



THE MISSING HALF OF THE TECHNICIAN WORKFORCE

INTRODUCTION

The difference between the number of men and women participating in science, technology, engineering and mathematics (STEM) is much wider in technical pathways than in academic ones. This has direct economic consequences, yet this part of the system remains largely missing from equity-focused programmes.

We draw on evidence showing that sustained exposure shapes perceptions and narrows the gender gap in interest in technical careers. Yet exposure is not enough. The gender segregation in technical pathways is shaped by wider structural factors: how training is organised, how jobs are valued, and how progression and retention really function.

We show where the problem is most acute, why it matters to the economy, what the evidence suggests may help and what remains unresolved.

ACADEMIC VS TECHNICAL PATHWAYS

- 1 in 4 physics A-level students are female
- 1 in 5 engineering undergraduates are female
- fewer than 1 in 10 engineering apprentices are female

STEM GENDER IMBALANCE IN EDUCATION

The difference between the number of men and women participating in STEM subjects has long been uneven. While women are well represented in some STEM subjects, such as biology and the life sciences, they remain under-represented in others, particularly physics and engineering.

In England, around a quarter of students currently taking A-level physics are female, a figure that has only slowly increased over time. The picture is similar in higher education in the UK: around a quarter of undergraduate physics students and around one-fifth of undergraduate engineering students are female.

We track gender gaps in higher education, but we rarely track them in technical routes – where the imbalance is often far greater. This keeps the focus of policy and public conversations about gender equity in STEM firmly on academic routes.

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MOST EXTREME IMBALANCES

- just over 2% of skilled technical tradespeople are women
- in 69% of shortage-affected technician occupations, fewer than 5% of the workforce are women
- in some roles, fewer than 1% are women

GENDER IMBALANCE IN TECHNICAL OCCUPATIONS

In many technician occupations, women are not under-represented – they are almost absent. Women make up around half of laboratory technicians but only around five per cent of engineering technicians. The imbalance is most pronounced in skilled technical trades, where just over two per cent of the workforce are women – one of the lowest participation rates in the labour market. Within this two per cent, the variety of roles that women occupy is further limited: only 12 per cent of precision instrument makers and repairers are women, while in many other skilled trades the number of women is too small to produce reliable estimates.

As in education, technical pathways, including apprenticeships and technician roles, are largely excluded from main policy and public debate on gender and STEM, despite being central to sectors facing acute skills pressures.

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SKILLS SHORTAGES AND THE ECONOMIC RELEVANCE OF TECHNICIAN OCCUPATIONS

Technician occupations are vital to the UK labour market. They underpin energy networks, transport systems and advanced manufacturing capacity.

Analysis carried out by the Burning Glass Institute for Gatsby shows that technician and skilled technical trade roles account for a disproportionate share of the UK's hardest to fill vacancies. The vacancies in these occupations tend to remain open for longer than those in many graduate and professional roles, even when overall labour market conditions improve.

Many of the technician occupations with the most persistent shortages are in sectors prioritised by the UK's industrial strategy. This means constraints on the supply of technicians impact not just individual employers but wider objectives for productivity, resilience and long-term economic capacity.

Labour market evidence also shows that technician shortages largely stem from structural factors, not short-term fluctuations in demand. Ageing workforces mean employers often have to recruit simply to maintain capacity as their experienced technicians retire. However, because technician roles often place more emphasis on prior, role-specific experience than many graduate occupations, short-term training or rapid increases in recruitment alone cannot address shortages.

PARTICIPATION AND LABOUR SUPPLY CONSTRAINTS

Evidence shows that women either are not entering the pathways that lead to many technical occupations, are not successfully recruited into them or are not staying in them. The result is unavoidable: in those occupations where women make up just one or two per cent of the workforce, employers are recruiting from a fraction of the talent available for roles that already have persistent shortages. Even modest increases in participation would meaningfully widen the recruitment base and increase the likelihood of easing sustained recruitment pressures.

In sectors with ageing workforces and high demand for replacements, drawing on a broader share of the workforce is not just about fairness; it is about economic capacity.

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GIRLS FAMILIAR WITH THE TECHNICIANS CAMPAIGN ARE SIGNIFICANTLY MORE LIKELY TO CONSIDER A CAREER AS A TECHNICIAN

- girls' interest in technician careers increases from 41% to 55% (+14 percentage points)
- the gender gap decreases from 17 percentage points to 7 percentage points (-10 percentage points)

LEARNINGS FROM GATSBY'S WORK ON IMPROVING THE UNDERSTANDING OF TECHNICIAN ROLES

Research consistently shows that young people's career expectations are shaped over time and are influenced by what they see as familiar, realistic and attainable. Longitudinal evidence, including from the ASPIRES Research project (which studies young people's science and career aspirations) and the Organisation for Economic Co-operation and Development (OECD) analysis of career readiness, emphasises the importance of young people having sustained exposure to a broad range of careers, especially those that they may not see through their family or social networks.

Over the last decade, Gatsby has invested in making technician careers more visible and in changing how they are seen by young people, their parents and carers, teachers and careers professionals, and policymakers. This has included the Technicians: We Make a Difference campaign; the Technicians: The David Sainsbury Gallery at the Science Museum, which showcases technical roles; and making resources that help schools present technical pathways alongside academic options.

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Gatsby's tracking of young people's attitudes suggests that young people who have seen the Technicians campaign see technical roles more positively: they are more likely to say that technician careers are skilled, important and offer opportunities for progression. Among this group, the gap between boys' and girls' interest in technician roles is narrower than among those who are not aware of the campaign.

These findings show that it matters how technical careers are presented. Gatsby's approach has been to normalise technician roles and show them as skilled, everyday jobs carried out by a wide range of people. The evidence suggests that this sustained, 'no big deal' message can shift perceptions and reduce gender differences in interest when young people are exploring their options.

WHAT REMAINS UNRESOLVED?

The evidence suggests that communications and awareness programmes can widen the range of careers that young people, and young women in particular, see as realistic, but improved awareness and understanding do not automatically translate into more women entering and staying in technician careers.

To change participation patterns at scale, awareness efforts must be matched by changes to how technical pathways are structured, supported and valued. The wider set of factors that shape participation in technical pathways, including access to high-quality training, workplace cultures, progression opportunities and employers' recruitment practices, also need to change.