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Championing better work and working lives

Policy report

April 2017

From 'inadequate' to *'outstanding'*: making the UK's skills system world class

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Acknowledgements

Written by Ian Brinkley and Elizabeth Crowley.

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Foreword

In today's competitive and fast-changing world, the skills and capabilities of the workforce are vital to economic sustainability and growth. From industrial strategy through to education, the skills we are building are important for policy and for enterprise as much as for providing opportunity for individuals. With all the predictions of a changing world of work and the nature of jobs we do alongside increasing automation, our ability to upskill and reskill our workforces, and therefore also the importance of adult and lifelong learning, will need a much stronger focus. Brexit is also causing many sectors and organisations to think more about their future skills needs, assuming less access to migrant labour from the EU, and we have been falling behind in the investments we make in our workplaces. And, with the introduction of the apprenticeship levy now imminent (April 2017), there is an urgent need to ensure that the reforms drive quality over quantity and deliver the skills needed now and in the future.

This report provides a much needed stocktake of how well our skills system is performing internationally and should serve as a wake-up call to government, businesses and individuals that we need to raise our game considerably. Drawing on a wide range of international evidence, we find that while the UK compares well on the provision of higher-level qualifications, its performance on most other indicators of qualifications or skills is either poor or mediocre.

Our young people are entering the workplace, college or university with mediocre scores on maths, reading and science despite a high rate of investment in education. And once in the workplace, they record mediocre scores for literacy, numeracy and digital skills compared with most other comparable countries. Of particular concern is that the UK is now the only developed nation where young people record no better skills than those leaving the labour market as they retire.

Yet, this report highlights that many of the biggest challenges lie in the workplace itself. The majority of people who will be working in 2030 are already in the workforce, and will be untouched by the current round of educational reforms. UK employers spend less on training than other major EU economies and less than the EU average. Participation in job-related adult learning has fallen significantly in recent years, leaving us languishing close to the bottom of the league table.

What's clear from this report is that we need to actively promote the development of productive, inclusive and engaging workplaces that get the best out of people, but also that we take a much more strategic view of skills and the systems and mechanisms through which we will develop and sustain them. Just focusing on the supply is not enough if we are to meet the huge challenges of rapid technological change, an ageing workforce, and increasingly complex organisational structures, while ensuring progression for as many people as possible. We need to start thinking much more broadly about how the growth of different employment models, flexi-working, contract and portfolio working may require significant changes to the ways we invest in and develop skills in the future.

HR has a vital role to play in helping organisations to take a more strategic view of the kind of workforce they'll need for the future. In turn, we can help employers assess the different ways in which they can find, access and develop the talent and skills they'll need to survive and grow, as well as helping to build more resilient and productive workforces.

Peter Cheese
Chief Executive, CIPD

Introduction

This report reviews skills policy in the last 20 years, compares our current performance against the world's major economies, and makes some recommendations on how we can improve our performance.

The focus of this report is on skills rather than qualifications. Although they are often treated interchangeably, skills are not the same as qualifications. Skills associated with the ability to write and understand reports and communicate with others, to perform numerical and analytical tasks, and use computers to help solve problems are at the heart of how organisations function in the digital age. Other attributes, such as the ability to work well with customers and clients, and being caring and creative, are also highly valued in some jobs, although these are harder to pin down as specific skills.

The process of acquiring qualifications undoubtedly builds on and improves skills – the well educated, for example, also tend to be highly skilled. But qualifications also provide specialist knowledge, they validate personal competences to clients and customers, and they signal to employers a wide range of desirable attributes and skills. These complement the generic skills we use in the workplace but are distinct from them.

Both qualifications and skills matter, as a workforce with low levels of qualifications is also one likely to have low levels of skills. But in this report we will argue that skills matter even more when thinking about the performance of the economy and of organisations and the progression of individuals. As we show later, it appears to be skills mismatch rather than qualifications mismatch which has the bigger impact on productivity. This is not surprising – many qualifications are obtained either before or shortly after starting our working lives and are not always updated, while we go on acquiring skills throughout our careers.

Yet it would be fair to say that it has been qualifications rather than skills that has been the key policy focus for many years, especially in the UK. The assumption that skills and qualifications are good proxies for one another – now disproved by recent research – is one reason. Another is that qualifications are easy to measure, whereas skills are difficult, and there is a noticeable discrepancy between the volume of statistical and survey measures on educational attainment and measures of skills and training effort.

In addition, an increasing segment of the UK labour market has been effectively closed off to those without the right qualifications, some through government regulation and practice and some through promotion by trade bodies and other institutions. Often these can be justified by necessity – few of us would want to be treated by a doctor or represented by a lawyer who was unqualified. Most organisations would expect an architect or engineer to be qualified, even though it is legal to practise as one without qualifications, and in some areas professionalism has been

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an important means of driving up standards and improving performance and productivity in the workplace. But taken too far it can also be a way of increasing the wages of the qualified as part of an insider–outsider labour market. As we show later in this report, there are concerns that there has been an excessive focus on degree-level qualifications through universities, when alternative and more vocational qualifications through alternative routes might be more appropriate for the job and less expensive for individuals and organisations.

But perhaps the most important reason has been that for many years the UK has given priority to expanding higher education rather than complementing that expansion with developing further education, strengthening adult education, and creating a high-quality vocational training system. It would be wrong to say that vocational training and non-university education have been neglected, as successive governments have attempted to remedy long-standing deficits in these areas. Their impact, as this report shows, has been mixed at best. Expanding the university system has, in contrast, been much easier and in many ways has been a successful policy. It has produced a highly qualified workforce while sustaining the UK's higher education system as a world leader. In contrast, a recent report called the vocational training system 'the invisible world' – and that seems a reasonable summary of the relative priorities of policy-makers.

One of the purposes of this report is to bring more light to this hidden world and persuade policy-makers to give a higher priority to developing a range of high-quality vocational routes to employment as complementary to a university education. We reject the idea that increasing provision and putting in place effective structures and incentives in these areas is in any sense anti-university. We need both systems to work effectively if we are to meet the huge changes in the content and organisation of work driven by new technologies, deal with increasingly complex organisational structures, and ensure progression in the workplace for as many people as possible. That means looking at how people can acquire and develop skills throughout their working lives, and not just in the early years.

1 The development of the UK skills system

To say the skills system is complex is a massive understatement. It is also one that has constantly changed, with a bewildering variety of institutions, incentives, structures and priorities – some short-lived, some more enduring. A recent report from City & Guilds estimated that over the past 30 years, skills policy has been overseen by 65 secretaries of state and with 11 changes in departmental responsibility.[1] It would be near impossible to chart all the twists and turns that characterise UK skills policy over the past 20 years without producing a massive tome, so in this report we try and identify some of the key features and milestones.

A recent assessment[2] suggests that the complexity stems from the decision in the 1980s to open up the market for provision of youth and adult training, previously co-ordinated by the Manpower Services Commission, to private and voluntary sector providers and to introduce a system of National Vocational Qualifications that had little in the way of central standard-setting or direction.

The focus on policy has also shifted. Ten years ago the Leitch Report on Skills committed the Government to making the UK 'world class' when it came to skills, warning that the current trajectory would leave the UK far behind countries such as Germany and France by 2020. The big focus of Leitch was also on what the report termed 'adult skills', which meant all those aged 20 or over. The report set out specific targets on skills at basic, intermediary and higher level, although the last two were expressed as qualification targets. At this time, there was also anxiety that the UK was falling behind on the share of the workforce with higher (degree-level) qualifications and the share of GDP devoted to higher education. A target to get 40% of the working-age population to level 4 (degree or equivalent) was adopted.

Leitch also created a new infrastructure and adapted existing institutions. Most funding for adult skills was to be routed through two programmes, Train to Gain and Learner Accounts, which were to be part of a new demand-led approach: a new body, the UKCES, was created to strengthen employer and stakeholder voice and engagement; Sector Skills Councils were to be given a stronger role; and a commitment to introduce a right to train in 2010 to at least level 2 for all employees was threatened if there was an insufficient voluntary employer response. The costs of training were to be shared between government, employers and individuals, with government focusing on those areas where private returns were weakest and deemed to be suffering from market failure.

By this time there was a degree of weariness setting in for some about the constant changes to skills institutions, structures and incentives, with one commentator noting that:

'Once in every generation, at least, the government panics about a perceived skills shortage in the UK

'To say the skills system is complex is a massive understatement.'

'The new government made a number of commitments to expand better-quality apprenticeships and this has remained the major focus of government skills policy.'

economy. It's a crisis. Everyone gets blamed. A report is commissioned. Reforms are proposed. A new quango is established. Deadlines are set. Not much seems to change. Then there is another panic … And so it is once more.' [3]

True to form, Leitch did not last long, although it was arguably because of the financial crisis of 2008 and the urgent need to prioritise that led the Coalition Government in 2010 to scrap the targets. Moreover, some programmes, such as Train to Gain, had produced disappointing results, which might have justified its abandonment even in a more generous funding climate. Funding was also withdrawn from qualifications with low take-up or demonstrating little value in a much needed cull of the plethora of qualifications on offer. The new government made a number of commitments to expand better-quality apprenticeships and this has remained the major focus of government skills policy.

Some of the principles of Leitch were retained, especially around greater employer engagement and participation, the sharing of funding responsibility, and the commitments to improve basic skills and qualifications. The UKCES survived until 2015, when it too was abolished and responsibility for skills development was shifted from industry to the education department. This appears to have been driven more by short-term budget pressures than a considered view of whether a social-partner-based strategic body for skills was still needed or whether skills development was best served as part of the overall education system.

However, there was no funding available for either an overhaul of existing provision or replacement schemes. As a result, starts classified as workplace learning collapsed and were only partially offset by an increase in apprenticeships. As many of the latter were for workers aged over 25, it has been suggested that many employers were, quite rationally, rebranding training effort previously supported by Train to Gain as apprenticeships.[4] The old weakness of publicly funded training validating existing training effort rather than encouraging additional training effort persisted. The Coalition and subsequent Conservative government embarked on a series of reform to improve the quality and additionality of apprenticeships and, more recently, to hugely expand the numbers.

In 2011 the Wolf report[5] was published, and was highly critical of the system as it stood. While Professor Wolf was looking at one part of the skills and qualification system, it is tempting to apply her strictures more widely to other areas of skills policy:

'These failures are not despite but because of central government's constant redesign, re-regulation and re-organisation of 14–19 education. And the numerous examples of good quality innovation and success are achieved not with the help of our funding and regulatory system, but in spite of it. This is in spite of unprecedented levels of spending; and after thirty years of politicians proclaiming, repeatedly, their belief in "parity of esteem" for vocational and academic education. The priority must be to move 14–19 vocational education away from the sclerotic, expensive, centralised and over-detailed approach that has been the hallmark of the last two decades. Such a system inevitably generates high costs, long delays and irrational decisions' (p21).

The centralised direction criticised in the Wolf report for under-20s vocational education has led to a more devolved system where employers have been given more control over the design of the apprenticeship system. Following the 2012 Richard Review,[6] a number of employer-led Trailblazers are developing standard-setting and funding models which will, over time, replace the current frameworks. The new system is not centred on qualifications and it remains to be seen whether this new approach will encourage more and better-quality training than under the current approach.

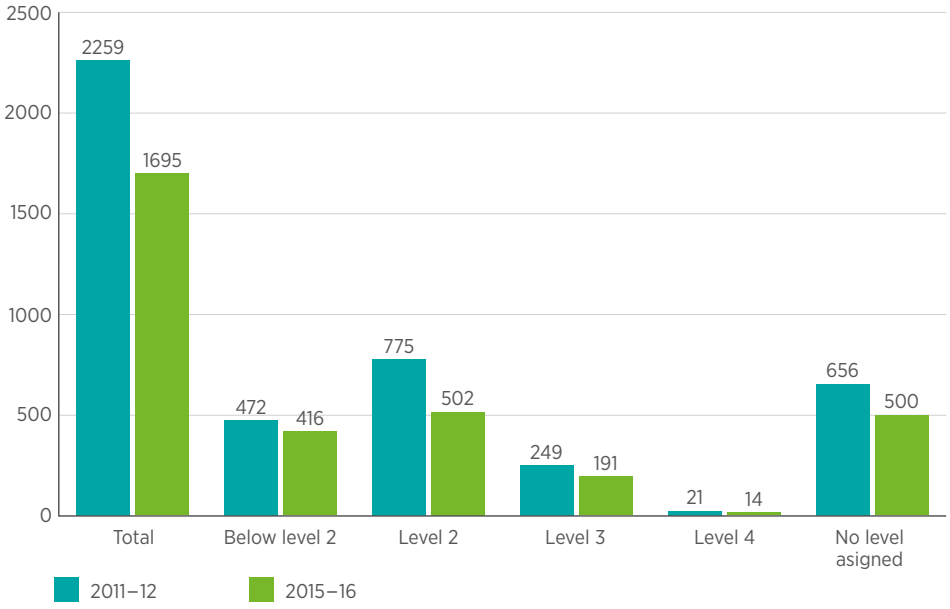
The 2014 OECD review of UK skills policy[7] noted that, with likely changes in the economies of most OECD countries with the growth of employment in technical and associate professional occupations, many would need a substantial and growing amount of post-secondary vocational provision below bachelor's degree level. The OECD concluded that *'the English system therefore contains a substantial gap in provision, or alternatively, over-provision of vocational bachelor degrees for jobs that do not require three years of training'.*

The OECD noted that since the early 1990s, a side effect of the expansion of universities was that shorter and more vocational course provision was steadily subsumed into the university sector, where the courses became longer and more academic and squeezed out qualifications such as Higher National Diplomas. Moreover, the UK vocational system is unusually complex by international standards, and pathways and progression for students are less clear than for degree students. In addition, funding of adult education and the further education sector has been cut.

The latest statistics at the time of writing show that in England, government-funded learners defined as adult (19-plus) and classified as achievers fell by 25% between 2011–12 and 2015–16. The fall was especially severe at both level 2 and level 4, with drops of around 35%. The fall was less severe for those achieving below level 2 (excluding English and maths), with a decline of just 12%.

Professor Alison Wolf,[8] in a report published in 2016, offers a bleak assessment on past and

Figure 1: Learners in adult education, by achievement, 2011–12 to 2015–16 (000s)



Note: This includes apprenticeships, workplace learning, community learning and teaching, and learning provision (including for ex-offenders) at further education colleges, sixth form colleges, agricultural and art and design colleges, and other specialist institutions. Below level 2 does not include maths and English. No directly comparable data before 2011–12.

Source: Skills Funding Agency https://www.gov.uk/government/statistics/further-education-and-skills-november-2016

current trends, where she warns of the collapse of technical-level education, with technical post-secondary awards accounting for only 2% of substantial qualifications and less than 1% of all qualifications funded by the adult education system; those that are funded are often not in areas where demand is greatest. Her analysis suggests that the UK is locked into a system where the number of degree-holders can only go up and the number of high-level technical qualifications will go down.

A recent review of the evidence by Mason and Rincon-Azar[9] for the House of Commons Education and Business, Innovation and Skills Committee, published in 2015, suggested that the greatest economic benefit would come from a system for intermediate skills when:

1 It produces a mix of technical, practical and occupation-specific skills combined with generic skills such as communication skills, problem-solving skills, teamworking skills and customer-handling skills.

2 Classroom-based learning is reinforced by employment-based training in some way (preferably through apprenticeship training) so that trainees learn a range of skills which are best acquired – or can only be acquired – in workplaces

On the evidence so far we still seem to be some way off creating such a system. The Government's reforms of technical education as set out in the Post-16 Skills Plan offer some promise here. The broad objectives of the reforms are to create a system that supports learners to achieve sustained skilled employment and that meets the skills needs of a changing economy. In particular, the reforms aim to streamline a complex system of overlapping qualifications into a common framework of 15 routes – or T-Levels – which group occupations together in a two-year college-based programme with a high-quality work experience placement, aligned to apprenticeships. However, at this stage, it's unclear what the outcome of the reforms will be and whether or not lessons have been learned from the similar 14–19 diplomas initiative which suffered from low levels of take-up and were discontinued after a few years. The apprenticeship levy set out in the 2015 Budget is another way that the Government hoped to address some of the criticisms of vocational and technical training in the UK. However, the implementation and design have been far from trouble-free.

The apprenticeship levy – a lesson in how *not* to introduce a new policy

In 2015 the Government reverted to a more centralised and directional approach through an apprenticeship levy to help fund the commitment to deliver 3 million apprenticeship starts between 2015 and 2020. There are obvious challenges in trying to simultaneously improve the quality of apprenticeships and hugely expand the numbers.

In April 2016 the National Audit Office noted that the Government needed to set out how apprenticeship reforms would help increase productivity, what success would look like, and also set some clear performance targets.[10] This echoes the comments made in the House of Commons Business, Innovation and Skills Committee report on the Government's Productivity Plan,[11] with the committee calling for a clearer justification for the 3 million target and its composition between higher- and lower-level apprenticeships. The committee pointed out that there is an inherent contradiction between an arbitrary target set by government and a training system where volumes and levels are supposed to be based on demand from employers.

In June 2016 the CIPD published some large-scale employer surveys which showed that the apprenticeship levy will, in its current form, make the underlying position worse, with employers cutting back in other areas of workforce development or validating existing training provision, and little sign as yet that many employers will make additional investment.[12] While some employers can see the merit of the levy in principle, in practice it is in danger of producing the opposite effect to its intention and replicating the weaknesses in apprenticeship training to date.

In some areas, such as careers guidance, policy changes appear to have increased complexity with little sign of improvement. A recent House of Commons Sub-Committee report in July 2016 concluded that: *'Recent years have seen a whole host of policy changes, initiatives and new bodies: none has led to any serious improvement in provision; some have proved counter-productive.'*[13] In 2014 the National Audit Office noted that the programme to simplify careers service provision by the then Department for Business, Innovation and Skills (BIS) had failed to produce much in the way of savings for providers. The Careers and Enterprise Company has started to fill some of these gaps between employers and schools, but it cannot substitute for a national careers service for schools themselves.

Whether these reforms under the previous Coalition Government and the current Conservative Government will change the underlying picture significantly is too early to judge in many cases and some reforms are still in the process of implementation. The recent report from City & Guilds neatly summarises some of the underlying failures and continued weaknesses which may yet derail the latest sets of reforms embodied in the Post-16 Skills Plan:[14]

'There has also been little improvement in learning from past failures. The Post-16 Skills Plan for example, has been likened to the failed 14–19 Diploma initiatives. High targets continue to be set, despite the potential adverse effects of compromising on quality. Timescales continue to be rushed, meaning insufficient time to garner the necessary support of employers or educators; the risk of initiatives failing to be embedded properly persists; and there's a lack of consideration for the longer-term impact of some of the changes in scope.'[15]

The concerns expressed above may be addressed, but as things stand there is a clear danger of simply going around the same track of supporting large numbers of low-quality apprenticeships with little impact on overall training volumes.

The implications of Brexit for domestic skills policy

Moreover, these changes are coming into effect in a period when Brexit appears to be having a small but negative impact on the willingness of employers to invest in workforce development. Recent labour market surveys by the CIPD show a negative balance between employers who say they will invest more in training because of Brexit and those who say they will invest less.

However, some employers who employ migrants say they will increase investment in the existing workforce and step up efforts to recruit more young people from domestic sources. The potential reduction in the flow of migrant labour also has major implications for UK businesses and domestic skill policies, not least that some existing investment may be directed to making good the loss of skills from overseas rather than increasing skill levels in the workforce.

Previous research by the CIPD shows that those firms who employ migrants are also the most likely to invest in their younger workers. Some of these firms will do even more, but others will not be in a position to increase investment and firms who do not employ migrants will have no incentive to fund additional training. The Government has acknowledged that increased training effort will be required, but has not as yet developed proposals for additional measures. There are considerable uncertainties about the impact on future labour supply and the skills-base, partly because at the time of writing the shape of future migration policy for EU nationals is unknown and partly because some migrants may vote with their feet. We also do not know how changes will impact on UK nationals currently working or seeking to work in the EU27.

Industrial partnerships and Industry Training Boards

In 2014 the Coalition Government set up several industrial partnerships to pilot yet another employer-led approach to skills development. The pilots were an eclectic mix of sectors (aerospace, automotive), cross-sector groups of activities (digital, creative, energy), general (science) and

'Previous research by the CIPD shows that those firms who employ migrants are also the most likely to invest in their younger workers.'

specialist (nuclear, tunnelling). It was clearly signalled that public funding would be for a limited period[16] and in December 2015 the new Conservative Government withdrew public funding in the expectation that private industry would continue to fund the partnerships. Their future and function is uncertain.

Most recently, the Government has shown some interest in the future of Industry Training Boards and, in October 2016, announced a review following the Farmer report on the Construction Industry Training Board.[17] Once an important part of the UK skills system, today only three exist in construction and engineering (statutory levy) and the film industry (voluntary). There is little indication the Government sees the boards as a potential model for delivering skills outside these sectors and the main focus of the review will be on how the new apprenticeship levy will interact with the current industry-funded levies that support the boards.

The Farmer report[18] is significant not because it identifies the problems in an important sector of the economy, but because it says a large part of the problem is a business model that locks the industry into too much low-margin work with erratic workloads and that has helped create what the report calls *'a dysfunctional training, funding and delivery model'*. Many critics of the UK skills system who have identified the prevalence in the UK of business models that rest on a 'low skills equilibrium' as a major barrier to increasing the demand for training would recognise that analysis.

Skills policy development

When looking at attempts to improve the stock of skills in the economy, we can see some broad themes which have persisted over the past 20 years. The net impact on creating new skills and new opportunities for individuals to acquire intermediate skills has been modest, with significant resource and effort going towards validating existing skills and training effort at relatively low levels:[19]

- There has been little consistency, with endless changes in institutions, structures, incentives, targets and policy priorities made worse by constant changes in ministerial and departmental responsibilities and oversight.
- Priority has been given to apprenticeships, with other areas such as adult education experiencing a big loss of part-time places before the recession and big cuts to the budget since 2010.[20]
- There has been a substantial and long-term decline in the volume of employer training (stabilised in recent years) and also a decline in employer investment in training in cash terms (which has continued).
- The higher education sector has greatly expanded and the participation rate has increased to one of the highest in the OECD.

The last two conclusions lend themselves to different interpretations. One is that the UK is best served by having a large supply of highly skilled labour in the form of degree-holders to drive the expansion of higher-skill jobs and knowledge-intensive industries of the future. The continued high wage *premia* for many graduates suggests employers value the skills this level of education brings to the workplace. An alternative view is that there has been a degree of substitution, with some employers deploying large numbers of graduates in non-graduate jobs as a cheaper alternative to investing in intermediate skills. The excessive expansion of higher education has therefore been one of the causes of the fall in employer training effort.

The purpose of this report is not to evaluate which of these interpretations is 'right'. Our view is that there is some truth in both of these propositions. Moreover, both would agree that skills policy for years has struggled with the fact that employer demand for intermediate skills in the UK has been relatively weak, most likely linked to business models and competitive strategies by some employers that do not require extensive investment in skills.

Before looking at what might be done to address these weaknesses, we set out in the next section how the UK compares with other economies. Before coming up with policy suggestions, we need to know how well we are doing and whether the trends we have seen in the UK are shared by other major economies.

2 How the UK compares

In this section we look at various measures of skills and training effort. This is less straightforward than it might seem. The definition and measurement of skills has proved more elusive than qualifications and consequently there are fewer good measures. There are also relatively few internationally comparable measures of training effort. Even comparison of qualifications can be tricky below degree level – for example, the US has no direct equivalent of NVQ levels that form the basis for comparisons for most European economies, as we show below.

Much analysis has been devoted to trying to measure over- and under-qualification and over- and under-skilling. Over-qualification and over-skilling occur when individuals have more qualifications or skills than the job demands. The reverse is true for under-qualification and under-skilling. These concepts have also proved remarkably hard to pin down, with different surveys, definitions and methodologies providing different results. There also appear to be significant differences whether the measure is taken at the point of hire or subsequently, and also with age. Employer perceptions seem to differ from employee perceptions, but there appears to be a dearth of international measures. There are some measures of employer perception from national surveys, though a recent attempt to use some UK datasets to measure skills issues from the employer point of view have highlighted significant problems in employer awareness.

These are sets of measures we therefore need to approach cautiously in making international comparisons. It is probably true to say that a robust and objective international measure of both over-skilling and under-skilling in the workplace is still a work in progress.

Investment in education

Many analyses and some of the suggested solutions of the weaknesses of the training system in the UK start with the education system. We do not in this report have the time and space to discuss the development of the UK education system in great detail, although it shares with the skills system to some extent the endless appetite for institutional and structural change and the commitment of successive governments to expand diversity of provision and devolve control to individual institutions and groups of institutions. There has also been an increase in the school leaving age, with older pupils being offered a range of educational and training options. With the huge expansion of the higher education system, the route to university has become a dominant route for many secondary school pupils, with other options being less well considered despite efforts by successive governments.

We start with one of the more objective measures: how much does each country invest in their education system? The measures are defined by the OECD and cover public expenditure on primary and secondary schools (but not private spending) and both public and private investment in the tertiary

'The definition and measurement of skills has proved more elusive than qualifications and consequently there are fewer good measures.'

sector (universities and their equivalent). The most recent figures are for 2013 and are expressed in US dollars at purchasing power parities. We have focused on spending per pupil as the better comparator, as total spend measured as a share of GDP can be driven by other factors, such as demographics and the relative size of the school-age population.

The UK is a high-investment economy when it comes to education. Of the 33 OECD countries for which we have comparable data, the UK ranks sixth highest, coming behind countries such as Luxembourg, Switzerland and the United States. UK spending is over 30% higher than the OECD average. The UK ranks well above the OECD average for spending per pupil in primary, secondary and higher education, coming seventh out of 32 countries on primary, eighth out of 32 countries for secondary, and fourth out of 32 countries on higher education. Higher education is boosted by an above-average contribution from private sources, such as student fees, when compared with most other European countries.

These figures do not take account of vocational post-secondary education. The UK devotes very little to this form of education, while it is much more important in many European economies such as Germany, France and Italy. However, they also exclude private spending on primary and secondary education, which is more important in the UK than in many other OECD economies. They do include private spending by individuals and organisations on higher education, and the latter also includes spending on research and development by universities funded by both public grant and private sector support.

National statistics show that public spending on education and training together has fallen in real terms since 2010–11, with the share dropping over the same period from 5.8% of GDP to 4.7% of GDP in 2015–16. Much of this reflects a reduced net public contribution to the university sector (largely because of increased provision for lower repayments of student loans); and there have been significant cuts in services to education. There has been little change in the cash totals allocated to pre-school, primary and secondary education since 2010–11, so mainstream education budgets in real terms will also have fallen as a share of GDP.[21]

In an analysis published shortly before the last general election, the Institute for Fiscal Studies[22] estimated that spending per pupil in current terms had increased very slightly in real terms between 2010–11 and 2014–15, though capital spending had been reduced significantly, as had spending on the education of 16–19-year-olds. It is likely that current cash spending plans will reduce spending per pupil in real terms somewhat to 2019–20, especially if inflation picks up. However, it is unlikely these cuts will greatly change the UK's ranking, partly because it starts from a relatively favourable position and partly because some other OECD economies also cut back spending in this area after 2008.

School outcomes at age 15

However, despite high levels of investment, school outcomes on some measures appear mediocre by international standards. The OECD PISA surveys measuring the performance of 15-year-olds on maths, reading and science in 2012 showed the UK around the OECD average on maths and reading, and somewhat above average on science. The UK scores for reading have improved over the past decade, but scores for maths and science have not.[23] So, as yet, the top ten

Table 1: Spending per pupil in non-tertiary education and selected outcomes at age 15

Spend per pupil		Maths PISA score		Reading PISA score		Science PISA score	
US	150	Japan	532	Japan	516	Japan	538
UK	**130**	Germany	506	Germany	509	Germany	509
Germany	110	France	493	France	499	**UK**	**509**
Japan	108	**UK**	**492**	**UK**	**498**	US	506
France	104	Italy	490	US	497	France	495
Italy	88	US	470	Italy	485	Italy	481
OECD	100	OECD	490	OECD	493	OECD	501

Note: spend per pupil is in US dollars at purchasing power parities in 2013, or nearest year, indexed against OECD average = 100.

Source: PISA 2015, Results in Focus, Snapshot of performance in science, reading, and mathematics https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf

rates of investment in education have not produced a top ten finish in terms of some educational outcomes. The UK is not alone in this contrast – the US spends even more than the UK, but has worse or similar outcomes on these measures. This is shown in Table 1 for the OECD's major economies.

Numeracy, literacy and computer problem-solving skills outcomes for young people aged 16–24

We next look at some measures of the basic skills that young people in the 16–24 age group possess. These are quite different from educational outcomes by qualifications conceptually and in how they are measured and cannot be directly compared. Moreover, skills outcomes will be determined by what happens in the workplace at least as much as, and arguably much more than, what happens at schools and universities.

The outcomes in terms of literacy and numeracy and computer-based problem-solving skills of 16–24-year-olds based on the OECD survey of skills conducted in 2012 have, so far, been unimpressive. In the OECD survey the UK came third from the bottom on literacy skills, above only Italy and Spain, and fourth from the bottom on numeracy skills, ahead of only Spain, Italy and the United States.

Surprisingly, given the high levels of connectivity and sustained efforts to introduce computers into schools at all levels, the UK also did badly looking at the share of young people who had only the most basic skills in using computers to solve problems, coming joint last, alongside the US, of the 19 economies for which we have comparable data. Nearly 50% of young people in the UK had poor computer problem-solving skills compared with the OECD average of just under 40%.

It is hard to avoid the impression that many young people experience slower progression in the workplace in their first years of employment than in many other OECD economies. The poor performance of the UK in providing good-quality vocational training for young people may be a significant factor. In addition, as we show later, the UK has an unusually large share of jobs which require only a basic level of education, so the opportunities to develop better skills for those young people who enter such jobs will be limited. It may also reflect higher unemployment among the under-25s and higher rates of NEETs (not in education, employment or training) in the UK than in some other OECD economies, which means fewer young people get the chance to capitalise on the skills and knowledge they take from education or develop new skills than in, say, Germany or the Netherlands.

The low achievement in this age group does not, however, persist into older age groups. This marks the UK and the US out as exceptions, where the skills of older age groups are better than the skills of some younger age groups, even though a much higher share of the current generation entering the workforce has been educated to graduate or equivalent level than the generation moving towards retirement. It is, however, always important to remember that measures of skills and measures of educational attainment are different, so we should be wary about reading across from one to the other. The skills survey is better at measuring basic generic skills rather than the specialised

'It is hard to avoid the impression that many young people experience slower progression in the workplace in their first years of employment than in many other OECD economies.'

'Across the rest of Europe and in Japan and Korea, the skills of younger workers are consistently higher than for older workers.'

knowledge and analytical and problem-solving abilities that a graduate education can provide.

There are two competing explanations for difference in skill levels between younger and older workers. The first is that the difference is generational, with older workers being able to develop higher-level skills than the younger generation, perhaps because for some non-graduates the labour market has become an even harsher place than in the past, especially around skills formation. As we show later in this report, there has been a huge long-term decline in training volumes offered by UK firms since the 1990s.

The OECD has voiced concern that, as a result, the stock of skills in the UK will decline as better-skilled older workers are replaced by new generations of less skilled workers.[24]

'The implication for these countries is that the stock of skills available to them is bound to decline over the next decades unless action is taken both to improve skills proficiency among young people, both through better teaching of literacy and numeracy in school, and through providing more opportunities for adults to develop and maintain their skills as they age.'

Across the rest of Europe and in Japan and Korea, the skills of younger workers are consistently higher than for older workers. In Germany, for example, the percentage point gap between 16–24-year-olds and those aged 55–65 when measuring numeracy is 25 points, in France 33 points, in Japan 26 points. The gap on literacy is also considerable – in Germany 19 percentage points, France 29 percentage points, and Japan 10 percentage points. The gap in the UK for both numeracy and literacy is zero. Assuming these results are sustained, the retirement of the lower-scoring generations in Germany, France and Japan and their replacement by higher-scoring younger generations must increase the stock of skills in these economies.

However, there is an alternative explanation, which is that over time workers catch up, so the skills of subsequent generations move into line with the OECD average. In the UK, both literacy and numeracy scores for each age group from 35 years onwards compares more favourably with the OECD average and with other major economies. There is some evidence that older workers in the UK have got better at retaining skills over time, with an increase in literacy scores for the oldest age group when comparing the mid-1990s with 2012.[25] This may be less alarming than the generational explanation, but it nonetheless still begs the question as to why in the UK young people do so badly compared with their peers. We also do not have a clear explanation as to how and why catch-up occurs in the UK (and US) adult populations.

Table 2 (p15) shows the mean scores for numeracy and literacy for three age groups (the youngest (under 25); those in mid-career (35–44); and those coming up to retirement or outside the workforce (55–64)). The last column shows the gap between the mean scores of the youngest and oldest groups – for example, the youngest group of adults in France have numeracy scores 33 points higher than the oldest group of adults.

Solving problems with computers

It is widely recognised that the ability to use computers to solve problems is becoming a growing essential for many new jobs

created in the digital economy, and across the economy as a whole, as technological change increases employment in occupations where computers complement skills and decreases employment in occupations where routine tasks can easily be automated. The OECD survey[26] specifically tests for the ability of individuals to use computers to solve basic problems.

In some countries the share of older workers who had no experience of computers or failed the basic test is very high. In Japan, over 40% of the adult population between the ages of 55 and 65 fell into this category, compared with 20% in the UK and 15% in the United States. Among the youngest age groups, 16–24, the share who either had no experience or failed the basic test is typically less than 5% in most OECD economies, including the UK, although Japan again has an unusually high share at 12%. However, as we show below, a large share of young people have poor computer problem-solving skills.

This may reflect generational differences – the group coming up to retirement from the labour force will also be the generation least likely to have experienced computers in the workplace or at home, so it is not surprising that they do badly on this measure. We would therefore expect that as the older groups drop out of the workforce, the stock of people with good computer problem-solving skills will increase.

However, there is less evidence of either generational change or catch-up for younger age groups in computer problem-solving skills in many OECD economies, including the UK. In the UK the share of people with no or low skills is almost exactly the same for both the 16–24 age group and the 35–44 age group at around 55%. Across the OECD as a whole, the share with no and low skills shows a modest improvement between the generations, from 44% for 16–24-year-olds to 51% for 35–44-year-olds.

It would appear that the rapid expansion of digital services and computer-based technology in both home and workplace is not translating into better problem-solving skills with computers. In the

Table 2: Generational gaps or catch-up? Numeracy and literacy skills across age groups

Literacy mean scores

16–24		35–44		55–65		Age gap (pps)	
Japan	299	Japan	307	Japan	273	France	33
Germany	279	Germany	281	**UK**	**265**	Italy	27
France	275	Canada	280	US	263	Japan	26
Canada	275	**UK**	**279**	Canada	260	Germany	25
US	272	US	273	Germany	254	Canada	15
UK	**266**	France	267	France	242	US	9
Italy	261	Italy	253	Italy	233	**UK**	**1**
OECD	271	OECD	279	OECD	255	OECD	24

Numeracy mean scores

16–24		35–44		55–65		Age gap (pps)	
Japan	283	Japan	297	Japan	273	France	29
Germany	275	Germany	279	**UK**	**257**	Italy	22
Canada	268	Canada	272	Germany	256	Germany	19
France	263	**UK**	**269**	Canada	251	Canada	17
UK	**257**	France	262	US	247	Japan	10
Italy	251	US	258	France	234	US	2
US	249	Italy	251	Italy	229	**UK**	**0**
OECD	271	OECD	275	OECD	253	OECD	19

Source: Survey of Adult Skills (PIAAC) (2012), OECD

UK the scores of the generation aged 16–24 at the time of the survey who entered the workforce from 2004 onwards are very similar to the generation of 35–44-year-olds who entered the workforce from 1984 onwards.[27] Indeed, the OECD confirms that these skills are typically the least used in the workplace and consequently are those least likely to be developed over time. The OECD also concludes that while graduates show a clear lead over non-graduates in terms of literacy, numeracy and problem-solving scores, this is less true for information processing skills. Moreover, graduates with the same qualifications show much wider variance in this skill than in the others (Table 3).[28]

The poor performance of the UK on this measure is somewhat puzzling, given the priority successive governments have given to getting computers into schools and the importance successive variants of industrial strategy have given to the digital economy. Moreover, the 2015 European Working Conditions Survey shows that use of computers (including tablets and smartphones) in UK workplaces is slightly higher than in France, but much higher than in Germany or Italy and well above the EU average. Indeed, the share of people who said they used a computer almost all the time at work in the UK was the third highest in the EU, just behind Denmark and Luxembourg.

The high scores for the UK on the use of computers must in part reflect differences in industrial and occupational structure, with the UK having more service-related and more high-skill occupations than many other EU countries. It certainly does not reflect a higher incidence of problem-solving ability in the population as a whole. That might in turn suggest a more polarised structure and a large share of jobs that, while they might use computers, do not require problem-solving skills. But it is also possible that the OECD measure does not fully capture the way computers are used at work, and is therefore underestimating workforce proficiency (Table 4).

Table 3: Problem-solving skills using computers compared across age groups (%)

	Share of population with no skills or low skills at using computers to solve problems, by age group					
	16–24		35–44		55–64	
	No or low skill	Low skill	No or low skill	Low skill	No or low skill	Low skill
Japan	40	28	40	26	67	21
Germany	44	42	53	44	74	47
Canada	46	41	50	42	70	50
UK	**54**	**50**	**56**	**49**	**72**	**52**
US	54	49	56	48	64	49
OECD	44	40	51	43	70	42

Notes: no skills are all those with no computer experience or failed basic test. Low skill is all those at or below proficiency level 1. No data for France or Italy.

Source: Survey of Adult Skills (PIAAC) (2012), OECD

Table 4: How much work do people do using computers? (%)

	Almost always	Between 25% and 75%	Almost never
UK	**44**	**25**	**31**
France	42	22	36
Germany	23	32	45
Italy	21	24	55
EU	31	25	44

Note: responses to question, *does your work involve working with a computer, tablet or smartphone?*

Source: European Foundation for the Improvement of Living and Working Conditions. (2017) European Working Conditions Survey, 2015

Qualifications

The UK is distinguished in having a high share of graduates, a high share of people with low levels of qualifications, and a relatively small share of intermediate qualifications. This is in contrast to countries such as Germany, which have a much smaller share of people educated to degree level and a much larger share of intermediate skills. These reflect long-term differences in business models, different institutional structures and different policy priorities. In 2014, the UKCES[29] took the qualifications structure today for 33 OECD economies (based on 2011 data from the OECD) and projected current trends forward to 2020.

The UK was ranked eleventh in 2011 by the share of those in employment who held degrees and in 2020 was projected to move up to seventh, behind the US, Canada and Japan, but ahead of Germany, France and Italy. For those with intermediate qualifications, the UK moved in the opposite direction from twenty-fourth to twenty-eighth, roughly the same as Canada but lower than all the other major OECD economies. The UK also slips back on the share of people with very low-level qualifications, dropping from nineteenth to twenty-second. By 2020 the projections suggest the UK will still have a higher share of people with low qualifications than Japan, Canada, the US and Germany, but a lower share than France and Italy.

Although there is not much change in relative rankings to 2020, if anything, the projections suggest the qualification structure of OECD economies will diverge further between some major EU economies (Germany, France, Italy) and the rest of the major OECD economies (UK, US, Japan, Canada). These trends are of course largely shaped by assumptions about the future course of policy, for example, that the priority given to expanding graduate-level qualifications in the UK will continue and that the share of people with lower levels of qualifications will remain at recent levels. However, there is nothing in more recent estimates to suggest this picture has greatly changed since 2011, and the most recent edition of *Working Futures*,[30] which looks at projected change for the UK through to 2024, is also consistent with a no-change scenario.

However, the structure is not entirely set in stone – for example, other countries that are moving in the same direction as the UK towards very high levels of degree-holders, such as Japan, Canada and the US, are all projected to have relatively few jobs with low qualifications. The UK is not. More recent policy changes, such as the commitment to expand new apprenticeships and improve their quality, may have some impact, though as our review section implies, it is highly unlikely that they will make much difference to the UK's relative position on non-degree qualifications (Table 5).

Over-qualification

There has been significant debate about the extent of over-qualification in the UK, especially for graduates. Over-qualification occurs when individuals have more qualifications than they need to do their current job. This is a different measure from over-skilling, which occurs when an individual has more skills than they need to perform their current duties. There is not much of an overlap between the two measures. Indeed, the OECD found that in most OECD economies, 80–90% of people who

Table 5: Qualification projections to 2020 (%)

	Low			Intermediate			High	
	2011	2020		2011	2020		2011	2020
Japan	7	5	Germany	59	59	Canada	51	60
Canada	11	5	Italy	41	47	Japan	46	52
US	11	9	Japan	47	44	**UK**	**38**	**48**
Germany	14	11	US	47	44	US	42	47
UK	**26**	**18**	France	42	43	France	30	36
France	28	21	Canada	37	35	Germany	28	30
Italy	44	33	**UK**	**37**	**34**	Italy	14	20
OECD	25	18	OECD	44	43	OECD	32	39

Source: Bosworth, D.L. (2014) *UK skill levels and international competitiveness. 2013.* Evidence Report 85, August. London: UKCES.

'The OECD found that in most OECD economies, 80–90% of people who reported they were over-qualified or under-qualified also reported a good match on skills and their job requirements.'

reported they were over-qualified or under-qualified also reported a good match on skills and their job requirements. In the UK, about 10% of those who were found to be over-qualified were also found to be over-skilled. Measures of educational qualifications are clearly not a good proxy for generic skills and vice versa.

There are three significant bodies of work on over-qualification which point in somewhat different policy directions. There has been extensive and detailed research undertaken on looking at the supply and demand for what are termed graduate jobs – that is, jobs that require at least graduate levels of qualification to do them. These conclude that in the UK especially there are high levels of over-qualification, with the number of jobs that require a degree significantly lower than the number of degree-holders. One conclusion that might be drawn from these studies is that the UK has over-expanded the higher education sector relative to demand.[31]
A second body of work using different approaches finds that while the UK has a similar incidence of over-qualification compared with some other major economies, the incidence is much lower, and under-qualification is a significant problem. A third body of work has looked at relative wages and has typically concluded that supply and demand are broadly in balance, but returns vary significantly by subject of degree.

Not surprisingly, there is a major problem, however, in measuring over-qualification or – as it is sometimes called – over-education, as the results are highly sensitive to the methodology chosen, survey questions and the datasets used. This section tries to pick a way through what is often a dense and dark forest of estimates, sometimes consistent and sometimes contradictory. Nor is it just a question of what the incidence of over- or under-education might be, where at times it feels as if the debate is reducing itself to the equivalent of an argument over the number of angels able to dance on the head of a pin. There are also some uncertainties about the trend: is it getting worse or better and by what degree? And which is the bigger challenge: too many people in jobs for which they are over-educated or too many people in jobs for which they are under-educated? Without clear guidance on these questions, it will be hard to formulate an appropriate policy response.

Graduates in non-graduate jobs and their skill utilisation

A recent report published by the CIPD[32] based on a detailed analysis of the 2010 European Working Conditions Survey found a high level of under-utilisation of graduate-level qualifications in the workplace compared with other European countries. The same report also shows that the share of UK graduates entering non-graduate jobs is higher and has grown faster than in some other EU countries. The follow-up CIPD report[33] emphasises the importance of making full use of the current qualifications that the UK workforce possesses, not least because any change in the future supply of new graduates can do little to address the under-qualification of the much larger number of graduates already in the workforce. We return to some of the conclusions of that report in our recommendations section.

Other surveys, such as the recent OECD Adult Skills Survey, also find high levels of over-qualification in the UK. The OECD survey asks whether people feel their qualifications are a good match

for their job and then uses their relative scores on literacy and numeracy derived from the Adult Skills Survey to estimate how many people outside that range are over-qualified or under-qualified. By this measure, over-qualification is a significant challenge in many OECD economies, but especially in the UK. The OECD estimates suggest that in 2012 about 30% of the workforce were over-qualified for the job they held in the UK, against an OECD average of 21%. Under-qualification – where workers are in a job that demands higher levels of qualification than they possess – is less common and the UK has a similar under-qualification rate to the OECD at 13%. This is pretty much the exact reverse of the estimates presented in the BIS research paper.[34]

When we take the two measures together, only 57% of the UK's workforce is described as well matched to their job by qualification compared with 66% across the OECD. Indeed, the UK has the joint lowest share of well-matched workers in the OECD, alongside Ireland. The share in the UK is not that different from Canada and Japan (58% and 61% respectively) but is significantly lower than in Germany and the United States (66% and 67% respectively). It is a long way behind the best performers in the OECD, where 70–80% of workers report they are well matched (Table 6).

These figures are consistent with some UK-based estimates using similar approaches. For example, recent UKCES estimates based on analysis of the Skills Employment Survey[35] found that over-qualification declined slightly between 2006 and 2012 from 39% to 37%. The UKCES distinguishes between 'real over-qualification', where someone is both over-qualified and over-skilled, and finds a similar modest decline from 17% to 15%. There were also

Table 6: Qualification mismatch across the OECD in 2012 (%)

Share over-qualified		Share under-qualified		Well matched	
Japan	31	Italy	22	Ireland	57
UK	**30**	Sweden	21	**UK**	**57**
Australia	28	Netherlands	18	Australia	58
Ireland	27	Cyprus	16	Canada	58
Canada	27	Ireland	16	Japan	61
Estonia	27	Norway	15	Estonia	61
Germany	23	Canada	15	Sweden	60
Spain	22	Finland	14	Italy	65
Korea	21	Austria	14	Austria	65
Austria	21	Australia	14	Norway	65
Czech Republic	21	Belgium	14	Germany	66
Norway	20	United States	13	United States	67
United States	20	**UK**	**13**	Netherlands	67
Sweden	19	Estonia	12	Spain	68
Denmark	18	Germany	11	Korea	68
Slovak Republic	18	Korea	11	Cyprus	68
Finland	17	Denmark	10	Finland	69
Poland	16	Spain	10	Belgium	70
Cyprus	16	Poland	9	Czech Republic	71
Belgium	16	Japan	8	Denmark	72
Netherlands	15	Czech Republic	8	Poland	75
Italy	13	Slovak Republic	4	Slovak Republic	78
OECD	21	OECD	13	OECD	66

Source: OECD Skills Outlook 2013, p171, http://dx.doi.org/10.1787/888932901733 and http://dx.doi.org/10.1787/888932901752

modest shifts in the share of those under-qualified, so that overall those with a match between their qualifications and their jobs increased from just under 48% to 52%. The UKCES analysis also finds that over-qualification is more common among those with intermediate skills than among those with degrees.

However, a somewhat different approach relies more on aggregate statistical datasets that allow us to compare years of education and occupational classifications based on relative skill levels, making ad hoc judgements on what constitutes a good match. This approach seems to be favoured in some recent official measures and analyses, including the ILO, the Office for National Statistics, Eurostat, and the then Department for Business, Innovation and Skills (BIS).

In 2014, the ILO[36] published a review of the published literature for some European economies, which found the range in the UK varied from 13–37%, in Italy from 14–72%, and in Germany from 12–61%. The ILO made its own estimates, using two different measures, of what it termed over- and under-educated people by comparing the educational levels of people in different occupational groups. Both measures generated relatively low incidences of over-qualification, with similar results for the UK, at 14–15%. The incidence of over-education in 2012 was similar to Germany (13–14%) and France (10–15%). There were no up-to-date estimates for Italy. One measure suggests over-education has increased in most EU countries since 2012, including the UK, while the other is fairly stable. The two measures produced very different results on under-education, with a range of 14–30% for the UK and France, and 14–22% for Germany. Neither measure suggests much change between 2002 and 2012 (Table 7).

In 2016, the then BIS published an evidence review on skills shortages that, as well as citing the ILO study, quoted a Eurostat estimate which used a similar approach in 2013 that also found relatively low levels of over-qualification.[37] The Eurostat study made a distinction between overall over- and under-qualification and what it termed severe over- and under-qualification (Figure 2).

The European Centre for the Development of Vocational Training (Cedefop) has measured what they term educational mismatch for younger workers aged 25–34 by using the share of graduates working in jobs outside the top three categories of managers, professionals, and associate professionals and technical workers.[38] As Cedefop accept, not all jobs in the top three skill classifications need a degree to do them and not all jobs in some of the less skilled categories will be unsuitable for graduates, so this is a somewhat crude measure. However, it is timely – 2015 – and avoids the weakness of self-reported estimates of educational over-qualification. Of the 28 EU states, the UK had the seventh highest share of young graduates

Table 7: ILO alternative measures of over- and under-education (%)

	UK	Germany	France (2010)
ISCO measure			
Over-educated (2002)	6.4	12.9	9.7
Over-educated (2012)	14.1	13.3	10.1
Mean measure			
Over-educated (2002)	14.1	16.3	13.2
Over-educated (2012)	15.0	14.4	14.9
ISCO measure			
Under-educated (2002)	47.3	24.2	27.0
Under-educated (2012)	29.8	22.0	29.7
Mean measure			
Under-educated (2002)	11.4	14.7	14.2
Under-educated (2012)	13.9	14.0	14.9

Source: ILO *Skills Mismatch in Europe* September 2014, annex tables
http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_315623.pdf

in jobs outside the top three skill classifications at 29%. This was lower than in Spain (40%), similar to France and Italy (28% and 25% respectively) but much higher than in Germany (19%).

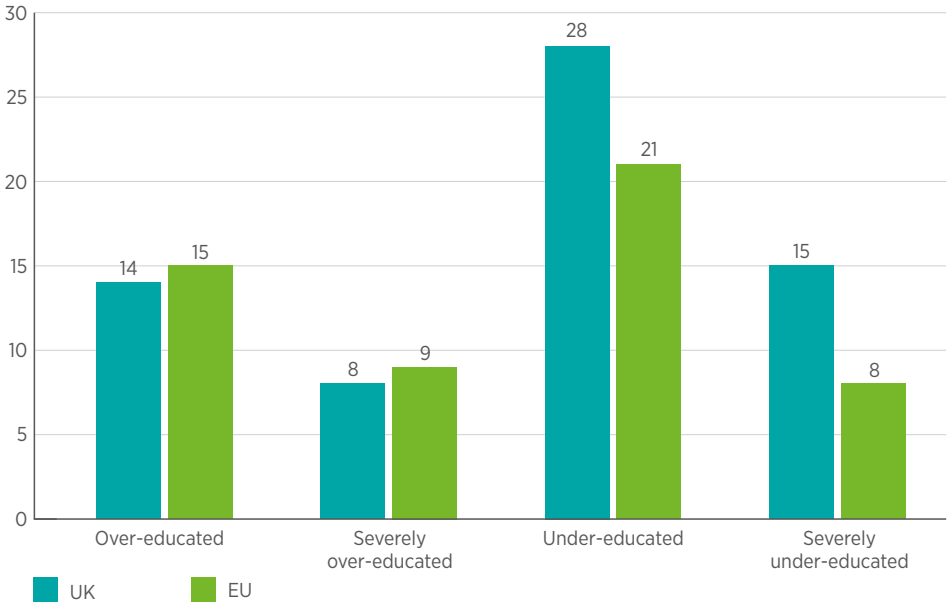
The same approach has been used by the Office for National Statistics in an analysis just for the UK published in 2015. This showed that the rate of over-education, as defined by the ONS, increased slightly from just over 15% to 16% between 2003 and 2015, and the under-education rate decreased somewhat from just over 17% to just over 15%. The share of workers described as well matched therefore increased slightly from just under 68% to just under 69%. This in turn is likely to be a cohort effect, as more under-educated older workers leave the workforce.[39]

The changes by age group show that, perhaps contrary to expectations, matching between jobs and education is consistently higher for the youngest age group and has not greatly changed between 2002 and 2015. The incidence of over-education is, however, highest among the next age group up, 25–34-year-olds. The incidence of over-education then declines among older age groups. The ONS thinks the consistency of these relationships over time suggests a demographic factor: *'the relatively high rate of overeducated for 25–34-year-olds may be more a reflection of the relationship between this age group, their occupation in these years and their position in their careers.'*

The analysis also shows that overall matching has declined in more recent years because of increased over-education. There was a significant increase in young people undertaking full-time education between 2008 and 2010, partly as a response to higher youth unemployment, and it may therefore be that as these

'The analysis also shows that overall matching has declined in more recent years because of increased over-education.'

Figure 2: Eurostat alternative measure of over- and under-education, by degree of severity (%)



Source: BIS Research Paper 265, May 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/522980/BIS-16-260-research-skills-mismatches-in-the-economy-May-2016.pdf

Table 8: ONS alternative measures of over- and under-education, by labour force characteristics (%)

All in work	2002	2015	Change (pps)
Over-educated	15.1	16.1	+1.0
Under-educated	17.4	15.1	–2.3
Well matched	67.5	68.8	+1.3
	Share well matched		
Under 25	76.5	76.7	0.2
25–34	68.5	66.9	+1.6
35–49	67.6	68.2	+0.6
50–64	60.4	67.3	+6.9
Full-time	66.6	69.1	+2.6
Part-time	69.9	67.5	–2.4
Employee	67.9	69.1	+1.2
Self-employed	64.1	66.5	+2.4
A10 migrant (from 2004)	45.4	50.7	+5.3

Source: ONS 2015

https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentand employeetypes/articles/analysisoftheuklabourmarketestimatesofskillsmismatchusingmeasuresofoverandundereducation/2015

cohorts enter the labour market, over-education has increased. However, the ONS also highlights wider labour market causes. Over-education is more common among part-time workers, among the self-employed, and among A10 migrants. Recent compositional changes may explain the modest rise in over-education, reflecting the significant increase in self-employment and increased migration from the A10 countries. Over-education among part-time workers is partly caused by graduates (mainly female) dropping down to less skilled part-time jobs as the only way to reconcile caring responsibilities and work (Table 8).

Graduate earnings – do they earn more?

Other studies have focused on the relative wages of graduates and non-graduates. These again produce a range of estimates, with most but not all showing that the relative earnings of graduates have remained fairly stable. This would lead to a somewhat different conclusion that, broadly speaking, the demand and supply of graduates is in balance, and it is this view that has to date prevailed amongst policy-makers. Most of the international evidence has come from the OECD, which has looked at relative earnings for graduates and non-graduates and also for new graduates after three years. The findings are mixed. The overall ratio for the UK is relatively high by OECD standards, higher than in France, Italy, Japan and Canada but lower than in the US and Germany. The ratio and the relative ranking of the UK has not changed very much over the past decade. However, about a third of new graduates were earning below the median wage three years after graduation in the UK. This again is not especially high by international standards, but nonetheless suggests a significant issue with a minority of graduates who earn below the median.

Critics point out that the same research shows that there is considerable variation by degree, with some degrees offering no financial return to individuals. The expectations that many graduates will not reach the earnings threshold which requires them to pay off their student loan certainly suggests a potential mismatch for some between the cost of a standard three-year degree and future earnings power. This might suggest that it might be wise to consider whether a conventional degree-level education is in all cases necessary in terms of the labour market and the future financial burden imposed on individuals, while expanding capacity in degrees which do offer better returns and changing the structure of others so they can be delivered within shorter timeframes.

The Government has recently improved the quality of information available to potential graduates about postgraduate employment rates and the sort of return they might expect from degree courses. This may over time alter choices about what sort of degree young people decide to pursue, but it does not of itself change the structure of degree courses and there may be a lack of good-quality vocational options so that, to many students, it appears that the only game in town is a university degree.

Moreover, some employers may be offering higher wages because graduates have characteristics they value which are signalled by having a degree, rather than the value of the degree itself. This may benefit the individual and employers (though it could be a costly way of attracting labour), but it is potentially wasteful from a public policy point of view. This is, however, a tricky concept to measure.

The measure of relative earnings has also been criticised because, if graduates were displacing non-graduates, it is possible that the ratio would remain constant even though non-graduates are being forced to take less well-paid jobs. This would be consistent with general labour market trends, such as the slowing of wage growth from the mid-2000s onwards, especially for younger workers and new job-seekers, but there is no direct evidence that excessive expansion of the graduate labour supply is a significant cause.

Skills mismatching

A major concern has been the share of workers in the labour market who say that their skills do not match the requirements of the job. The evidence suggests this reduces productivity and acts as a constraint on growth, according to the OECD. Skills mismatch leaves workers either under stress because they do not have the skills they need to do the job as well as they would like, or frustrated because they can do more than the job allows. Over-skilling is also likely to be associated with lower wages than if the workers' skills were fully utilised (though workers who are under-skilled get higher wages than they otherwise would do).

The impact of mismatch on productivity comes not only from reduced efficiency within firms but also because it makes it harder for more efficient firms to expand. The OECD also finds that while both over-skilling and under-qualification can reduce productivity, there appears to be no statistically significant impact from over-qualification.[40] The OECD concludes that: *'differences in managerial quality can potentially account for the relationship between under-qualification and under-skilling, and within-firm productivity.'*

That said, there will always be some mismatch in labour markets as technological change, changes in markets, changes in the regulatory environment and changes in job content and organisation constantly change the nature of work that people are asked to do and the way in which they perform their duties. The extent to which the labour market adjusts and how quickly it adjusts to these changes and imbalances so as to achieve a high degree of match between workers, jobs and skills is one indicator of overall labour market efficiency. The OECD notes that it is not always the case that a high degree of individual mismatch reflects a significant imbalance between aggregate supply and demand of skills at the whole-economy level. Skills at the whole-economy level could be reasonably balanced between demand and supply, but there could still be a significant amount of mismatch at the individual level. The OECD concludes that:

'Any evidence of mismatch between workers' qualifications and skills and those required by their jobs should be interpreted primarily as suggesting that there are economic benefits (and benefits in terms of the well-being of workers) to be gained from better management of human resources, including practices that involve hiring workers, designing jobs and providing training, apart from action concerning the adjustment of supply and demand in the aggregate. The evidence should not be interpreted as indicating the existence of too many highly qualified or highly skilled workers in the economy as a whole' (OECD Adult Skills Survey 2012, p169).

The OECD finds that there is remarkably little direct connection between a country's proficiency at skills and the degree of skills utilisation, especially if allowance is made for differences in occupational structure and firm size: *'Having a large pool of highly proficient workers does not guarantee a high use of those skills at work … skills proficiency explains only a small part of the variation in skills use'* (OECD Employment Outlook 2016, p51[41]).

However, measuring skills mismatch is not straightforward. The most common method until recently has been to ask workers whether they thought the job made full use of the skills they had or whether they need more skills to do their job. One problem with this approach is what the OECD terms 'over-confidence', which means that people often overstate the degree to which their skills are greater than job requirements. Moreover,

'For high-skill white-collar labour, over-skilling in the UK was slightly below average, at 30%, which is similar to Germany and France.'

international comparisons based on worker assessments can be tricky as they can be influenced by national differences in worker attitudes and expectations about work as well as by objective differences.

More recently, the OECD has developed a different approach which takes the literacy and numeracy scores referred to earlier in this report and uses the scores recorded by those who say they have a good match as the benchmark, with those scoring above the highest well-matched score being as over-skilled and those scoring below the worst well-matched scores as under-skilled. However, while this may or may not be an improvement, it is not entirely objective as it still depends on workers saying whether they are well matched or not.[42] Both national and international surveys tend to offer substantially different estimates of skills utilisation, reflecting differences in questions and methodology.

The OECD survey shows that in contrast to some of the estimates on qualifications, over- and under-skilling is much less common in OECD labour markets and the UK performs better. Over-skilling in the UK accounts for just 8% of the workforce compared with an OECD average of 10%. This is significantly better than in Germany, where 15% of the workforce are classified as over-skilled. In contrast, under-skilling is a significant issue in the UK, albeit it affects just 7% of the workforce compared with just 2% in Germany. There is also less variation between countries on the skills measure, so that in all OECD economies, 80–90% of the workforce is well matched on skills and job requirements and the differences between the major OECD economies are not great.

However, other surveys find much higher levels of skills mismatch, primarily because of much higher rates of over-skilling. The European Working Conditions Survey (EWCS) showed that about 34% of the UK workforce was over-skilled compared with around 25% for Germany, France and Italy, and 29% across the EU as a whole. The Cedefop survey found that just over 50% of the UK workforce was over-skilled compared with around a third in France and Italy, but found a surprisingly high level of over-skilling in Germany at 45%. This is a huge range, way beyond the normal variation we might expect from sample surveys at different times. It is not within the scope of this report to say which of these surveys gives the most accurate picture, but the EWCS and Cedefop surveys do seem to be more consistent with national UK surveys which share a similar methodology. We report on these surveys in more detail below.

Over-skilling by occupation and sector

The EWCS survey shows that the gap against the EU average for the UK is significantly larger for manual workers, both skilled and less skilled, than for clerical workers. Indeed, the extent of over-skilling is slightly lower for less skilled clerical workers in the UK than in the rest of the EU. For high-skill white-collar labour, over-skilling in the UK was slightly below average, at 30%, which is similar to Germany and France. There was a similar incidence for lower-skilled non-manual workers, at 29%, and slightly more of a gap with Germany and France, both reporting over-skilling rates of 25%. Over-skilling was, however, higher among both skilled and less skilled manual workers at 35%, and the gap somewhat larger against other major EU economies. For example, over-skilling among low-

skilled manual workers in Germany was just 20% compared with 35% in the UK (Figure 3).

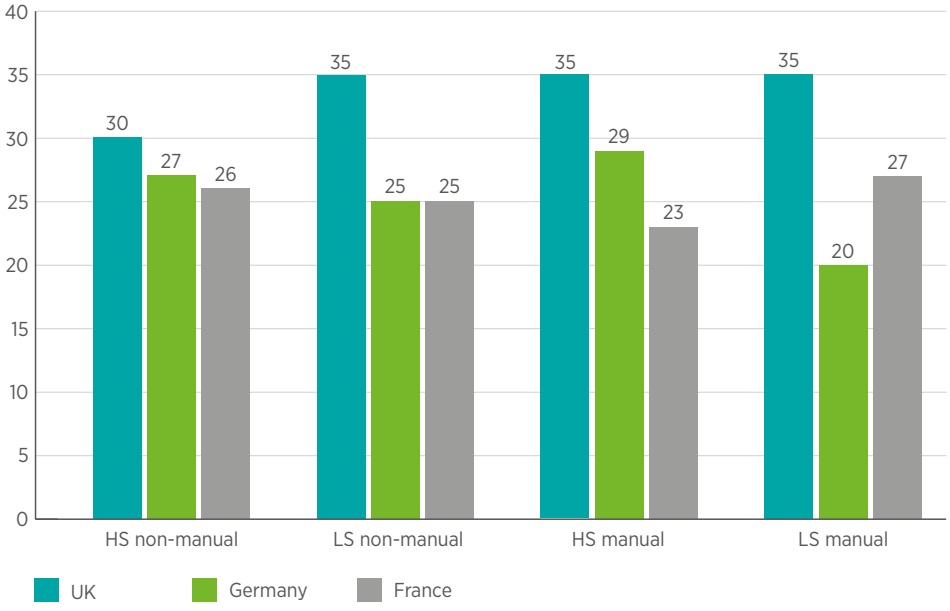
Over-skilling by sector

The EWCS has five broad industry categories. These show that over-skilling was more prevalent across the high-valued-added financial and business services sectors, where 38% said they were over-skilled compared with an EU average of 30%, and in low-value-added services, such as wholesale and retail and hospitality, where 37% said they were over-skilled compared with an EU average of 27%. The gaps in higher value-added service industries were even greater when compared against Germany (25%), France (24%) and Italy (22%).

This is of particular concern as the UK has an unusually large share of employment in these services and a comparative advantage historically with a large surplus on exports. The finance sector in particular may come under more competitive pressure after Brexit, either because of barriers to trade or attempts by EU financial centres to persuade some multinationals based in the City to relocate some of their business. Yet it appears that large numbers of rather expensive labour is not being used as well as it might. These industries are typically large recruiters of graduates, and these results are therefore consistent with the previous CIPD report on high rates of skills under-utilisation among UK graduates.[43]

In contrast, over-skilling was somewhat less common in public-based services such as education and health, where 31% said they were over-skilled, although this was still above the average in Germany (22%) and France (23%), and in manufacturing, mining and agriculture, where 31% and 32% respectively said they were over-skilled. For the construction, transport and communications

Figure 3: Over-skilling by occupational group (HS=high skilled, LS=less skilled) (%)



Source: European Foundation for the Improvement of Living and Working Conditions. (2017) European Working Conditions Survey, 2015.

sectors, the extent of over-skilling was somewhat lower, at 28%, and was no greater than in the major EU economies (Figure 4).

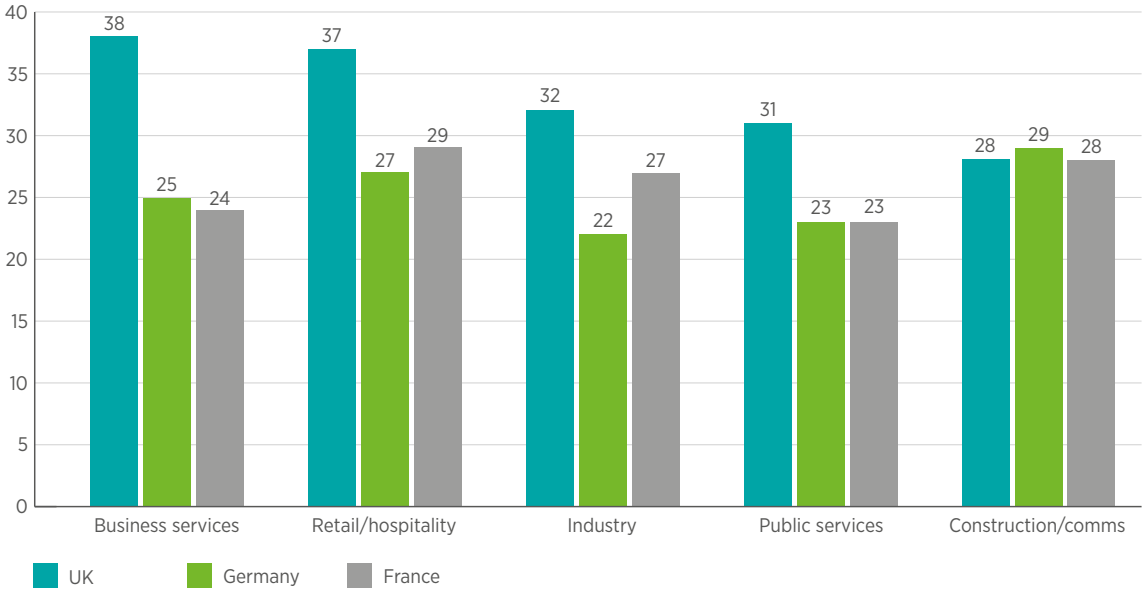
Older workers less likely to report skills mismatch than younger workers in the UK

Earlier in this report, we considered the apparent tendency of workers in the UK to improve their scores on tests of basic skills over time in the workplace, so that older workers scored much better than those who had entered the workforce more recently. The EWCS shows something similar may be happening with over-skilling, with matching between skills and the demands of the job improving as workers age. About 37% of workers under 35 reported they were over-skilled compared with 30% of those who were over 50.

Most other EU states show similar rates of over-skilling in both the younger and older age groups, although a few – such as the Netherlands, Denmark and Finland – also show higher skills mismatch for younger workers compared with older workers. In Germany, for example, 21% of those under 35 reported they were over-skilled, as did 26% of those 50 or older. This translates into a 16-point gap for the younger age groups and a 4 percentage point gap for the older age groups between Germany, France and Italy, and the UK. The poor relative performance of the UK on over-skilling is therefore strongly associated with the younger age groups who entered the workforce over the past 20 years.

However, as with the basic skills scores on literacy and numeracy, it is still ambiguous whether this means that there is a generational shift with those entering the workplace less well equipped than in the past in terms of skills match, or whether there is an improvement over time in the workplace as people move to jobs for which they are better suited, develop, acquire skills in existing jobs, or job reorganisation improves the fit between workers

Figure 4: Over-skilling by major sector groups in 2015 (%)



Notes: sector groups are financial and business services; wholesale and retail and hospitality; industry is manufacturing, mining, agriculture, energy and water; public services is public administration, education, health; construction/comms is construction, transport, electronic communications. Over-skilling is share of workers who say their job could make more use of the skills they have.

Source: European Foundation for the Improvement of Living and Working Conditions. (2017) European Working Conditions Survey, 2015.

and their current skills. The fact that overall the incidence of over-skilling has declined suggests it is more likely to be the latter rather than the former.

However, while the difference in over-skilling by age is significant, it still means that even in their 50s some 30% of workers in the UK still report they are over-skilled. So while age brings some improvement, there is a strong persistence of over-skilling across working lives in the UK. Moreover, even if workers in the UK eventually close much of the gap with their German counterparts over time, it still means that far more of their working lives are spent in jobs that do not make full use of their skills. The experience of other countries suggests that significantly improving the skills match for younger workers will carry through into later life, with potentially significant gains in productivity (Table 9).

Over-skilling has fallen over time in most EU states

The EWCS allows us to compare change over time, as the survey is carried out every five years. Between 2005 and 2015 the incidence of over-skilling in the UK declined significantly, from 43% to 33%. However, this was part of a general fall across the EU, with many countries recording similar significant improvements, rather than strong evidence of special efforts being made in the UK. The EU27 average incidence of reported over-skilling declined from 35% to 28%. The UK's relative position nonetheless improved somewhat, partly because some EU members had low levels of over-skilling to start with and the scope for big improvements may therefore be more limited.

Table 9: Over-skilling by age group in 2015 across the EU (%)

	Under 35		50 or older
Lithuania	13	Portugal	14
Slovakia	19	Finland	14
Malta	20	Lithuania	19
Portugal	21	Czech Rep	19
Germany	21	Slovakia	21
Austria	22	Malta	21
France	23	Estonia	21
Italy	23	Belgium	22
Bulgaria	24	Netherlands	23
Estonia	25	France	24
Czech Rep	26	Luxembourg	24
Luxembourg	26	Denmark	25
Latvia	26	Austria	25
Croatia	27	Italy	25
Belgium	28	Germany	26
Hungary	28	Croatia	26
Sweden	29	Bulgaria	28
Poland	30	Ireland	29
Denmark	30	Slovenia	29
Finland	31	Sweden	30
Ireland	33	**UK**	**30**
Netherlands	33	Greece	34
Spain	34	Poland	34
Romania	34	Hungary	35
Slovenia	36	Spain	35
UK	**37**	Latvia	36
Greece	39	Romania	43
Cyprus	43	Cyprus	47
EU average	28	EU average	27

Source: European Foundation for the Improvement of Living and Working Conditions. (2017) European Working Conditions Survey, 2015.

Moreover, some comparable EU states appear to have been able to achieve much bigger reductions, with reported over-skilling in France dropping from 46% to 25% (Table 10).[44]

Under-skilling – low incidence across the OECD and the UK

The opposite side of the coin to over-skilling is under-skilling, where individuals do not have the skills the job demands and, as with over-skilling, we can look at three recent surveys. The overall conclusion is that in most countries under-skilling is less important than over-skilling, though the 2010 EWCS found higher incidences of under-skilling than either the 2012 OECD Adult Skills Survey or the 2014 Employment Skills and Jobs Survey (ESJS).[45] There is also a lack of agreement on the country order. The OECD survey finds the UK and Italy have an above-average incidence of under-skilling, and Germany a very low level (there was no estimate for France). The EWCS finds the opposite, with Germany having one of the highest incidences and the UK and Italy one of the lowest. The most recent ESJS finds that under-skilling is below average in all four major European economies (UK, Germany, Italy, France). However, all three surveys show that under-skilling in the UK is relatively low at 5–10% of the workforce.

Employer perceptions

National surveys suggest that employers typically perceive much lower levels of mismatch than employees. At the time of writing we had identified no international surveys of employers that allow us to make these comparisons, and recent work by the UKCES and researchers at UCL[46] came up against two major problems in using employer responses. Nearly half the managers surveyed in the most recent Employer Skills

Table 10: Over-skilling across the EU, 2005–15 (%)

EU Working Conditions Survey			Cedefop Employee Skills Survey	
	2005	2015		2014
Lithuania	24	16	Lithuania	20
Portugal	27	18	Malta	20
Malta	32	21	Latvia	21
Finland	22	21	Estonia	22
Estonia	32	21	Romania	25
Czech Rep	22	23	Portugal	26
Italy	28	23	Bulgaria	28
Slovakia	36	24	Luxembourg	29
Austria	24	25	Belgium	33
Germany	28	25	France	33
France	46	25	Italy	34
Belgium	28	25	Czech Rep	35
Luxembourg	37	25	Slovenia	36
Bulgaria	31	26	Netherlands	36
Netherlands	33	27	Hungary	37
Denmark	33	28	Sweden	37
Sweden	41	30	Denmark	37
Latvia	41	30	Poland	39
Poland	30	31	Croatia	39
Spain	35	33	Slovakia	40
Ireland	44	33	Spain	40
UK	**43**	**33**	Cyprus	40
Cyprus	41	34	Finland	41
Slovenia	34	35	Ireland	43
Hungary	41	35	Germany	45
Greece	40	37	Greece	47
Romania	45	42	**UK**	**51**
EU27	35	28	Austria	54

Note: ranking is 2015 survey result. Over-skilled is share agreeing with statement 'I have the skills to cope with more demanding duties.'

Sources: European Working Conditions Surveys 2015 and 2005, Cedefop Employment and Skills Survey 2014 http://skillspanorama.cedefop.europa.eu/en/indicators/skills-under-utilisation

Survey said they did not know the extent of skills under-utilisation in their workforce. Moreover, the researchers identify 'awareness bias' to explain the otherwise odd result that skills under-utilisation was greater in firms with progressive high-performance management practices. They suggest that managers in these organisations have much better quality HR information so can make a more accurate assessment of how skills are being used. There is no reason to think that similar surveys in other countries would not encounter the same challenges. However, while the analysis might suggest employer surveys are not at present a reliable guide to the extent of under-utilisation of skills, it also highlights the critical importance of improving the quality of information on skills utilisation to HR and other senior managers.

Lifelong learning

A major objective of education and skills policy at both the UK and EU (and OECD) level is to encourage 'lifelong learning', which is broadly defined as formal participation in the education system (schools, colleges and universities) and all education and training provided outside the education system typically described as informal provision. Most measures, however, relate to participation rates by individuals and by the share of enterprises who provide some form of education and training, and much less on the quantity and quality of such provision.

We have several sources of information. The EU Labour Force Survey (LFS) provides up-to-date information on individual participation and has a long time series; the less timely Adult Education Survey (AES) is held every five years. The last survey results are for 2011, and the next survey was carried out in 2016 (release still pending). We also have the Continual Vocational Training Survey (CVTS), which surveys enterprises. This has comparable data for 2005 and 2010, but results from the next survey are not yet available. The 2015 European Working Conditions Survey (EWCS) also provides some estimates of participation in employer-provided training.

Whichever measure we use, the UK has a high participation rate compared with most EU states – only the Nordic economies typically record higher rates. In 2010, the CVTS showed that about 80% of all enterprises in the UK were classified as 'training enterprises', defined as those who provided some form of continuous vocational training, compared with 76% in France, 73% in Germany, 56% in Italy and an EU28 average of 66%. The high UK rate largely reflects more extensive informal workplace-based training.

Since 2007, however, these shares have increased or remained the same in most other EU states, but have decreased in the UK. This pattern is true both for more formal off-the-job learning and for more informal learning on the job and in the workplace. The UK's position has slipped considerably when it comes to more formal off-the-job learning. In 2010 about 60% of UK enterprises offered off-the-job training to some of their workforce compared with 67% in 2005, while across the EU the share went up from 49% to 56%. If these trends are confirmed in the 2015 survey, the UK will have fallen below the EU average in the provision of formal off-the-job training (Table 11).

Table 11: Share of enterprises offering vocational training across the EU, 2005–10 (%)

	Any CVT offered			Formal off the job			Other CVT training	
	2005	2010		2005	2010		2005	2010
UK	**90**	**80**	France	71	71	**UK**	**86**	**75**
France	74	76	Germany	54	61	Germany	66	66
Germany	69	73	**UK**	**67**	**60**	France	44	45
Italy	32	56	Italy	27	47	Italy	20	41
EU28	60	66	EU28	49	56	EU28	48	53

Notes: enterprises offering any form of continuous vocational training to at least some of their workforce. Formal off the job takes place off the employer's premises in a classroom or other training establishment. Other CVT training includes on-the-job training and participation in workshops, seminars, quality circles.

Source: Continuous Vocational Training Survey (CVTS) 2005 and 2010
http://ec.europa.eu/eurostat/cache/metadata/en/trng_cvts_esms.htm
http://ec.europa.eu/eurostat/web/education-and-training/data/database

'The UK still lags in terms of hours on CVT training per 1,000 hours worked and on the average number of hours spent on CVT courses.'

When we look at various measures of cost from the CVTS, we can see two clear findings. First, in 2010 UK employers spent less on training than other major EU economies and less than the EU average, and the gap has widened since 2005. In 2010, the cost per training hour in the UK was 35 euros against an EU average of 54 euros (at purchasing power parities); the cost per employee was 266 euros in the UK against 511 euros across the EU; and the cost of vocational training as a share of total labour costs was 1.1% in the UK and 1.6% across the EU (Table 12).

The third set of measures we have is hours spent on training, and here the story is somewhat more positive. The UK still lags in terms of hours on CVT training per 1,000 hours worked and on the average number of hours spent on CVT courses. However, the UK compares more favourably on hours per participant in CVT courses at around the EU average, and is ahead of Germany and Italy but still behind France. Moreover, since 2005, hours measures have been increasing in the UK, while they have fallen somewhat across the EU (Table 13).

Cost is not quite the same as investment, and it may be that UK employers delivered the same quality and quantity of training more cheaply than their counterparts in the rest of the EU through more flexible training systems able to respond to new developments in technology and more competition between training providers. Distance and

Table 12: Investment in vocational training across the EU, 2005–10

	Cost per hour			Cost per employee			Share of labour costs (%)	
	2005	2010		2005	2010		2005	2010
France	66	73	France	842	935	France	2.3	2.5
Germany	55	66	Germany	487	592	Germany	1.3	1.5
Italy	57	53	Italy	420	442	Italy	1.2	1.1
UK	**53**	**35**	**UK**	**345**	**266**	**UK**	**1.3**	**1.1**
EU28	51	54	EU28	454	511	EU28	1.6	1.6

Note: all figures in euros at purchasing power parities

Source: Continuous Vocational Training Survey http://ec.europa.eu/eurostat/web/education-and-training/data/database

Table 13: Hours spent in continuous vocational training across the EU, 2005–10

	Per 1,000 work hours			Hours on CVT courses			Hours per participant	
France	8	8	France	14	14	France	28	28
Germany	6	7	Italy	13	12	**UK**	**20**	**25**
Italy	5	5	Germany	11	11	Germany	30	23
UK	**3**	**4**	**UK**	**8**	**9**	Italy	25	23
EU28	5	6	EU28	12	12	EU28	27	25

Note: all figures for enterprises providing CVT courses

Source: Continuous Vocational Training Survey http://ec.europa.eu/eurostat/web/education-and-training/data/database

open learning appear to be more common in the UK than in most other EU economies. However, we have no direct evidence to support this idea, and it seems unlikely that it explains all of the gap between the UK and other EU states. It seems more likely that UK employers, on average, were investing in lower-cost CVT, which by implication will be lower quality and less thorough than some of their EU counterparts.

Participation in training and education by individuals

The Labour Force Survey asks a number of questions on whether people had any form of education and training in the four weeks up to the survey. These responses form the backbone of the EU indicators on 'lifelong learning'. The definition is quite broad and can include individual-organised courses outside the workplace that, in the view of the respondent, provide learning and development. The definitions are also not entirely consistent across countries. Although in principle the question goes back to the mid-1990s, it is difficult to show a consistent trend for long periods for more than a handful of economies because of breaks in series. The most basic question asks whether people participated in skills and training in the four weeks before the survey.

The UK again stands out as a high-participation economy by this measure. In 2015, just under 16% of those aged 25–64 said they had some form of education and training in the UK, compared with an EU average of just under 11%. The UK did better than Germany (8%) and Italy (7%) but less well than France at just under 19%. The participation rate declines with age in all EU economies, and the UK's relative position does not greatly change when compared with the other major EU economies. The trend data shows that since 2008 the UK's participation rate has fallen in all of these age groups, while across the EU and in Germany, France and Italy, participation rates have remained stable or increased slightly (Table 14).

This indicator may be telling us something, but it is not very clear what. Lumping together training courses, non-work skills and hobby pursuits is not very helpful in getting an understanding of what is happening to training

Table 14: Participation in education and training for 25–64 age groups, 2008–15 (%)

	25–34		35–44		55–64		25–64	
	2008	2015	2008	2015	2008	2015	2008	2015
France	–	24.2	–	20.6	–	12.8	–	18.6
UK	**25.9**	**19.9**	**22.5**	**16.9**	**13.1**	**10.8**	**20.5**	**15.7**
Germany	14.2	18.5	6.8	6.9	2.8	3.1	7.8	8.1
Italy	12.9	14.3	5.3	6.6	2.1	4.0	6.2	7.3
EU28	15.5	17.4	9.5	11.8	4.6	10.8	9.7	10.7

Note: major revision to French data from 2013 onwards. The old and the new series were both relatively stable between 2008 and 2012 and between 2013 and 2015. All figures cover four weeks before the survey.

Source: EU Labour Force Survey Eurostat http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

participation in the workplace. Fortunately, more helpful questions do exist. The Adult Education Survey (AES) provides a more useful definition, allowing us to look at non-formal education and training from all sources and also job-related training and education sponsored by employers. The period covered is the 12 months prior to the survey (Table 15).

The AES shows that participation in adult learning in the UK is significantly below that in most other EU countries: in 2011, the UK ranked twentieth out of 28 countries on the overall measure and twenty-third out of 26 countries on the job-related employer training measure. Participation has fallen significantly, from 49% to 36% on the general measure and from 35% to 25% on the job-related measure since 2007. In contrast, the EU28 average participation rate has increased from 35% to 40% on the general measure and from 34% to 41% on the job-related measure.

The decline in the UK for those in the 25–34 age group is greater than in the older age groups of 35–54 and about twice as much as the fall for those in the oldest age group of 55–64. This may be one indicator that the rapid expansion in higher education provision has been a factor in the decline in formal training offered by employers in the UK, although other countries have expanded provision without a similar fall.

Table 15: Participation in employer-sponsored training (%)

	2007	2011	Change
Sweden	71.4	67.0	–4
Norway	53.8	60.8	+7
Netherlands	43.4	59.8	+16
Denmark	39.7	53.7	+14
Finland	50.9	53.2	+2
Estonia	42.3	48.2	+6
Germany	43.6	47.7	+4
France	:	46.7	
Hungary	6.3	44.4	+38
Slovakia	47.3	42.8	–5
Portugal	23.8	41.4	+18
Austria	36.8	39.6	+3
Cyprus	36.5	38.2	+2
Czech Republic	42.6	36.1	–7
Malta	32.4	37.8	+5
Belgium	35.8	37.3	+2
Bulgaria	47.1	34.7	–12
Slovenia	32.5	33.4	+1
Italy	14.6	32.6	+18
Spain	20.6	32.6	+12
Lithuania	33.4	28.9	–5
Latvia	31.4	28.3	–3
UK	**35.2**	**25.5**	**–10**
Poland	24.2	23.4	–1
Greece	10.9	7.7	–3
Romania	4.8	6.7	+2
EU28	34.1	40.8	

Source: Adult Education Survey (AES 2007 and 2011) Eurostat

3 The future of the skills system

How the UK compares

The UK compares well on the provision of higher-level qualifications and varies between mediocre and poor on most other indicators of qualifications and skills. Young people are still entering the workplace or further and higher education with mediocre scores on maths, reading and science despite a high rate of investment in education. Once in the workplace they record mediocre scores for literacy, numeracy and ability to use computers to solve problems. UK workplace training appears widely available by international standards, but almost every other measure of employer-sponsored training shows the UK lagging behind most other EU countries on both participation and investment levels.

It is hard to have much confidence in the wide range of estimates of over- and under-qualification and over- and under-skilling that a confusing array of different methodologies, surveys and datasets have produced. This matters because such measures tell us whether the labour market is working efficiently, with profound implications for growth, productivity and workplace progression. They also should guide policy-makers on both the magnitude and nature of the skills challenge. We are still, to some extent, groping in the dark to understand if the biggest problem facing the UK by international standards is too many high-level qualifications, or too many people in jobs that make poor use of their skills, or too many people who do not have sufficient skills, or some combination of the two.

The evidence from the OECD suggests that what matters more in terms of the wider economic impact and workplace productivity is mismatches in skills rather than mismatches in qualifications. To be sure, the latter is important in terms of allocating resources between higher and further education and support for vocational training. We would nonetheless like to see a much greater focus on developing better and more consistent measures of skills and skill mismatches and employer investment in training at both the national and international level. We suggest that:

- the Office for National Statistics undertake a review of training and skills statistics to suggest the best basis on which international comparisons can be made
- to develop better measures of skills, lifelong learning and training investment by UK employers and publish such estimates on a regular basis.[47]

Skills, the productivity plan and industrial policy

A major part of the post-Brexit challenge facing the UK is to improve the poor productivity record. The 2016 Autumn Statement accordingly set out a further development of the previous government's productivity plan, with a strong emphasis on investment in infrastructure (including housing), and in science and innovation.

However, the glaring omission was the role of skills and skills development in the workplace

'The UK compares well on the provision of higher-level qualifications and varies between mediocre and poor on most other indicators of qualifications and skills.'

– other than some welcome support for an initiative to improve managerial quality. The total package announced by the Chancellor was worth £25 billion over five years; diverting just 5% of that to support the further education sector and workplace skills development would provide around £1 billion in additional funding.

The recent government green paper on industrial strategy, while providing a convincing narrative on the skills challenges facing the UK, was sadly lacking in terms of any solutions. The weaknesses were summed up neatly by the BEIS Strategy Committee: *'… the proposals contained in the industrial strategy Green Paper leave much to be desired … we expected more than a disappointing combination of re-announcements, continuations of existing policy, and vague aspirations. It is deeply disappointing that the Green Paper fails to outline any detailed proposals for discussion in relation to encouraging the uptake of STEM subjects, and improving the skills of those already of working age.'* [48]

The skills challenge was also at the forefront of the Government's 2017 spring budget announcements, with additional investment of 500m between now and 2022 additional funds to deliver the new T-levels for technical education. However, the majority of the workforce of 2030 is already in work, and while the £40 million investment in lifelong learning announced at the same time is certainly welcome, the balance of government spending priorities is to be questioned, given the focus needed on helping people already in work.

Indeed, without workplace skills development being given a higher priority for public funding in years to come, it is hard to see how the decline in government-funded adult learning can be reversed. It would be highly optimistic to suppose that employers and individuals will invest more in training on a scale which makes up for the decline in public funding, given past performance and the highly uncertain impact of new measures such as the apprenticeship levy on training volumes. Given this, there is the need to ensure that all of the money raised via the levy is spent on training in the workplace; however, recent analysis published by the IFS[49] suggest that although the levy is estimated to raise £2.8 billion in 2019–20, government spending on apprenticeships in England is only expected to increase by £640 million over the same period, so most of the revenue raised will be spent elsewhere. Government should commit to using any levy underspend to help reverse the decline in adult learning.

Towards a new skills system – pragmatic and evolutionary reform

There is a strikingly constant theme in official statements announcing new developments in the UK skills system, which is a yawning gap between the ambition of the statement and the means to achieve significant change. The various initiatives, structures, institutions and incentives have either been of insufficient scale and authority to do much good, proved flawed or ineffectual in practice, or have fallen victim to the constant chopping and changing of policy.

If the ideal is to create a policy framework that provides employers with consistency over time and flexibility in practice in order to achieve agreed sustainable high-quality outcomes and progression for individuals, the conduct of skills policy over the past 30 years has fallen well short. If one of the key objectives was to increase the volume of training undertaken by employers, it has clearly failed. The expansion of the higher education system stands out as one of the few success stories by comparison and it is a success story because governments have built on underlying strengths to pursue ambitious programmes with consistency and (comparative) coherence.

It is tempting in reports of this sort to call for sweeping reforms, the commitment of large-scale public investment programmes and big policy about-turns. This is unrealistic. Apart from anything else, in an age of austerity, the public funding that might be made available to facilitate change is bound to be limited. While some of our suggestions are challenging, we have tried to ground them in what is achievable. Nor do we pretend to have all the answers to some very intractable questions. Instead, we suggest that it is better to focus on making significant progress in a limited number of areas by building on what we have and recognising that meaningful change will be gradual and requires stability and consistency.

We have grouped our thoughts and recommendations around the following themes:

1 **strength and stability in the system**

2 **improving basic/core skills**

3 **increasing the quality of vocational pathways**

4 **building capacity at a local and workplace level**

5 **promoting learning across the life course**

6 **access to quality information, advice and guidance.**

1 Strength and stability in the system

Bringing stability to the system is paramount. The employer response is almost bound to be sub-optimal given the incoherence of the policy development process. The OECD's recent review of post-16 skills policy, published in 2014, noted that *'England enjoys a strong base of research expertise, and good data. The UK Commission for Employment and Skills (UKCES) plays an important role in providing strategic policy advice to government, based on the input of employers and unions.'* This assessment does not seem to have been shared by the previous government, as the UKCES was abolished in 2015 without any clear rationale being presented.

We are reluctant to recommend the establishment of a quango – that is after all one of the criticisms of past skills policy development – but there must be merit in looking at whether a national body with some independence from government could help bring more stability on policy development and delivery and provide a better mechanism for more consistent and meaningful consultation with employers:

- **Policy must be more consistent and coherent**, with clear objectives and mechanisms to deliver those objectives on realistic timescales, developed in meaningful and constant consultation with employers and other stakeholders.
- To help this process, **the Government should consider the merits of establishing a new national strategic body**, independent of government and charged with making recommendations and ensuring their delivery across the whole of the post-16 education and skills agenda.

- **Political responsibility for skills policy** has bounced around between departments and this must stop.[50] It **should be permanently located with the new Department for Business, Enterprise, Industry and Science** (BEIS) to facilitate a focus on the workplace, where the battle for skills will be won or lost, as well as full integration with industrial policy.
- **A much higher political and policy priority must be given to the regeneration of the further education sector** to meet the shortfall in provision and the delivery of technical and intermediate qualifications and increasing the demand for such qualifications.
- A recent report by the IFS highlighted that the new apprenticeship levy itself will raise *'far more money than the additional resource planned to go into apprenticeship training'*; in fact, their analysis suggests that just 23% of the money raised (period 2019–20) will be spent on apprenticeships. **Government must commit to ensuring that all money raised by the levy is spent on adult skills and training**.

2 Improving basic/core skills

'It is also important to recognise that skills build upon skills and acquiring foundation skills in literacy and numeracy, as well as "learning to learn", are absolutely essential for acquiring further skills and competences'[51]

International evidence presented in this report shows that the UK has mediocre to poor outcomes on literacy, numeracy and problem-solving with computers. Among 16–24-year-olds, England and Northern Ireland together rank in the bottom four OECD countries for literacy and numeracy – key prerequisites for access to intermediate and higher-level skills training. Also worrying, in terms of the ability to intervene, is the high proportion of those who have finished compulsory education and are already in work who have low basic skill levels.

We suggest the following objectives and areas for reform. We start with three broad objectives:

- Over the next decade, increase numeracy and literacy standards at age 15 to match those in higher-performing OECD economies, reflecting the UK's high levels of investment per pupil.
- Over the next decade, reduce the share of young people with low computer skills to the OECD average.
- Over the next decade, reduce the share of people in work with low-level qualifications in line with the trend in other major OECD economies.

The Government has committed to fully implementing the proposals in the Sainsbury Review of Technical Education, which made a number of recommendations aimed at raising the basic skills of young people.[52] These included ensuring that each of the new technical routes had a 'common core' (including English and maths requirements, and digital skills) which is aligned to apprenticeships, and that the Institute for Apprenticeships will work with employers to articulate a common set of transferrable workplace skills which could apply across all the new technical routes. Alongside this, there will be a single set English and maths 'exit' requirement for both apprenticeships and college technical routes, with the aim to also include additional occupational-specific requirements built into new apprenticeship standards. There is a need to ensure this is fully and properly implemented but also that in the longer term the ambition to *'raise maths and English requirements to reflect those of higher-performing international technical education systems'*[53] is realised.

As the OECD review of skills published in 2016[54] stated, *'tackling serious literacy and numeracy weaknesses among adults is challenging, and the returns from doing so are very uncertain'*. This is backed by an earlier review[55] published in 2011 by the then Department for Business, Innovation and Skills, which highlighted the prevalence of poorly designed interventions and lack of robust evaluation evidence. Adults with low basic skills are a very diverse group,[56] which means a one-size-fits-all policy is unlikely to have the desired impact. There is a clear need to improve the evidence base to find out what works, why and for whom. Policy-makers should also explore the potential of blended learning – combining face-to-face and technology-based, formal and self-study methods – given the substantial opportunities for cost-saving efficiencies.

The NOSTE programme in Finland is an example of a successful approach in reaching low-skilled adults in the workplace. The programme was launched in 2003 to raise the basic skills levels of those with no post-compulsory qualifications and encourage them to enter vocational training.[57] Free-of-charge provision was delivered through 60 network projects and trade union 'learning agents' were recruited to attract and encourage low-skilled learners. One of the key takeaways from the evaluation of the programme was that it challenged education providers to create new operating models, in particular the role that outreach played in motivating learners and '*opening up new and deepening business partnerships*'.[58]

The need to raise basic skills amongst the workforce should be considered in the context of a broader strategy to raise the demand for skills amongst employers (see recommendation 4) and to incentivise learning across the life course (see recommendation 5).

3 Increasing the quality of vocational pathways

The analysis in this report shows that too many young people leave school with poor basic skills and that, while in work, they experience slower rates of progression and skills development. The lack of alternative, quality, vocational pathways, as well as the high proportion of low-skilled jobs, is clearly a contributing factor to this under-par performance. This finding is support by the OECD review of vocational skills in England, published in 2013, which noted there was insufficient provision, both relative to other countries and to potential demand, and that the role of workplace-based training needed to be expanded within post-secondary vocational training.[59]

Some of the current initiatives being pursued by government to address these weaknesses, such as the apprenticeship levy, have good intentions, but there are significant doubts about whether the approach will have the impacts the Government wants. Our previous research suggests that, in its current form, the levy could have damaging unintended consequences, undermining efforts to improve the quality of apprenticeships.[60] Government should consider adapting the apprenticeship levy into a more flexible training levy, with a proportion of funding earmarked for apprenticeships to decrease the risk of employers rebadging existing CPD training as apprenticeships or reducing investment in other valuable forms of training.

In other Northern European countries, apprenticeships typically last longer (on average around three years or more), are at a higher level (level 3 is the norm) and the qualifications are much broader in scope and structured around a recognised and negotiated occupation rather than a narrow job role.[61] In the UK concerns have been raised over the proliferation of narrow and overlapping apprenticeship standards.[62] The Institute for Apprenticeships and Technical Education must urgently review all standards to ensure that they deliver quality, with any narrow and overlapping standards removed. In particular, where level 2 standards have been produced, there should clear and justifiable rationale for their introduction relative to a level 3 qualification.

Evidence from abroad emphasises the importance of social partners and industry partnerships in ensuring a *'better balance in the system between the different needs of employers across a sector, employees and the state'*.[63] In Germany, for instance, social partners are closely engaged in the development and updating of apprenticeship training plans for each qualification, ensuring that the vocational education system remains up to date in delivering occupational competence.[64] While in Australia, regional industry advisory boards work with training authorities to oversee the regulation, policy, delivery and funding, and these are supported by industry boards made up of businesses and workers.[65] In the UK there is the need to strengthen these relationships; the driving seat cannot be left to employers. Social partners and professional bodies need to have much greater involvement, as is the case in most other developed nations.

4 Building capacity at a local and workplace level

'The strongest models in the UK and abroad build lasting partnerships with local employers and work to increase their capacity to create effective training pathways.'[66]

Evidence from the UK and abroad emphasises the importance of effective linkages and collaboration between employers, education and training providers, and public institutions. This needs to happen at a number of levels, including sectorally and nationally, but is particularly critical at the local level, where skills strategies can be linked with wider local economic development approaches as well as industry development, innovation and business support policies.[67] In some US states, for instance, there is the emergence of skills-based local economic development strategies whereby networks of local colleges work in partnership with local economic development institutions, identifying companies with growth potential and working with them to deliver targeted workforce development initiatives.[68] Local-level action has also been shown to stimulate employers to offer more in-work training and internships, particularly in firms that traditionally offer low levels of training, such as SMEs.[69]

In England, Local Enterprise Partnerships are active in this space; however, evidence suggests that to date the focus has been on a narrow range of 'fashionable sectors' and that *'local skills strategies have paid insufficient attention to the issues of employer demand for skills, job design and workplace innovation'*.[70] To help address the weak demand for skills

across a range of sectors, LEPs should consider providing low- or no-cost business support to SMEs to improve their people management competencies, especially around the effective use and development of skills. The CIPD, in partnership with the JP Morgan Foundation, has been piloting the provision of HR support to SMEs in a number of locations.[71] This has demonstrated the critical role of local authorities with strong linkages to local businesses working closely with Chambers of Commerce and other local institutions in helping to create a 'supportive skills eco-system' at the local level.

Social partners and industry partnerships also have an important role to play in raising employer ambitions in relation to skills and training, ensuring that the needs of individual employers are balanced with those of the wider sector, and that the employee voice is represented. The OECD LEED programme, which reviewed local skills strategies, highlighted the importance of the involvement of social partners (footwear sector Italy) when helping businesses to move from medium to high product market strategies in the food-processing sector, ensuring that gains in productivity went hand in hand with improvements in working conditions.[72] In the UK, the BEIS should revisit the experience of the old DTI's Partnership Fund to see whether more direct support for partnership working between employers, unions and employees to improve business performance and the quality of work could be developed, drawing on the lessons from previous rounds.[73] The BEIS could consider giving more direct support and encouragement to building recent initiatives. For example, Acas's *Building Productivity in the UK*[74] identifies seven levers of workplace productivity, including well-designed work, improving the skills of line managers, managing conflict, fairness, employee voice, and high trust, and gives practical advice to businesses on how to improve in each of these areas.

5 Promoting learning across the life course

'Employers have a responsibility to provide, and employees a responsibility to pursue, opportunities for lifelong learning, whether on the job or through training providers, to help maintain productivity and employability in the face of change.'[75]

The international evidence presented in this report suggests that there is an institutional gap in addressing the training and development needs of workers outside the current vocational education system. This needs to be addressed, not just because raising skill levels improves individual outcomes, such as earnings and inclusion, but also because of the economic benefits. Evidence from the OECD suggests that higher participation in lifelong learning is associated with lower skills mismatch, as training beyond formal education can address changing labour market needs.

Alongside this, an ageing population and the need to work longer combined with rapid technological change and automation will require the workforce to continually update their skills to adapt to changing needs. This further highlights the need for greater investment in lifelong learning.

However, insufficient opportunities are not the principle reason why many adults do not engage in learning. Instead, barriers identified include lack of time – due to work or family commitments – and lack of resources to pay for training. Other issues may include lack of information of types of training that are available, the benefits and return on investment of different courses (see recommendation 6).[76] Other countries have introduced various measures to increase adult participation, from awareness and confidence-building, time off to learn and through 'rights to learn'. In Norway and Sweden, for example, employees have a right to unpaid training leave after being with their employer for three years.[77]

Financial incentives have been used in the UK as well as in other countries to overcome barriers to participation and encourage individuals and employers to invest in learning. In the UK, Individual Learning Accounts (ILAs) – discontinued in England in 2001 but available in Wales up until 2011 and still active in Scotland – were developed to encourage individual investment in skills development. The English model suffered from a number of initial problems, including accusations of fraudulent behaviour as well as over-subscription, and was quickly suspended.[78] However, evaluation from Scotland suggests that lessons were learned and adjustments made, including much more stringent vetting of providers and creating a much more flexible system, extending to cover high-level and professional qualifications, capable of better meeting demand.[79]

Personal learning accounts have also been implemented in a number of countries, including Sweden, the Netherlands, Austria, Ireland, Canada and the United States.[80] In the US, for instance, since 2001 Lifelong Learning Accounts (LiLAs) have been piloted across a number of states. These accounts are based on a co-investment model by employees and employers and evaluation evidence has found that they lead to greater take-up and investment in training and better matching of skills development between individual and business need.[81] Government should revisit the potential for **personal learning accounts** along the lines of the Individual Learning Accounts, but with greater scope for individual and employer co-investment and a much closer link with high-quality careers information, advice and guidance (see recommendation 6).

6 Quality information, advice and guidance

High-quality information, advice and guidance can help shape learner demand and career choices, better aligning them with the current and future requirements of the labour market. On the employer side, information and advice about the business benefits and returns on investment associated with workforce development and training can help boost demand and increase investment.

The foundation for any careers guidance system rests on the provision of high-quality labour market intelligence (LMI), its dissemination and its use. A review of OECD countries' skills strategies highlighted that although most countries collect extensive information on the skills and qualification of their population, not all collect data on employer skills needs.[82] The US approach is highlighted in the review as *'interesting and instructive'*: O*NET (Occupational Information Network) provides, freely available online, nationwide labour market intelligence, including occupational competency information from an individual and employer perspective; this is combined with demand-side information from an annual business survey, and labour market projections covering the labour force, sectors and 800 occupations.[83]

In terms of the dissemination of LMI, Switzerland has a strong regional infrastructure, with each state (canton) operating freestanding centres for occupational, educational and career guidance.[84] These centres provide impartial advice and guidance for all levels of vocational education and training. Individuals are able to access guidance initially from generalists and are then referred to specialists with more knowledge of specific institutions and occupations.[85]

Careers guidance in England has undergone considerable changes over the last few years, with the closure of Connexions and devolution of responsibility down from local authorities to individual institutions. In 2013 Ofsted released a damning report on the state of careers advice in England's schools, finding that only one-fifth of schools visited were effective in ensuring that students received the *'level of information, advice and guidance they needed to support decision-making'*.[86] The report also raised concerns about the breadth of information and guidance on offer; information provided was typically focused on too narrow a range of careers and educational options, vocational options were rarely promoted effectively, and links with employers were weak. Similar issues have been encountered in other countries that pursue this type of approach: an OECD report on the Netherlands found that devolving careers guidance to individual institutions led to reduced impartiality, with *'educational institutions … more interested in filling their courses than with giving good advice to students on the realities of labour market demand'*.[87]

To address these widely published failings the Careers and Enterprise Company (CEC) was created in 2015. The CEC is an employer-led organisation, set up to inspire and prepare young people for the fast-changing world of work. The CEC's role is to join the dots in the fragmented landscape of careers and enterprise, supporting programmes that work, filling gaps in provision and ensuring coverage across England. To do this, they have three key streams of activity. First, they work with Local Enterprise Partnerships (LEPS) to create a national network of enterprise co-ordinators who work with schools and college leadership teams to build careers and employer engagement plans. This work is supported by a network of enterprise advisers, senior business volunteers, who are each matched with a school or college to provide local labour market insight and advice on how to connect to other local employers.[88] More than 1,500 schools and colleges are now part of the network, supported by more than 1,300 volunteers, including 300 CIPD members, many of whom have first-hand experience of the employer

perspective when it comes to young people transitioning from education into work. Second, the CEC funds successful careers initiatives to allow them to scale up in areas that need support; and third, they commission research to evaluate and identify 'what works' in careers and enterprise and where the geographical areas of need are.

The CEC has been praised for getting up and running so quickly,[89] and we are extremely supportive of their work and are actively encouraging our members to become enterprise advisers. However, there are a number of urgent education reforms required to further build on their work.[90] In particular, the work of the CEC needs to be supported by better incentives within schools to ensure that they prioritise careers advice and guidance on an ongoing basis. In particular:

- Ofsted has placed additional emphasis on schools provision of careers guidance; however, we agree that this should go further and support the recommendation of the Sub-Committee on Education, Skills and the Economy (2016) that the Common Inspection Framework should be amended to make clear that schools whose career provision is judged as 'inadequate' or 'requires improvement' cannot be judged to be outstanding.[91]
- Publishing destination data has a key role to play in encouraging schools to prioritise, invest in, and be held to account for the quality of their careers provision. However, to make this an effective incentive, the Government needs to go further in improving the quality, timeliness and the length of time that young people are tracked for.

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CIPD

Chartered Institute of Personnel and Development
151 The Broadway London SW19 1JQ United Kingdom
T +44 (0)20 8612 6200 **F** +44 (0)20 8612 6201
E cipd@cipd.co.uk **W** cipd.co.uk

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