Deloitte welcomes the opportunity to contribute to the Committee’s inquiry on STEM skills.

Deloitte sees continued growth in demand from clients for services drawing heavily on STEM skills and, as such, STEM graduates compose a significant proportion of its graduate intake each year. The firm is also involved in a number of partnerships with education providers to develop these skills.

Deloitte has also conducted research relevant to a number of topics the Committee is considering, looking at the current and future skills needs of the UK economy and the role that STEM can play in addressing the gender pay gap.

**Deloitte as a STEM employer**

As one of the UK’s largest business advisory firms, and a major graduate recruiter, Deloitte is acutely aware of the importance of STEM skills to UK business.

Deloitte recruited 1,100 graduates in the last year and, while the majority came from business, finance, economics and humanities backgrounds, STEM graduates comprised around a quarter of Deloitte’s total intake. Last year Deloitte recruited 274 STEM graduates, representing 27% of the overall intake, and comprised of 82 science graduates (8%), 19 technology graduates (2%), 63 engineering graduates (6%) and 110 maths graduates (11%).

Deloitte has worked with higher education providers to develop courses to meet demand for skills in areas such as technology, data analytics and cyber security, which are increasingly important to its business. This includes helping to teach a new cyber security MSc at De Montfort University, working with Ulster University to offer school leaves full-time employment, alongside a fully funded BSc in Business Technology, and signing an agreement with Ada, the National College for Digital Skills, to develop the Higher Level Apprenticeship in Digital Innovation, focused on skills such as programming, machine learning & AI, 3D modelling and data analytics.

**Deloitte research related to STEM**

Deloitte has conducted extensive research around the topics of skills and the future of work and has set out below some of the key issues these have highlighted for UK businesses and educators in relation to STEM skills.

In July 2016, Deloitte published *Talent for Survival: Essential skills for humans working in the machine age*. Building on Deloitte’s research into the effects of automation on the UK labour market, this work modelled the skill sets most essential to the UK economy as technology displaces traditional tasks and jobs, and projecting how this will change over the coming years. This report found that:

- STEM skills and knowledge will become more important to the UK economy, and by 2030 the forecast demand for these talents is likely to be only met by adding the equivalent of 4,500,000 new jobs in STEM-enabled professional occupations.
- However, the UK will benefit most from a workforce with a balance of technical skills and more general purpose skills such as problem-solving, creativity, social skills and emotional intelligence.
- Conventional wisdom would suggest that STEM skills are key to the growth sectors of the UK economy and recent policy changes – such as the National Curriculum for schools – have prioritised developing STEM subjects. Despite this, unemployment rates for STEM graduates remain paradoxically high.
- So while it feels intuitively necessary in an increasingly digital worlds to focus on the acquisition and application of STEM knowledge and skills in the workforce, Deloitte’s research suggests that by itself, STEM is not sufficient to future employability or economic prosperity.
Business, educators and policymakers need to consider the wider skills, knowledge and abilities that the vast majority of jobs require and give workers the flexibility to adapt. Workers are more likely to need a range of talents, including cognitive, social, process, content and problem-solving skills, rather than just focusing on STEM knowledge and digital skills.

A balanced ‘kit bag’ of skills will enable workers to avoid being substituted by machines and enable them to work effectively alongside new technologies in a smarter, more efficient and productive economy.

Looking across different sectors of the economy and individual roles, even in jobs where there might be an expectation that STEM skills and knowledge would be important, in reality cognitive abilities and process skills tend to be ranked as more important than pure subject knowledge.

Deloitte’s research points to two challenges for policymakers and educators. Firstly, the UK education system is primarily designed to enable students to acquire knowledge, which is just a fraction of the overall talents they need in their future careers. Secondly, a great deal of emphasis has been placed on ‘digital skills’ – such as coding – many of which are not essential skills in their own right but a combination of talents such as deductive reasoning, problem solving and judgement. It may therefore be necessary to reframe what is meant by digital and STEM skills to focus more on the underlying talents these require.

In September 2016, Deloitte also published a report – *Women in STEM: Technology, career pathways and the gender pay gap*. This looked at the education choices and career paths of young men and women and their impact on levels of pay. It made the following conclusions in relation to STEM:

- While the gender pay gap is closing incrementally, at the current rate Deloitte forecasts that pay parity between men and women in the UK will not be achieved until 2069 and, in some occupations, the gap is actually widening.
- However, the gap in starting salary between men and women who have studied STEM subjects, and go on to take jobs in those spheres, is smaller than in any other subjects studied. Therefore, if more women were to pursue careers in these areas, it would give them a more balanced portfolio of skills and narrow the gender pay gap for those in the early stages of their careers.
- Analysis of employment data from the last 15 years alongside nearly three million university records finds that women make up just 14.4 per cent of individuals working in STEM occupations in the UK with as many as 70 per cent of women with STEM qualifications not working in relevant industries. This suggests there is potential talent among girls that is not being fully exploited, and could help to fill various skills shortages existing in STEM-related occupations.
- Overall, almost as many girls as boys sat GCSE in STEM subjects this year. However, three times more boys than girls took computing at GCSE level. And 50 per cent more boys than girls took design and technology, but with the number of girls awarded A* – C grades in this subject nearly 20 percentage points higher than for boys. At A-Level in 2016, 40 per cent more boys than girls took STEM subjects, including Computing, Economics, Mathematics and Information and Communications Technology (ICT). However, girls continued to outperform boys in almost every STEM subject, including ICT, Computing, Science, Chemistry, Biology and Physics. The only exception this year was in Mathematics, where boys have, for the first time, marginally outperformed girls.
- Even though more young women than men go to university, men are much more inclined to study technical subjects. The top two most popular university courses by subject area for women are education and subjects allied to medicine. In contrast, the most popular university courses for men are business and administrative studies and engineering and technology.