

OSCE Economic and Environmental Forum session on building women's human capital: UK statement

Mr Moderator,

The profile of jobs in the UK is changing and roles which require STEM skills are set to rise at twice the rate of other occupations between now and 2023. STEM graduates are in short supply. And the challenges presented by the COVID epidemic – and the need to respond to an increasingly technologically-advanced world – put STEM careers at the forefront of skills demands.

To fill these careers we need to understand what works to encourage groups that are historically underrepresented to consider STEM, most obviously girls and women. For example, in the UK, in 2019, only 12% of workers in engineering occupations were female.

I would like to take a moment to share with you the findings of a recent [UK Department for Education study](#) of under-representation of women and girls in STEM fields.

Despite outperforming boys in most STEM subjects at age 16, at age 18 – in the UK the first point at which students can choose whether to proceed with STEM subjects – gender disparity starts to emerge. In 2019, female students represented just 13% of examination entries in computing, 22% in physics, and 39% in maths. Importantly, only 22% of girls opted to take two or more STEM subjects, versus 35% for boys, a requirement to access many STEM degrees.

Women's underrepresentation in the industry also presents problems in terms of gender equality and diversity. As our society becomes increasingly dependent on technology, STEM jobs grow in terms of income, status, and influence. It is important that these jobs are not overwhelmingly held by a limited section of society.

So why the gender disparity?

First, girls' expectations of success in STEM subjects appear to be lower than those of boys, even though their performance is no worse. Despite girls outperforming boys in most STEM subjects at age 16, they are less confident in their abilities.

Second, parents' beliefs about their child's abilities in a given subject determine those of the child, and are influenced by the child's gender. Even when girls outperform boys in both maths and English, parents are more likely to think sons are more talented in maths than daughters. There is evidence that the better a parent thinks their child is at English, the worse the child thinks they are at maths. Teachers are more likely to attribute girls' success in physics to 'hard work' and boys' success in physics to being

'naturally bright', even when they do not perform as well as girls.

Third, girls' perception of the personal value of STEM subjects relative to others is lower than that of boys. Girls are more likely than boys to endorse communal goals – for example – working with or helping others, and there is a stereotype that STEM subjects do not help fulfil these goals. Interestingly, in health sciences, females are equally represented.

Fourth, girls do not see 'people like them' represented in STEM, and do not think it aligns well with the stereotypical female gender identity.

So what can we do?

Students are much more likely to select post-16 maths and/or physics if a key adult – typically a family member or teacher – has conveyed the worth of the subject, along with the belief that they can do well in it. Teachers need knowledge about the range of STEM careers available; and parents need a better understanding of where science can lead, as well as guidance on how to talk with their child about course choices.

Successful interventions that target girls provide information on the limiting impact of gender stereotypes; the importance of self-concept for success; testimony from other students about the usefulness of STEM; and the unhelpful frame-of-reference effects that can occur in the classroom – when students evaluate their ability by comparing their performance to others', rather than their own performance over time.

Other successful interventions show how the career of a scientist can actually afford communal goals. In studies, girls were more positive about the career of a scientist when it was presented as involving more collaborative, as opposed to independent, work.

I hope delegates found this useful. I would be happy to share further details with any who are interested.

Thank you.