INTERNATIONAL MONETARY FUND

Upskilling the UK Workforce

United Kingdom

Pragyan Deb, and Gloria Li

SIP/2024/030

IMF Selected Issues Papers **are prepared by IMF staff as background documentation for periodic consultations with member countries.** It is based on the information available at the time it was completed on June 14, 2024. This paper is also published separately as IMF Country Report No 24/204.

2024
JUL

SELECTED ISSUES PAPER

 SIP/2024/030

IMF Selected Issues Paper
European Department

Upskilling the UK Workforce

Prepared by Pragyan Deb, and Gloria Li

Authorized for distribution by S M Ali Abbas
July 2024

ABSTRACT:

The UK workforce has larger and more chronic skills gaps than in most peer countries, with surveys reporting widespread recruitment difficulties, with implications for output, in high-skill sectors like digital and software, manufacturing, medicine and life sciences, teaching, and construction. This partly reflects declines in primary and post-secondary education outcomes (particularly science scores, over the past two decades) and in workplace training and apprenticeships, particularly for the young. Moreover, the recent increase in non-EU migrants has not fully offset the adverse impact from Brexit on the availability of needed skills, including because smaller firms face more recruitment hurdles with regard to non-EU hires. Against this backdrop, there is an urgent need to upskill the UK workforce, both by building on ongoing efforts, as well as additional concrete measures to: (i) encourage students and young workers to join and excel in STEM; (ii) ensure adequate vocational and on the job training, particularly for the young; (iii) retain the talent produced by UKs world leading universities; (iv) upskill the existing labor force; and (v) facilitate attraction and retention of in-demand skills through adjustments to the visa regime.

RECOMMENDED CITATION: Pragyan Deb and Gloria Li. 2024. “Upskilling the UK Workforce” IMF Selected Issues Paper (SIP/2024/030). Washington, D.C.: International Monetary Fund.

JEL Classification Numbers:	E24, E6, J24
Keywords:	Potential Growth, Supply of Labour, Skills
Author’s E-Mail Address:	PDeb@imf.org; and GLi2@imf.org

SELECTED ISSUES PAPERS

Upskilling the UK Workforce

United Kingdom

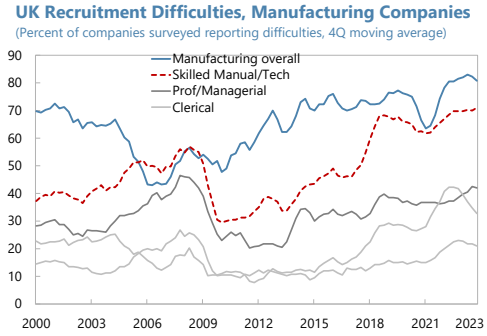
Prepared By Pragyan Deb, and Gloria Li

UPSKILLING THE UK WORKFORCE[1]

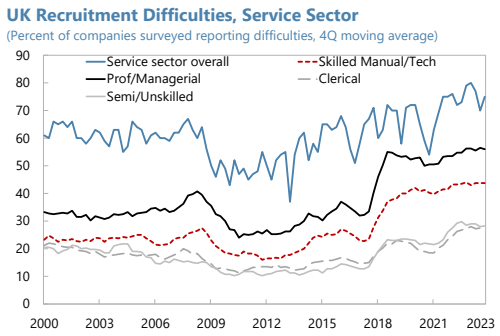
The UK workforce has larger and more chronic skills gaps than in most peer countries, with surveys reporting widespread recruitment difficulties, with implications for output, in high-skill sectors like digital and software, manufacturing, medicine and life sciences, teaching, and construction. This partly reflects declines in primary and post-secondary education outcomes (particularly science scores, over the past two decades) and in workplace training and apprenticeships, particularly for the young. Moreover, the recent increase in non-EU migrants has not fully offset the adverse impact from Brexit on the availability of needed skills, including because smaller firms face more recruitment hurdles with regard to non-EU hires. Against this backdrop, there is an urgent need to upskill the UK workforce, both by building on ongoing efforts, as well as additional concrete measures to: (i) encourage students and young workers to join and excel in STEM; (ii) ensure adequate vocational and on the job training, particularly for the young; (iii) retain the talent produced by UKs world leading universities; (iv) upskill the existing labor force; and (v) facilitate attraction and retention of in-demand skills through adjustments to the visa regime.

A. Skills Shortages in the UK

Recruitment Difficulties and Skills Shortages



Sources: The British Chamber of Commerce; and Haver analytics.



Sources: The British Chamber of Commerce; and Haver analytics.

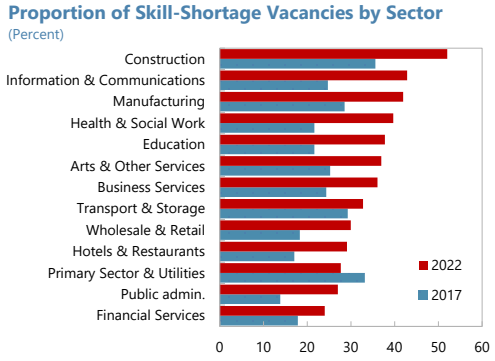
1. UK employers report widespread and chronic recruitment difficulties. Survey data show that recruitment difficulties have plagued UK employers from well before the pandemic or even Brexit, which have only served to exacerbate pre-existing problems. A rising percentage of surveyed firms faced increasing hiring challenges for skilled manual and technician roles since 2012, with almost 70 percent of firms reporting difficulties hiring skilled workers in 2023. Services companies have also experienced a shortage of professional, managerial and skilled technician roles, particularly since 2018. Employers reported difficulties filling roles for reasons such as low numbers of applicants with the required skills, a lack of interest in the job advertised, competition from other employers, and poor terms and conditions offered for the post. According to the 2022 Employer

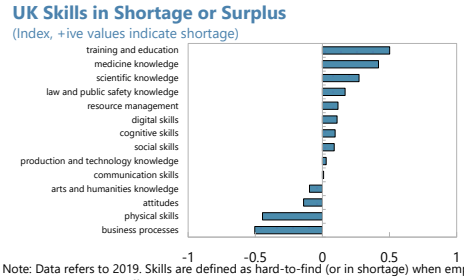
[1] Prepared by Pragyan Deb and Gloria Li. The paper benefited from discussions and comments received from the UK authorities during the 2024 Article IV consultation.

Skills Survey, the occurrence of skill-shortage vacancies—a subset of hard-to-fill vacancies that employers struggle to fill due to lack of skills qualifications or experience among applicants—has increased to 36 percent in 2022, a significant jump from the 22 percent reported in 2017.

2. Adding to the concern is that the largest increase in skills shortages has been in future growth sectors. Sectors such as information and communications (which includes digital, IT and AI), advanced manufacturing, health and social work, education, business services and wholesale and retail sectors have seen the highest increase in skills gaps. Construction and manufacturing were also among the sectors with the highest proportion of skill-shortage vacancies in 2022. Sector specific surveys point in the same direction: a recent PWC report highlighted a shortfall of 200,000 employees with green skills; and a Gallup and Amazon study found that 72 percent of businesses have digital skills vacancies, but only 11 percent of UK workers have advanced digital skills. These survey results are complemented by hard data, such as the OECDs measure of skill shortages. A measure of hard-to-find skills (or skills in shortage) in an OECD study shows that skills in demand in the UK are concentrated in key areas such as training and education, medical and scientific skills, and digital skills.[2]

Skills Shortages and Gaps in Key Sectors





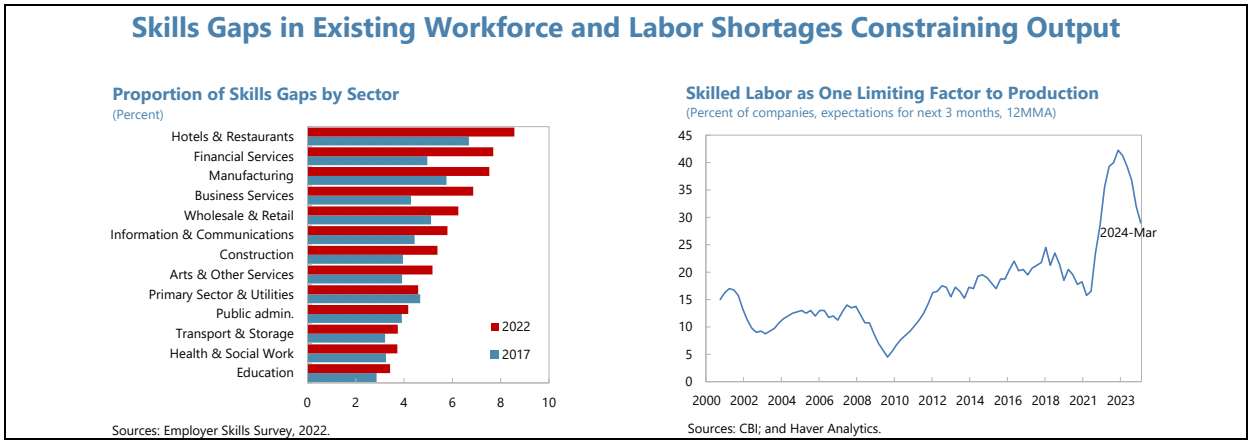
Sources: Employer Skills Survey, 2022.

Note: Data refers to 2019. Skills are defined as hard-to-find (or in shortage) when employers are unable to recruit staff with the required skills in the accessible labor market and at the going rate of pay and working conditions. Indicator constructed by the OECD using data on wage growth, employment growth, hours worked growth, unemployment rate, and under-qualification growth. Each series is compared against the economy-wide trend to derive sector specific differences; and then aggregated into an overall index. Sources: OECD Skills for Jobs Database 2022.

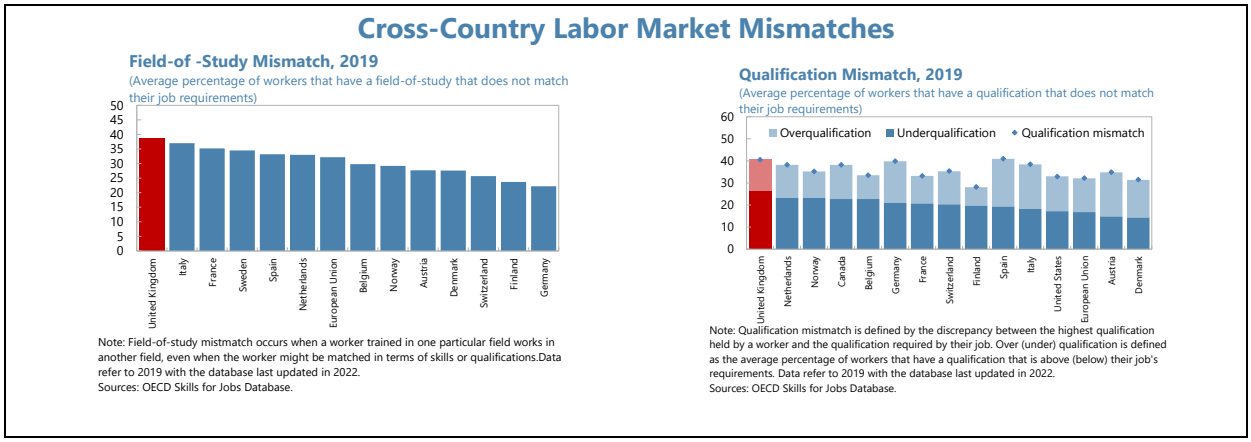
3. Skills gaps have also increased in the *existing* workforce (i.e., already-hired workers), and labor shortages are constraining output. In addition to skills shortages and difficulties in recruitment, 15 percent of employers also report that at least one member of staff is not fully proficient in their role (up from around 13 percent in 2017). The 2022 Employer Skills Survey also shows an increasing density of the skills gap in their existing workforce—the number of employees that are judged not fully proficient for their current roles as a proportion of all employees. This measure showed a steady decline since 2011, but picked up for the first time in 2022, increasing from 4.4 percent in 2017 to 5.2 percent in 2022. This was equivalent to 1.72 million employees

[2] OECD (2022) calculates an indicator of skill shortage or surplus using data on wage growth, employment growth, hours worked growth, unemployment rate, and under-qualification growth. Each series is compared against the economy-wide trend to derive sector specific differences; and then aggregated into an overall index. Skills are defined as hard-to-find (or in shortage) when employers are unable to recruit staff with the required skills in the accessible labor market and at the going rate of pay and working conditions.

lacking full proficiency, compared with 1.27 million in 2017. In addition, while the most common consequence of skills gaps was increased workloads for other workers, nearly a third of the companies reported that the lack of availability of skilled labor limited firm output. Smaller firms, with 2 to 4 employees, were more likely to note that skills gaps had a major impact.



4. The UK has larger field- and qualification-mismatches than peers. The OECD Skills for Jobs Database reports two measures of mismatch. Field-of-Study mismatch measures the average percentage of workers that have a field-of-study that does not match their job requirements, and qualification mismatch measures the average percentage of workers that have a qualification that is either below or above the job requirements. The UK ranks poorly in both measures of mismatch, as almost 40 percent of UK workers are calculated to have a field-of-study mismatch compared to an OECD average of 31.7 in 2019. In terms of qualifications mismatch, once again the UK compares unfavorably, particularly with the incidence of underqualification—a worker having a qualification that is below their job's requirements—which is one of the highest amongst other OECD economies at 40.5 percent, compared with an average of 34.4 percent. OECD estimates that such mismatches can lower productivity, increase unemployment, and limit the potential for UK businesses to compete globally. The Learning and Work Institute estimates that the UK skills shortage will cost £120 billion by 2030, with a shortfall of 2.5 million highly skilled workers and an oversupply of more than 8 million people with low skills.



B. Factors Driving Skill Shortages

5. Although it is difficult to isolate the precise drivers of the observed increase in skills shortages, the evidence points to weakening educational outcomes, including adult education, alongside the Brexit and COVID shocks, and population aging. Despite an increase in public funding for primary and post-secondary education since 2019 (reversing earlier cuts), outcomes, particularly science scores, have declined over the past two decades, accompanied by a decline in workplace training and apprenticeship, particularly for the young. Alongside cuts to state spending on adult education since the GFC, total employer investment in skills declined 19 percent per employee, in real terms, between 2011 and 2022, with sharper declines in larger businesses (-35 percent), primary (-44 percent), and public (-38 percent) service sectors. Since Brexit, there has been an increase in non-EU migrants, but they have not directly offset the loss of EU-workers given different skillsets and hurdles in hiring non-EU workers, especially for small firms. We discuss each element in turn.

Primary and Secondary Education

6. Public spending on primary and secondary education in the UK is relatively high compared with G7 countries but has declined over the past decade. On average, UK spending on primary to post-secondary education institutions, which includes expenditure on educational institutions and educational-related public subsidies given to households, was 3.7 percent in 2020 and above the OECD average of 3.3 percent. However, spending as percent of GDP has continuously declined from 2013 to 2018 with a small increase in 2020. On per capita terms, the IFS's 2023 annual report estimates 9 percent real terms fall in spending per student from 2010 to 2020, which is the result of a small (1–2 percent) increase in total spending on schools combined with a 11 percent increase of student numbers. In addition, while primary schools have experienced real-term growth in spending per student, secondary schools have experienced real-term cuts.[3] However, spending per student is projected to increase over the medium term due to schools receiving extra funding in the upcoming horizon and a decline in student population.

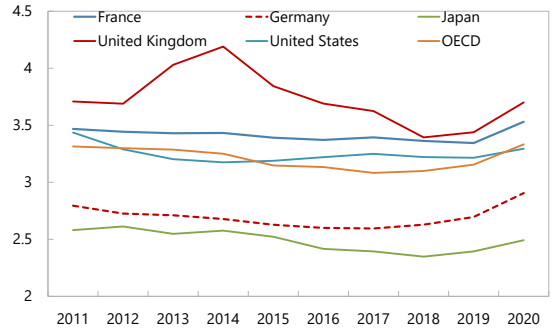
7. Reflecting this, although UK mean performances in students' education outcomes are above the OECD average, there has been a drop in performance outcomes from 2018 to 2022. OECD PISA, a comprehensive international assessment of student learning outcomes, measures the performance of 15-year-old students near the end of their compulsory education in reading, mathematics, and science. Overall, mean performance in these subjects have declined the past two decades across OECD countries and particularly over the last two years surveyed, i.e., from 2018 to 2022, which is partially explained by disruptions of COVID-19. Advanced economies that participate in the assessment often saw significant declines in two out of three subjects at once in the 10 years from 2012 to 2022 according to OECD's analysis. The UK experienced a non-significant declining

[3] According to the report, this is possibly because primary schools are likely to benefit from the transfer of funds and responsibilities from local authorities to induvial schools when secondary schools had reductions to sixth-form funding.

trend in both mathematics and science. In addition, since the first year of survey in the UK (2006), the lowest achieving 10th percentile of students has performed worse over time in mathematics, while the top 10th percentile did not experience significant change in performance, suggesting widening disparities.

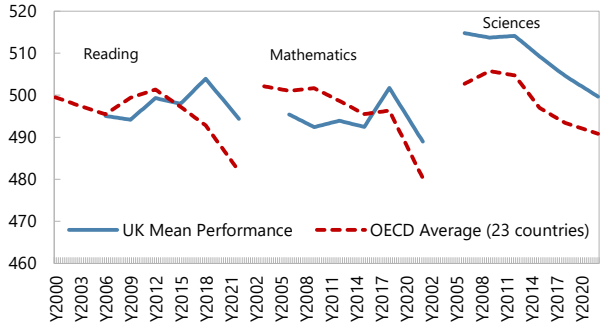
High But Declining Public Spending on Non-Tertiary Education; Falling Test Scores

Public Spending on Education Institutions: Primary to Post-Secondary
(Percent of GDP, 2011 to 2020)



Sources: OECD Public Spending on Education Indicators.

Trends in Performance in Maths, Reading, and Science
(2020, score points, 15-year-olds)

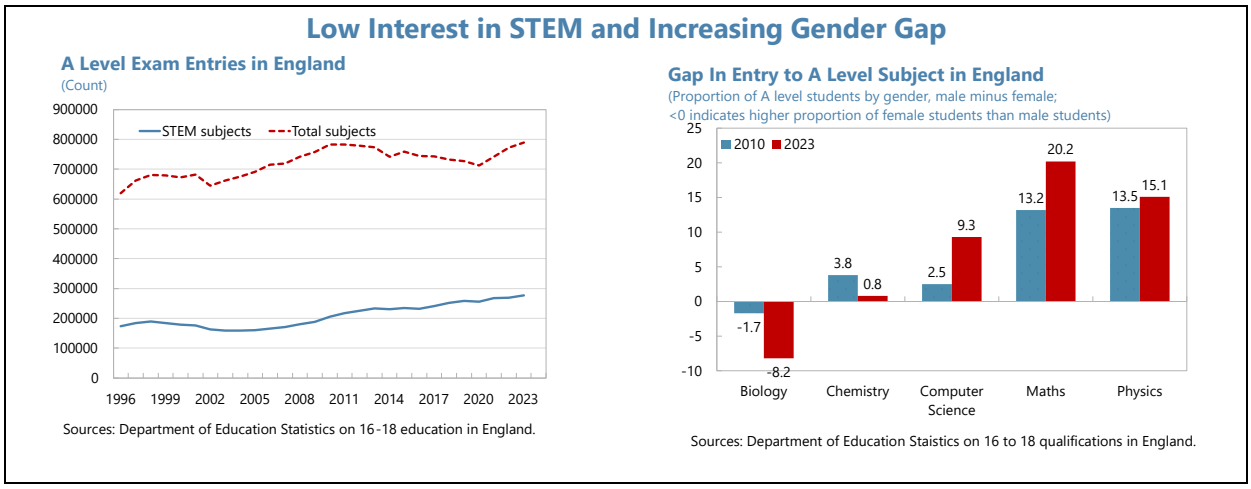


Source: OECD PISA (Programme for International Students Assesment) 2022 Database.

8. Several areas need attention to foster STEM education: student interest, gender gap, and more teachers with relevant STEM qualifications. By design, students in the UK take fewer core subjects with a higher degree of depth and specialization early on, while most other countries have established a wider core (OECD 2023). Demanding subjects such as A-Level mathematics are available to fewer students with implications for the limited number of entrants to tertiary education.[4] As a result, only 26 percent of UK graduates are from STEM courses, though this is better than 25 percent in France, 23 percent in Spain and 20 percent in the U.S; and the overall number of student participation in A-level STEM subjects has increased from 258,790 in 2019 to 276,641 in 2023.[5] In addition, there is a significant and increasing gender gap in subjects like Mathematics, Physics and Computer Sciences. In addition, STEM education is further impacted by shortages in qualified instructors. Reports such as the 2023 Teacher Labour Market in England Annual Report highlight the real term falls in teachers' pay that has been a key driver of challenges to recruitment and retention. This is particularly the case in subjects like physics, design and technology and computer sciences, which recruited less than a third of their respective targets in initial teacher trainees required to meet future staffing needs given better opportunities for such students in the rest of the economy (see McLean, Worth, and Faulkner-Ellis 2023).

[4] Not surprisingly, using the HESA and the National Pupil Database, Vidal Rodeiro, C.L. (2019) found that among those students whose main area of study is engineering and technology, uptake of A-level physics and mathematics was most prevalent. Similarly, most students whose principal subject area is medicine and dentistry in higher education also participated in A-levels Chemistry and Biology.

[5] A-level is a principal measure of education attainment for 16-18-year-olds before university, and uptake in certain A-level subjects are related to STEM degree choices in higher education. STEM subjects cover Biology, Chemistry, Physics, Total Mathematics, Further Mathematics, and Computer Science.



Vocational Training and Apprenticeship

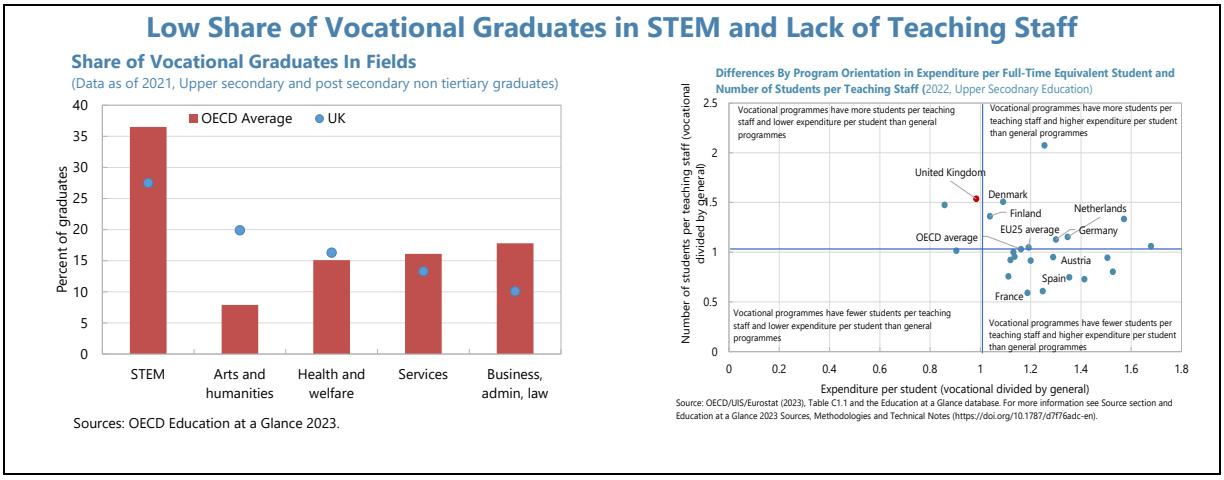
9. Improving T-level[6] and vocational training is essential for sectors experiencing skills-shortage vacancies such as construction, information and communication, manufacturing, and health. Some sectors that employ higher percentages of engineers and skilled trade professionals have traditionally reported that they struggle to attract younger workers (ONS 2006–2019 through ECITB 2018). In addition, half of the employers surveyed by a census of the engineering and construction industries in 2021 indicated that they faced difficulties hiring, and about 65 percent of those employers stated that those candidates not having the necessary qualifications and experiences contributed to hiring difficulties. A recent Institute of Physics research found that more than majority of physics-powered businesses faced slowdown or halted R&D investment due to a lack of skills of employees.

10. The UK has a low share of vocational graduates in key areas such as STEM, and vocational education needs more teaching staff. Vocational programs are designed to help students acquire specific knowledge and skills for occupations and trades and have combined school-and-work components.[7] Among OECD countries, the UK has a lower share of vocational graduates, especially female, in STEM, business, administration, law, and services. In addition, for the upper secondary vocational learners who consist mainly of younger students, only 7.9 percent of graduates are in in-demand sectors such as engineering, manufacturing and construction programs compared to an average of 31.8 (OECD 2021). Although the authorities introduced the T levels to address this, survey evidence suggests that understanding of these programs is relatively low for

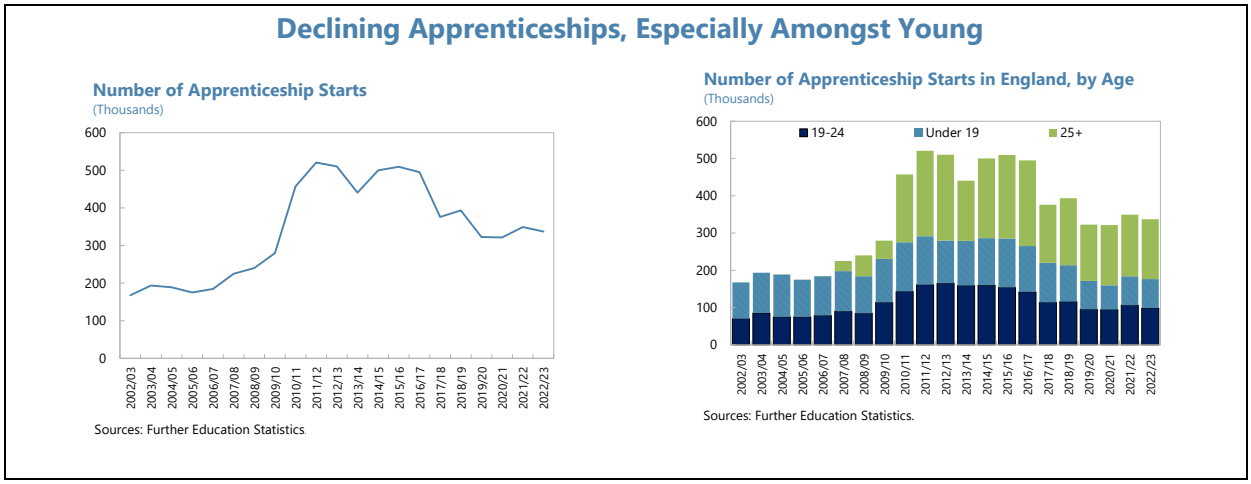
[6] T levels are two-year post GCESEs technical courses (Level 3) that offer practical learning at a school accompanied by on-the-job experience through an industrial placement of approximately 45 days.

[7] In the UK, these programs are offered for upper secondary levels (Level 2/3 or 12th and 13th year with average learner age of 20.2) and "vocational education" (post-secondary no-tertiary, Level 4+). T-levels, a new set of technical qualifications, were introduced in 2020 and aims to provide specialist knowledge and skills with direct access to tertiary education and streamline the existing system of qualifications.

both learners and employers, constraining uptake.[8] The student to teacher ratio is also higher—24.7 to 1 compared to the OECD average of 15 to 1 in 2021.



11. Apprenticeships, which are a type of work-based vocational training designed to provide direct entry to the labor force, have declined, and disproportionately for the young. Apprenticeship starts peaked in 2011 and decreased throughout the 2010s, with younger workers (under 24) apprenticeship starts almost halving after the pandemic, while apprenticeship starts for ages 25+ remained stable. Apprenticeship participation by levels also exhibited a divergence on opposite ends. High level apprenticeships, which include higher and degree-level (equivalent to at least a NQF Level 4 qualification) has tripled since 2017, in part due to policy initiatives to improve the quality of apprenticeship programs, while intermediate level apprenticeships (equivalent to NQF Level 2) have fallen sharply, bringing down overall participation.[9]

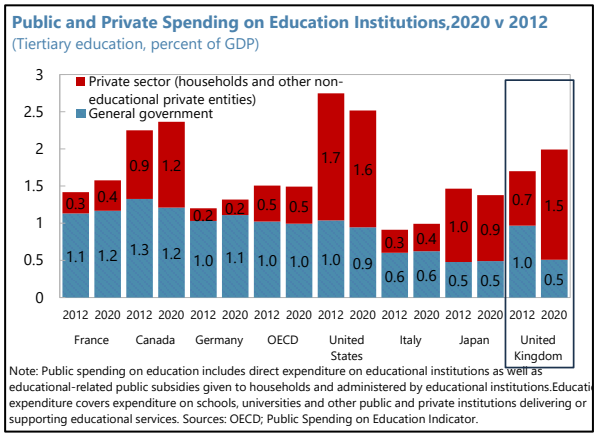


[8] Annual Perceptions of Vocational and Technical Qualifications survey conducted by the Office of Qualifications and Examinations Regulation (Ofqual) in 2022.

[9] NQF: National Qualifications Framework. Level 4 is equivalent to a Certificate of Higher Education. For reference, Level 3 is equivalent to a Diploma of Higher Education. Both A-Level, T-Level and advanced apprenticeships are Level 3 while intermediate apprenticeships are equivalent to Level 2, or GCSE.

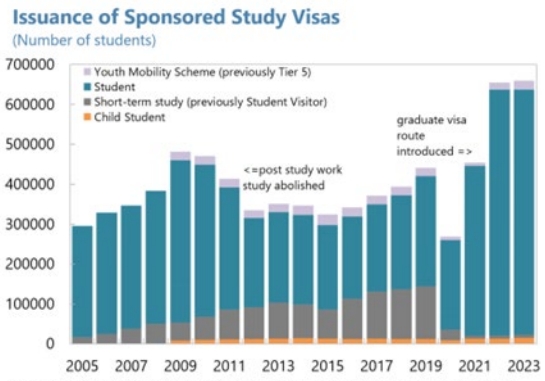
Tertiary Education

12. Public spending on tertiary education has plummeted in the last decade while private sector spending, fueled by international students, has increased. Overall spending on tertiary education has increased in the UK and is higher than other G7 countries except for the US and Canada in 2020, but this mask a remarkable shift between public and private spending. UK public spending on tertiary education institutions is well below OECD average in 2020, halving from 1 percent of GDP in 2012 to 0.5 percent in 2020. But this has been offset by private spending increasing from 0.7 to 1.5 percent of GDP. While as a general policy, it is desirable for public finances to focus on primary and secondary education, this shift has made UK universities more reliant on international students as domestic university tuition fees have been capped in the last decade. Tuition fees from non-UK students now accounted for 42 percent of higher education course fees and 21 percent of all income for universities in England in the 2021–22 financial year; and some universities in London received more than three-quarters higher education fees from non-UK students. This has made tertiary education finances more volatile and exposed to changes in immigration policy that has resulted in fluctuations in issued visas and enrollment, with potential impacts on research, performance, and skills attainment.

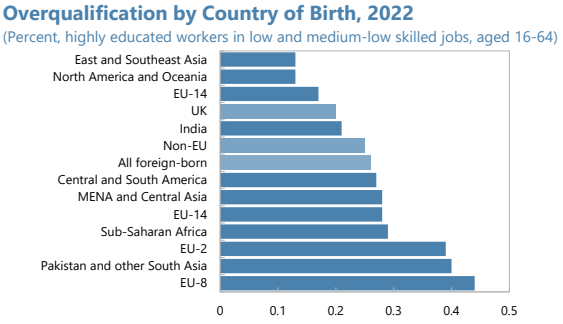


13. The impact of higher spending on tertiary education by foreign students on UK skills shortages depends on retention of these foreign students. The introduction of the Graduate Visa Scheme, which allows students to stay in the UK for 2 years and conduct job searches post-graduation, resulted in a more recent influx of visa holders and a large increase in yearly sponsored study. But insofar as foreign students return to their home countries after education, their impact on UK skill shortages will not be significant (other than indirect effects of subsidizing UK students). And even those who stay need to be properly integrated in the UK workforce – the Migration Conservatory's analysis of ONS population survey in 2022 shows that highly educated migrants are often overqualified, as the percent of highly educated foreign-born (including some EU born) workers employed in low and medium skilled jobs were above that of UK born workers. Finally, while the Graduate Visa Route was initially attractive to students, enrollment and retention is now an issue due to new restrictions changes and thresholds. Postgraduates are now restricted from bringing their families to the UK, and data from Enroly, a platform used by international students for registration, points to a decline in enrollment from several countries since 2023. Furthermore, management consultant companies such as KPMG, Deloitte, and HSBC that traditionally sponsor overseas recruits have cancelled job offers to non-UK recruits after the threshold for skilled visa workers was raised from £26,200 to £38,700 in 2024.

Increased Foreign Students and Labor Market Outcomes



Sources: Home Office Immigration Statistics, Entry Clearance Visa Outcomes Dataset;IMF staff calculations.

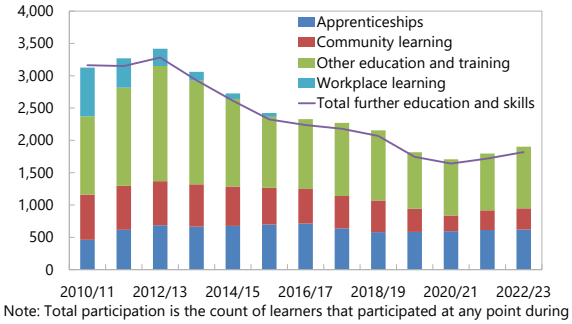


Note: low/medium-low skilled classification is based on the four-category classification by the ONS in 2020, in which job skills mainly indicate the educational credentials required to perform a job and do not consider other types of personal skills valued in the labor market. Highly educated workers are those with undegraduate or graduate degrees, or with higher education qualifcations below degree level. Sources: Migration Observatory; ONS Annual Population Survey 2022.

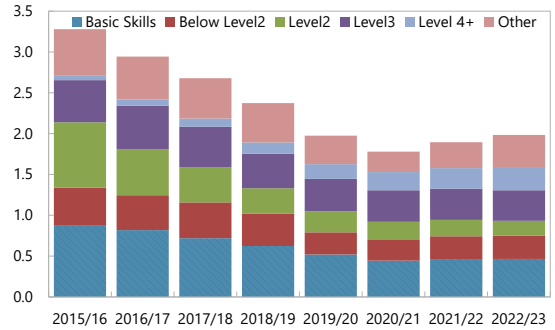
Adult and Workspace Learning

14. Participation in adult learning and skills development has also declined in the past decade and across most qualification levels, with a slight recovery over 2021-2023. These programs include community-based learning and workplace learning. In addition to the decline in participation, funding to adult learning has also decreased with consequences for the distribution of skills gap. Total public spending on adult skills have dropped 30 percent from its peak in the early 2000s. The Learning and Work Institute estimate that per capita funding for adult skills decreased in real terms by 28 percent and companies reduced the amount of investment by 20 per cent per employee between 2010/11 and 2022/23. Furthermore, in England, the decline in the number of adult learners in the most disadvantaged areas of the country was almost 10 times above the decline in the most advantaged.

Adult Learning has Declined, Though with a Slight Recovery in Recent Years

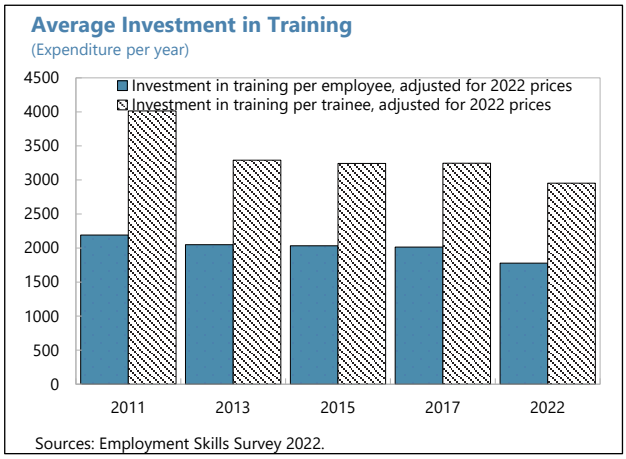


Note: Total participation is the count of learners that participated at any point during the stated academic period. Learners undertaking more than one course will appear only once in the grand total.Source: Individualised Learner Record (ILR).

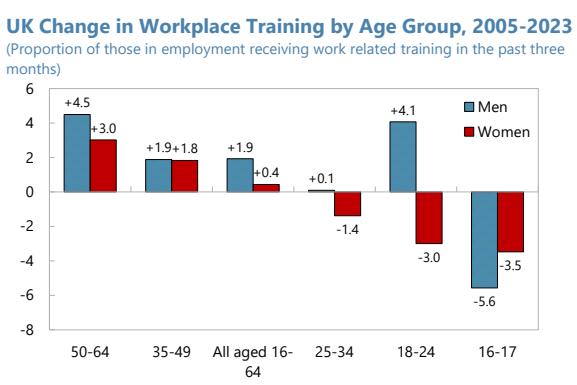


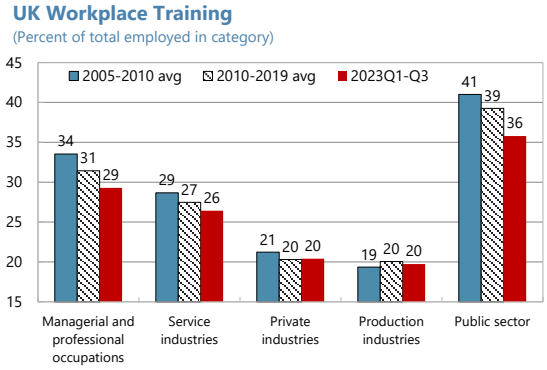
Sources: Individualised Learner Record (ILR)

15. While job-related training by employers has increased from 2005 to 2023, it has fallen for the young and women.[10] Overtime, the proportion of older workers who received workplace training increased 4.5 percent on average for men and 3.0 percent on average for women, even though in the aggregate younger workers (aged 16 to 24) still have the highest rates of in-working training participation. In the net, young people's participation has slightly decreased overtime, with women receiving less training. By occupation groups, the fall in workplace training during this period was the largest for those in managerial and professional occupation, public sector, and services. ONS (2017) found that women were more likely to participate in workplace training then men due to a having higher employment shares in occupation groups with higher rates of workplace training: professional, and caring/leisure and other services occupations. However, due to a higher share of women in part-time jobs, the training women undertook was typically shorter than training undertaken by men.



Workplace Training by Age and Occupation Groups

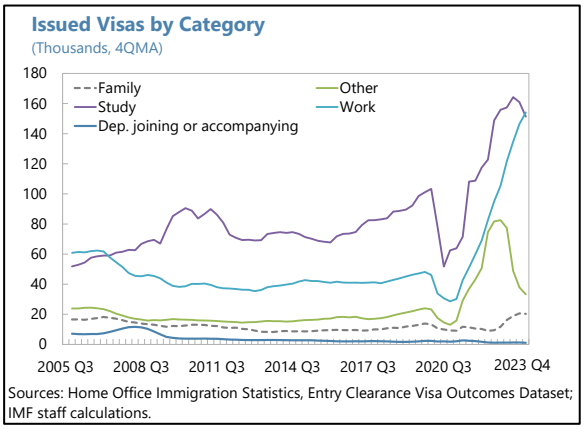




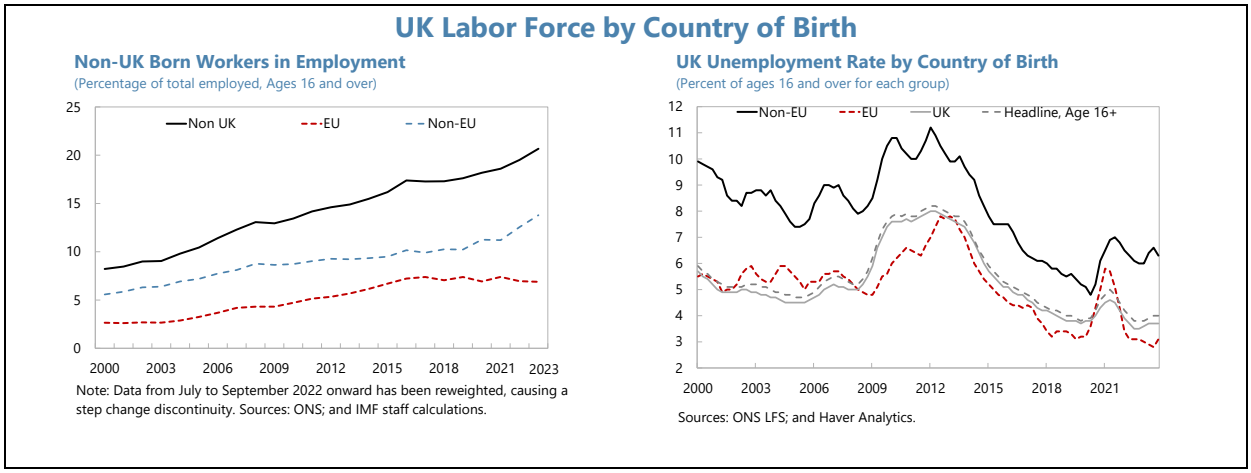
[10] Workplace training is defined by receiving job related training in the last four weeks, three months, or 12 months prior to being interviewed; and the training can take place at work or outside of work.

Brexit Challenges

16. Brexit has added to the skills challenge. Over the past two decades, migrants, including from the EU, have helped fill the skills gap in the short term. Data from the Home Office's Immigration Statistics suggest that studying and work are the main reasons for visa issuance. Although over the past two decades, the UK has had more non-EU born than EU-born workers, this gap has been widening significantly since Brexit. And while the surge in non-EU migration in recent years suggests that there is some substitution between EU and non-EU labor, there are significant differences in their labor market outcomes, matching, and employment share in industries. For example, on average, non-EU migrants also experience higher unemployment rate than EU-born and UK-born workers. In any case, hardening political views around high levels of migration suggest that large scale non-EU migration is not a long-term solution to skills gaps.



Sources: Home Office Immigration Statistics, Entry Clearance Visa Outcomes Dataset; IMF staff calculations.



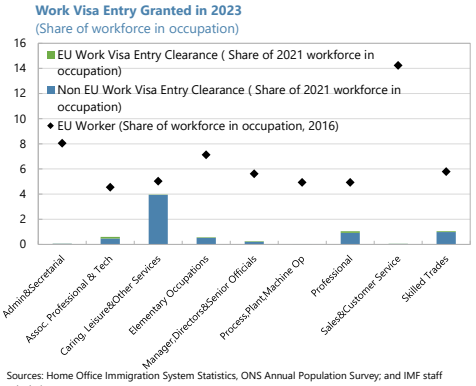
Note: Data from July to September 2022 onward has been reweighted, causing a step change discontinuity. Sources: ONS; and IMF staff calculations.

Sources: ONS LFS; and Haver Analytics.

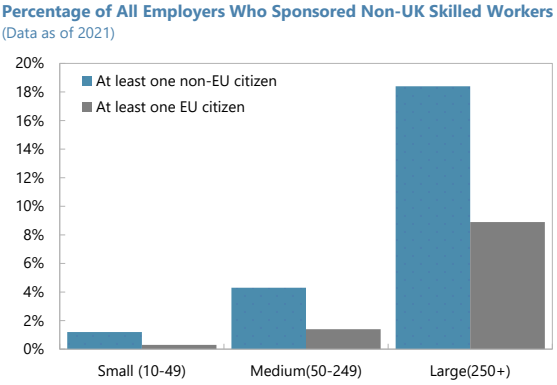
17. Certain occupations and companies face visa and sponsorship hurdles in obtaining non-UK workers to fill the void left by former EU workers. An often-cited criticism of the current immigration system is that it fails to help sectors, such as transport and skilled trades, that are experiencing significant worker shortfalls but cannot access labor through the current system. Analysis of the Home Office's Immigration System Statistics illustrate that pre-Brexit, many occupation groups in need for skilled workers, such as managers, professionals, skilled trades, and sales and customer services roles, filled their requirements by hiring EU workers. Such workers consisted of a significant share of the workforce in these occupations in 2016. However, post Brexit, many of these occupation groups have extremely low rates of sponsorship in 2023 when compared with the share of EU worker that they relied on, leaving a void and a substantial skills gap. Only in the case of caring, leisure and other services occupation group the share of non-EU workers in who

received visa sponsorship is relatively close to the share of EU worker in these occupation groups in 2016. A related issue is the size of companies – small and medium sized firms that often relied on EU labor, find it difficult to navigate the complexities and expenses of hiring non-EU workers, making it difficult for them to get the skilled workers they require. This is evidenced by the dominance of large firms in sponsor foreign workers, with small and medium employers largely staying out of the system.

Non-EU Workers in the UK Labor Market



Sources: Home Office Immigration System Statistics, ONS Annual Population Survey; and IMF staff calculations.



Sources: The Migration Observatory.

C. Policy Recommendations

18. Addressing skills gaps is a crucial challenge for the UK government, employers, and education providers to maintain economic growth and develop workforce and skills for the future. This involves starting from primary and secondary education levels, improving education outcomes, particularly in STEM, as well as promoting younger workers interests in digital, engineering, and creative subjects, and in technical education programs. Furthermore, there is a need to upskill the current workforce, with better quality training and apprenticeships programs, both by the employer and externally, particularly in high demand skills. And while it is critical to improve the domestic pool of skilled workers, this is likely to take time, and in the interim skilled migration can fill the gap.

19. Further ambitious reforms are needed, building on current polices. The authorities consider addressing skills gaps a priority, with an emphasis on future growth areas such as digital and AI, STEM, life sciences and the creative arts, particularly for the young, but also for older workers through lifelong learning. Various initiatives have been launched (see Table 1), but more is needed.

- ***Reforms to primary and secondary education with an emphasis on STEM.*** Ambitious targets consistent with a reversal of the recent decline in STEM outcomes is needed, along with schemes to further encourage students and younger workers, particularly women, to enter future growth sectors and improve retention.

- **More and better-quality vocational training and apprenticeships to develop skills in high demand, including via higher government support.** Efforts are needed to increase vocational graduates in key areas such as STEM, including by encouraging and increasing awareness of students and employers about the new T-levels and other vocational programs. It is important to also increase the quality of vocational programs and improve the below average (relative to OECD) student to teacher ratio. The decline in apprenticeships, particularly for the young, must be reversed while improving their quality, including via reforms to the apprenticeship levy.

- **Keep stable student visa regime and encourage high skilled students with in-demand skills to remain in the UK.** Given the increased importance of international student tuition fee (as an offset to declining public investment in tertiary education), a stable and attractive UK student visa regime is critical to protect the financing of word class UK universities. At the same time, efforts must be made to retain and fully integrate high skilled graduates in the UK labor market.

- **Continued focus on lifelong Learning and on-the-job learning, particularly for younger workers.** Building on the lifelong learning entitlement from 2025 that allows adult learners to access loans equivalent to four years' worth of higher education to spend flexibly on degree or technical-level qualifications, efforts are also needed to encourage on the job training, including through further public support, and with a focus on distribution. In particular, since younger workers utilize training to start and prepare for future careers, there is a need for employers to improve their access and incentives training.

- **A simplified worker visa regime** is needed to facilitate smaller employers (who were large employers of skilled EU-labor pre-Brexit) to hire non-EU workers.

20. Summing up, labor supply is a critical ingredient of economic growth, and the UK needs ambitious reforms to ensure that it has quality labor trained in the skills of the future. Growth going forward will be concentrated more in higher and professional occupations, which is likely to mean an increased demand for higher level skills. According to analysis by the Earning and Work Institute, between 2020 and 2035, the greatest number of jobs to be filled due to sectoral change and people retiring will be science, research, engineering, and technology professionals (1.9 million); business, media, and public service professionals (1.8 million); caring personal service occupations (1.7 million); administrative occupations (1.6 million); and health and social care associate professionals (1.2 million). Projections suggest there will be 3.5 million fewer jobs needing qualifications below A-level or equivalent and 6 million more jobs needing higher education qualifications. The UK needs to prepare for this by undertaking the ambitious reforms outlined above to ensure its workforce is fit and ready for the future.

Table 1. United Kingdom: Ongoing Initiatives in the Skills Space

Name	Description
Adult Skills Fund (ASF): Adult Education Budget (AEB), Direct Funding of Qualifications and Skills	ASF is made up of two component - the Adult Education Budget (AEB) which is a long running fund focused on basic skills (up to L2) and Free Courses for Jobs (FCFJs) which was introduced in April 2021, which includes fully advanced level (level 3); funding is paid to further education colleges. However, overall funding and participation have fallen.
Technical Education Reforms (T levels)	Launched in 2020, T levels are two-year post GCESEs technical courses (Level 3) that offer practical learning at a school accompanied by on-the-job experience through an industrial placement of approximately 45 days. Currently launched for full-time students aged 16-18 with remaining levels to be introduced.
Skills Bootcamps and Local Skills Improvement Plans (LSIPs)	Skills Bootcamps, launched in 2020, are designed to train, retrain, and upskill adult learners through short, sharp dynamic courses in high growth sectors. LSIPs, rolled out in 2022, provide an agreed set of actionable priorities that employers, providers, and stakeholders in a local area can get behind to drive change.
Digital Skills Training Package	Launched in 2023, training will be delivered through universities and government schemes to target digital and green skills for each region; and 200 million has been announced.
Institutes of Technology	Investing up to £300m to establish a network of 21 (19 already open, with remaining planned for 2024) Institutes of Technology that specialize in delivering higher technical education from level 3 (T-levels) to level 7 (Master's degrees).
Lifelong Learning Entitlement	From 2025, the post-18 student loan system will be reformed through merging separate loan systems for further and higher education
Apprenticeship Levy	Starting in 2017, a levy is charted on large employers to fund subsidies for apprenticeship training. High-level apprenticeship numbers have grown despite overall starts falling back. The authorities have put in measures to improve the quality of apprenticeships, which in part explains the decline in total numbers. Authorities are making efforts to grow apprenticeship numbers in key sectors, including incentivizing SMEs to create opportunities for young people. This includes a £50m apprenticeship growth sector pilot, which gives £3,000 per-apprentice funding boost for 13 standards to grow starts in key sectors such as manufacturing, life sciences, and green. A further £60m would create an additional 20,000 new apprenticeships and additionally removing the 5% SME co-payment for apprentices under 22 and raising the transfer limit for unspent levy funds to 50% from 25%.
Package for engineering and physical science doctoral skills	Announced in May 2024, over £1 billion from government, business, charities and academia will be used to train students in 65 Centers for Doctoral Training and with most opportunities outside of the Southeast of England.

References

Britton, J., & Farquharson,C., and L, Sibieta., (2019). 2019 Annual report on education spending in England. London: The IFS. Available at: https://ifs.org.uk/publications/2019-annual-report-education-spending-england

Drayton, E et al. (2023). Annual report on education spending in England: 2023. London: Institute for Fiscal Studies. Available at: https://ifs.org.uk/publications/annual-report-education-spending-england-2023

Mann, C. L. (2023). "Expectations, lags, and the transmission of monetary policy", speech given at the Resolution Foundation.

Melville, D., & Bivand, P. (2019). Local skills deficits and spare capacity. Learning and Work Institute.

Stronati, C. (2023), "The design of upper secondary education across OECD countries: Managing choice, coherence and specialisation", OECD Education Working Papers, No. 288, OECD Publishing, Paris, https://doi.org/10.1787/158101f0-en.

OECD. (2023). Education at a glance 2023: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/e13bef63-en.
OECD. (2023). Education at a Glance Database, https://stats.oecd.org/.

OECD (2023). PISA 2022 Results (Volume I): The State of Learning and Equity in Education. PISA, OECD Publishing, Paris, https://doi.org/10.1787/53f23881-en.

OECD. (2023). PISA 2022 Results (Volume II): Learning During – and From – Disruption. PISA, OECD Publishing, Paris, https://doi.org/10.1787/a97db61c-en.

OECD. (2023). Skills for Jobs Indicators.

Office of Qualifications and Examinations (Ofqual) (2023). Perceptions of vocational and technical qualifications in England-wave 6.

Vidal Rodeiro, C.L. (2019). Popularity of A Level subjects among university students. Cambridge Assessment Research Report. Cambridge, UK: Cambridge Assessment.

Blumenthal, von F,, & Fantini, B. A. (2021). ECITB workforce census 2021: overview of the engineering construction industry. Engineering Construction Industry Training Board.

Vassilev, G., et al. (2019). Characteristics and benefits of training at work, UK: 2017. Office for National Statistics.