveraged as an approach across both formal education and careers education provided in schools. In terms of support outside the education sector, employer engagement in careers activities can help young people in various ways, including by increasing knowledge around careers, developing workplace skills, fostering the motivation to pursue certain pathways, or even by providing networking opportunities.<sup>61</sup> For example, Jena (case study), while in college, found her workplace experience at a nuclear plant helpful both in gaining 'hands on' experience and further insight on options to pursue after college.

Providing opportunities for young people to see STEM as an option that is possible for them is essential for STEM education aimed at appealing to students from diverse backgrounds.<sup>62</sup> Growing evidence also suggests that young people experiencing the workplace can play a key role in challenging narrow perceptions and raising aspirations related to STEM.<sup>63</sup> What is more, meeting employers was found to play a key role in improving social mobility, as the CEC argues that these encounters through schools can provide opportunities that may not otherwise be accessible for young people with more disadvantaged backgrounds.<sup>64</sup>

Despite the benefits of meeting employers, access to these opportunities remains limited for some young people depending on where they live or their age. For example, research by CBI has found that young people living in coastal and rural areas often are not able to engage with a variety of employers.<sup>65</sup> There is also evidence that certain age groups are less likely to access employer encounters than others, with 11 to 14 year olds less likely to access employer encounters than 15 to 18 year olds and those below the age of 16 also less likely to take advantage of workplace experiences than 17 to 18 year olds.<sup>66</sup>

<sup>60</sup> Youth Employment UK. 'Youth Census Voice', 2020.

<sup>61</sup> CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

<sup>62</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

<sup>63</sup> Ibid.

<sup>64</sup> CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

<sup>65</sup> CBI. 'People and skills: getting young people 'work ready'', 2019.

<sup>66</sup> CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

Thus, not only is there a need for more employer engagement opportunities, but also better ones. Contributors to the Inquiry into Inequity in STEM highlighted how efforts should focus on supporting young people from lower socioeconomic areas in particular to access quality work experiences, internships.<sup>67</sup> Furthermore, in line with research showing how career interests develop from an early age, they also suggest including primary schools in workplace experiences. By starting these initiatives earlier in the educational pathway of a young person, the aim is to challenge narrow and gendered stereotypes early on by addressing assumptions that can be harmful to the perceived capability of a young person, as is especially the case for girls and STEM.

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**‘I think we youngsters need to have a larger range of work experience we cannot make our minds up when we do not understand what the choices really are’ (Girl, 13 years old)**

**‘Being able to gain work experience in these careers and talk to experts in these areas’ (Man, 18 years old)**

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## Case study

### **Jena, HE student**

19 years old; career interest: design engineer

#### **What careers information, advice or guidance, if any, have you received? And from whom?**

During high school in year 11 and college, I attended careers fairs throughout the academic year. However, in my current year of my HNC, I have only really spoken about careers with parents and a couple of tutors. Before my HNC, I attended a careers fair in college where there were at least 20 different employers. Due my course being engineering, the careers fair had employers like Sellafield, BAE Systems and the Royal Air Force.

#### **What did you find most useful about the careers advice and guidance you received while at school?**

During high school, even though there were several careers fairs, none of them really guided me towards a career path I wanted to pursue although they did help me find a college that had a course about engineering that interested me. In terms of inspiration, this mostly came from a family member who is also an engineer.

#### **What more do you think can be done to help young people make decisions about their future careers?**

I feel as though in school and college, there were enough resources to offer advice and guidance for future career progression. However, I feel as though in higher education programmes the support can be very limited and as this is an integral part of our education before employment, more resources and guidance at this stage is needed.

#### **Have STEM outreach activities affected the decisions you have made about the subjects you want to study or the career you are interested in?**

In my second year of college, I had a week's work experience placement at a nuclear plant. I found this experience very beneficial for making decisions as to where to go after college, not only this, it provided me with hands on experience on the job. This experience was arranged by a family member, and not by the college. I feel that colleges and universities, should be offering or arranging these placements for students as it offers a good platform into the working life after their studies.

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<sup>67</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

## Tailored careers information, advice and guidance

Beyond being interested in information from businesses, the findings from our Young People and Covid-19 Survey show that younger students were more likely to highlight that support and advice from within the school environment would help them better understand their career interests (18% of 11 to 14 year olds compared to 10% of 17 to 19 year olds). In particular, students of younger age groups were more likely than those from older age groups to identify advice and support from teachers as being helpful (13% and 9% among 11 to 14 and 15 to 16 year olds respectively, compared with just 4% from those aged 17 to 19), calling for more face to face tailored support within schools.

Differences among age groups may be reflective of the different educational stages they are currently in. It is not surprising that fewer older students mentioned support within schools, as they likely will have already selected the subjects to specialise in, narrowing down the options they are considering. Furthermore, many of the 17 to 19 year old respondents will have already finished their formal education in school. They are more likely already on a pathway towards the career they are interested in or are more independent in their search for careers they wish to pursue.

Findings from our Young People and Covid-19 Survey are also insightful as they indicate how careers provision could be tailored to different ages – meeting the needs of young people for the current educational stage they are in, and with the long-term vision of career opportunities and pathways towards them. As young people already form ideas of what career they wish to pursue early on, offering careers provision earlier in the experiences of young people can be beneficial.<sup>68</sup>

Early careers provision can also be critical to widening participation in STEM.<sup>69</sup> From an early age, stereotypes about men and women are ingrained in young people and are often reinforced by society and media representations. Traits that are perceived as more feminine and masculine, regardless of interest in STEM, can orient students towards careers relating to appropriate gender roles in accordance with societal expectations.<sup>70</sup> For example, research has shown how from as young as 7, gender assumptions have already influenced job preference, which in turn may impact one's academic aspirations.<sup>71</sup>

Tellingly, Gatsby benchmarks addressing the needs of each pupil (20%) and a stable career programme (21%) were reached by only a quarter of schools and colleges in England,<sup>72</sup> indicating further work should be done to address the needs of individual students. In terms of how schools can support young people, Youth Employment UK recommends that colleges or sixth forms offer careers workshops, providing clarity on the options available as well as supporting young people through a personalised approach.<sup>73</sup> Furthermore, it is critical to provide careers support for young people while they are still in education, as it becomes increasingly challenging to support and guide young people once they leave full-time education because they are more difficult to reach.<sup>74</sup>

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**‘I’d love to chat to someone who can guide me [on] how to get to the job I wish to do as I don’t know where to start’ (Girl, 15 years old)**

**‘Schools offering career advice from a young age’ (Boy, 11 years old)**

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<sup>68</sup> APPG on Diversity and Inclusion in STEM. ‘Inquiry on Equity in STEM education’, 2020.

<sup>69</sup> Ibid.

<sup>70</sup> Emembolu, I. et al., ‘Using action research to design and evaluate sustained and inclusive engagement to improve children’s knowledge and perception of STEM careers’, *Intl. Journal of Science Ed.*, 2020.

<sup>71</sup> APPG on Diversity and Inclusion in STEM. ‘Inquiry on Equity in STEM education’, 2020.

<sup>72</sup> CEC. ‘State of the nation report’, 2019.

<sup>73</sup> Youth Employment UK. ‘Youth Census’, 2020.

<sup>74</sup> Ibid.

## Key influencers

We know that young people seek advice mostly from parents and carers (61%), careers advisors (59%) and teachers (56%) (**Figure 11**). Information, advice and guidance concerning careers will inevitably be dependent on the knowledge these sources have, for example, on engineering and the various pathways to pursue a career in this sector.

There is evidence that that children from lower socioeconomic backgrounds are likely to experience a disadvantage compared to peers from wealthier backgrounds.<sup>75</sup> In fact, only 23% of parents from lower social grades (DE) know what engineers do (compared to 43% of parents from higher social grades – AB). Further, similar results were also found with regard to positive perceptions of engineering (64% compared to 79%), confidence on giving advice on careers in this field (27% compared to 46%) as well as likelihood of recommending engineering jobs (78% compared to 90%).

**Figure 11** Where students aged 11 to 19 in 2019 would consider going for careers advice (2019) – UK

Sources of careers advice	Proportion of respondents who would go to the following for careers advice
Parents/carers	61%
Careers advisers	59%
Teachers	56%
Internet/online sources	43%
Friends	34%
Other relatives (not your parents)	21%
Other young people	17%
Youth club leaders	9%
Don't know	5%

Source: EBM, 2019

Q – ‘Who would you consider going to for careers advice?’ Percentages presented represent the proportions including each option in their list of sources. Options given: parents/carers, careers advisers, teachers, Internet/online sources, friends, other relatives (not your parents), other young people, youth club leaders, don't know. Percentages do not add up to 100% as young people had the option ‘tick all that apply’.

Base: n = 1,912

There is a longstanding shortage of STEM subject teachers within the UK secondary education sector, which faces challenges in both the recruitment and retention of these teachers.<sup>76</sup> Additionally, many are not specialists in the STEM subjects they teach. In England, for example, only 63% of physics teachers and 78% of maths teachers have relevant post-A level qualifications in the subject they teach.<sup>77</sup> Due to difficulties with recruitment and retention, teachers are thus required to teach outside of their specialisation which in turn impacts most strongly on students from underrepresented groups in STEM. Inadvertently, both teachers (with little gender and minority representation and limited specialised knowledge) and curriculum (often focused on male role models) can contribute to gender-bias and low aspirations in STEM.<sup>78</sup>

While teachers, parents and other key influencers can play a critical role towards encouraging young people into STEM careers, there is also a risk they may be reinforcing unsupportive stereotypes. Findings from the EBM showed that 87% of parents (of both genders) of male children were likely to recommend engineering, compared with 81% of parents of female children. This figure rose to 93% for fathers with only male children, in comparison to only 79% of fathers with only female children. In contrast, only 71% of mothers with female children would recommend a career in engineering.<sup>79</sup> The risk of parental influence shaped by gender biases could reinforce notions about science being a male-dominated field.<sup>80</sup>

The importance of the influence teachers have is evident in Moad's account of his experience (case study). He attributes the access he was able to gain to various STEM activities to his science teachers, who were always encouraging and supporting him in taking part in various STEM opportunities.

Given the limitations of key influencers' knowledge and bias mentioned above, STEM outreach aimed at influencing young people's career choices needs to consider how to engage these sources of information to ensure young people are receiving impartial careers information, advice and guidance. This is particularly critical in order to ensure that young people regardless of their gender or socioeconomic background have the support they need to make informed decisions about their future.

<sup>75</sup> EngineeringUK. 'Engineering Brand Monitor' data, 2019.

<sup>76</sup> EngineeringUK. 'Educational pathways into engineering', 2020.

<sup>77</sup> Ibid.

<sup>78</sup> APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

<sup>79</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

<sup>80</sup> Archer et al. 'ASPIRES Report: Young people's science and career aspirations, age 10 –14', 2013.

## Case study

### **Moad, Year 11 student**

16 years old; career interest:  
aeronautical engineer

#### **What careers information, advice or guidance, if any, have you received?**

I have received a variety of career advice both from teachers within school and outreach activities such as summer schools. Firstly, starting with school, during year 11, a career advice session was allocated for every student in my school where students are guided to their potential career interests and pathways to achieve it. I have also been involved in summer schools that provide sessions with engineers and lecturers talking about their careers and the opportunities available for students currently. These sessions also provide an insight into the work-life of a STEM enthusiast, which I found extremely motivating.

#### **What did you find most useful about the careers advice and guidance you received while at school?**

Throughout my five years in school, I was lucky enough to have inspiring science teachers who guided and supported me in the correct career pathway for me. They have advised me to summer schools where I can find people with similar interests and learn from their past experiences in the industry. Through their guidance, I have been able to engage in STEM activities nationally which have always boosted my motivation to achieve my goal of becoming an engineer.

#### **What more do you think can be done to help young people make decisions about their future careers?**

Although I have been fortunate to have the right advice, I am certain that not all students are offered any careers advice to help them with their future. This will, therefore, leave them confused and anxious and may lead to discouragement. Furthermore, not all schools offer students a STEM club where they can experiment with their ideas and enhance them. Lastly, students may also be further motivated if they are directed to opportunities to help them better understand their career interests and what it takes to reach their goals.

#### **Have STEM outreach activities affected the decisions you have made about subjects you want to study or the career you are interested in?**

Over the past three years, I have been involved in numerous STEM outreach activities and competitions. I have participated in the Big Bang Competition final, Bright Ideas competition, Top of the bench, Engineering Imperial summer school, physics Queen Mary university summer school, and Imperial STEM challenge summer school. Having participated in all of these activities, I have developed a wider knowledge on STEM and particularly engineering. Through this experience, I have been able to create contacts with similar minded people to help me and aid me in the future.

## Different pathways and 'next steps'

Findings from our Young People and Covid-19 Survey showed that 1 in 5 young people age 11 to 19 (20%) referred to specific information they felt would be beneficial for them to better understand the careers they were interested in (**Figure 10**). Their responses focused on wanting more details on careers and different pathways into various professions (15%), more support in understanding various subject and qualifications needed for their career of interest (4%) and more information on the role and salary of jobs they are interested in (3%). A small percentage of young people aged 11 to 19 (4%) also highlighted the need for improved access and clarity of the information received.

In light of the interest in better understanding opportunities, pathways and related subject choices as well as clarity of information, this points to Gatsby benchmark 4, in particular 'linking curriculum learning to careers' in England. While progress towards hitting the benchmarks has been made,<sup>81</sup> there is still a need to foster a better understanding of the links between subjects, qualifications and careers.<sup>82</sup>

The majority of young people who said they were likely to choose a career in science (57%),<sup>83</sup> engineering (60%)<sup>84</sup> and healthcare (60%)<sup>85</sup> agreed that they knew the next steps they needed to take to work in these areas. However, that still left a large proportion of students who did not know what to do. Furthermore, those from higher social grades (ABC1) were significantly more likely than those from lower social grades (C2DE) to know the next steps in order to become an engineer (64% compared to 50% respectively). This was not true, however, for those interested in becoming healthcare professionals or scientists.

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## Talking to someone who was in my position and finding out the steps they took next to get into that career' (Boy, 15 years old)

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Young people from the most disadvantaged backgrounds are likely to be penalised compared to their wealthier peers in pursuing engineering as a career. The difference in findings by social grades suggests that careers provision specifically regarding pathways into engineering may not be reaching those from the lowest social grades. They may not be receiving the appropriate information, advice or guidance from their teachers or parents who may in turn have limited knowledge of the opportunities and pathways available.

Limited knowledge about the future career opportunities related to studying STEM subjects dissuades many students from pursuing those subjects as they are viewed as leading only to careers as scientists or doctors.<sup>86</sup> Further, research shows that young people who are Black and those from low socioeconomic backgrounds tend to have lower science capital and are less likely to continue pursuing STEM subjects and careers (compared to Asian or White peers).<sup>87</sup> Thus beginning with careers provision early on could have the potential to widen access to groups who tend to be underrepresented in STEM, possibly contributing to counteracting such limiting stereotypes.<sup>88</sup>

Coordination among governments, employers and educational institutions to improve careers provision should be targeted to addressing the current gaps in access that young people face based on where they live, as well as their age group and backgrounds. Not only should the focus be on enhancing the capabilities of young people, there needs to be additional opportunities to ensure the provision of quality careers education is equitable. There is also scope for STEM outreach initiatives to provide information, advice and guidance on alternatives to higher education or different modes of study.<sup>89</sup> Further, in order to widen participation and tackle inequalities in STEM careers provision, careers education and opportunities to engage in STEM careers activities should be offered early in educational pathways.<sup>90</sup>

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## Having information from my teachers about what exams I need to do and going into workplaces to find out more' (Boy, 12 years old)

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**81** The CEC reported that 38% of schools and colleges met the fourth benchmark (linking curriculum learning to careers) in 2019.

**82** CEC. 'Closing the gap: employer engagement in England's schools and colleges in 2019', 2019.

**83** Base: 504 young people aged 11 to 19 that were likely to choose a career in science.

**84** Base: 395 young people aged 11 to 19 that were likely to choose a career in engineering.

**85** Base: 403 young people aged 11 to 19 that were likely to choose a career in healthcare.

**86** Archer, L. and DeWitt, J. 'Participation in informal science learning experiences: the rich get richer?', *Intl. Journal of Science Education*, 2017.

**87** Archer, L. et al. 'Is science for us? Black students' and parents' views of science and science careers', *Science Education*, 2015.

**88** APPG on Diversity and Inclusion in STEM. *Inquiry on Equity in STEM education*. 2020.

**89** Long et al. *Careers guidance in schools, colleges and universities*. 2020.

**90** APPG on Diversity and Inclusion in STEM. 'Inquiry on Equity in STEM education', 2020.

## Case study

**Nyasha, Second year college student,**  
18 years old, career interest: aeronautical  
engineering progressing into commercial pilot

### **What careers information, advice or guidance, if any, have you received?**

I have received career advice from air cadets regarding the different routes that I can take to becoming a pilot. These routes include modular and integrated flight schools and the Royal Air Force. Advice I have received from family is to attend university and study an engineering degree with pilot studies, so that if becoming a pilot does not work, I have the insurance of engineering skills that will allow me to find a job. I also attended a pilot careers fair at Manchester airport. Additionally, I was given advice from British Airways on a flight experience day in Wycombe.

I have not met a specific STEM employer in the last 12 months, however. I have only met STEM employers in my first year of college. I have not specifically met employers from the aviation engineering sector as in my college it was very rare for an employer in the aviation industry to visit, which is the industry I would like to work in whether as an engineer or a pilot.

### **What did you find most useful about the careers advice and guidance you received while at school?**

When I booked an appointment with one of the careers advisors in college, they helped clear things up with me by drawing out different possible timelines of what I can do after college to achieve my career goals. In doing this, it put things in a wider perspective for me which motivated me to work harder.

### **What more do you think can be done to help young people make decisions about their future careers?**

In my college, a lot of action has been taken to help people find their desired career. Events such as career fairs and drop-ins where one can speak to a career advisor have helped a lot to give a picture of different careers and employers in those sectors. I do believe young people should be more involved in careers events because they can be very helpful. They can clear up a lot of uncertainty and points in the right direction which is motivating as one will have a goal to work towards.

### **Have STEM outreach activities affected the decisions you have made about the subjects you want to study or the career you are interested in?**

In high school I took part in a number of STEM activities to do with science and maths. My most memorable event that I attended was a chemistry event with Manchester University in which I won first prize and which boosted my confidence in the subject. I also attended a two-day Future Opportunities Challenge, which included activities in maths and science. This helped me to confirm that I was on the right track on my career endeavours and that I will enjoy my chosen pathway in A level.

## Considerations within the context of Covid-19

The Covid-19 pandemic has had repercussions throughout aspects of everyday lives since the beginning of 2020, with disruption to workplaces, schools and society more broadly. At this point in time, it is challenging to predict the consequences that such changes will have in the long-term. However, what is known is that Covid-19 has caused the worst economic downturn since at least the Second World War,<sup>91</sup> and in the UK specifically, this may be the deepest recession the country has seen for 300 years.<sup>92</sup>

In contexts of economic uncertainty, young people, especially those who are most vulnerable, are most at risk. According to the International Labour Organization, changes related to the pandemic will profoundly affect young people in three ways: (1) disruptions to education, training and work-based learning; (2) increased difficulties for young jobseekers and new labour market entrants; and (3) job and income losses, along with deteriorating quality of employment.<sup>93</sup>

Youth unemployment in the UK is expected to more than double by the end of the year. According to new analysis from the IPPR think tank, an extra 620,000 young people (aged 18 to 24) will be unemployed by the end of 2020.<sup>94</sup> This will bring the total of unemployed youth to over a million, considering the 410,000 young people already out of a job.

With the prospect of rising unemployment, the government announced in the summer statement the provision of a £2billion 'kickstart scheme' aimed at creating government-subsidised jobs for young people who are unemployed.<sup>95</sup> Other measures include a pledge to create 30,000 new traineeships,<sup>96</sup> providing lessons in maths, English, CV writing and unpaid work experience.<sup>97</sup> The prime minister has also promised an ambitious 'opportunity guarantee' for all young people to have access to apprenticeships and work place experiences.<sup>98</sup> However, these initiatives are only a starting point – their effect needs to be reviewed regularly and changes made as necessary. Furthermore, it is essential that the most disadvantaged and vulnerable young people are able to access the support they need and transition into the labour market.<sup>99</sup>

The engineering and education sectors also have already shown great initiative and innovation, rising to the challenge by delivering digital events for STEM careers provision in times of social distancing. For example, the CEC and Oak National academy hosted a week of over 50 live broadcasts to more than 100,000 young people, replacing Year 10 work experience in June.<sup>100</sup> Further, in July 2020, the Big Bang Fair was adapted to a one-day digital live event showcasing the incredible response to Covid-19 carried out by scientists, engineers, healthcare professionals, technicians and students. Throughout the day, there were over 28,000 viewers and over 650 young people shared their opinions on the content of the day. Eight out of ten young people rated Big Bang Digital as 'good' or 'excellent', and 71% reported they were likely to attend another Big Bang Digital in future.

The adaptation towards digital solutions is welcome and has overcome initial barriers related to the pandemic. However, it will also be essential to find inclusive solutions for all young people as inequalities already present are likely to be exacerbated by the changes and uncertainty that are now characteristic of our times.

Over the past decade, social mobility has been static and the health crisis is bound to widen socioeconomic differences, leaving young people from disadvantaged backgrounds behind.<sup>101</sup> Since the public health crisis, individuals, schools and workplaces have been relying more on ways to connect and work digitally during times of social distancing. While technology has been essential in keeping the country going, there are many who remain excluded by the transition towards more virtual ways of living, learning and working. Digital exclusion is more widespread than many people think in the UK (affecting 22% of the population), and the public health crisis will make its effects worse for the poorest populations.<sup>102</sup>

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91 ILO. 'Preventing exclusion from the labour market: tackling the COVID-19 youth employment crisis', 2020.

92 Financial Times. 'BoE warns UK set to enter the worst recession for 300 years' [online], accessed 31/07/2020.

93 ILO. 'Preventing exclusion from the labour market: tackling the COVID-19 youth employment crisis', 2020.

94 IPPR. 'Youth unemployment set to more than double by end of the year according to think tank' [online], accessed 07/07/2020.

95 BBC News. 'Coronavirus: Rishi Sunak unveiling 'kickstart jobs scheme' for young people' [online], accessed 05/07/2020.

96 FE News. 'Rishi Sunak's summer economic statement – sector response' [online], accessed 27/07/2020.

97 CEC. 'Workplace skills now more important than exam results in post-Covid jobs market say teachers' [online], accessed 10/07/2020.

98 BBC News. 'Coronavirus: Johnson sets out 'ambitious' economic recovery plan' [online], accessed 05/07/2020.

99 FE News. 'Rishi Sunak's summer economic statement – sector response' [online], accessed 27/07/2020.

100 CEC. 'Workplace skills now more important than exam results in post-Covid jobs market say teachers' [online], accessed 10 July 2020.

101 Youth Employment UK. 'Youth Voice Census', 2020.

102 Holmes H. and Burgess G. 'Coronavirus has highlighted the UK's digital divide' CCHPR, 2020.

103 Ibid.

In education, young people living in poverty are already at a disadvantage compared to their wealthier peers. The pandemic has affected how young people access education and this gap is expected to expand as many disadvantaged students do not have access to learning resources online or to appropriate devices.<sup>103</sup> It is critical that initiatives aimed at widening participation in STEM take this reality into account, working collaboratively across schools, employers, outreach providers and policy makers to ensure that young people who are digitally excluded are not left behind.

Governments, employers and the education sector need to build on the progress to date and adapt initiatives, finding collaborative solutions to support young people in learning about and navigating their education and career pathways. Improvement in careers provision should ensure that no one is left behind, regardless, for example, of where they live, their age group, gender, ethnicity, socioeconomic status or access to digital devices. Building a resilient future in a Covid-19 context will also have to rely on addressing diversity issues both present before and exacerbated during the pandemic.

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**As 22% of the UK population is affected by digital exclusion, young people from disadvantaged backgrounds may be less able to access online resources or digital devices.**

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## Examples of cross-sector collaborations

Coordination and collaboration across the education sector, governments and engineering and STEM outreach communities can be improved. Despite numerous players involved in providing STEM outreach activities, only 27% of young people aged 11 to 19 took part in a STEM careers activity in 2019.<sup>104</sup>

Some initiatives facilitating access to STEM engagement activities are already being developed. For example, the team behind Big Bang and Tomorrow's Engineers have been working together with the engineering community to create **Neon**, launched in September 2020. This digital platform brings together the best engineering experiences and inspiring careers resources to bring STEM to life with real-world examples of engineering. It enables teachers to find engaging activities for their students and have access to up-to-date careers information.

Other examples of STEM inspiration initiatives include **The Tomorrow's Engineers Code** which is a commitment by organisations to work towards common goals to increase the diversity and number of young people pursuing engineering careers. The Code will enable those in education, government and industry to work together to foster the critical engineering and technology skills needed for the UK to be a leader in innovation and improve societal and economic resilience and environmental sustainability.

The collective impact of work across the sector needs to grow to help young people understand what engineering is, how to get into it, and be motivated and able to access the educational and training opportunities on the way.

<sup>104</sup> EngineeringUK. 'Engineering Brand Monitor', 2019.

## Looking to the future

Looking forward, it is inevitable that the impact of the pandemic will continue to differ across all sectors of the economy for years to come and equally inevitable that engineering will play a key role in building a resilient future for the UK. Engineering, manufacturing and technology provide a breadth of exciting careers that can bring job security alongside societal value. These sectors have been relatively resilient to the impacts of the pandemic and should only become stronger. The Government continues to be committed to the Industrial Strategy and increasing investment in research and development. The Government's recent "Plan for Jobs" seeks to create many thousands of jobs in new infrastructure, decarbonisation and maintenance projects that will upgrade our hospitals, schools and road network, make public buildings greener and help the UK achieve its aspirations of achieving Net Zero by 2050 – all of these efforts will require engineers.

While this suggests that there are likely to be opportunities for young people wanting to move into a career in STEM going forward, it also highlights the fact that more needs to be done to showcase to young people not only the variety of engineering career opportunities, but also how a career in engineering could provide the job stability that so many of them are looking for today. In addition, with there being a clear focus on a green recovery and with images of engineers supporting the pandemic efforts still very much in young people's minds, there is also scope for the engineering sector and STEM outreach providers to highlight the positive impact on society that engineering can have.

Across most of the UK existing careers strategies are coming to an end in 2020. The findings presented in this report are therefore timely in highlighting young people's perspectives and experiences of careers advice and guidance. Furthermore, the insights offered here should serve as a reminder of how critical it is for all young people, particularly in these times, to get support in navigating their career options and providing guidance in their transition into the workforce. These considerations are essential in redesigning what careers information, advice and guidance should look like post-2020, leveraging the strengths of STEM outreach. Future careers information, advice and guidance related to STEM must reach all young people regardless, of where they live, their age group, gender, ethnicity, socioeconomic status or access to digital devices, and existing strategies must be reviewed with this in mind.

Taking account of what young people have told us about their experiences of receiving careers advice and guidance and what they say is important to them, the government, education providers and the sector must look to address the issues identified in this briefing. We have tried to highlight what governments may want to explore in relation to these issues in a review of careers strategies, in particular in the context of schools, which are a prominent piece of the careers puzzle.

### 1. Patchy provision of good quality careers education

This briefing has highlighted the fact that not all young people have the same access to quality careers advice and guidance across the country. This raises the issue of what **funding** schools receive to support their careers programme and the impact funding levels have on schools' ability to support students with their career decisions. It also raises questions as to why **careers hubs** are not available to all schools across England, and what more is being done to achieve equal access. The availability of careers hubs seems to correlate with schools performing better under the Gatsby benchmarks. Last but not least, this briefing prompts us to examine the role of **careers leaders** in schools, to verify whether all schools now have a careers leader and a clear **career plan**, to ascertain the level of student involvement in developing career plans, and to make sure careers leaders receive the support, training and resources they need.

### 2. The influence of narrow perceptions and gendered stereotypes

Our recent survey with young people has revealed that since the pandemic, gender disparity within (STEM) careers aspirations is widening. We have also learned that the advice young people receive depends on their gender, ethnicity and socioeconomic background. This brings up the issue of what training teachers and careers leaders get to tackle stereotyping and whether STEM careers provision is an effective part of the school curriculum so as to support more equal access to all young people. Our findings also highlight the need for STEM related careers information, advice and guidance to focus more on the societal contribution made by STEM professions, raising the question as to how far this is currently being done.

### 3. Leveraging employer encounters and other experiences with the world of STEM work

Our findings have underscored the value young people attach to learning about careers directly from the business environment to help them decide what they want to do in the future. We found that young people want more opportunities to meet and learn from a variety of employers, but they are only able to do so quite late in their school careers, with many 11 to 14 year olds being less likely to access employer encounters than older pupils. This leads one to ask how many young people are given the **opportunity to engage with the world of work**, how this varies across the country, and what impact government policy and the pandemic has had on this type of engagement in recent years and months? It also brings up the matter of how well employer encounters are working for young people across the country, what more needs to be done to ensure that pupils get access to **a variety of STEM employers starting also at a younger age**, how engaged employers are in providing these opportunities, and the role Enterprise Advisers play in making these encounters happen.

#### 4. The importance of engaging with key influencers

We know that certain factors can affect young people's career choices, such as limited science capital, limited knowledge or skewed perceptions of engineering among teachers, careers leaders and parents. With teachers and careers leaders in particular being considered key influencers for young people, this raises the question what further **training** teachers may require to be able to provide the support young people need. Another issue that arises is how far **careers learning is integrated into everyday STEM lessons** and whether more should be done to enable teachers to achieve this integration.

#### 5. Advice to students is focused on a narrow set of training and education pathways

The findings in this report confirm that apprenticeships and other vocational pathways into work are still less often discussed with students than traditional academic routes, despite the Baker Clause stipulating that schools must allow colleges and training providers access to every student in years 8- 13 to discuss non-academic routes. This raises the question as to how well performance against the **Baker Clause** and Gatsby Benchmark 7 is currently monitored and what more could and should be done to ensure that young people get information and advice in relation to all the STEM educational and training pathways in the UK.

#### 6. The pandemic is exacerbating inequalities in accessing STEM careers provision

The pandemic is exacerbating inequalities in terms of access to career education and more widely education as a whole, due to the current reliance on digital and online approaches. This brings up the question of what **additional resources** will be made available to enable young people to access online support and to catch-up on missed careers provision, including information advice and guidance related to STEM careers. Moreover, what can and should the education sector and employers be doing to ensure that their offer to young people takes these challenges into consideration.

## Who we are

Looking forward, it is inevitable that the impact of the pandemic 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.

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.

## Driven by data

We base everything we do on evidence and we share our analysis and insight widely. Our flagship publication Engineering UK: The State of Engineering, published for the 20th time in 2018, is a detailed examination of engineering's economic contribution and the composition of its workforce, as well as the extent to which the supply through the education and training pipeline is likely to meet future needs and demand for engineering skills. Its findings are used widely by the media, policy makers and employers alike. The Engineering Brand Monitor establishes the national benchmark for public perceptions of engineers and engineering.

We evaluate all our activity to help ensure our engagements with young people have as much impact as possible. It is through this evaluation that we have identified the degree to which we are winning hearts and changing minds through our programmes, with positive impacts on young people's understanding of engineering, perceptions of a career in it, and the extent to which they view engineering as a career for both boys and girls. And we have learnt that if young people meet an engineer and know they have done so, they come away with higher levels of knowledge of what people working in engineering do and higher levels of perceived desirability of engineering careers.

