FURTHER EDUCATION
TRUST FOR LEADERSHIP

MONOGRAPH

A WORLD-CLASS WORKFORCE FOR WORLD-CLASS SKILLS

The case for a national institute for technical teaching and regional knowledge centres

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ABOUT FETL

The Further Education Trust for Leadership's vision is of a further education sector that is valued and respected for:

- Innovating constantly to meet the needs of learners, communities and employers;
- Preparing for the long term as well as delivering in the short term; and
- Sharing fresh ideas generously and informing practice with knowledge.

MONOGRAPH

FETL monographs are short, forward-looking treatments of subjects key to the leadership of thinking in further education and skills. Written at the invitation of the Trust, they aim to influence leadership in and of the sector, taking its present needs and concerns as their starting point and looking deeply into the experience of colleagues in order to devise scripts for the future. As with all FETL's work, the intention is not to offer definitive solutions but to engage readers in further thought and debate about issues crucial to the development of FE and skills in the UK, often drawing on ideas from other sectors and disciplines. Each monograph concludes with a number of key ways ahead for the sector.

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FOREWORD

Dame Ruth Silver
President, Further Education Trust for Leadership

This is a timely and ripe report on an issue critical to the future of further education and skills in the UK: how to take seriously for success the modernisation of our system of technical education so that it stands side by side in excellence with the world's best.

The story of Britain's poor performance in technical and vocational education relative to other, comparable countries has too often been told. A 'world class' skills system has been an ambition of successive governments, which have adopted as an article of faith the link between high-level skills, improving productivity and economic growth.

Targets have been set, priorities changed and qualifications reformed. Yet, in all most every case, these interventions have fallen short, sometimes miserably so. Britain continues to lag well behind its competitors and near neighbours in terms of technical education outcomes, continuing professionalisation of its staff and productivity.

Too often, policy reforms have not been accompanied by the necessary resources and structure, or, indeed, the strategic and operational knowhow to make them a success. One of the most remarkable aspects of policy development over the past decade has been the persistence of government ambition for the sector despite round after round of debilitating budget cuts, long-term wage stagnation, short-sighted policymaking and a bruising, heavy-handed system of accountability.

Learners deserve the best and the people and places that serve them need to be terrifically well equipped themselves to deliver what they need, in terms of skills, knowledge, equipment and resources. Given the scale of the task at hand – and its urgency in a context in which we will have to rely more and more on our own homegrown talent and skills – asking more without investing more for is simply not a viable way forward.

The neglect of the skills, resources and equipment of the people who work in the sector, of whom so much is demanded and expected, is shameful and, to my mind, a growing disgrace. Their role, after all, is crucial – they work at the intersection of education and industry, ensuring the 'line of sight' between the world of work and the world of learning is clear and true.

For this reason, I believe this report points in the right direction. The Further Education Trust for Leadership is pleased to fund and publish it. The proposal at its heart – for a national of institute of technical teachers, supported by a network of regional teaching and sector specialist knowledge centres – deserves championing and needs the active attention of policy-makers.

The rebuilding of technical education – currently a central plank of the policy outlook of all major parties – must begin with a focus on teaching, training and learning, and offer proper development for those expected to deliver the desired step change in technical provision. We need to make sure the profession is attractive to potential teachers and support them accordingly, not only in terms of pay – a huge issue that needs to be addressed urgently – but also equipment and resources. Without this, no amount of altering curriculum and qualifications, central target-setting or calling out of failure will take us where we badly need to go.

This report is a challenge to politicians and policymakers to think about and invest seriously and continuously in the future of technical education. It is an example of the kind of informed foresight we need if we are to move forward in a serious and sensible way in making the most of the opportunities we face. It most certainly warrants the serious hearing and concerted policy attention badly needed for our students, our economy and our society to thrive.

Ruth Silver is President of the Further Education Trust for Leadership

Definitions and terms

Throughout this paper reference is made to the UK skills system. This is because of the importance of skills to productivity and to the performance of the wider UK economy. Organisation for Economic Co-operation and Development (OECD) benchmarks for skills, productivity and qualifications are based on UK-wide performance indicators but we acknowledge the impact of devolution and the different approaches to skills in Scotland, Wales and in Northern Ireland. For this reason, most references to the UK skills system in this paper are primarily to England.

The skills system in England is complex, multi-layered and difficult to navigate. It is not well understood and, as described later in the report, there are different interpretations of what is meant by further education (FE), higher education (HE) and technical education. Throughout Europe the generic term for their skills systems is technical vocational education and training (TVET).

The authors of this paper have adopted the term 'skills system' to describe what is variously know as FE, HE and vocational training. This means primarily post-16 technical further and higher education and training which has a clear line of sight to work. It incorporates all types of providers including general further education colleges, independent learning providers, universities, adult and community learning providers, group training associations, institutes of technology, sixth form colleges and university technical colleges. It concerns all levels of technical education from Level 2 to Level 7, including higher technical qualifications, which are the subject of the Department for Education's Level 4/5 review. It includes all technical qualifications and programmes such as apprenticeships, T-levels, applied general qualifications such as BTEC HNC/HND, and vocational qualifications.

This monograph is therefore focused on technical education and technical teaching in all its forms. The authors of this paper settled on two definitions taken from the Lingfield Review, *Professionalism in Further Education* (2012)[1]:

UNESCO definition of technical education

'All forms and levels of the educational process involving in addition to general knowledge, the study of technologies and related sciences, the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in the various sectors of economic and social life' (p.14).

Lingfield definition of FE mission

A single post-compulsory sector unifying FE and HE and with a primary purpose of providing *'practical learning which leads to the availability of a technically skilled workforce to power high economic performance' (p.27)*

1 Lingfield, R. 2012. *Professionalism in Further Education: Final Report of the Independent Review Panel*. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/422247/bis-12-1198-professionalism-in-further-education-review-final-report.pdf

INTRODUCTION

The UK will not be able to develop a prestigious, high-status technical education and skills system unless it raises the professional status of the people that teach in it.

The creation of a world-class skills system demands outstanding leadership, infrastructure investment, funding reform and a new generation of technical teachers. These teachers need current industry knowledge, professional skills, personal attributes and the ambition to make a career out of the teaching of others. They will need to be paid well, supported at every step of their development, and awarded the professional status that they achieve and deserve. They will need access to the latest learning technologies and the resources that support the delivery of outstanding and inspiring technical education and training.

This task should not be left to individual institutions alone. The technical teaching workforce needs to be made a priority. A national plan is needed to re-build and add capacity to our skills system after decades of under-investment. We also need a comprehensive workforce strategy the central ambition of which must be to recruit, support and develop the next generation of technical teachers. This should be led by a **national institute for technical teachers.** The institute should be supported by a network of six **regional teaching and sector specialist knowledge centres.** These centres should be professional lighthouses, muster points for the profession, and places where pedagogical and subject-specific skills can be honed and updated. They should exploit the full potential of digital learning and be centres for research and innovation. Each centre should be a sector lead for subject-specific pedagogy reflecting the latest technologies and industrial practices. Knowledge centres should be a place where effective practice is routinely shared, ideas are nurtured, and collegiality is celebrated.

We can shift the paradigm. A world-class skills system demands great employer partnerships, a clear ladder of progression for learners and industry-standard equipment. But the most successful skills systems

in the world stand out because of the investment they make in those that teach technical education and the value and professional status that they are afforded. The challenge is to attract more of the brightest and the best technical teachers and to provide them with fulfilling and challenging careers. Workforce reform is the single biggest factor in the success of the reforms of technical education. It will not be a quick fix but we can do it and this monograph is intended as a contribution to the debate about how we might go about it.

> *'We want our technical education system to be as prestigious as higher education in this country, and for it to rival the best systems in the world'*[2]

This paper is concerned with the recruitment, training, reward and ongoing development of the professional workforce of teachers and trainers who deliver technical education and training. Their skills and expertise are critical to the success of the current reforms of technical education and the ambition to make the UK's skills system 'world class'.

Few people will question the ambition of the current reforms: apprenticeship standards and an employer levy, new T-levels to underpin a high-quality technical route to employment or further study at Level 3, attempts to boost the uptake of Level 4/5 higher technical qualifications, and a long-term vision to have an institute of technology (IoT) in every major city to promote STEM based occupations – all backed up with a commitment to capital investment to match the ambition; over £290m to build up to 20 new IoTs, strengthening the skills infrastructure; a capital fund to purchase industry-standard equipment for T-level students; and a substantial grant to enable the Education and Training Foundation (ETF) to develop a range of professional development programmes to support those teaching the new T-levels.

Despite this ambition there is a real risk that the reforms will falter, as previous reforms have, because of the absence of a coherent and over-

2 HM Government. 2017. *Industrial Strategy: building a Britain fit for the future, p. 102.*

arching skills strategy that brings together the key ingredients needed for a world-class skills system, the most important of which is a strategy for the technical teaching workforce.

The Post-16 Skills Plan has just one paragraph about the workforce. It reads as follows:

> *'We expect colleges and other training providers to take on more direct responsibility for workforce development, taking advantage of the standards set and the services provided by the ETF'*[3]

Is that enough? Is that all we have to say about establishing a world—class teaching workforce, about the system-wide challenge to recruit, retain and develop outstanding teachers, about the desperate need to improve the qualifications, status, pay and conditions of nearly a quarter of a million people who teach technical education across the further and higher education sector?

This monograph considers the latest reforms in technical education and specifically the implications for the workforce. It asserts that we cannot have a prestigious, high-status technical and higher technical route unless we raise the quality, professionalism and status of the people that teach it. The paper concludes with a call to action and an ambitious proposal to recruit a new cadre of technical teachers and to radically improve the support and training of the technical teaching workforce.

In Section 1 of the paper we examine the current UK skills system and reflect on why decades of reform have not led to the establishment of a high-performing and world-class system. We reflect on why the UK, and, post devolution, England, in particular, has a persistent productivity gap compared with other industrialised nations, and how the skills system can help bridge this gap. We consider what needs to be done to ensure the success of future generations of students, including the investment that is needed in those that teach them. In doing so, we have sought to establish greater clarity about what we mean by 'technical education'.

3 Department for Education and Department for Business, Innovation and Skills. 2016. *Post-16 Skills Plan*, p. 35

Section 2 looks in depth at the current workforce and considers the changes that are needed to ensure the success of the technical reforms. This draws on the research and experience of senior leaders who have been at the forefront of teacher training in the UK. It provides an in-depth assessment of the current workforce and considers how it will need to evolve and develop to meet its new mission. It highlights the need for a new cadre of career-focused technical teachers to underpin the technical reforms, and reviews the current arrangements for continuous professional development in the sector.

In Section 3 we consider the key features and characteristics of a high-performing skills system. We re-visit the report of the Commission on Adult Vocational Teaching and Learning (CAVTL), *It's all about work,* with its focus on high-quality technical teaching and we look at international comparisons to ascertain what can be learned from best practice across the world. Specifically, we look at how other OECD countries recruit and develop technical teachers and we consider how best practice could be applied in the UK.

Finally, in Section 4 we set out proposals to improve the status, professionalism and quality of technical teachers in the UK.

The paper is an open invitation to policymakers, sector leaders and those that believe in the critical importance of skills to work together to transform the sector and, in doing so, transform the lives of all those that benefit from world-class technical education.

The research and appendices that underpin this monograph can be obtained from the Further Education Trust for Leadership website.

Appendix 1: Profile of the FE workforce in England and Continuous Professional Development. This appendix provides the supporting research for Chapter 2 of the monograph. The research was undertaken by Helen Pettifor.

Appendix 2: International comparators of TVET systems and approaches to teacher training. This appendix provides the supporting research for Chapter 3 of the monograph. The research was undertaken by Helen Russell.

Summary of the main findings and recommendations

The main findings

1. The skills system in the UK underperforms compared to most other OECD countries and this impacts on productivity, competitiveness, earnings and social mobility.
2. There are pockets of excellence in the UK skills system evidenced by, for example, performance at World Skills competitions, but world-class technical education at all levels has not been mainstreamed across the sector.
3. The current reforms of technical education are important steps towards a world-class skills system but there needs to be greater clarity about the purpose and mission of post-compulsory technical education and increased investment in both the skills infrastructure and the professional teaching workforce.
4. There is a sector-wide shortage of high-quality technical teachers, especially in STEM subjects. The terms and conditions for technical teachers, in particular, have been eroded over the last decade. In some parts of the sector, morale is low, staff turnover is high, and skills shortages persist. The introduction of T-levels and higher technical qualifications will increase the demand for high-caliber technical subject specialist teachers and the difficulty in recruiting these could threaten the reforms.
5. Raising the status, professional training and rewards for technical teachers are critical to the success of the reforms. The current arrangements fall short of what is needed.

Recommendations

1. Establish a national institute for technical teaching with responsibility for promoting and protecting the status of technical teachers, and overseeing the professional standards and continuous professional development of the workforce. The institute should be located within existing national structures to avoid duplication of effort and extra cost.

2. The first task of the institute should be to work with the sector to produce a five-year national workforce strategy for technical teachers and the wider community of professionals that work in technical education including sector leaders. This strategy should aim to attract a new generation of high-quality technical teaching professionals to the sector as well as promoting the role of industry expert dual professionals.
3. Significantly improve the technical teacher training infrastructure with the establishment of six regional knowledge centres. These centres should be co-located where there is capacity on an existing college or university estates. Each should be a national lead for an industry sector bringing together leading employers, providers and suppliers to focus on subject pedagogy at all levels. The knowledge centres will be at the forefront of teacher training, research, innovation and the development and the use of digital learning and other technologies.

SECTION 1

THE UK SKILLS SYSTEM – A WICKED PROBLEM[4]

Key points

- There is a well-established relationship between the efficacy of the skills system and the levels of productivity and economic growth that are achieved. The skills system in the UK underperforms compared to many international competitors and this impacts on productivity, competitiveness, earnings and social mobility.
- The performance of the UK skills system lags behind most other OECD countries. There are pockets of excellence but, overall, the skills system is too low-level, overly complex, and lacking in both public and employer investment. Technical education does not have the status afforded to academic and, specifically, university education in the UK.
- A major factor in this underperformance is a lack of clarity about the purpose and mission of further education colleges within the skills system together with a lack of coherence in the progression pathways between secondary, further and higher education. Preparation for technical education starts much earlier in many OECD countries, normally at age 14, and progression to post-16 technical education is continuous to the highest level that a learner can achieve.
- Current policy reforms suggest that technical education and skills now have a primacy of purpose within further education. The post-Sainsbury reforms signal the start of a 10-year plan to reform technical education. Levy, IoTs, T-levels, Level 4/5 higher technical education all form part of efforts to 'raise the game' to world class.
- The central planks of reform are structural changes to skills infrastructure, curriculum and the workforce.

4 A wicked problem (Rittel, 1973) is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize.

Reforming the skills system – running to stand still

The reform of the UK skills system has been a wicked problem for decades. Successive governments have sought to make the skills system more responsive to the needs of the economy, key industrial sectors and to the needs of employers. Most have promised much and delivered little.

In the 1980s, the Manpower Services Commission was established to lead a national strategy to link the needs of the labour market to national training policy. Despite an eye-watering £3 billion budget it largely failed to tackle the problems. In the 1990s, a series of reforms, including the creation of Training and Enterprise Councils, incorporation of further education colleges and the Technical Vocational Education Initiative (TVEI) all aimed to create freedoms in the education and skills 'market' to ensure a more responsive system. They failed. Instead our skills providers became qualification factories. The huge increase in National Vocational Qualifications (NVQs) during the 1990s saw 14 million people obtain a Level 2 NVQ qualification but almost none of them progressed to a Level 3 award. The UK's historic weakness in intermediate skills, the polytechnic-type hole, continues to persist today.

In 2004, Sandy Leitch was asked to undertake a full-scale review of the UK skills system to try to understand why the UK performed so badly against its international competitors and to make recommendations for reform of the skills system to make it 'world class'. His foreword to the report merits reproduction here.

Leitch Review on Skills

Our nation's skills are not world class and we run the risk that this will undermine the UK's long-term prosperity. Productivity continues to trail many of our main international comparators. Despite recent progress, the UK has serious social disparities with high levels of child poverty, poor employment rates for the disadvantaged, regional disparities and relatively high-income inequality. Improving our skill levels can address all of these problems ...

Our intermediate and technical skills lag countries such as Germany and France. We have neither the quantity nor the quality of necessary vocational skills. We have made enormous progress expanding higher education – and this is critical to becoming a high-skill economy. Over one quarter of adults hold a degree, but this is less than many of our key comparators, who also invest more. Our skills base compares poorly and, critically, all of our comparators are improving. Being world class is a moving target. It is clear from my analysis that, despite substantial investment and reform plans already in place, by 2020, we will have managed only to 'run to stand still'.

On our current trajectory, the UK's comparative position will not have improved significantly. In the meantime, the world will have continued to change and the global environment will be even harsher. The scale of the challenge is daunting. Our recommendations start with an ambitious vision. The UK must become a world leader in skills. Skills is the most important lever within our control to create wealth and to reduce social deprivation. We recommend radical change right across the skills spectrum. We have defined clear ambitions at basic, intermediate and higher skills. Our study focuses on adult skills but we express concern and suggest action for 14–19s. 'Economically valuable skills' is our mantra. Institutional change and simplification are necessary. However, we have tried to identify how to deliver better on what we have rather than to invent many more new structures. Too many of us have little interest or appetite for improved skills. We must begin a new journey to embed a culture of learning. Employer and individual awareness must increase. To reach our goals, we as a society must invest more. It is clear who will pay. It is all of us – it is the State, employers and individuals. But this will be the best investment we could ever make.[5]

5 Leitch, S., 2006. *Prosperity for all in the global economy-world class skills*. The Stationery Office , p.1–2.

Sadly, as Sandy Leitch himself predicted, 'It is clear from my analysis that, despite substantial investment and reform plans already in place, by 2020 we will have managed only to run to stand still.'

A decade after Leitch another review of technical education was undertaken, this time led by David Sainsbury. Its recommendations were adopted by government and resulted in the publication of the Post-16 Skills Plan and a major overhaul of post-16 education to include the creation of 15 technical skills pathways.

The Post-16 Skills Plan

> *We want our technical education system to be as prestigious as higher education in this country, and for it to rival the best systems in the world.*
>
> *We face a major challenge: the pressing need for highly skilled people, trained effectively, to grow the economy and raise productivity… We need young people and adults to have the skills and knowledge that better equip them for employment in the 21st century, in order to meet the demands of the future. The skills plan is our ambitious framework to support young people and adults to secure a lifetime of sustained skilled employment and meet the needs of our growing and rapidly changing economy.*[6]

The language may be the same but the current commitment to reform of the UK skills system has the potential to be different. There is at last a clarity of purpose for post-16 education and skills; the creation of a skills system that equips young people and the older workforce with the technical skills and knowhow that they need and business demands in order to be competitive in a global, technology-driven economy.

There is a lot to do to rival our international competitors. We need to re-build our technical skills infrastructure and recover from the loss of our polytechnics in the 1990s and the demise of our technical schools

6 Department for Education and Department for Business, Innovation and Skills. 2016. *Post-16 Skills Plan*, pp. 7–10.

and colleges a decade before. New institutes of technology and the university technical colleges are a good if somewhat modest start.

The reform of the technical curriculum and technical qualifications is gathering pace. Establishing the technical route as a prestigious gold standard for the next generation of technical professionals is long overdue. Raising aspirations and rebalancing provision away from low-level qualifications towards intermediate and higher-level technical education will take time and some tough policy decisions as well. Apprenticeship standards, minimum off-job training, T-levels and new higher technical qualifications are all steps in the right direction.

The final, most important and most often overlooked element of the reforms is the workforce. In contrast to our international competitors, technical teaching is not afforded high status in the UK. The entry qualifications for teaching are much lower, and the pay and conditions are out of step with other countries and also with the secondary and higher education in this country. As an OECD official recently remarked, 'the trouble is that you pay your plumbers much more than the people you want to teach plumbing'.

The workforce will be a critical factor and a key risk to the reforms. It is not clear how government intends to ensure that enough high-quality technical teachers are recruited, retained and trained. Workforce policy has so far been developed in programme silos. An overarching workforce strategy is urgently needed to ensure that the other elements of reform come together so that the system improves overall.

What problems are we trying to fix?

> *Weaknesses in the UK's skills base have contributed to its long-standing productivity gap with France, Germany and the United States. It performs poorly on intermediate professional and technical skills and is forecast to fall from 22nd to 28th out of 33 Organisations for Economic Co-Operation and Development (OECD) countries for intermediate skills by 2020.*[7]

7 Ibid., p. 10

Too low level and over-focused on numerical targets

There is a degree of imbalance in our skills system, a long tail of people with a low base of skills and a much smaller cohort that have the intermediate and advanced-level skills (Level 3 and above) that are known globally to drive productivity. Put simply, too much of post-16 skills provision, including apprenticeships, is too low-level, does not lead to full mastery of skills and does not promote or enable progression to higher levels.

On apprenticeships, for example, nearly two-thirds of starts are older workers already in work and over half of apprenticeships are only studying at Level 2. The obsession with a numerical target of 3 million apprentices, which has only recently been dropped, has driven provider behaviour and resulted in the number of 16–18 apprenticeship starts actually declining. The perverse impact of the levy has been the whole sale conversion of workforce training into apprenticeships. Huge increases in supervisory and management apprenticeships make little contribution to the availability of highly skilled technicians, engineers or construction workers.

Equally, the shocking collapse in the number of students studying Level 4 and 5 technical qualifications since the demise of the polytechnics, less than 200,000, hardly suggests that the UK is ready to compete in a global economy where technology and the very nature of work are changing and evolving at an eye-watering pace. There are some pockets of excellence and the UK has performed well at World Skills events, but these are the elite few not an elite of the many and we have not yet found a way to mainstream this excellence.

Skills as a driver of social mobility

The effectiveness of the UK' s skills system is not just about the economy and business. Acquisition of higher-level skills are strongly associated with social, economic and health outcomes, from wage premiums to increased social participation and improvements in wellbeing. Some of the most inclusive and economically dynamic countries in the world have high-quality, well-funded TVET and lifelong learning as a core part of their skills systems.

Our productivity issues are contributing to the high levels of inequality in the UK, because they have clear social and place-based dimensions. Regional variations in productivity in UK are the highest in Europe. Britain ranks 21st out of 29 high-income countries on the World Economic Forum Inclusive Development Index.

Defining further education and its mission

A clear factor in the under-performance of the skills system is a lack of clarity about the central purpose of further education and specifically the mission of further education colleges. These independent but largely publicly funded institutions provide the majority of post-16 education in the UK. Historically, these institutions have been defined by what they do not do rather than what they do. They are the piece in the middle between school and university attempting to meet multiple missions in support of individuals, communities and employers. This is different to other OECD countries which have a well-defined post-16 technical route which is clearly understood and combines both further and higher education. These institutions are specialist and focus on skills and employment.

The Lingfield Report highlighted this lack of agreement of purpose suggesting that FE has at least five different missions: **remedial** FE, **community** FE, **vocational** FE, **academic** courses to Level 3 and **higher education** studies. He argued that, all too often, time is spent in FE redressing the shortcomings of schooling. As he sets out early in the report:

> *FE is too often the filler of gaps left by others…it is the sector in between schools and higher education, covering a host of tasks and needs…whilst its international counterpart, VET, clarifies and defines a role in developing occupational skill in the service of the economy.*[8]

Lingfield suggests that the UNESCO definition of FE, with its reference to all levels of study of technologies and occupational skills and knowledge, is helpful in clarifying the FE mission:

8 Lingfield, R. 2012. *Professionalism in Further Education: Final Report of the Independent Review Panel*, p. 17.

> *All forms and levels of the educational process involving in addition to general knowledge, the study of technologies and related sciences, the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in the various sectors of economic and social life.*[9]

Lingfield argues for a single post-compulsory sector unifying FE and HE, with a primary purpose of providing 'practical learning which leads to the availability of a technically skilled workforce to power high economic performance' (p.27–28). Community lifelong learning should be a secondary purpose. This clarity of purpose and mission is important because it has implications for workforce planning. A refocusing on technical education and higher levels of study will fundamentally alter the shape of the FE and HE workforce.

Summing up

There's a lot to do if the UK's skills system is to become world class and outperform our international competitors. It demands a revolution in technical education, including a cultural shift in attitudes to different forms of education, structural change, funding reform, a new relationship with business and a substantial investment in infrastructure and, importantly, in the teaching workforce.

These reforms will take time and require the commitment of all the main political parties. It remains to be seen whether these reforms survive changes in government and in secretaries of state; changes which have so often derailed or disrupted the reform and improvement in our skills system in the past.

9 Ibid., p. 14

SECTION 2
THE WORKFORCE CHALLENGE

Key points

- The absence of an overarching workforce strategy and the complexity of a marketised system means that not enough is known about the existing workforce. What we do know is that there are not enough high-quality technical teachers entering the profession and serious problems recruiting and retaining industry-expert teachers, particularly in STEM subjects. This is having a direct impact on the quality of teaching and the learner experience.
- Teacher status and pay and conditions reflect the neglect and under-investment in FE of the last decade. There is an increasing use of fixed-term, temporary and zero hours contracts to enable providers, and particularly colleges, to deal with declining funding rates and often unpredictable changes in funding. This impacts on the quality of teaching and results in a negative perception of a career in FE teaching. Consequently, staff turnover is high in key subject areas and not matched by a secure pipeline of qualified new entrants.
- The multi-faceted nature of further education and the relatively low level of much of the provision is largely reflected in the make-up of the workforce. There is a very wide range of teaching roles including specialist maths and English teachers, employability teachers, A-level teachers and those teaching specialist occupational and technical skills.
- Nearly half of FE teachers hold a full PGCE teaching qualification. However, a much lower number of engineering and construction teachers hold a teaching qualification at Level 5 or above. Importantly, only half

of teachers surveyed felt qualified to teach their subject specialism at Level 4 or above and the number was lower in some key sectors. This has implications for T-levels, HE in FE and the IoTs.

- While the ETF has developed Professional Standards for FE Teachers which lead to membership of the Society for Education and Training, there are significant numbers of people teaching in FE for whom teaching is not their primary vocation. Some of these teachers fail to recognise a professional covenant or the professional teaching standards. Others who do commit to the professional standards do not feel that they are afforded the status or rewards that their commitment deserves.
- There is likely to be a serious shortfall in the number technical teachers capable of delivering high-quality, high-level technical education and training such as T-levels, higher technical qualifications and higher apprenticeships. There is a need to make major changes to teachers' pay to compete with industry rates.

What we know and don't know about the FE workforce

Data on the workforce in primary and secondary education are collected annually and analysed centrally by government for all schools. The demand for teachers can be forecast and aligned to national demographics. Teacher education programmes can be planned to ensure a pipeline of graduate teachers equipped with the subject specialisms which are needed to deliver the curriculum.

The same cannot be said for post-16 education and training. What we know about the FE workforce is distributed, sometimes contested and not clearly visible. There is no authoritative national picture. The marketisation of FE transfers responsibility for the workforce to the provider of the service, so strategic, national data collection is difficult.

The skills market itself is highly fluid, with providers coming and going, and, as a consequence of the Area Review process, a series of mergers

which have resulted in fewer, larger and less specialist colleges of further education. We are beginning to see the emergence of 'colleges within colleges' as a market flexible model. This will result in an increased demand for specialist technical teachers.

There is no contractual requirement for providers to report to the DfE or the Education and Skills Funding Agency (ESFA), and completion of the main source of information, the Staff Individualised Record (SIR), is voluntary. Consequently, planning national strategic programmes of CPD and support is challenging. Taken together, the annual SIR data collection and the DfE annual survey of further education colleges in England gives us some insight into the FE workforce. Detailed data and analysis are available in appendix one for those that wish to look in more detail at the research from which these headlines are drawn.

The further education workforce

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Size and profile

The FE workforce of teaching — and learning-facing staff is estimated to be 133,400, supporting some 3.1 million learners. This compares with 425,200 qualified teachers in schools in England, covering 8.6 million pupils.

The mean and median age of teaching staff in FE is 47 with the highest proportion of teachers falling into the 50–54 age band. The overall FE workforce is 80–90% white British. Unlike primary and secondary education, FE does not have a strong pipeline of graduate teachers coming into the sector.[10]

The DfE survey shows that only 16% of teachers were under the age of 35 and 64% had worked in FE for less than three years. It found that around two-thirds of teachers had worked outside education in an area relating to the vocational subject(s) they taught, with

10 Education and Training Foundation. 2019. *Further Education Workforce Data for England: analysis of the 2017-1018*. Staff individualised Record (SIR) data.

significant proportions having 10 or more years' such experience. Of those who had industry experience, 17% said that they were currently working in industry.[11]

Contracts and churn

Most staff in FE are on permanent contracts, but casual, fixed-term and zero-hours contracts are a key feature and the numbers on insecure contracts has risen significantly in the last 10 years. Just under half (47%) of staff work part-time. The prevalence of part-time, fixed-term and temporary contracts may reflect the financial pressures on FE colleges which seek to manage their staff costs in order to sustain viability in the face of a decade-long real-terms reduction in funding rates.

While in the DfE survey, one in seven teachers said that they were likely to leave FE in the next 12 months, in construction and engineering this number increases to 20% and 22% respectively. Consequently, alongside maths, these are the highest hard-to-fill vacancy rates.

Pay

Teaching staff in colleges earn a median of £31,800, lower in independent providers and local authorities. This compares with mean annual pay for secondary school teachers of £34,700 and the average salary of an HE lecturer of £54,800.[12]

Qualifications

As in HE, just under half of FE teachers hold a full Level 7 PGSE teaching qualification. The DfE college survey found that most teachers felt they could teach to at least Level 3 — corresponding with the new T-level qualifications. Half or more felt they were also

11 Department for Education. 2018. *College Staff Survey*. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757830/College_Staff_Survey_2018_Research_brief.pdf

12 See https://www.hesa.ac.uk/data-and-analysis/staff/salaries

qualified to teach to Level 4 or higher in 11 of the 15 T-level routes. The exceptions are construction, hair and beauty, catering and hospitality and transport and logistics.

A relatively low percentage of teachers of engineering and manufacturing hold a Level 5, 6 or 7 teaching qualification. This will have implications for STEM-related technical reforms.

Quality of teaching

The quality of teaching provides a picture of continuous improvement. The proportion of FE colleges judged good or outstanding has increased to 78%, with the proportion of good or outstanding independent learning providers dipping to just below 80%. This contrasts with state schools where the proportion of good or outstanding is 86%, and where the strategic investment and time going into quality improvement have been greater and longer.

A complex picture of qualifications, experience, professionalism and reward.

Qualifications of the workforce

Teachers in schools see themselves, and are seen by others, as a homogeneous group, a profession that still has some status. Crucially, pupil demographics broadly determine how many teachers are needed and in which subjects. While it is true that academisation is providing more flexibility in teacher training and curriculum design there remain national teacher professional standards and a high degree of regulation.

The FE sector is very different. Incorporation and marketisation have resulted in a myriad of different providers operating and competing in the skills system and in receipt of public funding. There is a wide range of job roles where there is interaction with learners, lecturers, basic skills teachers, trainers, instructors, assessors, learning coaches – the titles are many and varied. There are no mandatory qualifications. The recruitment of qualified staff and their continuing professional development is the responsibility of the employer.

In response to the emerging skills crisis, there is national, funded support for teacher CPD via the ETF, which provides a range of CPD interventions and programmes. Through its membership arm, the Society for Education and Training, it provides the only nationally recognised teacher status that is transferable into schools – QTLS or Qualified Teacher Learning and Skills.

Despite this current investment in CPD, it is still possible in FE to be a plumber on a Friday and to be teaching plumbing on a Monday, if both employer and employee are willing. The motivations to come into FE teaching are also many and varied and they don't always involve a commitment to teaching as a vocation or a profession. This makes the creation of a high-status teaching profession, able to teach both further and higher education to industry standards, a major challenge.

The UK stands out from other international comparisons in its approach to workforce planning, teacher training, and professional standards. This may be because other countries have a clear and singular focus for their TVET system – professional technical skills needed by the economy. So, given the re-focus of FE onto the same TVET agenda, how do we establish a high-status, high-quality professional teaching community to teach world-class skills?

Experience

The data confirm that a large proportion of FE teachers have recently worked in industry. This is a positive advantage in that they use their industry experience in the teaching of vocational subjects, and this helps to make learning relevant, often providing an effective link between both on- and off-job training.

This effective practice is difficult to replicate consistently for two reasons. First, industry professionals in high-reward industries may be reluctant to give up a high salary and, second, such career changers will have little or no teaching experience and may not see the need or be able to afford to train prior to teaching.

All too often, with colleges desperate to fill a vacancy, an FE teacher new to the profession will not receive the support they need with the

basics of teaching practice during the early period of their employment. Many will leave, with the cycle repeating itself to the detriment of the learner and their employers.

Professionalism

At the heart of the debate about technical teachers is the extent to which teaching in FE is seen as a high-status profession. Lingfield's 2012 report on *Professionalism in Further Education*[13] starts with an expectation that those attracted to teach in FE have both mastery of their technical subject *and* a vocation to teach others. In return for this commitment to the profession, technical teachers should expect the respect of the community and an above-average standard of living with its implied security of employment.

There are many outstanding teaching professionals throughout the skills sector and the UK. World Skills coaches for example, exemplify the highly skilled subject specialists who work tirelessly to help learners acquire the highest levels of expertise and mastery in their chosen skill.

The challenge is that there is simply not enough of them and this world-class excellence has not been mainstreamed within the skills system. This is at least in part because the conditions have not been created which would allow professionalism to flourish. Lingfield's professionalism 'working criteria' were derived from consultation with professional bodies, and include mastery, responsibility, accountability and a sense of the greater good. Such professionalism needs recognition and support; it cannot be mandated. Teaching in FE should be an attractive professional career for technical subject specialists who have a vocation to teach others and a recognition that they form part of a wider community of professionals who all share the same ambition.

Reward

The data suggest that there is increasing use of casual and temporary contracts as colleges and other providers try to match their staff overhead costs to annual learner numbers. These flexible arrangements may suit some but for others the job insecurity and uncertainty work

13 Lingfield, R. 2012. *Professionalism in Further Education: Final Report of the Independent Review Panel*.

against long-term commitment to continuous professional development. The problem is particularly acute in STEM subjects where nearly a fifth of teachers said that they planned to leave teaching within 12 months.

While there is some evidence of some FE colleges paying sector premiums or other forms of salary enhancement to attract people from industry to hard-to-fill vacancies there is a general reluctance to do this. College leaders argue that it is difficult to justify a salary gap between teachers of different subjects and subject levels. While national funding rates do vary based loosely on the higher costs of some curriculum areas, this is not typically reflected in salaries for those curriculum areas.

Creating a new cadre of technical teachers

The UK system tends to recruit people from industry who are occupationally qualified to at least the level that they teach. Their main 'vocation' is the occupational area in which they trained rather than a vocation to teach. They obtain pedagogical skills through the initial teacher training or other arrangements of the college or provider. Technical trainers and variously titled instructors, tutors and learning coaches work in colleges and in independent learning providers. They are highly mobile. Many of them move between institutions or work for more than one institution. The teaching of narrow occupational skills is often at a relatively low level rather than bedding in theory and progression for students.

Consider now the government reforms: Higher-level and degree apprenticeships, higher technical education (Level 4/5), institutes of technology (Level 3–6). These reforms will require a teaching workforce that is subject-qualified to a level higher than that being taught, and a different set of pedagogical skills to teach a greater degree of theory and develop the independent research and study skills of students. In the case of T-levels, in, for example, construction, being a qualified plumber is too narrow a skill and knowledge set to teach 'construction' as a subject. The reforms will demand high-level subject competence and higher-level teaching skills as well.

As the FE technical reforms start to be implemented, we need a new cadre of technical teachers, degree-level qualified in subject and probably degree-qualified in teaching as well. Crucially, the role of dual professionals will be more akin to guest lecturer, remaining at work in industry but delivering modules of learning to provide up-to-date industry processes and practices. As the UK's skills system starts to look more like our international competitors so the workforce will need to look more like the high-status teaching profession in those countries too.

SECTION 3

WHAT DOES A WORLD-CLASS SKILLS SYSTEM LOOK LIKE?

Key points

- High performing VET systems have common characteristics: clarity of purpose, high status, clear progression routes, and a critical role for employers in the leadership and governance of the system.
- In most high-performing VET systems, institutions are specialist (e.g. technical schools and universities of applied science) and support key sectors of the economy.
- Being a VET teacher is a high-status and sought-after profession. It is well paid, secure and offers career progression for those that want and can achieve it. Those teaching in the VET system must typically be degree-qualified and have prescribed pedagogical knowledge and competence, as well as industry knowledge.
- Employers have a central role in the governance of the skills system and there are high expectations surrounding their role in workforce training.
- In most VET systems there are clear pathways from general/foundation schooling to further education and few barriers to progression to higher education.
- There are cultural and economic differences between countries which help determine their approach to the design of their skills systems. It is not desirable or practical to replicate entire systems in the UK but it is possible to adapt some of the key features.
- Most countries require technical teachers to hold degree-level teaching qualifications and a degree-level subject qualification for teaching higher level technical theory.

Introduction

In this section of the report, we ask the central question, 'What does a world-class technical skills system look like?' We reflect on the Commission on Adult Vocational Teaching and Learning (CAVTL) report, *it's about work,*[14] and the progress that has been made towards implementation of its recommendations. We look overseas to some of the best skills systems in the world and reflect on what we can learn from them. We draw on the RSA and World Skills report, *adopting global skills and innovation for the UK*,[15] which explores ways of mainstreaming world-class skills in our FE system. Importantly, in our own research we look at both other high-performing skills systems and the teacher training that underpins them.

We have already outlined the key challenges for the UK skills system: the complexity which makes it hard to understand and navigate, the multiplicity of missions among its publicly owned colleges, its poor reputation and low status, the relatively low level of outputs, and the absence of very much higher-level technical education. There are pockets of excellence, of course, colleges and providers which promote and deliver technical mastery to compete with the best in the world, but it's not mainstreamed and embedded in the structures, systems and DNA of the country in the way that it is in Switzerland, Denmark, Germany or Finland.

Features of high-quality technical education

In its report, CAVTL set out the best features of high-quality technical education and teaching in the UK. It included many of the features of our group training associations (GTAs) and of our technical colleges: A clear line of sight and focus on preparing for work, a new and deeper relationship with employers who co-invest and co-design curriculum, and industry-standard equipment often donated by the employers themselves. The teaching delivered in these high-quality institutions

14 See the Commission on Adult Vocational Teaching and Learning (CAVTL) summary report, *It's about work*: https://www.excellencegateway.org.uk/content/eg5937

15 See *Adopting Global Skills Innovation in the UK* report : https://www.thersa.org/globalassets/pdfs/reports/rsa-adopting-global-skills-innovation-for-the-uk.pdf

is often delivered by 'dual professionals' who combine industry subject expertise and acquired pedagogical skills to contextualise and make learning 'real'. In the very best examples, colleges and learning environments are transformed into simulated work environments where employability skills and behaviours are learned alongside the technical skills.

To its credit, CAVTL contributed hugely to our understanding of what high-quality technical education should look like. It proved invaluable to the colleges and providers that wanted to improve the standard of technical vocational education and it gave the inspectorate a framework and benchmark for making judgements about technical education. Programmes such as Teach Too help attract talented industry professionals to teaching and promote the use of industry specialists to make the vital connections between on- and off-job training.

Six years on from CAVTL, excellence in vocational teaching and learning is still not mainstreamed. There are pockets of excellence throughout the UK. They can be found at places such as Dudley College in the West Midlands where the college and local employers share the employment of expert technical teachers, at Blackpool and the Fylde College in the North West where there is a long-established partnership with the offshore gas industry, and at City of Glasgow College in Scotland where advanced simulators are used to train shipping pilots from all over the world. These colleges and providers have many of the characteristics of world-class skills training, but their existence is often more to do with the vision of their leaders and the commitment of a few employers rather than a system-wide framework in which excellence in technical education can flourish.

What does 'world class' look like in other countries?

This report reviews the skills systems in 13 OECD countries with a focus on the recruitment and training of technical teachers in Denmark, Germany, Holland and Finland. These countries were selected because they are geographically and politically similar and because technical teaching in those countries is a high-status profession.

We were not tempted by the idea of trying to simply transplant other countries' skills systems into the UK or even, following devolution, into

England. The cultural, structural and socio-economic differences make this impossible. There are, however, lessons to be learned from the approaches to skills in other countries.

Denmark

Denmark has the highest participation rates in adult education and continuing training in the EU.[16] These rates reflect conditions such as the national strategy to focus on knowledge-intensive specialist sectors and lifelong learning and a tradition of strong ties between enterprises, educational institutions and social partners. The VET system is a central government responsibility with 11 continuing training and education committees, each responsible for a specific sector of the labour market. They play a key role in defining and developing vocational qualifications and training conditions.

VET teachers in Denmark must have a minimum of five years of industry experience and since 2010 must also have a Level 6 VET pedagogical diploma at 60 credits, as well as their subject qualification. This followed the training of VET teachers being placed in the framework of university colleges, which was established through the Danish National Centre for the Development of Vocational Education and Training. The diploma must be started within one year of teaching and completed within four. The national target is that all VET teachers have this by 2020.

A newer development in Denmark is the appointment of knowledge centres[17] to help VET students handle technological development and match the competencies that companies demand in a digital labour market. The centres will also support VET schools in their work on digitalization of education and testing new teaching and training methods for talent development in the VET teaching profession. The aim of these centres is to become 'professional lighthouses' that ensure VET

16 As of 2016.

17 See https://www.cedefop.europa.eu/en/news-and-press/news/denmark-vet-knowledge-centres , https://ufm.dk/en/education/the-danish-education-system/ and http://www.eng.uvm.dk/

keeps up with developments in the labour market. The intention is to have nine such public/private collaborations.[18]

Denmark

Summary

Skills system	Vocational/technical teacher training

• Combines a general upper secondary education with VET (from age 15), qualifying students for a job OR direct access to HE.
• Upper secondary is not compulsory but is free. Two routes –
  • Academic (gymnasium) — university
  • Vocational (vocational school/ apprenticeship).
• Consists of a basic and main programme in 1 of 4 subject areas. Basic is 40 weeks: broad knowledge & competencies x20 and then subject specific x20.
• Main subject programme usually takes 3–3.5yrs (L3 1.5 years, L4 3 years & L5 5 years).
• One level of qualification always provides access to the next, including full or conditional access from VET to HE at L5 & 6.
• Progression to universities, university colleges and academies of professional higher education.
• Academy profession degree is 2 years @120 credits and must include at least 3 months' work placement.
	• Approx. 8,000 VET teachers.
	• Own national educational institute – Centre for the Development of VET.
	• Minimum of 5 years industry experience.
	• Since 2010, all VET teachers must have a L6 VET pedagogical diploma (60 credits) as well as subject matter qualification.
	• This is delivered by university colleges, must be started within 1 and completed within 4 years of start of teaching.
	• All VET teachers expected to achieve this diploma by 2020.
	• Formal CPD is mandatory with additional funding to colleges to deliver against 7 pedagogical competencies.

18 In automation and robotics x2, welfare technology x2, process technology, design & architecture, sustainability, climate renovation and construction, digital trade and database service and business development.

Finland

In Finland, teaching has a high status in all parts of the education system, with only 30% of applicants selected for VET teaching. They must have a higher or postgraduate degree from a university of applied science or the highest possible qualification in the field. They must also have a minimum of three years' industry experience and complete prescribed pedagogical studies.

This high status and level of training needed goes hand in hand with a large degree of autonomy and a professional standing more seen in the university sector in England. There is no registration of teachers or national evaluation, so universities providing Industrial Technical Education (ITE) are free to independently design the content. CPD is compulsory for VET teachers and is undertaken every year as part of their agreement on salaries. Teachers at universities of applied science must have a master's degree and have completed pedagogical studies. Those teaching in universities typically have a doctorate.[19]

19 For information on Finland see:
Ministry of Education and Culture:
https://minedu.fi/en/vocational-education-and training,
Finnish National Agency for Education:
http://www.oph.fi/download/146428_Finnish_Education_in_a_Nutshell.pdf and
Cedefop ReferNet, 2016 (Finnish Board of Education): https://cumulus.cedefop.europa.eu/files/vetelib/2016/ReferNet_FI_TT.pdf

Finland

Summary

Skills system	Vocational/technical teacher training
• Students can choose to attend upper secondary and 90% do. Usually 3 years' study. • Either general upper or vocational routes and selection is based on grades in basic education. • There are two clear paths of academic and vocational. Both have equal status. • Completion of both general and vocational secondary education gives eligibility into higher education. • There are 50 vocational qualifications and 150 study programmes. Each requires 6 months on-the-job learning. • All can be 'school-based' or apprenticeship. • HE is made up of general universities and universities of applied science, both providing bachelor's and master's and the latter being more vocational. • There are over 30 universities of applied science (UAS)/vocational polytechnics. • All UAS degrees require work experience and to enroll on a master's at a UAS you require 3 years' work experience post bachelor's. • Those with lower grades can wait many years for a university place but education is free at all levels.	• Teaching is an attractive choice with high status. • Only 30% of applicants are selected for vocational education, so highly competitive. • Vocational teachers are required to have a higher or postgraduate academic degree from a UAS, or the highest possible qualification in their field. • In addition, a minimum of three years' experience and completion of pedagogical studies. • Teachers at UAS are required to have a master's or post-graduate licentiate degree and must also complete pedagogical studies (university teachers generally require a doctorate). • All teachers are highly autonomous which is linked to the need for high-level training. • No national evaluation or registration of teachers exists. ITE universities independently design course content. • CPD is compulsory for teachers and is undertaken every year as part of their agreement on salaries.

Holland

In Holland, like Finland and Denmark, there is clarity to the VET system and the ability to progress across and through clearly mapped levels of education and aligned institutions. The diplomas that individuals are awarded, prior to degree level, have a clear status and meaning to the rest of the education system and grant access to the next level.

VET institutions in Holland are given a high degree of freedom to design and deliver vocational programmes as they see fit, with the Ministry of Education providing the conditions for education and a broad framework. In 2000, working in teams was introduced into VET institutions, on the basis that to deliver competence-based vocational education, a variety of teaching disciplines is needed. The team is responsible for designing curriculum to all aspects of delivery and quality, to the CPD of its members. This approach was ratified in 2009 in the agreement between institutions and social partners (largely employers) to help achieve this.

Similarities also exist in approaches to VET entry and teacher training, with upper secondary teachers having a first-degree teaching license or a teaching certificate. The latter requires a higher education diploma via a work-based course. The routes to VET teaching are clearly aligned and linked to the education system cited above so you can progress into teaching from general or vocational routes. Progression to a master's level is also available and the Government is encouraging more teachers of technical subjects to achieve a master's degree through the offer of scholarships.

If someone enters the profession as a career changer, they must have a higher education diploma but following an interview can sometimes reduce further studies to two years while working as an unqualified teacher.[20]

20 For information on Holland see: Government of the Netherlands: https://www.government.nl/topics/secondary-vocational-education-mbo-and-highereducation and Cedefop ReferNet, 2016 (ECBO VET Research Institute): https://cumulus.cedefop.europa.eu/files/vetelib/2016/ReferNet_NL_TT.pdf

Holland

Summary

Skills system	Vocational/technical teacher training

• There are three secondary school options, which are grade and choice dependent:
  • VMBO: preparatory secondary vocational education (4 years), followed by MBO (secondary vocational education);
  • HAVO: senior general secondary education (5 years), followed by HBO (university of applied sciences);
  • VWO: pre-university education (6 years), followed by a research university.
• About 50% attend VMBO up to age 16, progressing to either an MBO – mid-level applied education.
• From this progression can be made to HAVO or if reached MBO L4, to HBO – higher professional education *(1/5th of students do this)* and then university.
• Mapped movement between all is possible upon successful completion of the former level.
• MBO prepares people for occupations at 4 levels – assistant, basic, professional and mid-management.
• HBO & WOs (universities) can offer bachelor+ degrees. Applied (HBO) degrees normally take 4 years & a masters a further 2 years.
• The Netherlands has 13 universities, including 3 institutes of technology.
	• Two paths – one for teachers of primary, lower secondary and upper secondary vocational and the other for all secondary grades.
	• They must hold a 2nd degree qualification (bachelor's). 25% of the programme is practical experience.
	• For progression, a master's degree is available.
	• Must be part of a registry of teachers.
	• Like the German system, where only practical learning is taking place, this is not required but new subject matter knowledge and education competency requirements are in place (2018).
	• Government is encouraging more teachers of technical subjects to achieve the master's degrees through scholarships.

Germany

The German VET system is often held up as a model of excellence. Its well-established dual system is followed by 50% of students. Employers play a leading role in supporting high-quality apprenticeships which lead to the 'Meister' examination and professional status. Teachers must hold a master's degree in order to teach subject theory and practical teachers must be a state-certified technician or 'master craftsman' and have completed a teaching qualification. A national body, the Trainer Aptitude Regulation (AEVO), regulates teacher education and professional status.[21]

21 For more information on Germany see: Cedefop ReferNet, 2016 (ECBO VET Research Institute): https://cumulus.cedefop.europa.eu/files/vetelib/2016/ReferNet_NL_TT.pdf and Federal Ministry of Education and Research: https://www.bmbf.de/en/index.html

Germany 

Summary

Skills system	Vocational/technical teacher training

• Children 'streamed' at 10 by ability. Two routes:
  • Most-able academically – Gymnasium (1/3rd)
  • Lower/middle/vocational – Hauptschule/Realschule.
• At 16, students can stay at the Gynamsium to complete their Abitur (university entry) exam or if in Hauptschule or Realschule:
  • Vocational schools/apprenticeships (5 types)
  • Institute of higher education or vocational academies to do dual study programme.
• Half of students attend VET after compulsory education.
• Programmes last 2–3.5 years with final exam conducted by the industry body.
• The Meister (master) exam has highest status and is usually taken at the end of an apprenticeship (at least advanced level).
• Students can go to universities or universities of applied science.
• Only those trained through VET with the Meister can apply to universities.
	• VET teacher training in vocational schools has a 2-phase structure — 1st studies at university & 2nd practical service. Students acquire professional and pedagogical knowledge.
	• Subject teachers must have a degree at master's level.
	• Trainers who are state-certified technicians or 'master craftsmen' who have successfully completed pedagogical CVET can provide practical technical instruction.
	• The professional and pedagogical knowledge must be verified pursuant to the AEVO. Trainers must be at least 24 years old.
	• Companies taking apprentices must have an in-company trainer who has also completed training that can be verified against the AEVO.
	• CPD is provided to support the acquisition of pedagogical and technical/professional competence with regard to the AEVO, the chambers and other educational providers offer different types of courses providing theoretical and practical knowledge.
	• There are opportunities for trainers to professionalise through formal qualifications.

Features of a world-class skills system

The research that we have undertaken in this report, suggests to us that a world-class skills system needs some if not all the following characteristics:

A clarity of mission and purpose: A national strategy for skills and a clear remit to institutions in receipt of public money as to the priorities for funding, the standards required and the outputs to be achieved. Government to makes real choices about where funding is directed and how it is prioritised. This might, for example, include a guarantee of funding for every 16–19-year-old studying a technical qualification. In Denmark, for example, key sectors of the economy are prioritised in a national skills strategy.

High status: In high-performing skills systems both academic and vocational pathways are equally valued. Vocational training is focused on 'training for a profession' rather than an alternative lower-level programme for non-academic learners. Registration and certification by a professional body goes hand in hand with completion of study.

Specialist institutions: A high level of specialisation so that the employers, the curriculum, the equipment and the teaching experts can be brought together to focus on an industrial sector. In the best performing countries higher education institutions specialize in either academic or technical routes, through to master's level, and there is clear movement between these. The emergence of institutes of technology and national colleges are a positive step towards this high-level specialisation in the UK (England).

Apprenticeships focused primarily on young people: In almost all other countries where apprenticeships can be found they are aimed primarily at young people who are starting their career in industry. Most are at least at Level 3, last for a minimum of 2–3 years and many lead to professional status and 'mastery'. In the UK less than a third of apprentices are 16–19 and the majority are training on Foundation Level 2 programmes.

Central role of employers: In all the best skills systems there is a high expectation and often a requirement that employers play a central role in the training of young people and that they provide work-based opportunities for placements, internships and employment. These employers expect to have to invest in skills and do not rely on the state to fund workforce training. Culturally, participation by business, both in design and funding, is seen by many as a necessary business investment and a civic duty.

Clear line of sight to work: In many countries, transition from school to further education starts at age 15. There is good-quality careers advice which allows young people to make informed choices about their future.

Key role of secondary education to prepare for transition: It is the responsibility of schools to prepare young people for their next steps and to ensure, for example, that they have the required levels of mathematics to enable progression. In some countries, such as Denmark, vocational pathways commence with a comprehensive 'Foundation' programme. This provides a platform for all learners to transition to a higher-level programme. They all provide a VET route, as part of the last stage of secondary education, reflecting a two-tier system that allows people to choose an academic or VET route in the upper part of secondary school, regardless of ability, with equal clarity and status (although it's not compulsory in all countries).

High-status teaching profession, well paid and secure: In most OECD countries there is a requirement that technical teachers are qualified to degree level in their specialist subject. Almost all are required to hold a teaching qualification and to have regular industry updating. Consequently, teaching is a high-status profession and there is a pipeline of graduates entering the profession. Their deep subject knowledge is supplemented by technical instructors and dual professionals who work in industry. Technical education has high status for those that graduate from it and for those that teach it.

Co-operation and collaboration: Between teaching professionals and between institutions who work together to raise standards, research and develop new approaches, and embrace technological change. The system is not seen as a market.

A professional teaching workforce

One of the biggest differentiators between the UK system and high-performing skills systems is the approach to the teaching workforce. VET teachers work in specialist institutions and both they and their graduating students have professional status in their communities. The common features found in these countries are:

- Being a VET teacher is a high-status profession, in the same way teaching in primary, lower secondary or university is, and the status between those teaching academic or vocational paths appears to be equal.[22]
- Those teaching in the VET system must typically be degree-qualified and have prescribed pedagogical knowledge and competence.
- There is generally clarity of role, with those that teach theory needing the above qualifications and professional recognition, and those only teaching practical aspects, requiring subject matter qualifications and industry experience. Many countries have or are putting in place pedagogical training for those teaching just practical aspects as well.
- Most countries have an institution that oversees VET, including setting standards for those who teach in it and providing support and resources.
- CPD is mandatory for those teaching VET and sometimes linked to pay.

Could the UK adopt some of the features of other skills systems?

Learning from international practice, there are two key and linked aspects of vocational/technical teacher training that could be tackled – the structure and status of teaching in this part of the sector (as a 'profession') and the acquisition and enhancement of pedagogical knowledge and competence, as well as industry currency.

A professional institution responsible for VET

Many of the countries researched had a professional institution of some nature, responsible for the development of VET and those who teach in it. This can provide:

- Greater clarity on the VET system overall and a hub for VET research and development.
- Clarity on the role of a VET teacher and its career structure, raising the awareness and status of it as a profession.

22 It is less clear whether this is the case at university level.

- Development of minimum entry (or early development) criteria that set and raise that professional status and the qualifications and support needed to underpin this.
- Provision of infrastructure, guidance, tools and materials to support the above.
- Far greater alignment with industry and enhancing technical knowledge and skills, acting as a central point to engage businesses and academia in the professional development of VET teachers.
- Supporting interventions to changing requirements, be that in teaching or in their industry, such as skills needed to utilise new technologies/digital skills development.
- Labour and skills insight through sector/industry committees.

Establishing this would drive improvement for the VET workforce in multiple ways by:

- Helping to raise the status and standing of the VET/ FE sector and championing this.
- Increasing the pedagogical knowledge and teaching practice to improve teaching and learner outcomes.
- Sustaining this through structured and regulated CPD, potentially linked to pay.
- Ensuring that VET teachers remain up to date and forward-looking in their skills and teaching practices, by facilitating collaboration with industry and universities in the development of VET teachers and their ongoing industry currency.
- Raising and maintaining the status of VET teachers as a highly valued profession, attracting high-calibre individuals and reducing acute skills shortages, especially for those teaching technical subjects who are in short supply.

SECTION 4

A NATIONAL INSTITUTE FOR TECHNICAL TEACHING AND A NETWORK OF REGIONAL KNOWLEDGE CENTRES

Main recommendations

- Establish a **national institute for technical teaching** responsible for promoting and protecting the status of technical teachers, their professional standards and their continuous professional development. The institute should be located within existing FE structures to avoid duplication of effort and cost.
- The first task of the Institute should be to work with the sector to produce a five-year **national workforce strategy for technical teachers** and the wider community of professionals that work in technical education, including leaders of technical education. This strategy should aim to attract a new generation of high-quality technical teaching professionals to the sector and promote the role of industry-expert dual professionals.
- Significantly improve the technical teacher training infrastructure with the establishment of **six regional knowledge centres,** co-located where there is capacity on an existing college estate. Each one would be a national centre of excellence and expertise for an industry cluster bringing together leading employers, providers, and suppliers to focus on subject pedagogy at all levels. The knowledge centres will be at the forefront of teacher training, research, innovation and the development and use of digital learning and other technologies.

Towards a world-class workforce

In this paper, we have set out the challenges which are faced by the UK skills system. Its historic neglect, the underinvestment of successive governments, the constant tinkering and piecemeal reforms, and the bewildering succession of schemes and initiatives which often seem to bear little relevance to the real needs of individuals, employers or the wider economy. Above all else, we have highlighted the embedded culture of snobbery which so devalues technical education and undermines the status of those that teach it.

We have acknowledged the serious intent to undertake a 10-year reform of our skills system and the ambition to transform technical education so that it is a high value first choice for young people starting out on their careers and for older workers looking to build their careers towards professional recognition and status.

We have sought to understand better what we mean by world-class technical education and we have scanned the international landscape to try to pinpoint the ingredients that are needed for success. The prize for getting this right is enormous. Analysis by the European Centre for the Development of Vocational Training (CEDEFOP) notes that a single percentage point increase in vocational skills from initial VET alone (prior to labour market entry) contributes a 0.75% increase in GDP in the UK. We know that a high-performing skills system leads to increased productivity, wage growth for skilled workers, and improvements to social mobility and inclusive economic growth.

In our view there are key risks to the reform of technical education that need to be tackled:

Policy conviction: There are powerful voices within both the FE and HE world and some have a vested interest in the status quo. For some it's about protecting the high status of their individual institutions and the settled structures of their delivery model. For others, it is the commercial opportunities that flow from the marketisation of the skills system and the frankly low expectations of our work-based skills system which focuses on numerical targets more than quality and outcomes.

The reforms need an unwavering conviction that they are right for business, right for individuals and right for the economy.

Real investment: What naturally flows from policy conviction is real investment. This is not just about public investment to support those that need state funding to progress up the ladder. It is also about individuals and business being willing to co-invest as a value proposition. We need to rebuild our technical education infrastructure, open an IoT in every region, treble the number of technical teachers in the system and, yes, pay them a salary which reflects their expertise and our expectations of them as world-class technical professionals.

A focus on innovation: Our system has become so regulated, audited and inspected that innovation and creativity have been stifled and all but extinguished within the sector. We need to be able to think more about new ways of doing things, theorise about educational pedagogy, and plan new ways of learning which harness the technology now at our fingertips.

A national institute for technical teachers

In this monograph, we call on the new government and, on the sector, to take a bold step and create a national institute for technical teaching. We propose that the institute is situated within existing structures and bodies, such as the Education and Training Foundation, but that it has a distinctive and clear mission focused on the technical teaching workforce. The institute should operate in partnership with policymakers, but it should be at arms-length of government. The new institute should be responsible for ensuring that public investment in skills is aligned with the needs of industry and key sectors of the economy and that it meets the aspirations and ambitions of the current and future workforce.

This single body will provide the leadership of technical education at all levels and in all settings. One of its first tasks will be to work with the sector to develop a five-year national workforce strategy setting out how we will build the professional community of high-status technical teachers that we need. We expect the institute to reach out to support technical teachers wherever they teach, in schools, UTCs, FE colleges and independent learning providers, and in our higher education institutions as well.

The institute will be the custodian of professional standards for technical teachers, the professional teaching covenant and a register of approved technical teacher practitioners. The national centre would co-ordinate research and development and channel public investment into new regional knowledge centres. Above all else, the national institute for technical teachers would be the professional association that promotes technical teaching and supports technical teachers in all their guises and throughout their career.

We would expect the institute to work closely with Ofsted and other inspectorates to ensure that high standards of technical education are understood, clearly defined and maintained. This is likely to require a new approach to inspection including a requirement that inspectors are subject experts as well as experts in technical teaching pedagogy.

Finally, and critically, the national institute would play a leading role in changing societal and cultural attitudes to technical education. It will do this through support for skills competitions, teaching awards, championing excellence wherever it finds it and supporting a network of skills ambassadors.

Key role for the national institute

- Helping to raise the status and standing of the skills system and championing this.
- Increasing the pedagogical knowledge and the teaching practice to improve teaching and learner outcomes.
- Sustaining this through structured and regulated CPD, potentially linked to pay.
- Ensuring that technical teachers remain up to date and forward looking in their skills and teaching practices, by facilitating collaboration with industry and universities in the development of technical teachers and their ongoing industry knowledge.
- Raising and maintaining the status of technical teachers as a highly valued profession, attracting high-caliber individuals and reducing acute skills shortages, especially for those teaching technical subjects who are in short supply.

Regional knowledge centres

We need to go further than the creation of a national body for technical teachers. What is also needed is a regional structure providing practical and accessible support for teaching professionals, sector specialists and the wider community of providers.

Building on the Danish model, we propose the establishment of six regional knowledge centres. These knowledge centres would co-locate with a leading regional FE college or skills provider. This would ensure that new technical teachers could apply their teaching practice in a real-world setting, akin to a teaching hospital model in the NHS.

Industry-lead knowledge centres

Each knowledge centre would be a national lead for subject-specific pedagogy for groups of industries that have been clustered together similar in form to the T-level routes. One centre, for example, will be national lead for public service industries, incorporating health and science, social care, protective services, childcare and education. The lead centre would bring together industry experts, professional bodies, key suppliers and awarding bodies to develop learning materials, train teachers on specialist equipment and keep pace with technology changes within the sector.

Professional lighthouses

The industry-lead knowledge centres would be the professional lighthouses for those industries, identifying key labour-market trends and skills shortages, and forecasting future workforce requirements. They would have a key role in industry updating and in designing and developing specialist learning materials. Importantly, the knowledge centres would have a specific remit to improve careers information in schools for their sector.

Sector-specific knowledge centres

Sector	Industries	Region
Public services industries	Health and science Social care Protective services Childcare and education	Yorkshire & Humberside Knowledge Centre
Creative industries	Creative and design Digital	Midlands Knowledge Centre
Business service industries	Sales, marketing and procurement Business administration Legal, finance and accounting	London and South Knowledge Centre
Leisure service industries	Hospitality and catering Hair and beauty Travel and tourism	East of England Knowledge Centre
Infrastructure industries	Construction Transport and logistics Engineering and manufacturing	North of England Knowledge Centre
Agricultural industries	Land based Animal care Environment	South West Knowledge Centre

The wider role of regional knowledge centres

The regional knowledge centres should be accessible and responsive to the professional development needs of technical teachers, providers and employers in their locality. They should be governed by a regional panel and have a high degree of autonomy.

Knowledge centres should foster collaboration and co-operation between colleges, providers and employers. We want the centres to be a focus of continuous professional development for technical teachers. They are places of learning, reflection and research which lead to the development and sharing of good practice.

Knowledge centres should offer a wide range of CPD opportunities with a focus on initial teacher training for those new to the sector and 'dual professional' training for those coming from industry to teach part-time. There should be opportunities for 'masterclasses' from industry or technology experts. There should be a major focus on digital learning technologies and digital learning platforms with an emphasis on how digital learning can improve access to learning for those in work and those in rural areas, for example.

Finally, knowledge centres will have a key role to play in the leadership of learning. This does not mean training for chief executives and principals, which is provided elsewhere. These programmes should be focused on middle leaders, curriculum managers and subject leaders and include, for example, professional support to introduce higher technical education into their college or provider.

Funding and timescales

The scope of this paper did not include resource to undertake a detailed feasibility study for the recommendations that have been made. This monograph is designed to stimulate the debate about what needs to happen to support the workforce to deliver world class skills.

The authors are clear that the new Institute and Knowledge Centres should sit, as far as possible, within existing structures to avoid duplication and unnecessary additional cost.

They should be funded initially by central government but increasingly by individuals, providers and employers. Large employers should be permitted to spend a proportion of the apprentice levy on training of technical teachers including recovery of the costs of members of staff given time to teach in a local college. The new institute and the regional knowledge centres will require an initial capital investment in buildings and equipment and revenue funding for the first three years of their operation.

A national workforce strategy is needed urgently to support the reforms of technical education. With the right ambition and commitment, it should be possible to get this strategy in place by the beginning of January 2021, with new knowledge centres opening in 2022/23.

It is time to take our technical teaching workforce seriously, to offer rewarding careers to expert professionals, to provide well paid and secure employment, and the recognition and status that their skills and experience deserve. Only then will we create a skills system which is truly world-class.

AUTHORS

Neil Bates FCGI

Neil Bates has a long and distinguished career in technical education. He became Chief Executive of Prospects College of Advanced Technology aged 24, leading the organisation for 30 years and steering it to become one of the UK's leading Colleges of Advanced Technology. Neil established his own business in 2017 which champions professional technical education. He became Chair of the Edge Foundation earlier this year, succeeding Lord Baker, having served on the board for more than a decade. In 2014 he was conferred fellowship of City & Guilds London Institute in recognition of outstanding professional and personal achievement. He is a member of the City & Guilds Council and an advisor on technical education at the Education & Training Foundation.

Helen Pettifor OBE

Helen Pettifor OBE recently completed a successful career in Further Education. Beginning with a PGCE(FE) in 1982, she progressed through leadership roles in colleges to senior roles in a range of national development bodies. As a teacher and leadership developer, with extensive expertise in vocational curriculum, she held roles at organisations such as the Staff College, Learning and Skills Development Agency, Centre for Excellence in Leadership and the Learning and Skills Improvement Service (LSIS). Her final career post was as Director of Professional Standards and Workforce Development at the Education and Training Foundation (ETF). She then became an Associate Director for Professional Standards before undertaking consultancy projects in her area of specialism. She remains Vice Chair of Governors at Woodhouse Sixth Form College.

Helen Russell

Helen Russell's career has centred on education and skills. It began with the Department for Education, working in research and policy for the Teacher Training Agency, moving to Local Government leading on skills strategy for a large county, to College and University Directorships, leading on industry partnerships, apprenticeship reforms and establishing employer led provision. In early 2019, Helen started her own consultancy and has been working on a range of projects, including work with Local Enterprise Partnership to develop an industrial strategy for the area.

Throughout her career, in each area of public service, Helen has worked strategically to champion industry led skills, with a focus on technical skills needed in the economy. She has aligned this with her passion for social mobility and creating opportunities for people to access education and skills that can help transform their lives.

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