

THE MISSING MIDDLE:  
HIGHER TECHNICAL EDUCATION  
IN ENGLAND

SIMON FIELD



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## **DISCLAIMER**

The views and opinions expressed in this report are those of the author and do not necessarily state or reflect those of the Gatsby Charitable Foundation.

## EXECUTIVE SUMMARY

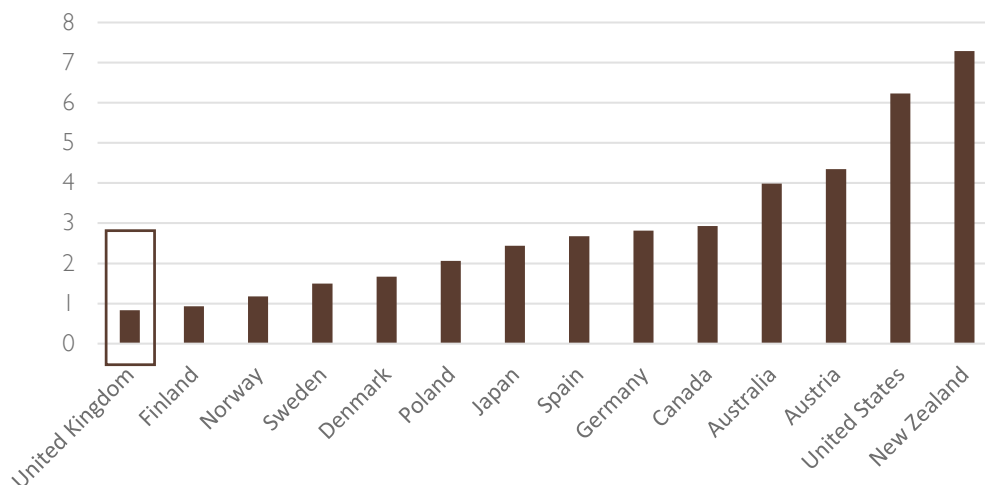
### INTRODUCTION: THE MISSING MIDDLE

#### **England is distinctive in its lack of mid-level education and training**

The English education and training system is marked by a 'missing middle' of higher technical education (HTE) at level 4 and 5. In England in 2014/15, just under 190,000 students were enrolled in such programmes, representing just under 90% of all those enrolled at level 4 and 5 (Boniface, Whalley and Goodwin, 2018). But HTE enrolments are less common than in many other countries, and represent a much smaller part of higher education provision than in the past. Even within the UK, in 2014/15 18% of all full-time higher education students in Scotland, and 11% in Northern Ireland, were studying at level 4 and 5. The comparable figure for England was only 4%. While survey data show smaller differences, it is clear that, relative to other countries, HTE is a small sector in England.

#### **The missing middle: few UK graduates from HTE programmes**

Number of people graduating in 2015 from ISCED 4 and 5 programmes per thousand in the population.



Source: OECD education database (no date). Comparator countries where data were available. Author's calculations.

#### **This absence of mid-level technical education is a weakness**

HTE can serve both as a direct route to a job and as a further qualification for those already in work. Labour market needs are highly diverse, and not best met solely through the three-year bachelor's degree. The one clear certainty about the future is fast-changing labour market requirements, and shorter, targeted technical programmes are a vital element in the response. Moreover, a vibrant HTE sector provides vital opportunities for the many people who do not, for many reasons, pursue three-year degrees.

#### **This report draws on history and international experience to suggest policy responses**

This report seeks to explain why higher technical education has shown little growth or even decline over many years in England, and why, in other countries, different conditions have enabled this sector of education to develop and sometimes flourish. Drawing on both history and international experience, the report argues that this missing middle represents a challenge and suggests a number of ways in which it can be tackled.

## THE HISTORY OF HIGHER TECHNICAL EDUCATION IN ENGLAND SINCE 1945

### *Varying rationales have been used to justify the level of provision of HTE*

In 1945, the main HTE programmes were the Higher National Diploma (HND) and Higher National Certificate (HNC), both established in the 1920s through collaboration between the Board of Education and professional associations, at first in engineering fields and later more widely. Since 1945, diverse rationales have been advanced for the amount of higher technical education that should be provided. Some have estimated the numbers of technicians needed by the economy as a basis for planning. Others, following the Robbins report (Robbins, 1963), pointed to student demand as the right driver. Comparisons with other countries have also been used to argue for more technicians. More recently, HTE has been seen as a tool to promote equity.

### *In the mid-1950s, Colleges of Advanced Technology were designated*

In the decade following the Second World War, three main types of further education colleges emerged – regional, area and local colleges – in addition to evening institutes. Following proposals in the 1945 Percy report (Percy, 1945), in the mid-1950s a small group of further education colleges were designated as Colleges of Advanced Technology (CATs). The CATs were to deliver the Diploma in Technology (Dip.Tech.), a ‘degree equivalent’ qualification, primarily delivered as a sandwich course, including six monthly periods in industry often over four years. Participation grew fast, and the CATs became universities in the 1960s, while the Dip.Tech. became bachelor’s programmes. Today, the sandwich programme tradition lives on, often in the same institutions, and is supported by good evidence of its effectiveness.

### *The 1963 Robbins report was a milestone*

The Robbins proposals, implemented by subsequent governments, expanded full-time undergraduate education, backed by extensive public funding for teaching, and more systematic maintenance grants for full-time students. Growth would be concentrated in universities and those colleges which would shortly afterwards be transformed into polytechnics. Robbins encouraged the development of full-time bachelor’s level technical education, but offered little encouragement to an HTE system characterised by responsiveness to industry needs, part-time provision, and programmes below bachelor’s level – including the HNC and HND.

### *The polytechnics were given a vocational mission, and grew fast*

Anthony Crosland’s 1965 original proposal for polytechnics, with its vocational focus on intermediate and technician skills and support for part-time and sandwich provision, represented an HTE mission for them. By 1989/90, there were 280,000 students in English polytechnics – a faster expansion than in universities. After 1992, polytechnics became universities, a merger in striking contrast to international experience, where two sector university systems have often flourished – for example, in the universities of applied science found in many European countries.

***Technician education was reorganised***

The Technician Education Council (TEC) and the Business Education Council (BEC) were established in 1973 to provide a more systematic framework of technician education (including the HNC and HND), and subsequently merged in 1983 to form BTEC. The 1970s also saw the emergence of the Diploma in Higher Education (Dip. HE). While originally intended as an initial academic two-year qualification for those planning a teaching career, over time it developed a more technical profile.

***In the 1970s and 1980s, two factors restrained growth in HTE***

Rapidly expanding opportunities for full-time bachelor degrees in the 1970s (although less so in the 1980s), funded generously (at least by today's standards) with student grants and free tuition, provided formidable competition to HTE. In a complementary development, professions such as engineering, teaching and nursing increasingly came to expect full bachelor's degrees in their recruits.

***Dearing recommended that further growth should be concentrated at HTE***

The 1997 Dearing report, while proposing tuition fees, also suggested that higher education expansion should be concentrated in HNCs and HNDs, looking to Scotland as a model. A further attempt to expand HTE provision was made in 2000 through the launch of Foundation Degrees. Numbers grew fast, initially supported by a funding premium and caps on bachelor's programmes, but then fell back when the caps were removed.

***There has been a sequence of initiatives in the last decade***

More recent initiatives bearing on HTE include increased fees for higher education, the Sainsbury review, the Post-16 Skills Plan, the development of level 4 and 5 apprenticeships, and the introduction of the levy and apprenticeship standards. Advanced learner loans have been introduced. Most recently, policy reviews of level 4 and 5 provision, and of post-18 education and funding, have been launched.

***The precipitous decline in part-time students was a surprise***

The number of part-time undergraduate students in England halved between 2008/09 and 2015/16, with a massive effect on HTE. Reasons include the removal of funding from students who already had equivalent or higher qualifications, debt-aversion among part-time students, and declining employer support. The government response has been to introduce maintenance loans for part-time students.

***The background to the current Review of Level 4 and 5 Education is the Sainsbury review and the Post-16 Skills Plan***

The Post-16 Skills Plan, implementing recommendations of the Sainsbury review, proposes that young people pursuing technical education should follow either a work-based pathway, primarily apprenticeship, or a school-based pathway involving a new 'T-level' qualification. Fifteen technical routes cover different groups of related occupations, drastically simplifying the qualifications landscape, the principle being that for every group of occupations or career there would be only one qualification, identified by industry sector professionals. Similar principles would be applied to level 4 and 5.

## INTERNATIONAL EXPERIENCE AND POLICY POINTERS

### **Policy pointer 1. Professional examinations**

Many HTE qualifications require defined programmes of study, sometimes two years full-time (like Foundation Degrees), but also sometimes less. Some qualifications embodied in professional examinations leading directly to a qualification do not require specific study programmes. In Austria, Germany and Switzerland, such professional examinations are mostly regulated by government and social partners; in the United States, such examinations are largely unregulated. Professional examinations offer the prospect of efficiency gains, both by encouraging speedier learning, and by the opportunity to tailor learning to individual needs. Often they are national qualifications, and their development is usually led by labour market representatives.

*Professional examinations offer the scope for substantial efficiency savings, and are used extensively in a diverse range of countries to certificate and encourage the development of higher level occupational skillsets. Such an examination system might therefore be used in England to develop HTE. This could be linked to the end-point assessments of apprenticeship standards at level 4 and 5, on the basis that these assessments, as in the apprenticeship systems of other countries, should allow direct access to the end-point assessment without going through an apprenticeship programme.*

### **Policy pointer 2. International experience relevant to Institutes of Technology and other providers**

Some countries, such as Austria, have programmes that allow students to enter upper secondary education, and then either leave on completion of this phase with a qualification, or stay in the programme (and institution) for the post-secondary part of the programme. Sweden, in its higher vocational education system, builds a partnership requirement between education providers and employers into initial eligibility for funding. The employers involved are then responsible for providing the workbased learning component of the programme.

*Two types of programme observed internationally might be relevant to the new Institutes of Technology and other providers. First, following models in Austria and Japan, level 3 T-level programmes might offer the option of continuing, within the same training provider, in a connected level 4 or level 5 programme. This would encourage progression and might also serve to make the T-level more attractive at the outset, through the clear offer of post-secondary continuation. Second, the Swedish model of higher vocational education, in which partnership with employers is built into funding eligibility, would be one option for tackling specific sectoral or regional skills needs, and promoting partnerships between training providers and employers.*



**Policy pointer 3. An effective relationship with higher education**

HTE programmes can be organised as a) an integrated element of the higher education system, b) a higher-level add-on to upper secondary technical training, or c) a quite separate element in the education and training system. In England, while HTE has always been closely linked to the higher education system, this has sometimes been an uneasy relationship, given that HTE typically involves shorter labour-market responsive programmes, often delivered to adult part-timers. Despite large recent increases in tuition fees, demand from young school leavers for full-time bachelor's level degree education has remained robust, so there has been little incentive for higher education institutions to adapt to the rather different requirements of HTE. Across countries, HTE often succeeds by offering something that is quite different from bachelor's programmes in universities. For example professional examinations in Switzerland are not only quite different in form from university programmes, but also more strongly linked to employer requirements.

*HTE, considered as part of higher education, is often marginalised because its characteristics do not sit easily in a higher education context. International experience shows that HTE often develops most effectively when its programmatic, institutional and governance base has sufficient independence from higher education to allow it to compete with bachelor's level programmes, while maintaining the collaboration necessary for articulation. To appeal to students and employers, HTE needs also to be distinct from bachelor's programmes, rather than just a smaller or lower status version of a bachelor's degree. The new Institutes of Technology may provide a context for such a distinct offer.*

**Policy pointer 4. Funding**

Some evidence suggests that in England HTE is funded less well than bachelor's level provision. This means that teachers of HTE programmes will sometimes be paid less than those delivering bachelor's programmes, and resources and facilities will be less adequate. While programme quality does not only depend on resources, potential students may respond to the resource signal by opting for bachelor's programmes in preference to HTE.

*In many countries, and especially in England, fewer resources per student-year are devoted to HTE on average than to bachelor's programmes. In the absence of any reason in principle for thinking that HTE programmes are easier or cheaper to teach than bachelor's degrees, these resourcing differences will distort student choice. This issue should be addressed by the Review of Post-18 Education and Funding.*

**Policy pointer 5. Involving local employers in qualifications**

While employers are nearly always involved in the development of programmes and qualifications, the level of that involvement is variable. HTE qualifications offering a consistent occupational standard across the country can be balanced with a local element that encourages the participation of local employers in, for example, work placements. Such a model is found, for example, in the HTE programmes in Fachschulen in Germany, and in the post-high school programme in Romania.

*Outside the institutionally-determined qualifications of higher education institutions, there are advantages in HTE qualifications which reflect the requirements both of the labour market nationally, and sometimes also local employers. One model is to fix most of the programme and qualification in consultation with employers nationally, while allowing a proportion – perhaps around 20 per cent – to be determined in consultation with local employers.*

**Policy pointer 6. Workbased learning**

The workplace provides a powerful environment both to learn hard technical skills using up-to-date equipment, and to learn many soft skills, including how to relate to colleagues and clients and resolve conflict. In many HTE programmes in different countries, workbased learning is a mandatory element. Placements need to be structured carefully. In Denmark, the two-year programmes include a minimum of three months of quality-assured, credit-bearing workplace training. In England, workbased learning has in the past been very variably used in HTE (and many other vocational) programmes and has had little structure. There are now plans to change these arrangements through more substantive and mandatory placements in new level 3 technical qualifications, called T-levels.

*At all levels of technical education, workbased learning is a powerful learning tool and means of linking employers with students. In England, mandatory workbased learning is currently being implemented for new level 3 technical programmes for 16-18 year olds (T-levels). Consideration should be given to extending this principle to all level 4 and 5 programmes except those designed for part-time students already working in the field.*

**Policy pointer 7. HTE and equity**

In principle, HTE should be good for equity, since for people who do not wish to pursue a bachelor's programme immediately, it offers both a credible qualification and a potential route to a bachelor's programme. To serve equity, HTE programmes need to facilitate both access and progression. Measures which allow prior learning to be formally recognised assist access to HTE and facilitate completion by allowing appropriate course exemptions. Typically this requires a framework which encourages provider institutions to recognise prior learning, as in France. Often, for HTE graduates to obtain the recognition required to transfer to a bachelor's programme, the HTE provider institution has to make a bilateral agreement with the receiving institution. Countries sometimes establish credit recognition systems to facilitate such agreements, as for example in British Columbia in Canada.

*A strong system of HTE serves an important equity role, offering valuable technical training to those who have not entered a bachelor's programme and supporting lifelong learning for those already in work. It can also offer a bridge into bachelor's programmes. To fully contribute to equity, HTE needs to include measures to support both access and progression.*

**Policy pointer 8. Assessments**

Good quality assessments, leading to the award of qualifications, are critical for HTE programmes. Often, demanding assessments will be the key element in the quality assurance of teaching and learning, setting a test of knowledge and skills which only those fully competent in the target occupation will be able to pass. Some minimum requirements of good assessments can be identified. The International Standard in Examinations for Professional Certification is not well known in the UK, but represents an agreed international standard developed by a working body. It governs matters such as the consistency and transparency of the examination criteria; the impartiality of the examiners and avoidance of conflicts of interest; the defining of competencies; the qualifications of examiners; and the independence of examinations. In England, new apprenticeship standards depend heavily on the quality of end-point assessments, as will the new T-levels. While there is extensive experience with assessment techniques in technical programmes, particularly in the larger awarding bodies, more could be done to build on this experience, drawing on international standards.

*Despite their critical role in apprenticeships and other technical programmes, assessments in HTE (and in technical education generally) have been little studied, and there are few sources of information on the topic. Consideration should be given to how best to professionalise assessments, initially by sharing information and experience, and perhaps subsequently by establishing a centre of excellence and guidance on the topic.*

## INTRODUCTION

This chapter describes the main theme of this report, the ‘missing middle’, meaning the relatively small size of the higher technical education system in England, and why it matters. The structure of the report is outlined, with Part I covering the history of higher technical education since the Second World War, while Part 2 compares the experience of selected other countries. A concluding chapter summarises policy implications.

### THE MISSING MIDDLE

#### ***England is distinctive in its lack of mid-level education and training***

The face of the English education and training system is marked by a curious absence, a ‘missing middle’ of mid-level, occupationally-relevant skills and qualifications, which in this report are collectively referred to as ‘higher technical education’ (HTE). In England in 2014/15, just under 190,000 students were enrolled in such programmes, representing just under 90% of all those enrolled at level 4 and 5 (see Table 2). But as documented in this report, this number is surprisingly low relative to past times, and relative to other countries. Other things being equal, we might expect a relatively even distribution of demand from the economy for one, two, and three years’ worth of post-school education and training, according to different types of labour market need. Similarly, we might expect a relatively even distribution of demand from students for one, two or three years’ worth of education and training, and might expect the pattern of programme participation to reflect this. But this is not what we observe. Instead we observe a pattern in which three years of bachelor’s level university, mostly full-time, has become the overwhelmingly dominant form of post-school education in England.

#### ***This contrasts with past history in England and with other countries***

This report will describe how higher technical education has declined over the last half century, and how many other countries in continental Europe, North America and Australia maintain substantial HTE sectors, as do Scotland and Northern Ireland. So the missing middle is anomalous, both in comparison to the past in England, and to other countries.

#### ***The lack of mid-level provision damages both efficiency and equity***

Some would argue that this absence does not matter since England has an internationally-recognised university system fully capable of meeting most post-18 education and training requirements, primarily through three-year degrees. It might be further argued that this is what most potential students evidently want and need, given robust demand even in the face of substantially increased tuition fees in recent years. This report will challenge this viewpoint, and argue that the missing middle does matter; and that shoe-horning diverse labour market demands into the single scale of a three-year degree creates both inefficiency and inequity. Full-time bachelor’s degrees will be largely irrelevant to the changing requirements of an adult workforce facing the need to upskill and reskill in response to the one clear certainty about the future – fast-changing labour market requirements. The missing middle also damages equity, because it limits the offer for those who want to gain higher level qualifications but cannot or do not wish to study for a bachelor’s degree, while also failing to support an adequate bridge to bachelor’s level provision in higher education (recognising that such bridging may be a subsidiary role of HTE).

## AIMS AND METHODOLOGY

### ***The report seeks to serve policy development***

This report has been prepared while two Department for Education (DfE) policy reviews are under way which bear on the topic; the Review of Level 4-5 Education (Department for Education, 2017a) and the Review of Post-18 Education and Funding (Department for Education, 2018). The report seeks to illuminate policy by standing back from current policy and practice to examine higher technical provision in different times, and in different places. The goal is to explain why higher technical education has shown little growth or even decline over many years in England, and why, in other countries, different conditions have enabled this sector of education to develop and sometimes flourish. The report also draws out some policy pointers emerging from history and international experience. By virtue of this broad perspective, it offers more limited depth on current arrangements for governance, funding, institutional arrangements and quality assurance.

### ***The history since 1944 illuminates current policy***

Part 1 of the report looks at the history of HTE since the 1944 Education Act. This period was selected not least because it coincided with a dramatic growth in post-compulsory education. While at various points during the period, attempts were made to develop and expand HTE as a substantial element in this growth, the overall trend has been of relative decline, leading up to the present day. For that reason, history contains multiple lessons for current policy.

### ***Comparisons across countries were also selective, and based on a limited set of countries***

Part 2 of the report compares HTE across countries. This part of the report looks at selected issues, including the varieties of HTE that have proved successful and that might therefore have application in England, and some of the relevant policy challenges, including relationships with higher education, workbased learning and assessments. Comparator countries for the study were chosen so as to illuminate policy in England, using the criteria set out in Table 1. This led to the choice of the following countries: Australia, Austria, Belgium-Flanders, Canada, Denmark, Estonia, France, Germany, Israel, Netherlands, Northern Ireland, Scotland, South Korea, Sweden, Switzerland and the United States. How they fit the criteria is indicated in Table 1, which is based partly on comparative data as indicated, and partly on an assessment by the author based on country experience.

**Table 1. Choosing countries for the study**

Criteria for including countries	Countries that meet the criteria
1 Where higher technical education is particularly well-regarded culturally	Austria, Germany, Switzerland.
2 Where there is a high proportion of higher technical students relative to bachelor's degree and postgraduate students	In order; United States, Canada, Australia, South Korea, Israel, Germany, Austria, Estonia, Sweden, Denmark (see Figure 2 for full-timers; France is not in the dataset for Figure 2 but also meets the criterion).
3 Where there are clear pathways between higher technical and academic education	Australia, Belgium-Flanders, Canada, Netherlands, United States all offer systematic approaches, but there are also many obstacles.
4 Where there are specialist institutions for higher technical education	All of the countries in the study have such institutions. In some cases they have a mixed function, as for example community colleges in the United States, and further education colleges in England.
5 Where there are high rates of HTE study	In order; United States, Austria, Australia, Canada, Germany, Denmark, Sweden (see Figure 3).
6 Countries that previously had little or weak HTE but are making progress on reforms	Estonia, Israel, Netherlands, Sweden.
7 Where the governance/education system is most like England	Northern Ireland, Scotland; Australia, Canada.
8 Middle ranking countries that provide a barometer to inform medium-term goals	France, Netherlands, Sweden.

### ***Comparative international data and policy analysis on HTE are limited***

The comparative international literature is sparse, reflecting the limited analysis and policy attention given to this type of education, despite the fact that it sometimes plays a large part in skills systems. Data have improved recently (see Chapter 2.1). However, despite a huge amount of analysis and research on comparative higher education issues, there are very few sustained international comparative discussions of HTE. Those that exist include OECD (2014), CEDEFOP (2011) and Kirsch and Beernaert (2011). Dougherty and Callender (2017) contrast the limited attention given to sub-baccalaureate higher education in England with the United States, where, increasingly, over the last decade, this sector has been identified as highly important and is supported by an extensive research base on community college provision.

## **DEFINITIONS AND NOMENCLATURE**

### ***Higher technical education refers to technical programmes at level 4 and 5***

This report is about higher technical education, meaning technical education at level 4 and 5 in England. It follows the definition of 'technical' used in the Sainsbury review, which "... must focus on progression into skilled employment and require the acquisition of both a substantial body of technical knowledge and a set of practical skills valued by industry. ... it draws its purpose from the workplace rather than an academic discipline" (Independent Panel on Technical Education, 2016, pp. 23-24). Technical education has sometimes been defined more narrowly, to be linked to engineering occupations, and contrasted with vocational programmes

in, for example, commercial or service fields. Most provision at level 4 and 5 has been, and remains, technical rather than academic.<sup>1</sup> But there are exceptions – for example the Diploma in Higher Education, particularly in its earlier manifestations, was largely academic. The main qualifications examined include:

- **Higher National Certificates (HNCs) and Higher National Diplomas (HNDs).** Long-established technical programmes and qualifications which have declined markedly over the last two decades (see Focus point 2).
- **Foundation degrees.** Developed from 2000, these grew fast for a decade and then declined (see Chapter 1.4).
- **Diplomas and Certificates in Higher Education.** Developed initially as a general component of teaching qualifications, but more recently used as a technical qualification. Numbers have always been modest.
- **Apprenticeships at level 4 and 5** were launched in 2006 (at a time when most apprenticeships delivered lower level programmes) and have grown rapidly.

#### ***Comparisons require a common framework***

For the purposes of this review, current English HTE must be compared with the past in England, and with other countries. The period under study pre-dates the development of qualifications frameworks (see Focus point 1). It follows that there is some unclarity about precisely what past qualifications are equivalent to modern level 4 and 5 qualifications. This allows, for example, Cantor and Roberts (1972) to describe HNDs as “of near pass-degree” standard. The HTE field was often described as one of “sub-degrees” until the creation of the foundation degree, and as “sub-bachelor”<sup>2</sup> provision more recently (Parry, Saraswat and Thompson, 2017). The historical part of this review will follow Parry, Saraswat and Thompson by making use of the expression “sub-bachelor” to refer to provision at level 4 and 5 – although this terminology was not used at the time. This will include some academic education, alongside HTE, but in most cases rather little, so a comparison with modern HTE is reasonable. Historically, the data record is clouded partly because of breaks in the historical record of education statistics generally (Bolton, 2012). But it also reflects the challenges of data collected on the margins of other activities, and in a sector spread across higher education institutions, further education colleges, and private providers.

1 Parry’s (2015) assessment is that except for Open University students, “nearly all sub-bachelor students are pursuing qualifications designed for, or geared to, the workplace”.

2 Parry, Saraswat and Thompson (2017) define sub-bachelor level as “higher education at levels below the bachelor’s degree”. In practice this includes level 4 and 5 programmes, qualifications and apprenticeships.

### **Focus point 1. Qualifications frameworks in England**

In England, a 1986 White Paper led to the introduction of the 5-level National Vocational Qualifications Framework (NQF). At about the same time, the Council for National Academic Awards (CNAA, see Chapter 1.2) introduced a system of higher education levels. In 2004, what had been level 4 in the NQF was subdivided into level 4, 5 and 6, while level 5 was subdivided into level 7 and 8, allowing a better fit with the higher education qualifications framework. Given an additional entry level below level 1, the NQF at this point had nine levels. The NQF was replaced by the Qualifications and Credit Framework (QCF) in 2008, which used similar levels to the NQF but also attempted to attach a credit value to each level. Since 2015, the QCF has been replaced by the regulated qualifications framework (RQF) which covers all the qualifications regulated by Ofqual in England. It follows the nine-level system of the QCF and NQF. Arrangements in the devolved administrations are different (Qualifications and Curriculum Development Agency, 2009).

The Framework for Higher Education Qualifications of Degree-Awarding Bodies in England, Wales and Northern Ireland (FHEQ), published in 2001, and revised in 2008, has five levels at level 4-8. Level 4 includes HNC and Certificates of Higher Education; level 5 includes HNDs, Foundation Degrees and Diplomas in Higher Education. These levels are therefore closely aligned to level 4 and 5 in the RQF (Quality Assurance Agency, 2014).

### ***A new approach to the definition of higher technical education in England has emerged in occupational maps***

In England, the Institute for Apprenticeships has consulted on a new approach which seeks to clarify the set of occupations associated with HTE. These occupations are grouped in clusters, each cluster being associated with one of the 15 routes now being used by the Institute to define a framework for technical education (both work-based and classroom-based) following the Sainsbury review and Post-16 Skills Plan. For example in the 'health and science' route, one of the higher technical occupational clusters is 'health practitioners' and this cluster includes a dental hygiene therapist and a rehabilitation worker for those with visual impairments (Institute for Apprenticeships, 2017).

### ***Across countries, nomenclature for HTE can be bewildering***

Across countries, there is little common nomenclature to describe HTE or its qualifications. Diverse diplomas, certificates, certifications, examinations and degrees are pursued in schools, colleges, institutes, universities. Few countries, even within their own borders, have a standard name for HTE. (Switzerland is an exception, with its 'professional education and training system', recognising that it also extends to higher levels). 'Higher VET' has some currency, particularly in countries with strong initial VET systems, but it usually refers to quite specific forms of HTE granting higher level skills to vocationally trained practitioners. International comparison requires a comparative statistical framework, and the International Standard Classification of Education (ISCED) (UNESCO, 2012) is discussed further under the heading of international data comparison in Chapter 2.1. But the ISCED terminology of 'short cycle tertiary education' (level 5) has quite limited currency in national discussion outside the domain statistical international comparison, while



'post-secondary non-tertiary' (ISCED level 4) has none. The absence of common terminology is itself a challenge to the status of higher technical qualifications in individual countries, particularly when they are compared with the more internationally-recognised status of bachelor's degrees, reinforced by the Bologna process (as discussed in Chapter 2.1).

### ***Approaching 200,000 students study HTE***

A snapshot of present day HTE may be a helpful starting point (see Table 2). Boniface, Whalley and Goodwin (2018) provide a detailed statistical picture of higher technical education in England in 2015/16, based on a combination of data from the Higher Education Statistics Agency and the Individual Learner Record, which allows for the inclusion of information of many private providers, as well as higher and further education institutions. This shows that there were 216,170 studying at level 4 and 5, (including 41,700 apprentices). Half of them (52%) were studying in further education (FE) colleges, and 60% were over 25. Apart from the apprentices, most (59%) were studying part-time. Overall, nearly 90% (189,620) were on higher technical<sup>3</sup> (rather than academic) courses. The composition of the student population has been changing, with sharp declines in part-time numbers (see Chapter 1.5). While Foundation Degrees, HNCs and HNDs have all shown some decline over recent years, level 4 and 5 apprenticeships have grown fast (from zero to over 40,000) since their creation in 2006/7 (Powell, 2018).

**Table 2. Numbers of students in level 4 and 5 programmes in England in 2015/16**

Qualification type	Number of learners	% in FE colleges (includes those franchised from a higher education institution)	% in HE institutions
Foundation Degree	60,030	62	33
Apprenticeships	41,700	36	2
Diploma	25,790	65	23
HNC	19,470	84	16
HND	14,950	86	14
Other	55,340	26	69
Total	216,170	52	32

Source: Boniface, Whalley and Goodwin (2018).

## **THE STRUCTURE OF THIS REPORT**

Part 1 of this report, which follows, describes the history of HTE in England. A timeline is presented at the outset. Five chapters (1.1 to 1.5) explore consecutive phases in this history, leading up to the present day. Part 2 compares HTE across countries. The first chapter of Part 2 (2.1) looks at comparative data on the prevalence and characteristics of HTE. Chapter 2.2 describes some of the different types of HTE found in different countries. Chapter 2.3 looks at some of the main policy challenges arising in different countries and how they are addressed. These chapters offer the opportunity to identify the policy pointers arising. The final chapter draws the threads together and seeks to explain why England's HTE

<sup>3</sup> This figure refers to the number of level 4 and 5 learners who were "studying subjects that align to one or more of the technical routes" (Boniface, Whalley and Goodwin, 2018).

system is now relatively limited, and why it plays a larger role in other countries. It also argues that there are good reasons to try to promote HTE. Some broad principles of reform are identified, and policy pointers, already identified in Part 2 of the report, listed. The policy pointers in this report rest on the evidence of history and international comparison. It is recognised that other sources of evidence and practical considerations will and should bear on policy, and for that reason they described as policy pointers rather than recommendations.

## PART I A HISTORY OF HIGHER TECHNICAL EDUCATION

This part of the report describes the history of higher technical education in England between the 1944 Education Act and the present day. The three quarters of a century since the 1944 Education Act have witnessed the complete transformation of the education and skills landscape in England. Within this transformation, a multiplicity of policy decisions, social and economic trends and other changes have affected the development of higher technical education. More recent history, since 1997, has involved a complex and numerous set of initiatives under Labour, coalition and now Conservative governments. Policy initiatives have succeeded one another with increasing rapidity. The purpose of this history is not to evaluate individual policy initiatives in any depth, but rather to cast light on some of the sustained policy challenges affecting this sector of education, and in particular to explore the most salient mega-trend; the relative decline of higher technical education over the last half century.

A timeline of selected relevant events, covering the entire period, is presented at the outset. The historical narrative is presented sequentially in five chapters covering periods of history leading up to the present day. Some issues and themes relevant across different historical periods are addressed in 'Focus points' in text boxes.

## TIMELINE

- 1919** University Grants Council established, giving government a strategic role in managing the higher education system.
- 1921** ONC and HNC established for Engineering.
- 1944** Education Act. Further education defined. Day-release proposed for 15-18 year-olds, but not implemented.
- 1945** Report from Percy committee. Argued for high level technical colleges – subsequently realised 10 years later in the form of Colleges of Advanced Technology.
- 1955** Proposals first advanced for Colleges of Advanced Technology (CATs) and establishment of the Diploma in Technology (Dip.Tech.) Subsequently implemented through the designation of 10 CATs. Many offered Dip.Techs. usually through sandwich programmes, which grew rapidly.
- 1963** Robbins report. Recommendations led to a massive expansion of full-time bachelor's level higher education.
- 1964** Council for National Academic Awards (CNAA) started work, awarding degrees to students at non-university institutions (including subsequently the polytechnics).
- 1964** Industrial Training Act established Industrial Training Boards in industry sectors with levy-raising powers.
- 1965** Polytechnics launched with a mission to provide mid-level technical education, and part-time programmes for adults. By the late 1960s, there were 100,000 students in polytechnics in England and Wales.
- 1965** The Council of Engineering Institutions (CEI) decided to relate their educational requirement for corporate membership to a university or CNAA degree.
- 1973** Following the 1969 Haslegrave report, the Business and, separately, the Technical Education Council were established to provide a more systematic framework of technician education at both lower and higher levels, replacing the separate arrangements of the Joint Committees which oversaw the ONC/Ds and HNC/Ds. The two councils merged in 1983 to form the Business and Technical Education Council (BTEC).
- 1972** Following the James report on teacher education, the Diploma in Higher Education introduced as a two-year general programme to be followed by would-be teachers. The Diploma would subsequently be used as a free-standing technical qualification.
- 1982** Industrial Training Act facilitated the gradual winding up of many of the 21 Industry Training Boards, with the exception of the construction and engineering sectors.
- 1988** The Education Reform Act created a two-sector system of higher technical education, separated into 'prescribed' (fundable through the higher education system) and 'non-prescribed' (fundable through the further education system).
- 1988 – 1992** Growth surge in higher education. Bachelor's degree student numbers grew by 50%; sub-bachelor numbers grew by only 15%.
- 1989** By this date, apprentice numbers in manufacturing and engineering had fallen to one quarter of their 1964 level.

- 1992** Further and Higher Education Act. Polytechnics were allowed to become universities, and the CNAAs abolished. Higher and Further Education Councils subsequently established. NVQs introduced.
- 1997** Dearing report led to introduction of a tuition fee in higher education. Dearing argued that further expansion in higher education should prioritise HNDs and HNCs, following the example of Scotland, but this did not come about.
- 1999** £1,000 annual higher education tuition fee introduced, increased to £3,000 in 2006.
- 2000** Learning and Skills Council established.
- 2000** Following the announcement of a target that half of young people should enter higher education, the Foundation Degree was created as a vehicle for growth. By 2010 around 100,000 students were studying for Foundation Degrees.
- 2006** The Leitch review proposed that 40% of adults should have at least Level 4 qualifications by 2020, up from 29% in 2006.
- 2006** Level 4 and 5 apprenticeships launched.
- 2008** The financial crisis triggered a recession followed by continuing austerity measures.
- 2008** Education and Skills Act prioritised funding for English, maths, and first level 2 and 3 qualifications. Level 4 and 5 were not a priority.
- 2010** Browne review resulted in further increases in tuition fees. Part-time students were given access to loans to cover higher fees.
- 2010** Skills Strategy proposed an expansion of apprenticeships at level 4 and 5, with further funding announced in 2013.
- 2011** System of loans for FE fundable quals announced for those aged 24 and over taking L3+. These later became Advanced Learner Loans for all 19+s undertaking non-prescribed L4/5.
- 2012** Gradual process of liberalisation of controls over student numbers begins, leading to removal of all controls from 2015-16.
- 2016** Sainsbury review and Post-16 Skills Plan published, committing the government to a reorganisation of technical education within a common framework of 15 routes across all levels of technical education.
- 2016** First FE colleges were permitted to develop and award their own taught degrees without having to partner with a university. Limited number of FE Colleges pursued this opportunity.
- 2017** Apprenticeship levy introduced.
- 2017** The Higher Education Research Act granted regulatory powers to a new body, the Office for Students.
- 2017** The Technical and Further Education Act extended the functions of the Institute for Apprenticeships.
- 2017** Launch of the DfE Review of Level 4 and 5 Education.
- 2018** Launch of the DfE Review of Post-18 Education and Funding.

## 1.1 FROM THE SECOND WORLD WAR TO 1960: AN ERA OF HUMAN RESOURCE PLANNING

This chapter describes how some early attempts to establish higher level technical education finally reached fruition in the 1950s, in the shape of the Colleges of Advanced Technology (CATs), delivering diplomas in technology through sandwich programmes. The emphasis of these initiatives was towards establishing full-time technical education at bachelor's degree level. Ultimately the CATs would become universities, and the diplomas in technology would become bachelor's level qualifications.

### THE 1944 EDUCATION ACT AND THE PERCY COMMITTEE

#### *From the 1920s, a system of national technical qualifications was established*

Limited attention was given to technical education in England in the first half of the twentieth century, so that in 1935 the Board of Education was reporting to the Cabinet that “technical education lags behind that which exists in many parts of Europe” in both facilities and standards (Board of Education, 1935). A system of national technical qualifications was established in the 1920s – the national certificate system – through collaboration between the Board of Education and professional associations, at first in engineering fields and later more widely (see Focus point 2). By modern standards, the system produced few graduates at higher levels. In 1939, 1,053 Higher National Certificates (HNCs) and 39 Higher National Diplomas (HNDs) were awarded (Percy, 1945, p. 8).

#### *The 1944 Education Act established the principle of further education provided by LEAs*

During the Second World War, technical education was disrupted, but demand for war-related technical skills was high. Against that backdrop, the 1944 Education Act required local education authorities (LEAs) to offer further education, defined to include, first, “full and part-time education for persons over compulsory school age” and second, “leisure time occupation” which involved cultural and recreative educational activities (Section 41, Education Act, 1944).

#### *The requirement of day release for the education of young people was never fully implemented*

The 1943 White Paper leading to the 1944 Education Act regretted that, of those 15-18 year-olds who had left full-time school, only one in six attended part-time education. The 1944 Education Act therefore required LEAs to develop plans for further education in their areas, and to establish ‘county colleges’ where 15-18 year olds would need to attend one day a week for 44 weeks a year (Board of Education, 1943, part 2, section 43-44). However, this day release plan was not implemented, apparently because of financial constraints (Cantor and Roberts, 1972). In 1954, of young people under 18 in employment, only 17% were obtaining the day release to which the 1944 Education Act had supposedly entitled them (Eccles, 1955).

### **Focus point 2. Higher national certificates and diplomas: a long history with many wrinkles**

'National certificates' at 'ordinary' and at 'higher' levels were first developed in 1921 through collaboration between the government-backed Board of Education and the Institution of Mechanical Engineers. This model of government-industry partnership was extended to other professional associations, including the Electrical Engineers, Institute of Building, Institute of Chemistry and the Textile Institute (and subsequently commercial subjects). Joint Committees were established, with representation from government via the Board of Education, the professional associations and teachers. These Joint Committees would determine the subject content, while allowing freedom to individual schools/colleges in the organisation of the work and its assessment, sometimes in response to the needs of local industry, but with local syllabuses submitted to the Joint Committees for approval. Ordinary Certificates (ONCs) were awarded after a three-year part-time course at a technical college (Peters, 1967, Richard, 2009).

One key principle of national certificates in their earlier form was that they could only be awarded on the basis of part-time study, with a requirement that the students should also be employed (Dent, 1969). Higher national certificates (HNCs) were typically awarded after two years of part-time study, while, higher national diplomas (HNDs) required two years of full-time study, although they were sometimes organised as sandwich courses over three years, with as much as half the time in industry, and half the time in college. Cantor and Roberts argue that, at least in the early 1970s, HNDs and HNCs were of similar standard, but the HNDs went into more depth and included a larger element of general education (Cantor and Roberts, 1972).

While HNCs and HNDs were initially designed, through the Joint Committees, as a route to membership of the relevant profession (Cantor and Roberts, 1972), this gradually changed as the professions came to expect members to have full degree qualifications, notably when the Council of Engineering Institutions changed its requirements (see Focus point 9). Over time there has been a gradual shift in the mix of HNCs and HNDs. The proportion of full-time HNDs gradually rose in the period leading up to 1970, as did the proportion of non-engineering HNDs. In 1969, of some 5,600 students entering the HND exam, about 3,000 were in engineering. In the same year there were 18,000 candidates for the HNC exam (Cantor and Roberts, 1972). Mostly through the HNC, further education colleges produced two thirds of the 1961 output of engineers (Peters, 1967, p. 276). Impressed by the experience of Scotland with their separate system of HNDs and HNCs, the Dearing inquiry set out a clear expectation that future growth in higher education should emulate the Scottish experience, and therefore rely heavily on growth in the provision of HNCs and HNDs. The Dearing report also recommended standardisation so that, as in Scotland, an HNC should represent the equivalent of one-year full-time study, while the HND should represent two years (NCIHE, 1997).

The number of students studying HNDs in England fell from 45,000 in 1996/1997 to 15,000 in 2015/16, while those studying HNCs increased from 12,000 to 20,000 over the same period (Parry, 2015; Boniface Whalley and Goodwin (2018)). Part of the decline came about following the creation of the Foundation Degree, with up to half of such programmes displacing HNCs and HNDs (Sastry and Bekhradnia, undated, referring to a 2004/5 HEFCE analysis). Change in the fee regime and new arrangements to award such qualifications under licence from Pearson may also have been factors.

In England, the governance arrangements for HNCs and HNDs have changed several times. In the 1970s two separate bodies, which subsequently merged in 1983 into the Business and Technical Education Council (BTEC), took over responsibility from the Joint Committees (see Chapter 1.3). From 1995, BTEC merged with the University of London Examinations and Assessment Council to form the Edexcel Foundation, which became fully owned by Pearson from 2005. HNCs and HNDs are now copyrighted qualifications accredited by Pearson. When offered by universities these qualifications are awarded under licence from Pearson. When provided by FE colleges, Pearson is the awarding body (Parry, 2015).

### ***The Percy committee established a vision that was influential over decades***

A 1945 report on technical education by the government-appointed Percy Committee (Percy, 1945) established a vision that was initially only implemented in a halting way, but which remained influential and, eventually, in the late 1950s, it came into being. Its essence was, according to Peters:

*...the idea of a more developed form of technical education, to be fostered by separating off a part of the work of the colleges and elevating it to the status and quality of the best university study whilst encouraging the retention of its close connection with industry (Peters, 1967, p. 121).*

### ***Percy argued that technical education should provide intermediate technical skills***

The Percy Committee classified the skills demands of the engineering industry into five groups. (1) senior administrators, (2) engineer scientists and development engineers, (3) engineer managers (design, manufacture, operation and sales), (4) technical assistants and designer draughtsmen, and (5) draughtsmen, foremen and craftsmen. Percy argued that the role of a newly designated limited group of 'technical colleges'<sup>4</sup> should be to provide for group 4, but also, alongside universities, for group 3 (Percy, 1945, paragraph 7).

### ***Higher level technical education more akin to university level studies was needed***

The Percy Committee further argued that part-time and evening study, the usual pattern for many students outside universities, had its limitations. It maintained that the newly proposed technical colleges needed to develop their own syllabuses (implying the capacity to award their own qualifications), leading to the recommendation that several of the proposed technical colleges might be selected to provide high level technological courses "of a standard comparable with that of

<sup>4</sup> The term 'technical college' has been used in very different ways. In the early 1970s, Cantor and Roberts (1972) describe two different types of technical college, both distinguishable from 'colleges of technology'.



university degree courses". In fact, as noted by Barnett (2002) and Peters (1967) this recommendation was not fully pursued until ten years later, in the 1956 White Paper on Technical Education, which proposed "colleges of advanced technology" along the lines first envisaged by the Percy report.

## COLLEGES OF ADVANCED TECHNOLOGY AND THE DIPLOMA IN TECHNOLOGY

### *Human resource assessments argued for more scientists, engineers and technicians*

The 'Barlow' 1946 report on scientific education looked mainly at university education, and science. The main recommendation was a doubling of the output of graduate scientists, but in passing it endorsed the Percy recommendations. Similarly, the Zuckerman report argued that there should be a substantial increase in the supply of scientists and engineers (Peters, 1967). (The varying arguments that have been used over the entire period to justify the scale of HTE provision are set out in Focus point 3). Against that background, when David Eccles, the Secretary of State for Education and Science, minuted his cabinet colleagues on technical education, he noted that the current output of 'technologists' from technical colleges, using 1954 figures, was around 10,000, of which 7,000 were graduates of the HNC, 1,400 City and Guilds Certificates, and 1,500 degrees (mostly external London degrees).<sup>5</sup> He proposed to increase output to 15,000 through a new qualification which would become the Diploma in Technology.

*Our policy at the technological level is to attract more students who have stayed at school till 18 and to get more young men released from industry for full-time study. They will take either a continuous course of three or four years or, more frequently, the 'sandwich courses' of alternate periods of study and employment which are being developed in consultation with the electrical, mining, building, railway and other industries. The new award-making Council, under the Chairmanship of Lord Hives, will approve these courses for diplomas in advanced technology having a status equal to a university degree (Eccles, 1955).*

### Focus point 3. Shifting criteria for how the quantity of HTE should be determined

At different points in time, different grounds have been advanced to justify the quantity of HTE provision:

**Economic need and human resource planning.** Sometimes quantitative estimates are made of the amount of HTE provision required, and it is seen as the job of policy to provide for that need. For example, the Committee on Scientific Manpower, working in the 1950s, argued that scientific 'manpower' (in the terminology of the era) would need to increase in line with industrial production, which at that time was increasing by 4% a year (Peters, 1967, p. 14). But the Leitch report returned to this theme, arguing for an increasing need for higher level skills (level 4 and above)

<sup>5</sup> This was a system, in place from the middle of the nineteenth century, in which those with appropriate qualifications could register as external students of the University of London and take examinations similar to those taken by internal students. This allowed different colleges to establish their academic standards, and permitted students who for one reason or another who could not attend university, to acquire university-level qualifications (Robbins, 1963, paragraph 426).

**Ratio estimates.** Sometimes the demand for ‘technicians’ has been estimated on the basis that a certain number of technicians are needed for each fully qualified engineer. The 1956 White Paper on Technical Education proposed a figure of 5 or 6 technicians for each technologist. The 1965 National Plan proposed a figure of 4. Sometimes this is linked to the argument that the UK is good at pure science but there are not enough applied scientists to exploit the science (Peters, 1967, pp. 14-15).

**International comparison.** The Percy committee argued that the technical education system “requires overhauling if it is to play its part in assisting British industry to hold its own in foreign markets” (Percy, 1945). Similarly, in 1955, then Minister of Education David Eccles, justified his proposal to increase the number of trained technologists from 10,000 to 15,000 “to keep pace with other industrial countries” (Eccles 1955). Anthony Crosland, in arguing for the establishment of the polytechnics, said that Britain could not alone, and in contrast to other countries, “downgrade the non-university professional and technical sector” (Crosland, 1965). More recently the OECD report (2014) has argued that England has too small an HTE sector by international standards.

**Student demand.** The Robbins report argued that higher education should be offered to those who are able to benefit from it. On that basis, growth is largely driven by demand from students with the relevant entry qualifications. More recently, with much higher tuition fees in higher education, the rationale is that students must be at liberty to choose what they have to pay for, recognising that they need to be well informed about quality and outcomes. This implies HTE might find its own level in the market.

**Widening participation.** Particularly since the 1997 Dearing report, there has been a recognition that HTE has a key role in engaging learners from different social groups who might otherwise not benefit from higher level education (National Committee of Inquiry into Higher Education, 1997). This is because of HTE’s vocational emphasis, because it often serves those with weaker initial educational qualifications, and because it is often delivered part-time to adults; it also serves to facilitate a route to full bachelor’s degrees for those who might otherwise not attain that level of education. HEFCE’s policy on HE in FE sees widening participation as one of the objectives of the sector (see Focus point 11).

### ***Proposals were set out for the creation of Colleges of Advanced Technology***

To deliver the planned growth in those qualified at higher technical level, David Eccles proposed to designate a small group of elite further education colleges as Colleges of Advanced Technology (CATs), where the majority of ‘advanced’ courses outside university would reside. In effect this picked up one of the proposals in the earlier Percy report. Subsequently 9 Colleges of Advanced Technology were designated, and some of the Regional Colleges were also made CATs.

### ***The Diploma in Technology was successful***

The Diploma in Technology (Dip.Tech.) was developed by the 1956 ‘Hives’ committee, at the instigation of government. It aimed to be a ‘degree equivalent’ qualification based on a full-time course of two or three years, or a sandwich

course (see Focus point 4), including six month periods in industry, that could be up to four years. The Diploma was initially accredited by the Hives committee, but subsequently by the CNAAB (see Chapter 1.2), which was established on the model of the Hives committee. There were Dip.Techs in engineering and applied science in fields such as industrial chemistry and applied physics. Participation grew fast, with 124 Dip Tech courses in 30 colleges (mostly CATs or Regional Colleges) (Peters, 1967). The Robbins report subsequently noted that “since their designation from 1956/7 over 90% of full-time students in CATs<sup>6</sup> were taking advanced courses, often the Dip Tech. In 1962/3 four fifths of all students for this qualification were studying in ten colleges” (Robbins, 1963, paragraph 389). Most of the provision was in the form of sandwich programmes: Evans (2009) reports that in 1959/60 there were 48 sandwich and 14 full-time programmes for the Dip.Tech.

#### Focus point 4. Sandwich programmes

Sandwich courses were developed in Glasgow in the 1880s and by English colleges from the beginning of the twentieth century (Peters, 1967). The sandwich principle implies a period of work placement (the filling) placed between two periods of study (the bread). A ‘thick’ sandwich implies a full year in work placement, a ‘thin’ sandwich a few months (Parry, 2015). An ‘inside-out’ sandwich places the period of study between two work placements. Peters estimates that sandwich release multiplied 22 times between 1953-4 and 1964-5, and during this period sandwich programmes were widely commended because of the way in which they integrated work and advanced study. For example in the British Aircraft Corporation in 1965, technicians were being trained through part-time or block release for the HNC and the City and Guilds Technician Certificate. At higher level, employees on sandwich programmes were studying for Diplomas in Technology and the HND through alternation of six months in College and six months in Industry during four years (Peters, 1967).

Wilson (2012) estimates that sandwich students declined from 9.5% of the total full-time UK cohort in 2002/2003 to 7.2% in 2009/2010, but more recent years may have seen some growth, with slightly more than 170,000 first degree UK sandwich students in 2016/17 (see Higher Education Statistics Agency, no date) representing about 12% of full-time UK first degree enrolment. A few universities, with a sandwich tradition often rooted in their earlier existence as Colleges of Advanced Technology or polytechnics, provide most of the sandwich courses: for example, Loughborough University, University of Surrey, University of Bath, Brunel University, Aston University, Bournemouth University. But research also suggests some barriers to sandwich programmes on the students’ side, including uncertainty in securing a work placement close to home. Conversely, within the institutions that offer them, sandwich programmes continue to prove their success. One of the outstanding issues of provision is how to handle (now much increased) university fees during periods of work placement (Wilson, 2012).

6 Most of the CATs subsequently became universities. For example, Birmingham College of Advanced Technology became the University of Aston at Birmingham; Bristol College of Advanced Technology became the University of Bath.

***A hierarchy of further education colleges had emerged***

Between 1946 and 1956, three main types of further education colleges emerged – regional, area and local colleges. These were in addition to the evening institutes which offered diverse, but often non-vocational provision. This pattern, as it further developed in the late 1950s following the creation of the CATs, is set out in Focus point 5. Student numbers in further education in England and Wales expanded from around 1.6 million in 1946 to over 2.2 million in 1956; full-timers increased from 45,000 in 1946-7 to 76,000 in 1956 (Cantor and Roberts, 1972). But this same growth in participation, felt widely across the education system, was about to trigger a dramatic shift in higher education policy, a shift which would have many implications for higher technical education.

**Focus point 5. Further education institutions in the late 1950s**

Following the creation of the Colleges of Advanced Technology, further education included the following mix of providers:

- 9 Colleges of Advanced Technology train technologists and scientists, and offer courses of undergraduate and postgraduate standard and research.
- 22 Regional Colleges undertake work at undergraduate level through sandwich and full-time courses for London University degrees, for the Diploma in Technology and for the Higher National Diploma. Research work is also done. These colleges train senior technicians, craftsmen and technologists.
- Around 160 Area Colleges provide courses for technicians and craftsmen, mainly part-time, up to Higher National Certificate and City and Guilds final examinations for students in industry. Many are developing sandwich courses leading to the Higher National Diploma, together with block release courses at technician level. There may also be courses in general education, art and commerce.
- About 300 Local Colleges offer courses at Ordinary National Certificate level, the Intermediate Examination of the City and Guilds and occasionally the Final Examination. Courses may be held for G.C.E., and for intermediate professional examinations. Most students are part-time and aged 15-18.
- In addition, there were 23 Colleges of Commerce, around 180 Colleges, Schools and Departments of Art, 8 National Colleges, to meet the needs of specific industries. 60 other colleges and over 8,000 'evening institutes' often located in schools, and staffed by school staff serving nearly 400,000 students, mostly over 18.

*Source: Central Advisory Council for Education (England) (1959).*

## 1.2 THE 1960S: THE ROBBINS REPORT AND CREATION OF THE POLYTECHNICS

This chapter describes how the Robbins report, with its emphasis on the expansion of full-time bachelor's level education, provided little encouragement to higher technical education. The creation of the polytechnics took a different approach, since polytechnics were intended to have a higher technical mission, providing intermediate technical skills, often to adults, and often part-time.

### THE ROBBINS REPORT AND ITS EMPHASIS ON FULL-TIME BACHELOR'S LEVEL EXPANSION

#### *Proposals for higher education expansion responded to rapid growth in qualified school-leavers*

During the late 1950s, the post-war baby boom, alongside an increasing tendency for young people to stay on in education, drove a rapid increase in the public sector secondary school population of the UK, rising from 2.2 million in 1955 to 3.2 million in 1965 (Bolton, 2012). Further education also grew rapidly: part-time day student numbers in England and Wales grew from 470,000 to 750,000 between 1956 and 1970, and full-time student numbers rose from 76,000 to 275,000 over the same period (Cantor and Roberts, 1972). In response to the rising aspirations of this post-war generation, the 1963 Robbins report recommended a large expansion of higher education. In the period between 1962/3 and 1980/81 it proposed a near trebling of the full-time higher education student population in the universities of England and Wales (from 108,000 to 291,000), and a doubling of the full-time higher education student population in further education colleges (from 28,000 to 59,000) (Robbins, 1963, table 44).

#### *The Robbins report and its implementation did little to encourage HTE*

The Robbins proposals, implemented by subsequent governments, massively expanded full-time undergraduate education, backed by extensive public funding for teaching, as well as more systematic maintenance grants for full-time students (see Focus point 8). Growth would be concentrated in the universities and those colleges which would shortly afterwards be transformed into polytechnics (Parry, Saraswat and Thompson, 2017, and Focus point 3). But the Robbins report provided little encouragement to an HTE system characterised by responsiveness to industry needs, part-time provision, and programmes below bachelor's level. Thus:

- **On responsiveness to industry needs**, Robbins rejected the “economic need and human resource planning” approach to planning higher education numbers, claiming it was impractical, and instead embraced an approach based on student demand (Robbins, 1963, paragraphs 133-134). Robbins advanced the principle that “all young persons qualified by ability and attainment to pursue a full-time course in higher education should have the opportunity to do so” (Robbins, 1963, paragraph 135), and on that basis forecast a continued increase in the need for higher education. This embedded a principle, which continues to the present day, in which the quantity and mix of higher education would respond to student demand, rather than any assessment of the requirements of the economy.

- **On part-timers**, the terms of reference of the Robbins inquiry only covered full-time higher education but, in passing, the report assumes that growth in part-time higher education, mostly in the further education colleges, will be muted, not least because of the competition arising from growth in full-time higher education following the Robbins recommendations (Robbins, 1963, paragraph 510). The Robbins report recognised that much professional education for engineering and commercial occupations was part-time, but argued that full-time education could go deeper: “As knowledge grows, and a grasp of fundamental principles becomes ever more important, we would expect the need for full-time study to be increasingly recognised” (Robbins, 1963, paragraph 159).
- **On sub-bachelor programmes**, Robbins was lukewarm about HNCs and HNDs: “The new degree courses we propose ... would soon render Higher National Diplomas superfluous”. While accepting that the HNC was popular and would continue for some years, the report expected employers to “increasingly see the case for full-time study for many of those students who at present take the part-time Higher National Certificate” (Robbins, 1963, paragraph 431). The reasoning behind this assertion is not clear.

#### ***Instead, it sought to support an advanced sector of higher technical education***

Reflecting a line of thinking going back to the Percy report, Robbins encouraged the development of what was seen to be a more advanced part of higher technical education, meaning, in practice, full-time bachelor’s level technical education. The idea, noted above, that ‘in-depth’ technical education had to be full-time also reflected the views both of the Percy and Robbins reports that it would be valuable to identify, within the frame of ‘college’ technical education, a set of programmes and institutions which might be upgraded and enhanced and brought up to the level of full bachelor’s degrees in university institutions (Peters, 1967).

#### ***Some colleges were given university status, and the CNAAC was established***

To this end, the Robbins report first transferred to full university status 21 colleges, including all the Colleges of Advanced Technology and some of the regional colleges. It also built on the work of the Hives committee, and the experience with the Dip.Tech, and set up the Council for National Academic Awards (CNAAC) (Robbins, 1963, paragraph 428) to award bachelor’s and master’s degrees to students at non-university establishments. This provided the framework in which not only further education, but also subsequently the polytechnics, would operate when delivering HTE. Responsibility for the Dip.Tech was taken over by the CNAAC, with the name of the qualification changed to a B.Sc. (Peters, 1967).

### **POLYTECHNICS AND THE CNAAC**

#### ***Anthony Crosland launched the proposal for polytechnics in 1965***

In a 1965 speech, Anthony Crosland, then Secretary of State for Education, set out the philosophy behind the creation of the polytechnics. He rejected the idea of a ‘ladder’ system, in which institutions would all engage in a ‘rat-race’ for the award of university status, a process which, in his view, would lose the diversity needed in higher education. Instead he proposed a ‘dual system’ involving universities on the one hand, and on the other a new set of institutions (to become polytechnics). These latter institutions would be backed by the degree-awarding powers of the CNAAC. Their first function would be to prepare students for particular professions. Secondly they would provide intermediate level programmes for what Crosland

referred to as “high level technicians and middle managers”. Thirdly they would offer part-time provision for those who missed out on full-time education first time round. Sandwich programmes were commended (Crosland, 1965). In its vocational emphasis, focus on intermediate and technician skills, and support for part-time and sandwich provision this represented an HTE mission for the polytechnics. It was also a completely different approach to the policy line of thinking running from Percy to Robbins, whereby the policy imperative was to bring the ‘best’ technical education up to bachelor’s degree level, preferably full-time, in a university setting, or in institutions which might become universities. The later history of the polytechnics, which only partially fulfilled Crosland’s vision, is described in Focus point 6.

#### **Focus point 6. The polytechnics: 1965 – 1992 and their afterlife**

Crosland’s initial proposals were followed by a White Paper, and 27 English polytechnics were established by 1972 (Cantor and Roberts, 1972). All of them were based on previous institutions; three were based on a previous regional college. 23 out of 27 involved mergers of previous institutions: for example Manchester polytechnic was created from three Manchester institutions: John Dalton College of Technology, the College of Commerce and the College of Art (Cantor and Roberts, 1972). By the late 1960s, there were 100,000 polytechnic students in England and Wales, a figure which trebled by 1989/90, when there were 280,000 students in just the English polytechnics – a faster expansion than that in the universities. By 1989/90, there were 1,700 CNA degree programmes, of which 460 were sandwich courses. Polytechnics expanded their offer to include most of the subjects offered by universities, and dropped some sub-bachelor provision, thus displaying some academic drift (Parry, 2015). At the same time, teacher education was reformed to be a graduate profession, and teacher training colleges merged into polytechnics and universities, while others became a new sector of colleges of higher education (Pratt, 1992).

After 1992, the polytechnics became universities. The rationale for abandoning Crosland’s ‘dual’ or ‘binary’ system was set out in a 1987 White Paper, which argued that this would allow more competition in a unified and growing university sector that would allow for “efficient expansion” (Pratt, 1992). The polytechnic tradition continues to be recognised in the common expression of a ‘post-1992 university’, and some aspects of that tradition remain – such as sandwich provision (see Focus point 4).

Looked at internationally, ‘binary’ systems of higher education, with similarities to the university-polytechnic arrangement in the UK, have been widely adopted. Many countries, such as Finland, Sweden, Denmark, France, Germany, Switzerland, Austria and the Netherlands maintain universities, which offer more academic forms of higher education, alongside a separately designated set of higher education institutions which specialise in professional education and training at bachelor’s level and above. In Europe the common name for the latter institutions is “universities of applied science” (see UAS4Europe, no date). Often growth in higher education participation has been concentrated in these institutions, as opposed to traditional academic universities (following the pattern observed in England in the 1980s) and they are widely seen as success stories. So the creation of the polytechnics, and their success and rapid growth, was entirely consistent with international experience, but the abandonment of the binary system was more unusual.

***Provision of HNCs, HNDs and other ‘advanced’ programmes would continue outside the aegis of CNAAs***

The reforms of the 1960s left arrangements for HNC and HND provision, and for some other forms of non-degree provision, largely unchanged. HNCs and HNDs remained as qualifications approved by the Joint Committees until the creation of the Technical and Business Education Councils (see Focus point 2), separately from degree level provision under universities or the CNAAs. Many colleges also offered advanced courses provided by the City and Guilds of London Institute (CGLI), prepared students directly for the examinations of professional institutions, or awarded their own diplomas and associateships. So the equivalent of what would now be level 4 and 5 provision remained as a separate framework. A 1966 White Paper (Department of Education and Science, 1966) envisaged that such provision, at full and part-time levels, would continue in both polytechnics and further education colleges (Parry, Saraswat and Thompson, 2017). While less visible, this portion of the student population would remain important in the following years, so that by the early 1980s about one third of the total UK higher education population were still enrolled in ‘other advanced’ courses – i.e. at what would now be level 4 and 5 (Parry, Saraswat and Thompson, 2017).

***New industrial training legislation established training boards supported by sectoral levies***

In 1962, the Minister of Labour John Hare submitted a draft White Paper on Industrial Training to his Cabinet colleagues. It expressed concern about a lack of skilled labour, with individual employers free-riding on the training provided by other firms, and underlined the need to remedy this, to match the performance of competitor countries. To this end it proposed Training Boards for individual industries, which would impose levies in their industry sector and use the money to support training. It had been widely noted that the proposals for day release from employment set out in the 1944 Education Act had never been implemented, and the Cabinet submission expressed particular concern over the narrowness of some first-year apprenticeship training, and suggested that the levy might help to support broader training in the first year, and possibly even support the apprentice wage during this period. The Industrial Training Act 1964 implemented these proposals, but had a limited effect on higher level technical training and education (Hare, 1962). Twenty years later, following criticism of the working of the levy grant system, the Industrial Training Act 1982 facilitated the gradual winding up of many of the 21 Industry Training Boards, often in favour of more voluntary training efforts. However the construction and engineering sectors opposed reform, and were successful in retaining the CITB and EITB as statutory non-departmental public bodies (BIS, 2015).

***The 1960s established a climate in which HTE was not a priority***

The 1960s defined the course of higher education, and therefore to a great extent higher technical education, for many years to come. Growth would be concentrated by design in full-time bachelor’s level provision in universities and the polytechnics. In the decades that followed, other reforms took place in the governance of the HTE system and HTE managed to show some growth. But, as will be seen, it was an environment in which HTE could not compete with the growing dominance of bachelor’s level education.



## 1.3 FROM 1970 TO THE EDUCATION REFORM ACT 1988: 'GRADUATISATION' AND RELATIVE DECLINE IN HIGHER TECHNICAL EDUCATION

This chapter describes the history of the Technician and Business Education Councils, established by government to drive technical education, including the HNCs and the HNDs, and, in the case of the Business Education Council, to make business education more effective. The 1970s and 1980s also saw the creation of the Diploma of Higher Education as a spin-off from the reform of teacher education. Full-time bachelor's level education expanded rapidly, while HTE, in the face of multiple constraints, grew at a much slower pace. A process of 'graduatisation' meant that many professions increasingly expected practitioners to have bachelor's degrees.

### TEC, BEC and BTEC

#### ***In 1969, the Haslegrave report sought to consolidate training arrangements for engineers***

The Haslegrave report<sup>7</sup> on Technician Courses and Examinations (National Advisory Council on Education for Industry and Commerce (NACEIC), 1969) advocated greater coherence between the technician, technician engineer and chartered engineer professions, and their training requirements. The report argued that the arrangements for training were confusing, and needed to be replaced. Two new bodies were therefore created for England and Wales, the Technician Education Council (TEC), and the Business Education Council (BEC) from 1973. (Separate and parallel bodies were established in Scotland). The new bodies were intended to provide a more systematic framework of technician education, at both lower and higher levels, replacing the separate arrangements of the Joint Committees which had overseen the ONC/Ds and HNC/Ds, and the work of the City and Guilds of London Institute which provided many of the lower level examinations and qualifications. The initiative was also a response to rapid changes in the shape of industry and the labour market (Parry, Saraswat and Thompson, 2017).

#### ***The Business Education Council was intended to professionalise business and public administration***

The creation of BEC was designed to address the less developed sectors of business and public administration. In a 1994 interview, John Sellars, the chief executive of BEC on its creation, described the challenge in this field:

*As Haslegrave went on it became apparent that employers would not turn employees loose on capital equipment unless they were further educated or trained, because they would either get injured or they would damage the equipment. So, on the technician side there was no question that employers supported training. On the business side though it was too often a case of "welcome, sit next to him, or her, and you'll find out how we do it". Sometimes one employer would have different policies for technician and for business/administration staff. It was decided that there should be two councils because two different challenges existed (John Sellars, 1994).*

<sup>7</sup>The Haslegrave report also offered a definition of a technician.

"One who has acquired detailed knowledge and skills in one specialist field, or knowledge and skill to a lesser degree in more than one specialist field, is required to exercise judgment, in the sense of both diagnosis and appraisal, and initiative in his work; is frequently called upon to supervise the work of others; and has an appreciation of the environment beyond the immediate limits of his duties" (NACEIC, 1969).

***The two councils were combined to form BTEC***

BEC and TEC operated differently, reflecting divergent ways of approving and quality-assuring the work of colleges in developing and delivering their programmes. TEC HNC courses involved 600 hours of study, while the HND involved between 1,200 and 1,600 hours. Colleges could use standard units of study developed by TEC programme committees, or develop their own, subject to TEC validation. By 1981, there were 24,000 TEC registrations for HNC and 3,000 for the HND; BEC registrations for higher national awards were around 9,000. TEC and BEC merged in 1983 to form BTEC, but their different approaches remained largely intact until in 1988 a standard approach was implemented. From 1995, BTEC merged with the University of London Examinations and Assessment Council to form the Edexcel Foundation, which became fully owned by Pearson from 2005 (Parry, Saraswat and Thompson, 2017).

**NEW QUALIFICATIONS: THE DIPLOMA AND CERTIFICATE IN HIGHER EDUCATION*****The Diploma in Higher Education emerged out of the reform of teacher training***

The 1970s also saw the emergence of a new qualification, the Diploma in Higher Education (Dip. HE). This was intended as an initial academic two-year qualification for those planning a teaching career, but over time, alongside its smaller sibling, the Certificate in Higher Education, it developed a more technical profile, so that both qualifications may now be considered as potentially part of the HTE system (see Focus point 7).

**Focus point 7. The Diploma and Certificate in Higher Education**

During the 1960s, some school teachers had full bachelor's degrees, while others had followed a two-year programme in a teacher training college leading to a certificate. The James report (DES, 1972) recommended that teacher training should extend over four years, thus placing bachelor's level education as the minimum requirement. The four years would begin with a two-year general programme leading to a Diploma in Higher Education (Dip. HE). The James report envisaged that graduation with this diploma would provide an entry point for the more practical training of teachers that would occupy the following two years.

The government endorsed the diploma, and also argued that it conveniently filled a gap in provision, as existing two-year programmes were all specific and vocational. The Dip. HE would provide a foundation for further study, including university degrees, and would be validated by existing bodies, notably the CNAA. Take-up was limited, with enrolments in the early 1990s of less than 10,000. In a 1985 Green Paper the government rejected proposals for an expansion in the Dip. HE on the grounds that it would compete unhelpfully for the same type of students as the HND (Parry, Saraswat and Thompson, 2017).

A Certificate of Higher Education (Cert. HE) now also exists, and is described as providing the academic parallel to an HNC. But in fact, both diplomas and certificates have increasingly colonised some technical and specialist fields, particularly in the healthcare sector (Parry, 2015) thus drifting away from their initial more general and academic focus. For example the Open University offers Cert. and Dip. HEs in vocational fields like "computing and IT and business" and in "early childhood" (see Open University, no date).

**Obstacles to the growth of HTE**

Three factors restrained growth in HTE

In the 1970s and 1980s, three trends restrained potential growth in HTE:

- First, rapidly expanding opportunities for full-time bachelor's degrees in the 1970s, (although less so in the 1980s) funded generously (at least by today's standards) with student grants and no fees provided formidable competition to HTE among young people who might have considered HTE full or part-time (see Focus point 8).
- Second, in a complementary development, professions came increasingly to expect or require entrants to the profession to have full bachelor's degrees (see Focus point 9).
- Third, a major restructuring of industrial employment took place, accompanied by severe recessions. Employment in UK manufacturing industry fell by around 40% between 1973 and 1990; by 1989, apprentice numbers in manufacturing and engineering had fallen to one quarter of their 1964 level (Kitson and Michie, 2014; Broadberry, 2005). High unemployment rates can sometimes make a period of full-time higher education, supported by a student grant, more attractive.

**Focus point 8. Maintenance funding for students in higher education**

Between 1944 and 1962, local authorities had the power but not the duty (under the 1944 Education Act) to award scholarships and other benefits to students at any establishment or level. This discretion tended to benefit university students as opposed to those in further education: in 1961-2 only around half of the full-time students in the UK pursuing recognised qualifications in colleges were receiving any grant (Peters, 1967). In 1962, new legislation removed much of the discretion, and required local authorities to provide grants to students pursuing first degrees, HND and Dip. HE courses, and initial teacher training (Wilson, 1997). Many other awards were discretionary. Subsequently, most full-time school-leaver entrants to bachelor's degree programmes received grants automatically, subject to a means test. But in 1964-5, despite the new rules, over one third of students accepted into full-time 'advanced' (HTE) courses in the colleges did not receive a full value grant (Peters, 1967). These maintenance arrangements, subject to incremental adjustments, remained in place until the 1990/91 academic year, when student loans were introduced. By 1995/96, expenditure on mandatory maintenance grants had reached £1075M (Wilson, 1997). This compares with £22M spent by local authorities on awards in 1958/9.

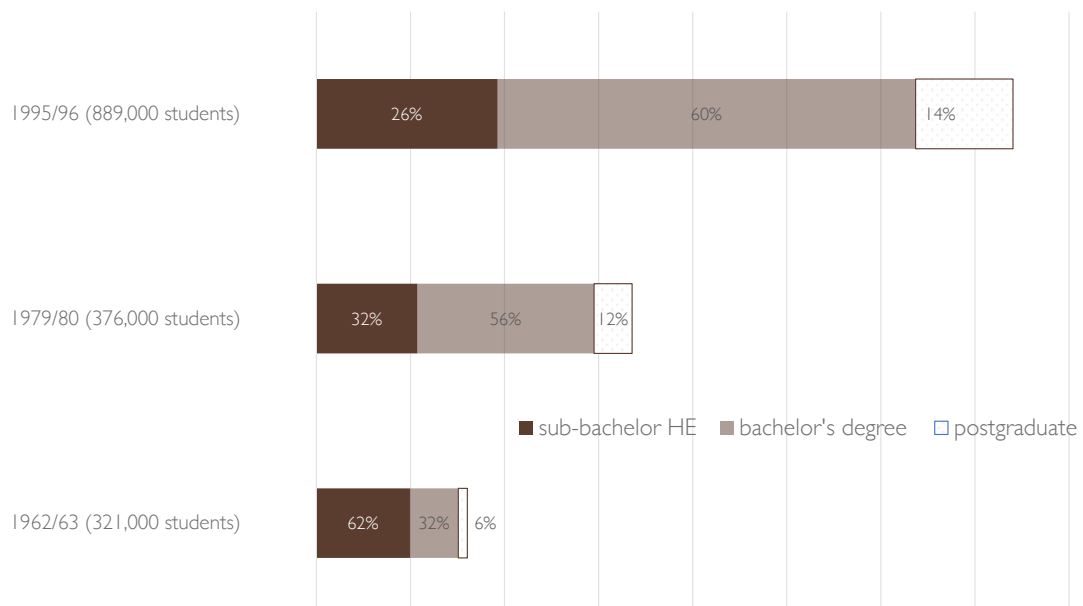
In summary, therefore, the 1962 reforms guaranteed maintenance funding for young people pursuing bachelor's degrees, offering higher rates for those living away from home. It therefore supported the massive expansion in full-time higher education participation which followed the Robbins report. Often, this was an attractive alternative to other forms of further education and training, including some forms of HTE.

***It would be some years later before the relative decline in HTE attracted concern***

The result of these factors was that, although HTE also grew, its relative share in higher education declined in the two decades following the Robbins report (see Figure 1). Within this period, there was a surge in growth between 1988 and 1992, when the number of bachelor's level students in England grew by more than 50% in just four years. Over the same four years, sub-bachelor student numbers grew by less than 15% (Parry, Saraswat and Thompson, 2017, table 4.3). Later on, weak growth in HTE would become the subject of concern. In 1997, the Dearing report would record the “longstanding perception that the UK’s comparative international weakness lies at the technician rather than degree level” (NCIHE, 1997, 6.12). In the years that followed, a sequence of attempts would therefore be made to shift the pattern of growth in favour of HTE.

**Figure 1. Growth in bachelor’s degree students far outpaced growth in sub-bachelor higher education**

Number of UK students in higher education in thousands. Bachelor’s degrees include those awarded by the CNA.



Source: Adapted from data in chart 3.3 of National Committee of Inquiry into Higher Education (1997).

## 1.4 FROM THE EDUCATION REFORM ACT TO THE FINANCIAL CRISIS: DEARING, FOUNDATION DEGREES AND WIDENING PARTICIPATION

This chapter first describes the impact of the Education Reform Act on the funding and governance of higher technical education. The Dearing report argued that further growth in higher education participation should take the form of HTE, and this view was subsequently pursued through the creation of the Foundation Degree, which grew rapidly, supported by a funding premium and other incentives. The Leitch review also emphasised the need to increase skills, but funding constraints limited subsequent support for level 4 and 5 qualifications.

### **THE EDUCATION REFORM ACT: A NEW APPROACH TO FUNDING**

#### ***Before the Education Reform Act, LEAs were responsible for HE in FE colleges***

Before 1988, higher education in further education colleges was the responsibility of local education authorities. This included both 'advanced' higher education (covering degrees validated by the CNAAB, HNDs validated by the BTEC, and some other awards) and 'non-advanced' higher education (covering some technician and craft qualifications, A levels, and some other diplomas). Funding for advanced higher education flowed from the Department of Education and Science via the National Advisory Body for Public Sector Higher Education (NAB). NAB approved individual courses and allocated the associated resources to around 400 polytechnics and colleges in England. During the 1980s, the NAB facilitated substantial growth in student numbers in the advanced sector at a time when the number of university places was being constrained.

#### ***Following the Act many programmes were removed from local authority control***

Following the 1988 Act, both nomenclature and funding arrangements changed. In most cases 'advanced' further education programmes became, alongside first degree and postgraduate programmes in universities, 'prescribed' programmes. But there were exceptions: the BTEC HNC, previously identified as 'advanced', became non-prescribed. From this point forward, all prescribed programmes, with the exception of the HND, were funded on a national basis by a new body entitled the Polytechnics and Colleges Funding Council (PCFC), alongside the Universities Funding Council (UFC). Many of these programmes were therefore removed from the control of local education authorities. Further governance changes took place in the early 1990s with the creation of the Further Education Funding Council (FEFC), but the main distinction between prescribed and non-prescribed programmes remained (Parry, 2017).

#### ***Non-prescribed higher education mostly involves part-time business programmes***

Non-prescribed higher education takes diverse forms. In 2002, Clark (2002) reported that there were around 60,000 students in this form of education, mostly pursued by adults in the business area, delivered by further education colleges and funded by the Learning and Skills Council. It has been argued that non-prescribed courses are useful to those who find it difficult to pursue mainstream programmes, but gradual decline took place in non-prescribed provision so that enrolments had dropped to around 40,000 by 2014 (Parry, 2015).

***Franchising emerged as a major source of higher education in further education colleges***

'Franchising' takes place when a higher education institution sub-contracts some of its higher education programmes to a further education college. ('Franchising' can be differentiated from 'validation', whereby higher education providers who do not have the power to award degrees can offer a course leading to an award from a provider that has degree-awarding powers by entering into a validation arrangement with that provider). Franchising allowed higher education institutions that had reached their capacity limits to farm out part or all of some higher education programmes when it meets their interests, where there are further education colleges willing to partner with them. It was weakly regulated from the outset, but it grew in importance, particularly for Foundation Degrees (Parry, 2005); of the 70,000 Foundation Degree students in England in 2014-15, nearly 15,000 were registered at higher education institutions but were being taught in further education colleges (Parry, Saraswat and Thompson, 2017, table 5.4).

***The 1992 Further and Higher Education Act introduced a sequence of reforms***

Two white papers, Education and Training for the 21st century (1991), and Higher Education: A New Framework (1991) led to the 1992 Further and Higher Education Act, which crystallised several policy changes. These two Acts:

- allowed polytechnics to obtain the name of a university (see Focus point 6). The Council for National Academic Awards, as the body which sanctioned the degree-awarding powers of the polytechnics, was abolished;
- unified the funding of higher education under the Higher Education Funding Councils in England and other parts of the United Kingdom (HEFCs); established the Further Education Funding Councils in England and other parts of the United Kingdom (FEFCs);
- removed further education and sixth form colleges from the control of local education authorities;
- introduced a new system of national vocational qualifications (NVQs). In principle, but rarely in practice, these could be utilised at HTE level.

**THE DEARING REPORT*****The Dearing report led to tuition fees for higher education and an income-contingent student loan system***

One of the main outcomes of the 1997 Dearing review (National Committee of Inquiry into Higher Education (NCIHE, 1997) was the establishment in 1999 of university tuition fees, set initially at a maximum of £1,000 annually, but subsequently increased so that the maximum is now over £9,000, thus approximating full cost recovery. The fees are set against government-provided loans, both to pay fees and provide for maintenance. The terms of loans have been repeatedly modified, but one constant element has been loan forgiveness for low-income graduates, meaning that a substantial government subsidy remains in place. This has provided the funding for continued expansion in higher education, and most recently the removal of the cap in student numbers.

***Dearing recommended that further growth should be concentrated at HTE level in further education colleges***

The Dearing report pointed to evidence that graduates were now being employed in jobs traditionally done by non-graduates. To address this challenge, Dearing looked to Scotland as a model, noting the extensive use of Scottish HNCs and HNDs in further education colleges. "In Scotland, 40% of higher education is at sub-degree level, compared with 26% in the rest of the UK." (NCIHE, 1997, paragraph 7.30; see also Focus point 10). (The expression 'sub-degree' was used to refer to sub-bachelor higher education at this period, prior to the introduction of the Foundation Degree). Dearing concludes: "As to the demand for more people with advanced technical training, we agree that this is an area of national need. We believe that much of the further growth of higher education, at least in the short term, should be in the Higher National Certificate, the Higher National Diploma and other analogous awards" (NCIHE, 1997 6.14). The report argues that this growth might mainly take place in the further education colleges (again following the Scottish model). To facilitate this, the report recommended that the cap on full-time sub-degree places should be lifted immediately, while the cap on full-time undergraduate places should be lifted more gradually (NCIHE, 1997).

**Focus point 10. The development of higher technical education in Scotland – Scottish higher nationals**

In the surge of growth across the UK in higher education in the late 1980s and early 1990s, the Scottish experience was distinctive. In Scotland, the most rapid growth took place in the further education colleges. Scottish two-year HNDs and one-year HNCs (both also available part-time) are different from their English counterparts, and are funded as 'advanced' further education. From 1992, the Scottish Office took over responsibility for the colleges from local authorities, but continued to support the HNC and HND. In 1994, Scotland had more than a quarter of higher education students in further education colleges. While many of the students were part-time, more recent years have seen growth in full-time 'higher national' students in further education colleges. Scotland chose not to adopt the Foundation Degree, and did not therefore experience, as in England, a process of Foundation Degrees displacing, or partially displacing, HNDs (which was in fact the explicit policy intention) (Parry, 2015). Further education colleges in Scotland also appear to have been successful in attracting a more diverse, and sometimes disadvantaged population of entrants to higher education (Parry, 2005). While some higher nationals are standalone, many students – particularly in some programmes such as business and computing – continue on into university bachelor's programmes. But recent research shows that 40% of those progressing receive no credit at all for their higher national qualifications (Commissioner for Fair Access, 2017).

***Dearing argued that this would help to widen participation in higher education***

The Dearing report identified 'widening participation' as a key policy goal in higher education, and recognised the contribution which HTE might make to that end, both by providing job-relevant training to those less suited to bachelor's degrees, and by offering a route that could involve transition to a full bachelor's degree. So Dearing recommended "that future funding arrangements recognise the distinctive mission of further education colleges in offering sub-degree higher education, which

is accessible locally. We believe that these recommendations will be fundamental to widening participation in higher education". This strand of thinking, linking HTE to an equity objective, as well as meeting needs in the labour market for technical training, was actively pursued by government in the years following the Dearing report, and came, for example, to be embodied in HEFCE's policy principles for higher education in further education colleges (see Focus point 11).

#### **Focus point 11. Higher education in further education: a new policy focus for HTE**

1. In 2006 HEFCE proposed a policy framework for higher education in further education (HEFCE, 2006). Five objectives were proposed (Greenwood, 2010).
2. Development of higher level skills and on engaging employers closely and directly.
3. A focus on the needs of local and regional communities.
4. That learners will be drawn from groups which are under-represented in HE overall.
5. That HE in FE Colleges will generally focus on dynamic, flexible 'short cycle' provision (typically the equivalent of two years or fewer of full-time study) delivered in a variety of modes, including work-based learning.
6. That all HE students should benefit from a high-quality learning experience, supported by a scholarship, that meets their needs and the needs of the economy and society, and which provides the opportunity of successful participation in HE to all who can benefit from it.

#### ***The Learning and Skills Council was established***

The 1999 White Paper (Department for Education and Employment, 1999) which followed the Dearing report, under a new Labour government, also set out plans to establish a Learning and Skills Council (later embodied in the Learning and Skills Act, 2000) which would take funding and management responsibility for most post-16 education outside higher education. It also proposed the creation of Individual Learner Accounts (which would quickly fall by the wayside following problems with fraud). But much of the emphasis of this White Paper and other Departmental initiatives at this time fell on improving basic skills in both schools and in the adult population.

#### **THE STORY OF FOUNDATION DEGREES - A NEW ATTEMPT TO DRIVE HTE GROWTH**

##### ***Weak growth in HTE, and a new expansion target, led to the creation of the Foundation Degree***

Despite the Dearing intention to concentrate expansion on HTE, and various incentive measures, including priority given to colleges in the allocation of funded places, the redefinition of the HNC as prescribed higher education, the desired growth in the numbers of students pursuing HTE (in the form of HNC and HND) did not materialise (Parry, Saraswat and Thompson, 2017). Additionally, there was a concern that progression and credit transfer from HNC and HND to a bachelor's degree was not as smooth as it should be. Tony Blair's announcement of a new target,



that 50% of young people should enter higher education (Blair, 1999), therefore renewed the pressure to find an effective vehicle for higher education growth. The Dearing inquiry had considered a proposal for associate degrees (similar to Foundation Degrees), but rejected it on the grounds that it would become a 'second-class' qualification of little interest to employers (NCIHE, 1997, paragraph 10.29). This view was now set aside in a new attempt to expand HE provision below bachelor's level, in the shape of the Foundation Degree, announced in 2000.

***Foundation Degrees were intended to become the standard two-year HTE qualification***

Foundation Degrees are a two-year programme if full-time. A 2003 White Paper (Department for Education and Skills, 2003) argued that they should become the standard two-year qualification, and that they should be both a free-standing work-related qualification and an avenue of progression, reflecting labour market demand:

*There is good evidence to suggest that the skills gap is most acute at a level that is served well by what has traditionally been termed 'sub-degree' provision – two-year provision that is work-focused. The National Skills Task Force reported that jobs at the associate professional and higher technician level will experience the greatest growth in the coming years, increasing by 790,000 up to 2010. The Employer Skills Survey 2002 found that associate professional occupations were a 'hot-spot' for skills shortage vacancies (Department for Education and Skills, 2003a).*

***The government Skills Strategy also argued that there was a lack of intermediate skills***

The government's Skills Strategy (Department for Education and Skills, 2003b) similarly argued that the biggest gaps in skills lay at intermediate level, and referred to analysis by the NIESR, showing that in the UK just over one quarter (28%) of the workforce had 'intermediate' skills, (defined as "more than general schooling but below degree level"). The comparable figure for France was over half, and for Germany nearly two thirds (O'Mahony and De Boer, 2002). In fact, the Skills Strategy went on to focus its concern on level 2 and 3 rather than higher levels, but in principle at least, the argument of the Skills Strategy supported the development of the Foundation Degree.

***Enrolments in Foundation Degrees increased rapidly, then fell after bachelor's degree caps were lifted***

Initially, Foundation Degrees were supported by a funding premium, so that HEFCE offered providers an extra 10% funding per student, relative to other undergraduate provision. Caps on funded places for bachelor's programmes also acted to funnel students into Foundation Degrees. In addition some ad hoc development funds were made available by HEFCE to support the development of the qualifications through partnerships with employers (Parry, Blackie and Thompson, 2006; Foundation Degree Task Force, 2004). Foundation Degrees developed rapidly, but often simply because the funding premium attached to Foundation Degrees meant that HE institutions converted HND programmes into Foundation Degrees. In 2011/12, the number of Foundation Degree students in England reached 70,000. In the same year, the number of students studying HNCs and HNDs in England had fallen to 13,000, less than one quarter of its level in 1996/97. About half of those acquiring Foundation Degrees proceeded to a bachelor's level degree (Parry, 2015). Later on, when student number controls were dropped, HEIs responded by recruiting more students directly onto first degrees, rather than on to Foundation Degrees which were very often no more than a stepping stone to first degrees (Kelly, 2015). Wolf (2015) shows how Foundation

Degree student numbers initially rose sharply, peaking in 2008-09, but then with the cap on bachelor's degrees removed, numbers fell back rapidly. As caps on bachelor's degree numbers in individual HE institutions were removed, those institutions saw less reason to collaborate with FE colleges to offer Foundation Degrees.

### THE LEITCH REVIEW

#### ***The Leitch review argued for more investment in 'intermediate' level skills***

The Leitch review, published in 2006, once more pointed to the weakness of the UK in skills at 'intermediate' level by international standards. It therefore proposed new targets to increase the percentage of adults qualified to level 3, and that the percentage of adults qualified at level 4 and above should increase from 29% to 40% by 2020. While it did not propose specific targets for level 4 and 5, it noted that the target of 50% participation in higher education for young people was one means to that end, while also commenting that the 50% target "tends to prioritise first full degrees and traditional undergraduate study, where funding levels are higher; ahead of part-time opportunities for employees and more focused high skills courses that reflect the needs of employers" (Leitch, 2006, paragraph 3.55). Leitch also reiterated the view that expansion in higher education should not involve more of the same, but instead, "provision should be based on new types of programme offering specific, job-related skills such as Foundation Degrees" (Leitch, 2006, paragraph 3.56). Leitch also argued that much of the required growth would have to come from upskilling adults, backed by employer engagement, and therefore recommended readjustment of HEFCE funding to respond more directly to employer needs (Leitch, 2006, paragraph 4.19) and to encourage employers to invest more in high skills (Leitch, 2006, paragraph 5.74).

#### ***But budgetary constraints meant this was not implemented in subsequent legislation***

However, the Leitch emphasis on the need for provision to upskill adults through HTE was not effectively realised. The subsequent Education and Skills Act, 2008, set out a duty on the Learning and Skills Council to fund, for adults aged 19-24, their first level 3 qualification, but was silent on level 4 and 5. This was a natural response in managing a limited budget, but the effect was that any level 4 or 5 provision that was not prescribed higher education and therefore fundable through HEFCE, would fall through the gap, and often not be funded (Education and Skills Act, Explanatory Notes, 2008). The financial crisis of 2008 had already cast its long shadow over policy on HTE, and the climate of financial austerity which it brought in its train would have a major influence on subsequent policy.

## 1.5 SINCE THE FINANCIAL CRISIS: MULTIPLE INITIATIVES AND A COLLAPSE IN PART-TIME HIGHER EDUCATION

This chapter describes the extensive sequence of initiatives bearing on HTE in the last decade. These include substantial increases in fees for higher education, advanced learner loans, and more recently, the Sainsbury review and the Post-16 Skills Plan. A steep decline in part-time students has had large effects on HTE. The rapid development of level 4 and 5 apprenticeships – and more recently degree apprenticeships – is described. Most recently, the Level 4-5 Review and the Review of Post-18 Education and Funding were launched.

### AN ACCELERATION OF POLICY INITIATIVES

#### *There has been a sequence of initiatives*

The decade since the financial crisis has seen a continuous sequence of initiatives bearing on HTE. The 2010 Browne review led to an increase in higher education fees to levels near cost-recovery, with part-time students granted access to loans to cover their higher fees. Advanced learner loans, designed to cover tuition fees, were more limited at first but then extended in 2016 to those aged 19 and older studying at level 3-6. In 2011, a system of loans for FE fundable qualifications was introduced, initially for students over 24 undertaking non-prescribed level 4 and 5 qualifications and subsequently extended to all those over 19. Further changes in qualifications frameworks were introduced. In 2016, the Sainsbury report was issued, with its proposals accepted by the government in the shape of the Post-16 Skills Plan (Department of Business, Innovation and Skills and Department of Education, 2016). Changes in funding rules have also allowed the development of private for-profit 'alternative' providers of higher education. FE colleges, subject to approval, have been granted powers to develop and award their own taught degrees, without having to work with a university (so far, relatively few colleges have pursued this option). The environment was also shaped by radical changes in the apprenticeship system, with a new framework of apprenticeship standards: from 2017 a levy on employers to support apprenticeships, and a new emphasis on higher level apprenticeships, including at level 4 and 5, and degree apprenticeships. Higher education reforms have included the merger of HEFCE and Office for Fair Access into the new Office for Students. Most recently, the Review of Post-18 Education and Funding has been launched, with a clear brief to address the needs of HTE (discussed further below). These are just some of the relevant initiatives, with the collective effect being to create both a complex and changing environment for HTE. (The issue of policy churn, and its impact on HTE, is discussed further in the conclusion to this report).

#### *A sequence of policy decisions have squeezed higher technical education*

Wolf (2015) explored the development of funding for both higher and further education over the previous decade and a half. She shows that funding levels for the further education sector, funding for adult skills, and funding for higher technical education have all been sharply constrained, while funding levels for many parts of higher education have been very healthy. On adult skills, she argues that spending per head of the population aged 20-60 in England and Wales peaked at over £140 in 2009-10, before falling to half that figure in 2015-16. On similar grounds, Porter and

Simons (2015) argue that the more than £500 million HEFCE funding for 'widening participation' should be shifted to the further education sector. Wolf's conclusion is that HTE has been financially squeezed in a way that is damaging and unnecessary:

*The current situation is financially unsustainable. It is deeply inegalitarian in its allocation of resources. It is also inefficient and bad for the 'human capital development', which increasingly drives and justifies education policy. In post-19 education, we are producing vanishingly small numbers of higher technician level qualifications, while massively increasing the output of generalist bachelor's degrees and low-level vocational qualifications. We are doing so because of the financial incentives and administrative structures that governments themselves have created, not because of labour market demand, and the imbalance looks set to worsen yet further (Wolf, 2015).*

### **Focus point 12. The emergence and growth of private providers of higher education**

Recent government policy has allowed students studying at private providers in higher education to apply for student support on the same basis as other students. This has permitted growth in the private sector. Wolf (2015) argues that these providers expanded substantially between 2011-12 and 2013-14 by providing HNDs in a context where there was a cap on the number of HE places requiring fees of £9,000 a year, but no such cap on the provision of places at £6,000. Until recently HE providers not in receipt of 'direct' public funding were not required to make data returns (Callender and Thompson, 2018). However, a survey of private providers of higher education in the UK identified nearly 700 private providers with around 160,000 students studying at higher education level. Nearly half were international students, mostly from outside the EU. The majority were studying business, management and law, but there were many small providers offering 'niche' provision in just one field. Most of the students are adults, and around 60% of the students were studying full-time. Slightly less than one third of the higher education students were studying at level 4 and 5 – the vast majority pursuing HNC/Ds and diplomas and certificates in HE, with relatively few pursuing Foundation Degrees and other qualifications. Remarkably, 70% of the private providers were based in London and South East England. Most are for-profit, and very often they are newly established. Most are subject to some form of quality assurance or accreditation (BIS, 2013, 2016; Parry, 2015). There are three broad types of private providers.

- Campuses or branches of foreign universities, particularly some American universities.
- Several bodies granted degree awarding powers under the Higher Education Act 2004. Some, including the University of Buckingham, are not-for-profit. One, BPP Ltd., is a for-profit company.
- Colleges validated by UK HEIs to award their degrees (or offering the university's franchised programmes).

The NAO (2017) has been concerned that private providers may not be adequately monitored, and public money wasted. Middlehurst and Fielden (2017), drawing on experience in the US and Australia, sound a warning against allowing private HE providers, subject to weak regulation, access to government funding.

***One response to the funding challenge is through advanced learner loans***

Advanced learner loans are designed to cover, or partly cover, tuition fees. Initially they were restricted to those studying at level 3 and 4 and over 24, but from August 2016 they were extended to those studying at level 3-6, and all those aged 19 and older, studying at an approved provider (see UK government, no date). Such providers now include some private providers (see Focus point 12). There is no credit check or means test. Repayments of the loans follow the same rules as other higher education student loans, with repayment through the income tax system. Most loans are for level 3 study. In 2016-17, there were slightly over 9,000 learners with loans for studies at level 4 and above, and 110,000 at lower levels (Department for Education, 2017c). A further opportunity to address the funding challenge will come through the Review of Post-18 Education and Funding, discussed further below.

**A RAPID FALL IN PART-TIME HIGHER EDUCATION**

***The precipitous decline in part-time students was a surprise***

One of the biggest events in the last decade was largely unforeseen and certainly unplanned, namely the rapid decline in part-time higher education. The number of part-time undergraduate students in England halved between 2008/09 and 2015/16 (Hubble and Bolton, 2018). Within this total, the decline in part-time level 4 and 5 numbers was even sharper. Across the UK as a whole, the number of part-time first year undergraduates in Foundation Degree programmes in 2016/17 was less than one third of the equivalent figure in 2009/10, and a similar collapse was evident for 'other' undergraduate programmes. First degree and postgraduate part-timers declined much less (Hubble and Bolton, 2018).

***This decline is having a big impact on HTE***

Decline in part-timers has only a marginal impact on total bachelor's level provision, given that in 2014/15 in England, part-timers represented less than 7% of total bachelor enrolments. But it has a massive impact on level 4 and 5 enrolments, three quarters of which were part-timers in the same year (Table 4.5 in Parry, Saraswat and Thompson, 2017). In effect therefore, the collapse in part-time numbers implies a collapse in HTE participation and graduation overall.

***There are multiple causes of the decline in part-timers***

The reasons for the collapse in part-time numbers have been extensively researched. Factors cited (see Hubble and Bolton, 2018) include:

- Although increased fees for part-time students have been balanced by the introduction of loans for part-timers, as many as two thirds of part-time students do not qualify for loans, in most cases because they already have a higher qualification (from 2008/9, funding was removed from students who already had equivalent or higher qualifications).

- Many part-time students are older, and are more reluctant to take on loans.
- Employer support for part-time students has fallen significantly. Declining public sector employment and austerity measures have reduced training budgets in the public sector.

***Maintenance loans for part-time students are intended to stem the decline***

The government response has been to introduce maintenance loans for part-time students, that from 2019/20 are expected to be available to part-time students studying at level 4 and 5 (subject to any changes arising from the Review of Post-18 Education and Funding). This is specifically designed to arrest the decline in part-time level 4 and 5 numbers (Department for Education, 2017d). The post-18 review now under way will further address this issue.

**MORE RECENT POLICY INITIATIVES**

***Apprenticeships at level 4 and 5 have grown fast***

Apprenticeships at level 4 and 5 have only existed since 2006/7. Since then they have grown fast, so that in 2015/16 there were around 40,000 apprentices studying at this level (Powell, 2018, and Table 2). Level 4 and 5 apprenticeships have some positive characteristics that set them apart from many other level 4 and 5 qualifications in England. First, they are not dependent for their existence on higher education institutions. Second, they are closely dependent on employers, both in their development in Trailblazer groups, and for their implementation. Third, they have a new funding mechanism in the apprenticeship levy. They are not formally part of the current Level 4-5 Review, but these considerations suggest that they are an extremely relevant context.

***Apprenticeship standards would also support HTE qualifications with broader functions***

Moreover, level 4 and 5 apprenticeship standards are, potentially, more than just apprenticeships. Kuczera and Field (2018) and Field (2018) have argued that, if England is to follow the model of nearly all other apprenticeship countries, apprenticeship standards should lead to a separately designated qualification. Again following the model of other countries, and filling a gap in current provision, it should be possible to obtain qualifications through non-apprenticeship routes of preparation leading to end-point assessments. This would open up the possibility of level 4 and 5 qualifications, created through the apprenticeship standards, as part of the range of HTE qualifications. This could establish an organising principle for all level 4 and 5 qualifications, backed by employers, and by levy funding. It could form the nucleus of a level 4 and 5 professional examination system, on the model of the highly successful systems of higher VET examinations in the dual system countries, for example in Switzerland (see Part 2 of this report).

***Degree apprenticeships may come to compete with level 4 and 5 apprenticeships***

Other apprenticeship reforms, including the creation of the apprenticeship levy, and the development of apprenticeship standards to replace frameworks, may bear on further growth in ways which at present are hard to predict. Degree apprenticeships (at level 6 and above) are certain to grow fast, as they offer a means for larger employers to replace expensive sponsored degrees and graduate recruitment schemes with degree apprenticeship schemes, which will be much cheaper for employers as they are funded through the apprenticeship levy (Kuczera and Field, 2018). Higher education institutions appear to be embracing degree apprenticeships enthusiastically, and they may therefore come to compete strongly with level 4 and 5 apprenticeships.

***The background to the current review of level 4 and 5 is the Sainsbury review and the Post-16 Skills Plan***

The Post-16 Skills Plan (Departments for Business Innovation and Skills and for Education, 2016) sets out proposals for implementing the findings of the Sainsbury review (Independent Panel on Technical Education, 2016). It proposed that young people pursuing technical education should have two main pathways, first a work-based pathway, primarily apprenticeship, and second a school-based pathway, which would yield a new 'T-level' qualification. There would be 15 substantive routes available covering different economic sectors. This implies a drastic simplification of the qualifications landscape, the principle being that for every group of similar occupations or career there would be only one qualification, identified by industry sector professionals. This would sweep away the old system of competing qualifications offered by multiple awarding bodies, even in the same occupational domain. Similar principles would be applied to level 4 and 5. The proposal is that the Institute for Apprenticeships should identify the level 4 and 5 qualifications that have industry support, and only these should receive public subsidy. Clear progression routes to level 6 and above are also necessary.

***The post-18 review appears designed to address the challenge of the 'missing middle'***

In 2018, the government launched the Review of Post-18 Education and Funding. The terms of reference make clear that the objective is to arrive at a 'joined-up' system of funding that will address higher and further education at different levels in a coherent way. It also indicates that many of the challenges described in this report are recognised and should be addressed by the review. Thus:

*This review will look further at how we can ensure our post-18 education system is joined up and supported by a funding system that works for students and taxpayers. For example in recent years the system has encouraged growth in three-year degrees for 18 year-olds, but does not offer a comprehensive range of high quality alternative routes for the many young people who pursue a technical or vocational path at this age. The majority of universities charge the maximum possible fees for at least some of their courses and three-year courses remain the norm. Average levels of graduate debt have increased, but this has not always led to higher wage returns for all graduates. And the system does not comprehensively deliver the advanced technical skills that our economy needs (Department for Education, 2018).*

## PART 2 COMPARING HIGHER TECHNICAL EDUCATION ACROSS COUNTRIES

In this part of the report, different country systems of HTE are compared. Chapter 2.1 looks at some of the main data comparisons across countries, and examines the size of the HTE sector relative to other countries. Chapter 2.2 examines some of the main forms and functions of HTE systems. It identifies three main functions of HTE, and describes some varieties of HTE, including two-year and shorter programmes, professional examinations that do not require fixed periods of study, and programmes that straddle the divide between upper secondary and post-secondary education and training. Chapter 2.3 explores some of the key policy issues and challenges in developing effective HTE systems and how they are being addressed in other countries. The challenges include that of how to provide a secure institutional and funding base for HTE, how to respond to labour market needs, and how to ensure equity and quality in the programmes delivered.

Country examples are presented in boxes at relevant points throughout this part of the report. Specific policy pointers, emerging from the international evidence, are identified as they arise.



## 2.1 COMPARATIVE INTERNATIONAL DATA

This chapter looks at the comparative international data on higher technical education. It first explores some of the methodological challenges in using the internationally standardised ISCED levels. The data show that by most international tests, England has a relatively small HTE sector. Other indicators suggest that the profile of HTE students in terms of age and gender is not unusual by international standards.

### DATA DEFINITIONS

#### ***Level 4 and 5 in England is mapped to ISCED (2011) level 5***

Comparing level 4 and 5 in England with similar programmes in other countries requires reference to the 'ISCED' (International Standard Classification of Education) qualifications framework used by OECD, UNESCO and other international organisations involved in statistical comparisons. The current version of ISCED is ISCED 2011, which supersedes ISCED 1997, but in practice ISCED 2011 has only been implemented in the last few years, so the data definitions are still relatively new, and do not usually allow for much time trend analysis. As with other countries, the ISCED mapping for the UK is agreed between the international agencies and the UK authorities, but in practice it is the national authorities that take the lead in associating national qualifications to particular ISCED levels. ISCED assigns most English qualifications at level 4 and 5 (including Foundation Degrees, HNDs and HNCs, the diploma in higher education and NVQs at level 4 and 5) to ISCED (2011) level 5, described as 'short cycle tertiary education'. No English qualifications are assigned to ISCED level 4 ('post-secondary non-tertiary education').

#### ***In this report, HTE programmes in England are compared with ISCED level 4 and 5 in other countries***

The criteria for ISCED 2011 describe ISCED level 5 programmes as typically lasting between two and three years, while ISCED level 4 programmes are from six months to two or three years (full-time). The guidance is specific: "ISCED level 5 has a minimum duration of two years" (UNESCO, 2012). This suggests that the assignment of HNCs, which are normally one year full-time, and NVQ level 4s to ISCED level 5 is questionable. One implication is that English level 4 and 5 can reasonably be compared with ISCED level 4 and 5 in other countries, rather than just ISCED level 5. This is an important point, because some other countries assign most of their 'shorter' post-secondary programmes to level 4 in ISCED (recognising that there is some discretion involved in these criteria). Germany, for example, identifies nearly all its 'short' post-secondary programme students (totalling half a million) as being level 4, with almost none at level 5. Similarly, Australia reports nearly three quarters of a million students studying at level 4. Comparison with the European Qualifications Framework (EQF) is simpler: English level 4 and 5 (in the RQF) can be associated with level 5 in the EQF (Qualifications and Curriculum Development Agency, 2009).

***In England, and in other countries, not all HTE is reported in national statistics***

In many countries, some types of largely private sector education and training programmes and qualifications are relatively unregulated, and therefore not reported in regular national, and therefore international data collections. Professional certifications, organised by individual professions independent of government, may sometimes have this quality. For example in the United States, a special 2012 survey suggested that as many as 65 million adults have ‘certifications’ or ‘licenses to practice’ – qualifications which are important but which are not routinely included in national data (Kuczera and Field, 2013). The official figures of other countries may be underestimates for similar reasons. In England, administrative data are collected in further and higher education institutions in the public sector; but has not been routinely collected in private providers, except in respect of publicly supported provision. The most recent data collections have sought to rectify this, with fuller data from alternative providers collected by HESA. The data in Table 1 in the introduction to this report includes data from alternative providers – representing about 15% of the enrolled population of students studying for level 4 and 5, around 30,000 students in 2015/16 (Boniface, Whalley and Goodwin, 2018).

***The data used are from the OECD’s education database***

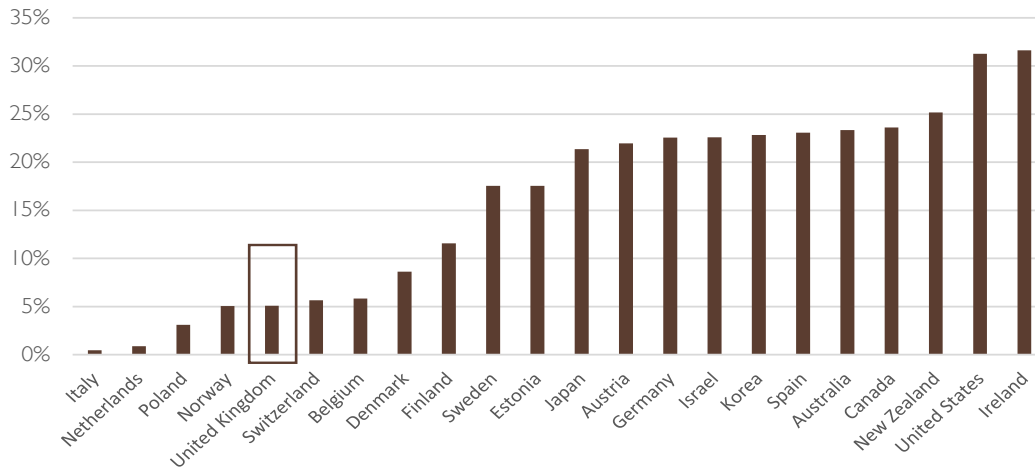
The comparative data used in this report come from the online OECD database of educational statistics, which collates data returns from a wide range of OECD and non-OECD countries, including the UK. For the UK, these figures are provided by the statistical agencies of England, Scotland, Wales and Northern Ireland working together. The comparisons are therefore for the UK rather than for England only. England includes 84% of the population of the UK, and as Scotland, and to some extent Northern Ireland, have proportionately rather more people studying at level 4 and 5 than England (see Country example 1), the net effect will be that the UK figures for the relative scale of HTE quoted here (in Figures 2-4) will be very slightly higher than those for England.

***The comparisons omit some smaller countries***

The statistical comparisons made in this report are with OECD countries, including all the countries in the study listed above as prime targets, but omitting some of the smaller countries, and some countries, such as Latin American countries, where country circumstances are so different as to make the comparison with the UK and England less relevant. The countries omitted were Chile, Czech Republic, Greece, Hungary, Iceland, Latvia, Luxembourg, Mexico, Portugal, Slovak Republic, Slovenia and Turkey. Data from all other OECD countries were included where they were available (recognising that there are a number of gaps in the data). This means that the comparisons include all the countries initially selected for the study (where data are available), plus Finland, Ireland, Italy, Japan, Poland, Norway, New Zealand and Spain.

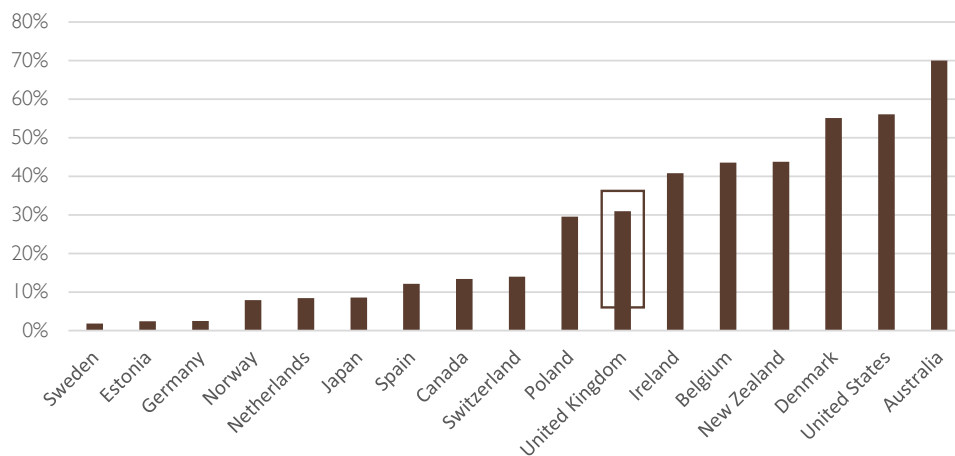
### COMPARING THE SCALE OF THE HTE SECTOR IN DIFFERENT COUNTRIES

**Figure 2. In the UK, HTE students are only 5 per cent of all full-timers**  
 Full-time students at ISCED level 4 and 5 as a percentage of full-time post-secondary students (at ISCED level 4-8). 2015.



Source: OECD education database (no date). Comparator countries where data were available. Author's calculations.

**Figure 3. In the UK, just under one third of part-time students are in HTE programmes**  
 Part-time students at ISCED level 4 and 5 as a percentage of all part-time post-secondary students at level 4-8. 2015.



Source: OECD education database (no date). Comparator countries where data were available. Author's calculations.

***In the UK a smaller proportion of full-time students study at HTE level than in many other countries***

Figures 2 and 3 report the number of people enrolled in HTE programmes at ISCED level 4 and 5 as a proportion of all enrolled post-secondary students (at level 4-8, thus including postgraduates). Only 5% of full-time students study at HTE level in the UK, less than in most other countries. Among part-time students, the UK proportion is less of an outlier. In 2015, just under one third of part-time students in the UK were in HTE programmes.

***England has relatively few graduates with HTE qualifications per head of population***

Figure 4 shows the annual number of people graduating from HTE relative to the size of the population in different countries (rather than relative to other sectors of higher education, as in Figures 1 and 2). It therefore covers both part-time and full-time programmes. The UK graduates relatively few people with HTE qualifications for a country with the UK's population. Other countries, and particularly the other English-speaking countries, graduate several times as many, taking account of their population size. When the analysis was repeated for level 5 only, omitting all level 4 graduates, the other English-speaking countries were still reporting graduation rates three or four times the level of the UK. Given that Scotland and Northern Ireland have a relatively larger HTE sector than England (see Country example 1), comparisons with England only would show an even larger disparity.

***Historically, a relative decline in HTE in England partly explains these findings***

The data in Figure 4 should be treated cautiously. A number of countries were omitted because of absent data, and these could include countries with very little HTE provision. But the main finding of a relatively small HTE sector in England is supported by another dataset. OECD (2014) used the 2012 Survey of Adult Skills to identify those with HTE as their highest qualification, using a field of study marker to exclude those with more academic and less technical qualifications (see Figure 5). These data show smaller differences between England and other countries, probably partly because the data reflect older patterns of participation (with 45 year-olds in 2012 having gained their qualifications as early as the late 1980s). These data also depend on the previous versions of ISCED, and so are not exactly comparable. But the main finding is clear: relative to other countries, HTE is a small sector in England.

**Country example 1. Scotland and Northern Ireland**

In **Scotland** in 2014/15, 18% of all full-time higher education students were studying at sub-bachelor level; the comparable figure for England was 4% (Parry, Saraswat and Thompson, 2017, table 3.6). In Scotland, nearly three quarters of enrolled students were studying in FE colleges, compared with only 42% in England in 2014/15. More than half of enrolled sub-bachelor students in Scotland were studying full-time, compared to around one quarter in England. The main qualifications involved are the Scottish HNC and HND, which, unlike their English counterparts, have been consistently owned by the public sector, through the Scottish Qualifications Authority. The HNC in Scotland, unlike in England, is usually delivered full-time and in Scotland there are no Foundation Degrees to compete with HNCs and HNDs. Around half of sub-bachelor students in Scotland, or just over 40,000 students, were studying for HNCs and HNDs in 2009/10 (Parry,

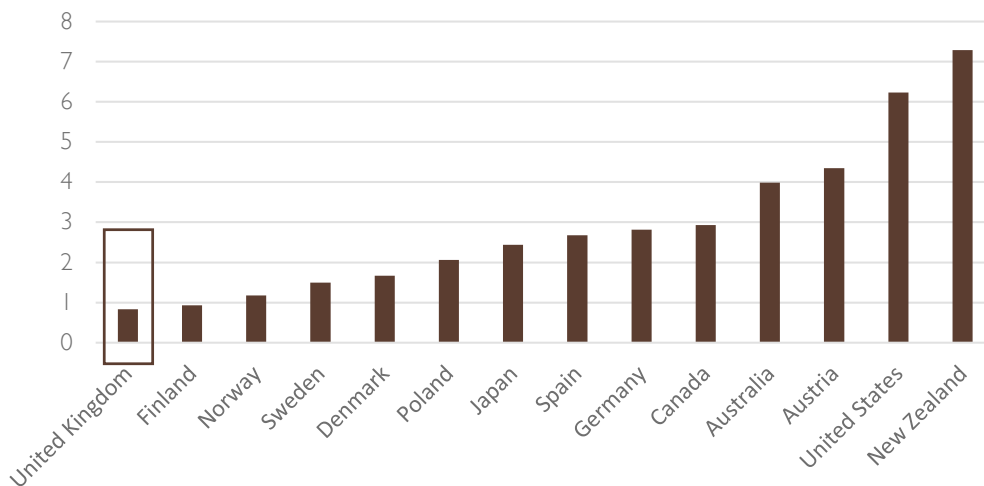
Saraswat and Thompson, 2017). Further education colleges in Scotland also appear to have been successful in attracting a more diverse, and sometimes disadvantaged population of entrants to higher education than have higher education institutions (Parry, 2005).

In **Northern Ireland** also, sub-bachelor programmes represents a larger share of provision than in England, with 11% of full-time students studying at sub-bachelor level in 2014/15. Some, but not all of this difference, reflects the fact that as many as one third of Northern Irish school leavers entering higher education travel to other parts of the UK to do so (see BBC News website, 2018), while others go to the Republic of Ireland. Given the role of sub-bachelor programmes as 'local' provision, the out-migration is likely to be strongly dominated by bachelor's level students. In Northern Ireland, like Scotland, further education colleges deliver much of the sub-bachelor provision. Most recent growth has been in part-timers. Unfortunately data are not available on the mix of programmes taught in the further education colleges (Parry, Saraswat and Thompson, 2017).

'Sub-bachelor' refers to programmes at level 4 and 5 in England, and counterparts in Scotland and Northern Ireland.

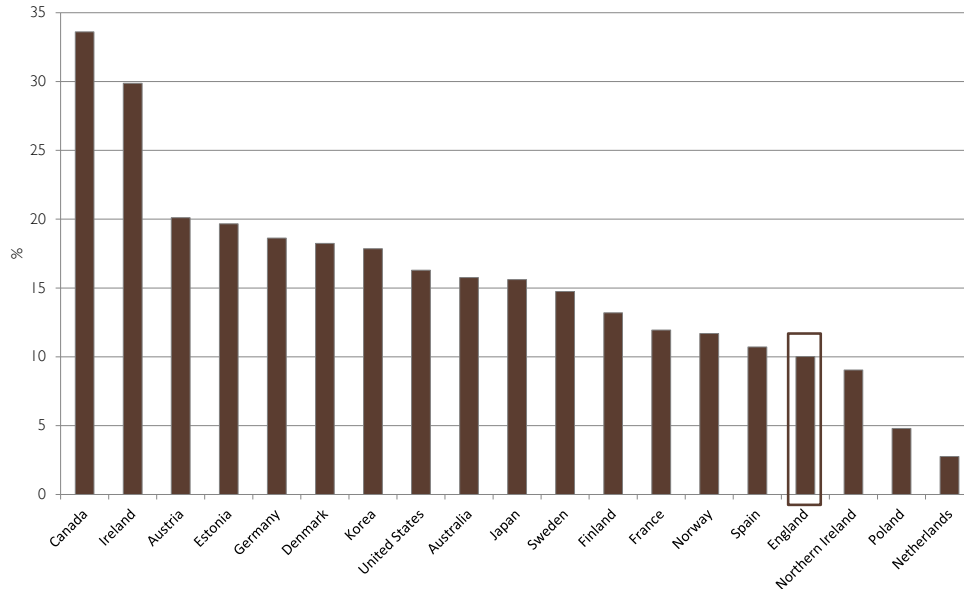
**Figure 4. The missing middle: few UK graduates from HTE programmes**

Number of people graduating in 2015 from ISCED level 4 and 5 programmes per thousand in the population.



Source: OECD education database (no date). Comparator countries where data were available. Author's calculations.

**Figure 5. By one measure, around 10 per cent of 20-45 year-olds in England have HTE qualifications**  
 Percentage of adults aged 20-45 who reported having HTE as their highest qualification in 2012.



Source: OECD Survey of Adult Skills (2012). Figure adapted from Figure 1.2 in OECD (2014).

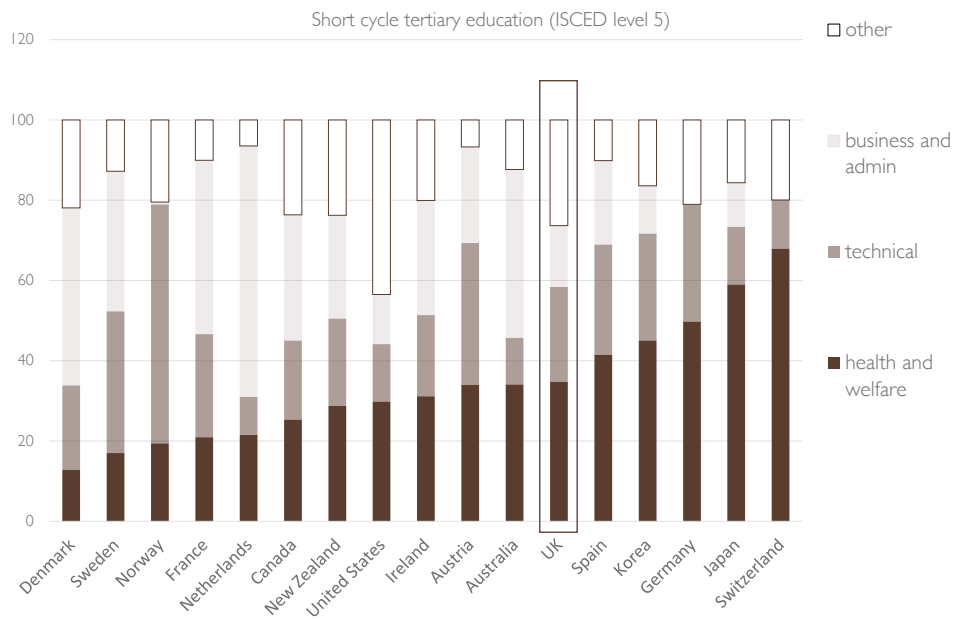
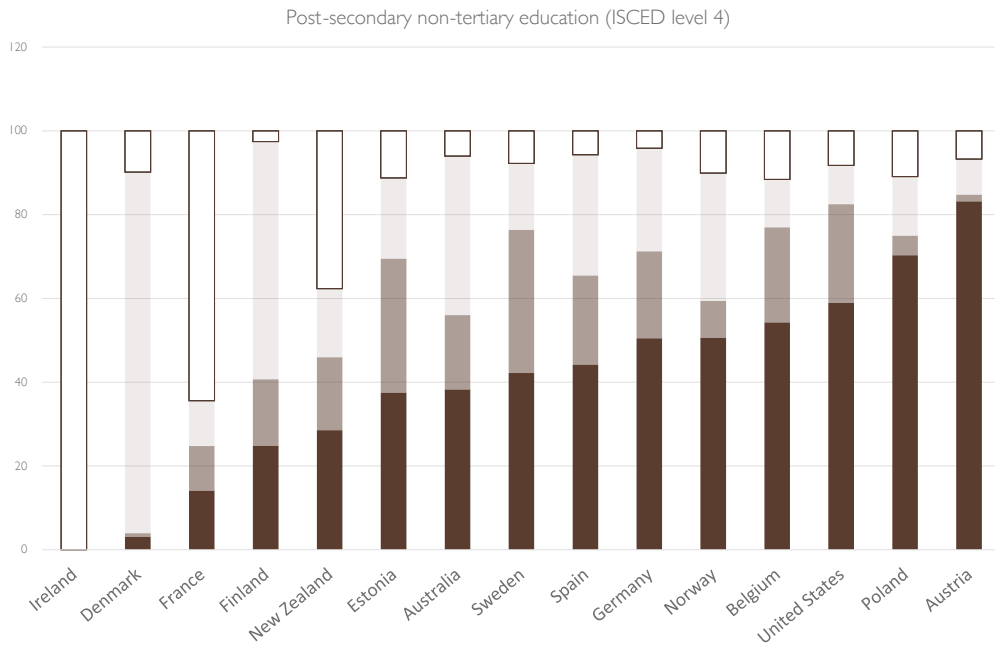
Note: HTE in this analysis is based on ISCED 1997 (since ISCED 2011 was not implemented at the time of the Survey). HTE is identified as qualifications at level 4 and 5B in ISCED 1997 with fields of study identified as being technical (see Box 1.4 in OECD (2014)).

## DATA ON SECTORAL MIX, AGE AND GENDER

### *The health and welfare sector is important in UK HTE programmes*

The sectoral and occupational mix in HTE systems depends on history and function. Some programmes map onto the apprentice occupations for which they offer higher level training. Sometimes the sectoral focus of HTE is guided by occupational licensing arrangements – for example in healthcare professions, or in industrial sectors like aviation with tight safety requirements. Most HTE systems therefore have a sectoral bias. Figure 6 illustrates the sectoral mix of HTE programmes in different countries (showing all the countries in the selected group as described in Chapter 1 for which data were available). In the UK, as in many other countries, the health and welfare sector is very important. But in some countries, notably Denmark, France, the Netherlands and Australia, business and administrative programmes dominate level 5 programmes.

**Figure 6. Those who graduated from HTE programmes in 2015. Percentage distribution between different fields of study**



Source: OECD education database (no date). Author's calculations. Comparator countries where data were available. Since the UK reports no programmes at ISCED level 4, the UK is not included in the data for level 4. The data are grouped as follows in the database:

'Other' includes generic programmes, arts and humanities, agriculture, fisheries and veterinary sciences.

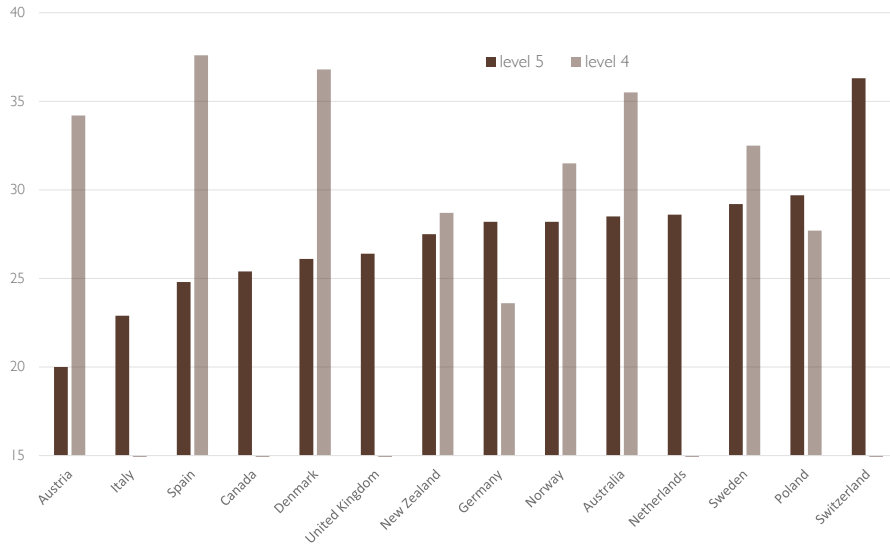
'Business and admin' includes business, administration and law.

'Technical' includes engineering manufacturing and construction, ICT, science and mathematics.

'Health and welfare' includes health, welfare, education and services.

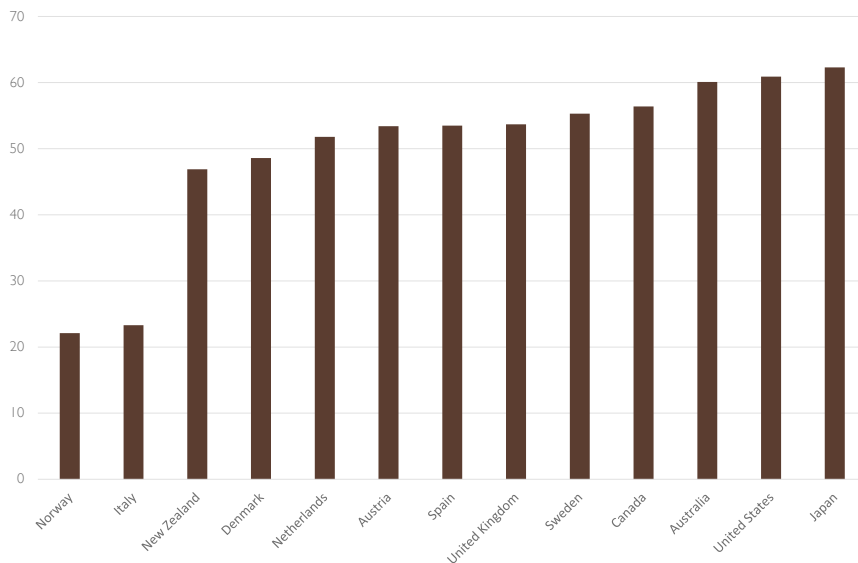
**Some further data on the characteristics of HTE graduates are given in Figures 7 and 8**  
 In England and many other countries, people graduate from level 5 programmes in their mid-20s (see Figure 7). In most countries, men and women are roughly equally represented (see Figure 8), but this varies markedly by field of study.

**Figure 7. On average, students graduate from HTE programmes in their mid-twenties**  
 Average age of graduation from ISCED level 4 and 5 programmes in 2015.



Source: OECD education database (no date). Comparator countries where data were available.

**Figure 8. In the UK, men and women are roughly equally represented among level 5 graduates**  
 2015 graduates at ISCED level 5 (short cycle tertiary education). Percentage of women.



Source: OECD education database (no date). Comparator countries where data were available in sufficient quantity.



## 2.2 THE FORMS AND FUNCTIONS OF HIGHER TECHNICAL EDUCATION

This chapter looks at the characteristics of HTE programmes across countries, starting with the different functions of HTE in terms of learning and career outcomes, and how these might fit into a learning career. It then examines some of the main types of programme: those defined by programme length, and those not defined by length, and some less common or more innovative forms of HTE. Some policy implications for England are identified.

### **DISTINCTIONS BY FUNCTION**

#### ***Three main functions of HTE can be identified***

There are three main potential functions of HTE, in terms of learning objectives and outcomes. Many programmes serve more than one function:

- as a direct route to a job;
- as a step towards more advanced education and training;
- as a means of upskilling or reskilling for adults who are already in work, and already have some technical skills or training.

#### ***First, it can be a direct route to a job***

The first and most obvious function of HTE is to prepare people for particular jobs and careers, with the expectation that graduates will exit programmes directly into those jobs. In England, during the early post-war period, this was the dominant role of provision, reflecting, for example, the origins of the 'national certificate' qualifications in links with professional bodies, such as the Institute for Engineers, and in which the qualification provided a direct route into membership of relevant professional bodies (see Focus point 2). In countries with more limited vocational provision at upper secondary level, the role of HTE is often to provide this type of training to young adults without extensive training or experience in their fields of study. For example in the United States, many entrants into nursing and paramedical professions will do so following two-year associate degree programmes.

#### ***Second, HTE can provide a step towards more advanced education and training***

Graduates of HTE programmes may want to pursue further studies, sometimes by continuing into a bachelor's programme in a higher education setting, sometimes through more advanced or specialised technical training in a different setting, outside higher education. Some programmes, such as Foundation Degrees in England, are marketed with such a progression function in mind as one possible outcome, while in other cases the role of HTE in supporting progression to more advanced education and training may emerge more incidentally. Sometimes graduates of level 4 and 5 programmes, wishing to enter more advanced programmes, may transfer credit, so that they may, for example, start in the second or even third year of a related (technical) bachelor's degree programme. Examples of two-year programmes which offer this articulation include programmes in TAFE (technical and further education) institutions in Australia (see Country example 14 in Chapter 2.3), Korean junior college programmes, and DUT (Diplôme universitaire de technologie) programmes in France (see Country example 2). Often institutions providing transfer programmes are more locally available than

the universities which might otherwise offer the first years of a bachelor's degree (see Country example 18), or have a less demanding entry standard. Some students may not initially be sure whether they would like to pursue a bachelor's programme, so starting in a shorter programme and keeping their options open makes sense. Sometimes, for example in US community colleges, fees may be lower than in a university. Usually, such programmes are not 'just' a means of undertaking the first part of a bachelor's degree in a cheaper and/or more convenient setting, in that they often also offer a direct route into the labour market.

### Country example 2. DUT programmes in France

Two-year 'DUT' (diplôme universitaire de technologie) programmes were launched in 1966 to provide mid-level skills and 120,000 students now study for the DUT. (They were launched just a decade after the Diplomas in Technology in England, and also reflect the desire to increase the number of well-trained technologists). They are delivered by institutions called IUTs (Instituts universitaires de technologie), which are often closely linked to a university. The DUT is divided into 25 specialised sections within the two fields of 'services' (with around 60% of students) and 'production' for the remaining 40%. 'Services' includes programmes in business, management, and information and communications technology. 'Production' includes programmes in engineering and materials science. The programmes for each DUT specialty are worked out by national pedagogical commissions including employers, practicing professionals, teaching faculty, and officials from the Ministry of Higher Education and Research. DUT programmes have to include a work placement. Around 40% of first year students obtain a work placement and 90% of those in the second year. Placements usually last less than two months in the first year, but in the second year three quarters last two months or more. Some students may also obtain their qualification through an alternance arrangement which is more like an apprenticeship, with students alternating periods of study with periods in the workplace. Students who have already completed two years of post-secondary education may sometimes earn a DUT in a single specially-organised one-year programme.

Entrance into DUT programmes is selective and the IUTs spend more per pupil than universities, so teaching conditions tend to be better and drop-out rates lower in IUTs than in general university courses. This means that students with a strong academic performance have incentives to pursue their first two years in higher education in an IUT, before transferring to a university. Three quarters of DUT graduates continue their studies on graduation (see Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation, 2017; Grelet, Romani and Timoteo, 2010).

### ***Third, HTE can provide further qualifications for those already in work***

Some programmes are designed to deepen or broaden the skills of those already possessing a technical qualification, typically at upper secondary level, often augmented by work experience. Such programmes are most common in countries with strong systems of apprenticeship and/or upper secondary technical education, as such systems yield a pool of trained workers with an interest in further upskilling or specialisation in their technical field. Sometimes these programmes are referred to in these countries (notably in Germany) as 'higher VET' to indicate their role. As

well as offering higher level technical skills in a target profession, such programmes may, for example, teach someone how to manage a team of technically trained people (see Country example 3). They may also provide entrepreneurial skills, helping trained craftspersons to successfully run their own small business, as in the 'Meister' examinations in the dual system countries (OECD, 2014).

### Country example 3. Programmes for management skills

In **Germany**, Fachschulen (trade and technical schools) offer programmes designed for those who are qualified in a technical field, and have work experience, to prepare them for management functions. The programmes are normally two years full-time or three or four years part-time. These schools are often co-located with upper secondary vocational schools and most of the teachers also teach in those schools. The programmes are state-funded and there are no tuition fees (Fazekas and Field, 2013b).

In **Romania**, the 'foreman' schools offer programmes to train experienced technicians in the management of staff and the guidance of students during work placements, as well as updating their technical skills. The programmes lead to a qualification that is often legally necessary to become self-employed and/or to start a company. Foreman schools are able to offer their own programmes based on the needs of the local employers (Musset, 2014).

## DISTINCTIONS BY PROGRAMME LENGTH

### *HTE programmes can be categorised by length*

The main distinction is between those which are approximately two years in length, if pursued full-time, and often with a strongly defined articulation with bachelor's degrees, and those which are shorter. In principle the difference between ISCED level 4 and 5 reflects this distinction, given a minimum length of two years required for ISCED level 5, although as seen in the case of the HNC, the supposed rules of the ISCED framework are not always applied. Two-year programmes, sometimes described as 'short cycle tertiary/higher education' were discussed above, under the heading of programmes with a strong role in offering continuation to a bachelor's programme (see also Country example 4).

### Country example 4. Associate degrees in Belgium-Flanders

In 2009, legislation designated some previously ill-defined two-year programmes, offered in adult education and other centres, as 'higher vocational education' leading to associate degrees at level 5 in the European Qualifications Framework. Programmes are usually pursued in centres for adult education in collaboration with university colleges. They are organised in five fields - biotechnology, health care, commercial sciences and business management, industrial sciences and technology, and social work. Every associate degree has to be based on a professional qualification, with a component of work-based learning. The programmes are required to offer guaranteed follow-up pathways into linked bachelor's degrees. One prominent example is in nursing, with around 7,000 enrolments (see The European Education Directory, no date; Musset, 2013).

**Shorter programmes (sometimes ISCED level 4) are often less than two years**

Short programmes include in England, for example, an HNC. In Sweden, the higher vocational education system includes some shorter programmes alongside the two-year programmes which are the main form of provision (Kuczera, 2013). In Israel, again alongside two-year practical engineering programmes, one-year technician programmes lead to national examinations and a diploma (Musset, Kuczera and Field, 2014). In the United States, the fastest growing sector of post-secondary education has been in short certificate programmes (see Country example 5).

**Country example 5. Certificate programmes in the United States**

In the United States, a diverse range of 'certificate' programmes are pursued in community colleges and other providers, and nearly all involve less than two years of full-time study, with many requiring less than one year. The percentage of adults reporting certificates as their highest qualification grew from 2% in 1984 to 12% in 2009. One third of certificate holders also hold other higher education qualifications. Wage returns are highly variable, but many programmes yield very good returns (Carnevale, Rose and Hanson, 2012). A more recent report from the state of Oregon, which has been particularly active in promoting certificate programmes in its community college system, illustrates good returns from these programmes. Common challenges include articulation to higher education, and quality assurance in a diverse provider market (Carnevale, Ridley and Fasules, 2018).

**PROFESSIONAL EXAMINATIONS****Professional examinations require no defined period of study**

Professional examinations may be defined as assessments delivering a technical qualification without any required programme of academic preparation. Practical working experience is sometimes expected when the function of the examinations is to certificate the skills (often augmented by training) of those already working in a technical field. While examinations are less common in England than in some countries, examples include accountancy examinations (which require individuals to pass exams and accumulate professional experience), and some of the (international) ICT certifications offered by Microsoft, Adobe and other ICT companies. Sometimes such examinations are linked to legal licensing requirements on those practising in a certain profession. As they do not require a fixed programme of study, preparation for the examination can be organised to suit the individual. Those who already have most of the knowledge and skills required to pass the examination can adopt their own tailored programme of preparation, filling in gaps in their knowledge base. This is, implicitly, recognition of prior learning, but it is a very different process from that which is pursued – say – in a university, where a programme applicant goes through a procedure to seek credit for their work experience.

**Country example 6. Professional examinations in Germany**

These examinations are typically pursued by graduates of upper secondary vocational training (such as an apprenticeship) who have some years of relevant work experience. Preparatory courses for examinations are not mandatory, but candidates almost always attend either part- or full-time courses offered by the professional organisations or private providers.

Examinations are now available, not only in engineering and craft professions, but also in agricultural, commercial, manufacturing, and service-related sectors. The 'certified senior clerk' is the most common advanced vocational examination, followed by the 'certified industrial supervisor' (Industriemeister) and the 'master of skilled trade' (Handwerkmeister). Government and industry regulations define admission requirements, examination arrangements and pass criteria. Boards of examiners include equal numbers from the employers' and the employees' side and at least one vocational school teacher (Fazekas and Field, 2013b).

***Professional examinations are found in many countries***

In Austria, Germany and Switzerland, such examinations, although industry-led and initiated, are mainly accredited by national authorities, so that they have become an assimilated part of the national skills system (see Country examples 6 and 11). Conversely, in the United States, the professional examination system is largely unregulated (Kuczera and Field, 2013).

***Developing such examinations would be advantageous in England***

It is remarkable that, well into the 21st century, so much high level education and training provision is defined not by what is learnt, but by the amount of time taken to do so. Professional examinations offer the prospect of huge efficiency gains, both by encouraging speedier and therefore more efficient learning, and by the opportunity to tailor teaching and learning to individual needs. In addition, they are national qualifications, and their development is usually led by labour market actors. They have been shown to work in countries as diverse as the United States, and Estonia (see Country example 19). They therefore represent an alternative to bachelor's programmes, with some unique selling points. In some ways, NVQs at level 4 and 5 would correspond to the model of professional examinations, but they have not developed on any scale. Chapter 1.5 has also argued that the end-point assessments of level 4 and 5 apprenticeship could be used as a foundation for such a system.

**Policy pointer 1. Professional examinations**

*Professional examinations offer the scope for substantial efficiency savings, and are used extensively in a diverse range of countries to certificate and encourage the development of higher level occupational skillsets. Such an examination system might therefore be used in England to develop HTE. This could be linked to the end-point assessments of apprenticeship standards at level 4 and 5, on the basis that these assessments, as in the apprenticeship systems of other countries, should allow direct access to the end-point assessment without going through an apprenticeship programme.*

## SPECIAL TYPES OF PROGRAMME

### *Some programmes straddle the upper secondary – post-secondary divide*

Some countries offer relatively integrated programmes of career preparation covering level 3 and 4 or 3, 4 and 5, avoiding the problem of articulation between upper secondary and post-secondary programmes. Students may therefore enter upper secondary education, and then either leave on completion of this phase with a qualification, or stay in the programme (and institution) for the post-secondary part of the programme. The clear pathway to a post-secondary qualification can make the initial entrance to a technical route at level 3 more attractive. Such programmes are not common, but are found for example in Austria and Japan (see Country example 7), and in the polytechnic system of India (Field and Guez, 2018).

#### **Country example 7. Programmes which straddle the upper secondary - post-secondary boundary**

In **Austria** around one quarter of young people, on entry to the upper secondary level, enrol in vocational colleges offering five-year programmes, with an exit point and qualification after the upper secondary phase, but also, for many students, continuing to a post-secondary qualification in a range of commercial and technical vocational subjects. Through the programme they can acquire both a vocational diploma and the Reifeprüfung that gives access to university. One in four university students, and almost half the students in universities of applied science have graduated from vocational colleges (Musset et al., 2013).

In **Japan**, about 1% of young people at around the age of 15 enter 'KOSEN' colleges of technology. These colleges provide engineering and technical education in '3+2' five-year programmes combining upper secondary and junior college education, with an optional exit route after three years. Graduates of the five-year programme are able to transfer to the third year of university engineering/science courses by taking transfer examinations or on the basis of recommendations. More than half the KOSEN graduates obtain employment immediately, while about one quarter proceed to universities, while 15% continue their studies in the KOSEN colleges to obtain a bachelor's degree (Field and Guez, 2018).

#### ***In England there are potential benefits in the use of this model***

England is relatively unusual in having a 'final' school exam in the GCSE at age 16, followed by a diversity of post-GCSE programmes. This contrasts with the more common arrangement of focusing secondary education on preparation for a school completion examination at age 18. England might take advantage of this feature through HTE programmes that are designed to start following the GCSE. This could involve a set of T-levels, and/or level 3 apprenticeships, that are closely articulated with level 4 or 5 programmes in the same field, and undertaken in the same institution. This might follow either the Austrian model, which is a mass system, or the Japanese model, which is designed as a selective track for high-performing students. The new Institutes of Technology in England (Department for Education, 2017b) would be natural locations for such programmes.

***In the Swedish model, funding is offered on a limited basis to local programmes***

One way to tackle the challenge of engaging local employers in post-secondary training provision is to build a partnership requirement between education providers and employers into initial eligibility for funding. The employers involved are then responsible for providing the workbased learning component of the programme. This model has been used successfully in Sweden (see Country example 8), showing that such funding incentives can be used effectively, even when, as in Sweden, there is little culture of employer-provider partnerships. Plans for the new Institutes of Technology in England are in many ways consistent with this approach, since they are intended to foster collaboration between further education providers, higher education providers and employers, as well as responding to regional skills needs. The Institutes of Technology are expected to increase the number of learners obtaining higher level technical skills, particularly at level 4 and 5, and to engage disadvantaged groups in skills development. They will offer programmes at level 3 to 6 (and therefore including degree level programmes); a capital fund of £170M will support the development (Department for Education, 2017b).

**Country example 8. Higher Vocational Education (HVE) in Sweden**

Since the early 2000s, programmes of higher technical education ranging from six months to two years in length have been offered in Sweden. The Swedish National Agency for Higher Vocational Education (the National Agency) was established in 2009 to manage the system. The key innovative feature of HVE is a funding model in which it is left to the initiative of local training providers (including a mix of public and private providers), in collaboration with employers, to propose programmes to the National Agency, which may then be funded for a limited period, subject to renewal. All HVE programmes include workbased learning, with a minimum of 25% in the two-year programmes. Each programme in every institution has a steering group including employers. Numbers have grown quickly, so that now around 50,000 students are in (mostly full-time) HVE programmes, with plans to increase numbers to around 70,000 by 2022 (see Swedish National Agency for Higher Vocational Education, no date).

**Policy pointer 2. International experience relevant to Institutes of Technology and other providers**

*Two types of programme observed internationally might be relevant to the new Institutes of Technology and other providers. First, following models in Austria and Japan, level 3 T-level programmes might offer the option of continuing, within the same training provider, in a connected level 4 or level 5 programme. This would encourage progression and might also serve to make the T-level more attractive at the outset, through the clear offer of post-secondary continuation. Second, the Swedish model of higher vocational education, in which partnership with employers is built into funding eligibility, would be one option for tackling specific sectoral or regional skills needs, and promoting partnerships between training providers and employers.*

## 2.3 POLICY ISSUES AND CHALLENGES

This chapter explores some of the main policy issues and challenges arising in higher technical education, how they are being addressed in different countries, and the potential lessons for England. It looks first at the relationship between HTE and other higher education provision in a context where HTE programmes can easily be marginalised. It looks second at funding, noting how HTE programmes are often less well-resourced than bachelor's level programmes in universities. Third, it examines how HTE programmes and qualifications can engage employers and meet the needs of the labour market. Finally it considers how HTE programmes can best serve the needs of equity.

### THE ROLE OF HIGHER TECHNICAL EDUCATION WITHIN THE HIGHER EDUCATION SYSTEM: INTERNATIONAL COMPARISON

#### *Finding the most appropriate role for HTE in the HE system is critical*

A key feature of HTE is the extent to which it is, and/or is seen to be, part of the higher education system. In England, much HTE provision (with the exception of level 4 and 5 apprenticeships) has been seen as part of higher education, although of a special type. Across countries, some different models and relationships can be identified. None of the distinctions are strict, and many systems involve a mix of the different models.

- **A well-integrated part of the higher education system.** 'Integration' means having common funding arrangements, provider institutions, and regulatory and quality assurance bodies. Often, the degree of integration, as in England, is partial, with some common provider institutions (such as universities offering both bachelor's and Foundation Degrees) and some differences (such as a division of labour between OFSTED and the Quality Assurance Agency). In the United States, community colleges, alongside state universities, are largely funded and managed by state governments, and this common foundation drives some degree of integration (Kuczera and Field, 2013).
- **A separate space, linked to the vocational training system at lower level.** In some countries most HTE is 'higher VET', providing technical programmes to which graduates of initial technical programmes can aspire, sometimes after some work experience. This means, in practice, that governance of the system may involve some combination of government and social partners along the same lines as initial technical training, separately from higher education (OECD, 2014). Germany, Austria and Switzerland all conform to this pattern. Sometimes the link with initial vocational training is reinforced by common provider institutions, as for example in German Fachschulen, and in Spain and Romania, located in upper secondary VET schools (Fazekas and Field, 2013b; Field, Kis and Kuczera, 2012; Musset, 2014). FE colleges in England also offer both HTE and lower level technical programmes.
- Sometimes HTE programmes are managed in an **entirely separate governance and policy space.** For example the HTE practical engineering programmes in Israel are located in engineering colleges, and managed quite separately from higher education (Musset, Field and Kuczera, 2014). In Sweden the higher vocational education programmes are organised through the National Agency



for Higher Vocational Education, at arm's length from the Education Ministry (CEDEFOP, 2016).

***Some countries identify a special set of higher education institutions that offer professional training***

Higher education participation has grown fast almost everywhere, and this has often involved the development of more technical programmes at bachelor's level. In a 'single sector' university model, found in the UK since 1992, the US, and often in other English-speaking countries, technical bachelor's programmes are found in regular universities. But some countries distinguish the higher education institutions that offer this type of professional training from academic universities. These "universities of applied science" are found in the Nordic countries, the Germanophone countries (Fachhochschulen), the Netherlands (see Country example 9), and Belgium Flanders. As described in Focus point 6, prior to 1992 the UK followed the same model, with polytechnics having a strong vocational mission (further education colleges in England play a very different role to universities of applied science, since only a relatively small proportion of FE college activity is in the higher education space, and they rarely offer bachelor-level programmes).

**Country example 9. Universities of applied science in the Netherlands**

In the Netherlands, higher education includes two distinct sectors: academic universities and universities of applied science (hogescholen). The universities of applied science, enrolling more than 400,000 students, deliver more than 1,000 professional bachelor programmes, usually full-time over four years. Programmes are open to graduates of both academic and higher tracks of vocational, upper secondary education. Graduates may continue into academic or professional master's programmes which last an additional one to two years. The universities of applied science also offer associate degrees, representing the first two years of professional bachelor's degree programmes, with transition options to the associated bachelor's programme. Despite government efforts, the numbers of students on associate degree programmes remains small, at around 5,000 students (Fazekas and Litjens, 2014).

***The Bologna process is designed to make higher education in Europe more consistent***

The Bologna process, launched in 1999, groups European countries and their higher education institutions in a process designed to improve mutual compatibility. The Bologna declaration aspired towards:

*... a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries (European Ministers of Higher Education, 1999).*

***But the process leaves HTE in a marginal role***

The initial Bologna proposal, quoted above, was subsequently developed into a three cycle system of bachelor's, master's and doctoral programmes, representing a qualifications framework for higher education. Both the Bologna declaration, and the subsequent Bergen declaration (European Ministers of Higher Education, 2005) are remarkably silent on the issue of higher education qualifications below

bachelor's level. Attempts were made to bring 'short cycle higher education' within the Bologna framework in work by Kirsch, Beernaert, and Nórsgaard, (2003) and Kirsch and Beernaert (2011). But even here it is made clear that for such short cycle higher education to have a place within the qualifications framework, it needs to have a very clear articulation with a bachelor's degree. So free-standing one- or two-year qualifications, no matter how demanding or how high level, are granted no recognition within the Bologna process.

## COMPARISON WITH ENGLAND

### ***HTE fits uneasily into the higher education environment***

In England, HTE typically involves short (less than three years) programmes designed to be responsive to labour market needs, often delivered part-time to adults. These three features are all at variance with the most usual characteristics of higher education in England. For those in higher education and its institutions, developing and teaching HTE programmes may therefore mean, at best the hard work of adapting mindsets, and at worst they may be seen as unfitting to HE culture. As discussed in Chapter 1.2, the Robbins report, a guiding influence on the development of higher education in England for many decades, was sceptical of all three typical characteristics of HTE. Parry (2015) contrasts the national and international recognition and demand for the bachelor's degree with the "legacy of ambivalence about the place of the vocational, technical and practical in higher education." Wolf (2015) points out that universities and their staff tend to be focused on research excellence rather than on-the-job training or to close relationships with local employers. For similar reasons, Porter and Simons (2015) conclude that "technical and professional training within a university setting risks, (in terms of course design, workforce qualifications and in prestige) being overly focused on theory above practice."

### ***Strong demand for bachelor's degrees gave few incentives to universities to develop HTE***

Under different circumstances, higher education in England might have adapted and innovated to embrace these distinct characteristics of HTE. But despite large recent increases in tuition fees, demand from young school leavers for full-time bachelor's level degree education has remained robust. This means that there has been no incentive for the higher education industry to diversify its offer in favour of HTE – especially when such provision might well compete with their own bachelor's level provision. Government policy interventions following the Dearing report, linked to Foundation Degrees, only worked when there were firm caps on bachelor's level numbers (see Chapter 1.4).

### ***In principle, high tuition fees motivate an interest in shorter HTE programmes***

In many parts of continental Europe, higher education, supported by government subsidy, demands no or very low tuition fees. Conversely, many English-speaking countries (including not only England, but also the United States, Canada, Australia and New Zealand) have higher education systems largely supported by tuition fees, often set against loan systems, as in England. In these countries, students bear more of the costs, and therefore in theory have a greater incentive to pursue shorter and therefore cheaper courses. Overall, there are some indications that this is happening, given the large role of full-time HTE relative to bachelor's level programmes in Australia, Canada, the United States and New Zealand (see Figure 2). But in England, the rapid increase in higher education tuition fees over recent years has not increased participation in HTE relative to bachelor's degrees. One

possible reason is that students in England can pursue a bachelor's degree without risk that they will end up with an unmanageable debt, since if they earn very little the loans will not have to be repaid. This is very different from loan arrangements in the United States, for example, where unpaid student loans are pursued vigorously regardless of low income levels.

***Despite weak basic skills among school-leavers, England has a high level of tertiary participation***

By international standards, England's participation rate in tertiary education is high. In 2016, just over half of 25-34 year olds (52%) in the UK had tertiary (ISCED level 5-8) qualifications, well above the OECD average (43%) (OECD database). Kuczera, Field and Windisch (2016) argue that, in England, this high level of participation is surprising given relatively weak numeracy and literacy by international standards in the teenage pool of potential entrants to higher education. Significant numbers of young people in England enter higher education even when their academic preparation to do so is questionable, so that around one in ten students in bachelor's and Foundation Degree programmes in England have only the lowest levels of numeracy and literacy. Kuczera, Field and Windisch (2016) show that for students with weak basic skills, HTE programmes yield returns that are, on average, indistinguishable from full bachelor's degrees, implying that such students might be better off entering shorter and cheaper HTE programmes. However, there may still be reasons why bachelor's programmes are desirable to them, since they benefit from the signalling value of a bachelor's degree, and as explained above, are effectively insured, through the loan forgiveness arrangements, against the risk of being unable to repay their loan.

***The pool of young people with sufficient basic skills to succeed in HTE is limited***

By comparison with England, other countries tend to equip young people better with basic skills, or to maintain more selective systems of entry to bachelor's programmes, and often both. The upshot is that other countries often end up with a sizable pool of young people who do not enter bachelor's programmes, but who are relatively well equipped with the levels of literacy and numeracy that will enable them, without additional support addressed to basic skills, to succeed in HTE programmes. In England, by contrast, that pool is small.<sup>8</sup> Overall, therefore, the growth of bachelor's provision in England has tended to crowd out HTE.

***To compete, HTE should be differentiated from bachelor's level education***

One separate, but related challenge in England is that many of the HTE qualifications and programmes look like smaller, and sometimes weaker versions of bachelor's degrees. Sometimes this is designed in – as with Foundation Degrees that articulate with bachelor's degrees – but often it is because of the higher education framework which defines them. Across countries, HTE often succeeds by offering something that is quite different from bachelor's programmes in universities, for example professional examinations in Switzerland, or higher vocational education in Sweden, both examples which are not only quite different in form from university programmes, but also more strongly linked to employer requirements. The new Institutes of Technology in England could provide a context for such differentiation.

<sup>8</sup> One effect is that a worrying number of HTE students and graduates in England have very weak basic skills. Kuczera, Field and Windisch (2016) report that in 2012, one in five graduates of HTE programmes (excluding foundation degrees) have weak basic skills in the sense of either literacy or numeracy below level 2 on the Survey of Adult Skills scale.

**Policy pointer 3. An effective relationship with higher education**

*HTE, considered as part of higher education, is often marginalised because its characteristics do not sit easily in a higher education context. International experience shows that HTE often develops most effectively when its programmatic, institutional and governance base has sufficient independence from higher education to allow it to compete with bachelor's level programmes, while maintaining the collaboration necessary for articulation. To appeal to students and employers, HTE needs also to be distinct from bachelor's programmes, rather than just a smaller or lower status version of a bachelor's degree. The new Institutes of Technology may provide a context for such a distinct offer.*

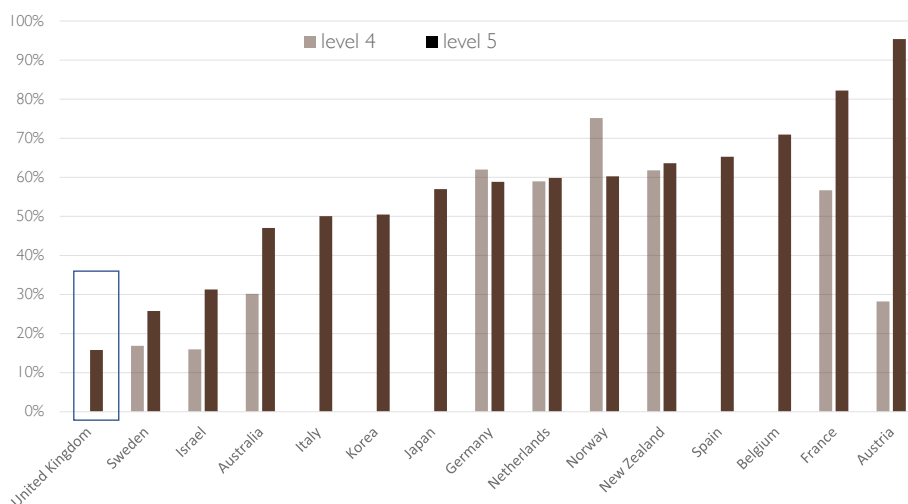
**FUNDING HTE TO COMPETE FAIRLY**

***Fair competition between HTE and bachelor's provision is desirable***

Fair competition should allow students an unbiased choice between a shorter HTE programme and a three-year bachelor's degree, in the light of individual learning and career objectives. This choice therefore needs to be undistorted by considerations such as the extent to which a bachelor's degree is seen as intrinsically of higher quality (and not just longer) than an HTE qualification. While a shorter programme will necessarily cover less ground, there is no reason why it should not involve the same level of intellectual demand and quality of teaching as a longer programme. Figure 9 compares HTE spending per student with funding for higher education at bachelor's level and above, expressed as a percentage. Expenditure per student on HTE is lower than for other forms of higher education, especially in the UK, Sweden and Israel.

**Figure 9. Relative to other forms of higher education, institutions in the UK spend less per student on higher technical education than most other countries**

Annual expenditure by public and private educational institutions per full time equivalent student at level 4 and 5 expressed as a percentage of expenditure per full time equivalent student at bachelor's level and above. 2014.



Source: OECD education database (no date). Author's calculations. Comparator countries where data were available.

***It has been argued that level 4 and 5 provision is underfunded***

The funding of level 4 and 5 provision in England is a complex topic, as responsibilities are divided between different funding bodies, but a recent report from the House of Lords Economic Affairs Committee documents how level 4 and 5 provision is underfunded relative to bachelor's level provision (House of Lords, 2018). This is an issue which will be addressed in the current Review of Post-18 Education and Funding. The challenge is not unique to England, with other countries also showing the distortionary effect of funding differences on competition between HTE and bachelor's level provision (see Country example 10).

**Country example 10. Funding for HTE and higher education in Israel**

In Israel in 2012, average annual funding per student in higher (mostly university) education was over 50,000 Shekels, with the public sector contributing 80% of the costs. Average annual funding per student in post-secondary vocational programmes (including two year practical engineering programmes) was 20,000 Shekels, of which the public sector contributed only 40% (Musset, Field and Kuczera, 2014). This is a funding framework which ensures a student preference for more resource-intensive, and therefore possibly better quality, degree programmes, given that state support is also at a higher level for these programmes.

***Funding levels of HTE need to match those for bachelor's degrees***

Other things being equal, technical programmes are more expensive to teach than academic programmes, as they often require special equipment and practical demonstrations, making them more resource-intensive than a classroom setting. In England, bachelor's programmes in universities usually attract the maximum annual tuition fee of £9,250, while Foundation Degrees normally involve lower fees, often around £6,000, as do HNDs and HNCs (see The Complete University Guide, no date). Of course, fees charged are not the same as expenditure on programmes, but they are an indicator, and providers have few incentives to cross-subsidise HTE programmes. Equally, well-resourced programmes are not necessarily better quality than badly resourced programmes. But these caveats aside, resourcing differences mean that teachers in HTE programmes will be paid less well than teachers of bachelor's programmes, and teaching resources and facilities will be less adequate. Potential students choosing between bachelor's degrees and less well-resourced HTE programmes may therefore opt for the former. Conversely, in France, the DUT programme is well-funded and highly esteemed (see Country example 2): in France, but quite possibly also more generally, esteem follows funding.

***In some countries, an HTE programme is cheaper for students than university***

In the United States, although subsidies to community colleges have fallen in recent years, the average annual tuition fee in a two-year community college programme for a student living in the college catchment area is \$3,600, compared with \$10,000 for a four-year public university for a state resident in 2017-18 (College Board, 2018). This means that community college provision is much more affordable than four-year college provision. One reason for the prominence of level 4 and 5 provision in the US skills system is that community colleges tend to be more affordable than state universities, particularly given that the greater geographical spread of community colleges facilitates living at home.

**Policy pointer 4. Funding**

*In many countries, and especially in England, fewer resources per student-year are devoted to HTE on average than to bachelor's programmes. In the absence of any reason in principle for thinking that HTE programmes are easier or cheaper to teach than bachelor's degrees, these resourcing differences will distort student choice. This issue should be addressed by the Review of Post-18 Education and Funding.*

**RESPONDING TO LABOUR MARKET NEEDS*****Employer involvement in qualification development is universal in principle but variable in practice***

While employers are nearly always involved in the development of programmes and qualifications, that involvement is sometimes nominal. But sometimes employers are genuinely in the lead, for example in professional examinations in Switzerland, where employer groups initially propose the qualification to the government, and subsequently develop the examination (see Country example 11).

**Country example 10. Developing professional examinations in Switzerland**

In Switzerland, professional examinations provide skilled workers holding an initial VET qualification with the opportunity to develop their skills, knowledge and specialisation. Examinations, and the associated qualification, are created on the initiative of a professional organisation (and not government), which will approach government through the Federal Office for Professional Education and Technology (OPET) with a proposal for an examination. OPET will only approve the examination/qualification if it commands the support of most of the relevant professional/industrial sector, and does not overlap or compete with existing examinations/qualifications. OPET supervises these examinations and issues the corresponding diploma. Successfully passing the exam leads to either a Federal PET Diploma or an Advanced Federal PET Diploma (Wettstein, Schmid and Gonon, 2017; Fazekas and Field, 2013a).

***HTE qualifications can be either national or institutional***

In the world of higher education, most qualifications are developed and assessed by individual, autonomous higher education institutions. Conversely most vocational qualifications are national in scope. These two quite different approaches are both used in HTE. For example in Switzerland, the professional education and training system includes both professional college programmes and nationally standardised professional examinations (Fazekas and Field, 2013a). In England, many of the programmes are institutionally determined, like Foundation Degrees. Since further education colleges have recently been given the right to apply for degree-awarding powers in order to seek approval to develop and assess their own qualifications, this model may now be extended beyond universities and other higher education institutions. Conversely, HNDs and HNCs, like most other sub-bachelor vocational and professional qualifications, are largely national in scope, so they should have broadly the same coverage regardless of where they were taught (although some local discretion was present particularly in the early years of HNC and HND – see Focus point 2). Level 4 and 5 apprenticeship standards, similarly, are national,

designed to have the same coverage regardless of the training provider involved. But there is surprisingly little debate, in England or elsewhere, about the respective merits of these two models in relation to HTE. This is probably because, in university settings, institutionally-defined qualifications are seen as a defining feature of the institutions. But one potential selling point of national HTE qualifications relative to bachelor's degrees could be their 'national' status.

***Programmes may be modified in response to local employer needs***

In higher education, qualifications are often 'local' in that they reflect the preferences of a particular higher education institution. But qualifications can be local in a different way, in that they can be adapted, typically in consultation with local employers, to reflect local skills needs. A national technical qualification (offering a consistent occupational standard across the country) can be balanced with a local element that encourages the participation of local employers in, for example, work placements. Such a model is found, for example, in the HTE programmes in Fachschulen in Germany, where the region (Land) determines most of the qualification, but 20% of the curriculum is determined by the individual Fachschule following consultation with local employers (Fazekas and Field, 2013b). A similar arrangement is found in the post-high school programme in Romania (Musset, 2014). This same model was proposed for England in the report of the Commission on Adult Vocational Teaching and Learning (LSIS, 2013).

**Policy pointer 5. Involving local employers in qualifications**

*Outside the institutionally-determined qualifications of higher education institutions, there are advantages in HTE qualifications which reflect the requirements both of the labour market nationally, and sometimes also local employers. One model is to fix most of the programme and qualification in consultation with employers nationally, while allowing a proportion – perhaps around 20 per cent – to be determined in consultation with local employers.*

***Alongside relevant content, the occupational mix of HTE needs to reflect labour market needs***

As well as having the right content in individual HTE qualifications, systems are needed to ensure that HTE delivers the right number of qualified people in different fields of study. Government can reasonably decide to constrain government-funded provision to match labour market needs, and put mechanisms in place to do so. For example, in the Swedish higher vocational education system, this match to labour market needs is realised in two ways. First, programmes are only funded when providers can demonstrate partnership with employers in their delivery, including work placements. Second, the National Agency, which decides on funding in response to bids, determines the number of training places guided by labour market information on sectors and regions (see Swedish National Agency for Higher Vocational Education, no date). But where students pay much of the cost, they may feel entitled to choose whether or not to pursue any given programme in the light of labour market outcomes. In this case, they should at least be well-informed. Clearly training providers have an interest in persuading students to pursue such programmes, even if the labour market outcomes are poor. In Korea, parental and student aspirations sustain a large HTE system despite weak labour market returns (see Country example 12).

### **Country example 12. A large HTE system in Korea with an uncertain link to the labour market**

Korea maintains a large HTE system, primarily in the form of two-year programmes in junior colleges, at one stage amounting to approaching one third of all tertiary enrolment. These programmes can be academic, and usually offer transition to a four-year university degree. As a result, Korea has the highest rate of tertiary attainment of all major countries, with, in 2016, 70% of young adults (25-34 year olds) having a tertiary qualification at ISCED 5-8 (OECD education database).

But the match between provision and labour market needs is weak. In Korea, education is highly prized, and although two-year programmes in junior college are largely funded privately through tuition fees, and the labour market returns are weak, demand for places remained high until a recent demographic downturn. Some vocational two-year junior college programmes are quite low level, and include hairdressing and coffee shop Barista programmes (Kis and Park, 2012).

#### ***Average wages of HTE graduates provide a limited indicator of the value of HTE***

One potential measure of labour market relevance is the earnings of people with HTE qualifications, indicated in Figure 10. But these figures provide only a limited indication of the added value to an individual of pursuing an HTE qualification. The highest attaining school leavers almost invariably opt for a bachelor's degree programme, so that the wage outcomes reflect that selection bias as well as the effect of the programme and qualification on earnings. Moreover, those who pursue HTE and then transfer to bachelor's programmes are included in the earnings figures for bachelor's degrees, although this is, at least partially, an outcome from HTE.

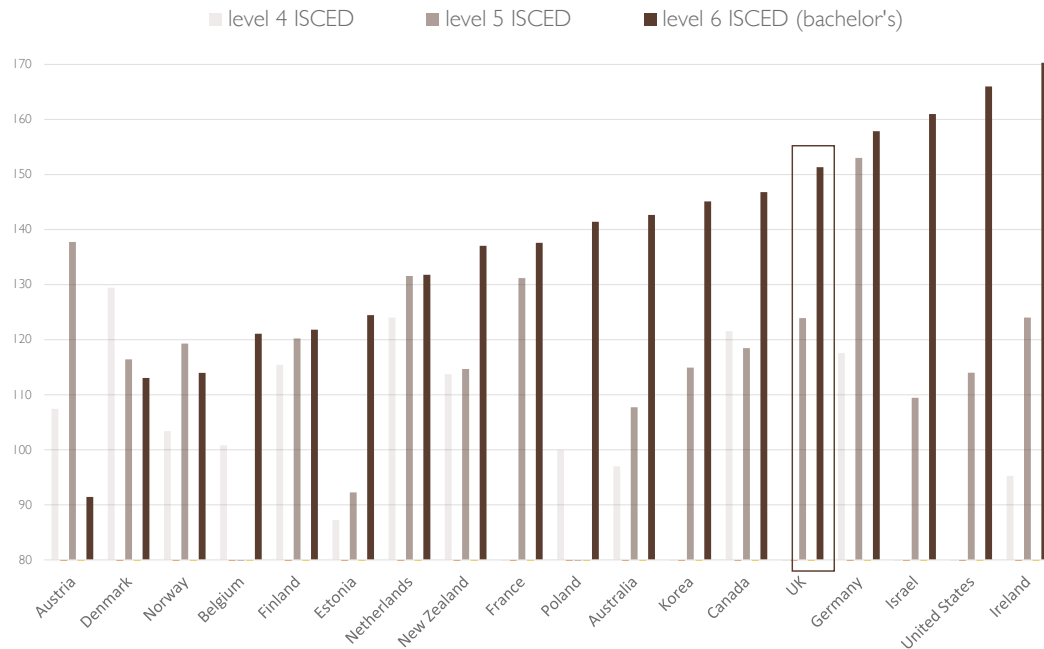
#### ***At the margin, there is little evidence that bachelor's degrees yield better returns than HTE in England***

Rather than average wage returns, the key policy indicator is the relative wage returns to those at the substantive margin. These are potential students, often with mid-level school attainment, who are considering whether to opt for an HTE programme or a bachelor's programme in a relatively unselective university. Policy changes will affect the decisions of these potential students, and so their outcomes are critical. Here the evidence raises many doubts about the relative desirability of bachelor's programmes. In evidence to the House of Lords Economic Affairs Committee, Anna Vignoles reports that the median earnings of men from the bottom 23 universities were less than the median earnings for nongraduates (House of Lords, 2018). Kuczera, Field and Windisch (2016) found that for those with weak basic skills, there are few identifiable differences in the wage returns as between bachelor's degrees and HTE.



**Figure 10. Earnings of graduates with different levels of education**

Comparison between average earnings of graduates at level 4, 5 and bachelor's level with graduates with upper secondary education only (upper secondary earnings = 100). 2014.



Source: OECD Education at a Glance database (2017, table A.6.1). 25-64 year-olds with income from employment (full- and part-time workers).

## WORKBASED LEARNING

### *The workplace provides a powerful learning environment*

The workplace provides a powerful environment both to learn hard technical skills using up-to-date equipment, and to learn many soft skills, including how to relate to colleagues and clients and resolve conflict. Workbased learning also allows employers to get to know potential recruits and their capabilities, and trainees to get to know employers and sell themselves as recruits.

### *Mandatory workbased learning is common across countries*

When HTE programmes are offered to adults already working in the relevant field, workbased learning adds less value, and is difficult to organise for part-time students. In this case ordinary working experience may partly serve the role of workbased learning. Outside these circumstances, workbased learning requirements are common in HTE programmes. For example it is a requirement in BTS and DUT programmes in France, in all vocational programmes in Estonia, in academy programmes in Denmark, in two-year programmes of higher vocational education in Sweden, in all polytechnic programmes in Korea, and in associate degrees in Belgium-Flanders (OECD, 2014; CEDEFOP, 2017). But in many national contexts, including much of the English-speaking world, workbased learning is not a formal requirement and often takes the form of short work shadowing or work experience placements of a week or two.

***It supports employer engagement***

When a programme requires workbased learning, employers can influence the content of programmes and the mix of provision through their willingness (or not) to offer work placements. Programmes can then only run if employers participate, and to the extent that they participate. Mandatory workbased learning also means that local employers know that they will have to offer placements if they are to recruit trained staff. If they do not offer placements then any government funding available to support training will be redeployed to regions and industry sectors where employers offer placements. This is a powerful incentive for employer engagement (see discussion in OECD, 2014).

***Workbased learning needs to be quality-assured, credit-bearing, and linked to learning objectives***

To fully realise the benefits of workbased learning, it is not enough for students to spend time in a workplace; work placements need to be structured carefully. This means identifying what students can be expected to learn during their placement, and ensuring that the tasks they are given, and the guidance they receive, are adapted to these learning objectives. Assessments ensure that students have realised learning objectives through their work placement, and that they are granted credit for the experience. What is learnt during the placement needs to be most useful when it fits meaningfully into the programme as a whole. The OECD recommended that HTE programmes should include “systematic, mandatory, credit-bearing and quality-assured workbased learning” (OECD, 2014). Arrangements in Denmark show how this might be managed (see Country example 13).

**Country example 13. Workbased learning in Danish HTE programmes**

In Denmark, the two-year programmes pursued in academies of professional higher education include a minimum of three months of workplace training. These placements are essential to the accreditation of programmes, and accreditation explores how to make the placements support both student learning and employer needs. In the workplace, each student is assigned to a supervisor who has knowledge of their study programme and can therefore assist them in the learning process. Work placements are designed to be closely linked to learning outcomes, and so that students apply what they have learnt in their study programmes to working practice. On completion of a work placement, students report back to their training institution and are assessed to see if they have met their learning objectives (Field et al., 2012).

***The Sainsbury review and Post-16 Skills Plan recognise these principles***

In England, workbased learning has in the past been very variably used in HTE (and many other vocational) programmes and has had little structure (Musset and Field, 2013). There are now plans to change these arrangements dramatically, following the Sainsbury review and the Post-16 Skills Plan. The Sainsbury review distinguishes short ‘work experience’ placements of a week or two (which have been common) from more substantive placements that would be “well-planned and clearly structured to ensure that the student has appropriate opportunities to learn pre-defined knowledge, skills and behaviours” (Independent Panel on Technical Education, 2016). The Post-16 Skills Plan sets out the government’s intention that 16-18 year olds should be ‘entitled’ to work placements (Departments of Business, Innovation and Skills and Department for Education, 2016). Funding is being

provided to support these placements, via providers, but at present it is limited to 16-18 year olds on level 2 and 3 programmes (ESFA, 2017). While these are very positive developments, workbased learning is equally desirable for older students and level 4 and 5 programmes.

#### **Policy pointer 6. Workbased learning**

*At all levels of technical education, workbased learning is a powerful learning tool and means of linking employers with students. In England, mandatory workbased learning is currently being implemented for new level 3 technical programmes for 16-18 year olds (T-levels). Consideration should be given to extending this principle to all level 4 and 5 programmes except those designed for part-time students already working in the field.*

### **ENSURING EQUITY AND QUALITY**

#### ***Strong HTE systems help deliver equity***

In principle HTE should be good for equity. In the absence of HTE, the adult population faces a divide between those who have bachelor's level qualifications or more on the one hand, and those with only upper secondary qualifications on the other; a polarisation of human capital that will, almost inevitably, increase inequality. The missing middle, or relative absence of an intermediate level, in HTE, both widens the gulf between the two segments of the population, and increases the difficulty of crossing the gulf.

#### ***In England, both equity and efficiency considerations argue for a stronger HTE system***

When the issue of equity in post-secondary education arises in England, the discussion is often dominated by the issue of 'widening participation', in the sense of ensuring that those from disadvantaged backgrounds have every opportunity to enter bachelor's level education and high status universities. While this is important, as well as ensuring fair access to higher education for (roughly) half of the youth cohort, considerations of both equity and efficiency argue for high quality programmes that serve the needs of the other half of the population, both for young people and adults. Some of this is HTE.

#### ***HTE also helps to address more specific equity challenges***

In many countries, HTE is pursued by those with mid-level attainment, with high attainers entering university bachelor degree programmes. HTE serves equity both by providing a post-secondary avenue with labour market value, and in offering a route to a bachelor's degree (see Country example 14). HTE is also a key tool for many adult equity population groups – for example migrants with skills that need to be recognised and built on, women who want to return to the labour market, and displaced workers who need to find a new occupation. When HTE assumes the role of 'higher VET' allowing skilled workers who are graduates of initial technical training to deepen and/or widen their technical and professional skills, it offers a pathway of further learning that strengthens and dignifies the initial choice of technical training, by offering a career and qualification ladder within the profession. This serves equity by strengthening the technical pathways used by many young people from more disadvantaged backgrounds.

#### **Country example 14. TAFE institutions and equity in Australia**

In Australia, around 60 public sector TAFE institutions provide a wide range of HTE and other technical training, including diploma, advanced diploma and associate degree programmes (regarded as equivalent to one or two years study in a bachelor's programme in a university). TAFE institutions often also support apprenticeships. TAFE institutions take many students from disadvantaged backgrounds and play a key role in transitioning them into university programmes. But the transition can be stressful. TAFE entrants, because they are offered credit in some first year courses, may be required to manage the additional demands of second year study, whilst negotiating the pressures of coping with first year transition. These former TAFE students are often the first ones in their family to make it to university and they may be unfamiliar with academic study. The combination of non-traditional educational background, cultural differences between TAFE and university, and the extra demands in their university programme mean that these students will need extra help and support to sustain them through to successful completion (Cameron, 2004).

#### ***But the design of HTE programmes needs to address equity***

All these factors argue for supporting HTE on equity grounds, as well as because it meets labour market needs. The equity dimension of a programme has to be considered systemically, in terms of access to the programme, quality and funding, and onward pathways. For example in France, it may appear positive at one level that DUT HTE programmes are funded more generously per student-year than university, but one effect of that arrangement is that students compete to enter the selective DUT programme to benefit from the quality provision, so the benefits of the higher quality programme are captured by the best prepared students, who may not be from disadvantaged backgrounds. Similarly, in Japan the Kosen programme is high quality but it is also highly selective on entry. So the aim should be to provide good quality and status in HTE programmes while also ensuring access by the most disadvantaged. This is a challenging circle to square.

#### ***Access depends on well-considered entry requirements, flexible modes of study and effective funding***

For students to make the best use of HTE, effective access arrangements are a precondition. Well-designed entry requirements can ensure that those who start are sufficiently well-prepared to succeed, without creating artificial barriers to entry. For adults, recognition can be given to prior skills that have not been certificated, and programmes can be delivered in a form suitable to those with working and home commitments, often part-time and through evening and weekend provision (OECD, 2014). Above all, access depends on manageable programme costs. These points may be addressed in turn.

#### ***Strict requirements for prior qualifications may be compared with open access models***

Often formal qualifications at upper secondary level (ISCED level 3) are required to enter HTE programmes. For example, to pursue the French BTS or DUT programmes, it is necessary to have passed the upper secondary baccalaureate examination. While such requirements are a reasonable way of determining that an individual has the core academic skills to succeed in post-secondary programmes, it does not address the needs of those who may have left school without taking the

final examination, or of migrants with good skills but few formal qualifications. This may also be a particular challenge for previous generations of adults, now in the workforce, who left school at a time when completing upper secondary education was seen as an optional 'extra', or when other now outdated qualifications were pursued. Tackling this access challenge is important on efficiency grounds, to make better use of the existing skills of the workforce. But it is also vital on equity grounds, as a way of addressing the needs of those who have few qualifications, and who are therefore very vulnerable in the labour market. One possible model, found in the United States, is through the community college system (see Country example 15), where the value of open access must be balanced by the problems of dropout.

#### **Country example 15. Open access and completion in US community colleges**

In the United States, public sector community colleges play a large part in the skills system, enrolling around 7 million students and offering programmes ranging from short technical training to two-year associate degrees (some even offer four-year bachelor's programmes). Usually they admit anyone who has completed high school. Tuition rates are modest, given state and local financial support. The economic returns to graduates are often good, and graduates from two-year associate degree programmes can usually transition to the third year of a four-year bachelor's programme in a university. Given that community colleges have a major role in serving disadvantaged students, they are seen as a vital arm of education equity.

The major drawback of open access is dropout: after six years, only 38% of entrants to community colleges earned a credential (Juszkiewicz, 2016). Many of the entrants have weak basic skills, as revealed by tests administered on entrance to college, and are assigned to remedial maths and English. It is often suggested that it would be better to improve standards in high schools, rather than remediate in the community colleges (Pratt, 2017; Kuczera and Field, 2013).

#### ***Recognition of prior learning (RPL) can also play a valuable role***

Measures which allow prior learning to be formally recognised assist access to HTE and facilitate completion by allowing some parts of a programme to be waived because the student already has the relevant skills. This can encourage those who have extensive workplace experience, but fewer formal qualifications, to return to education. Typically they require a framework which encourages provider institutions to make effective use of RPL (see Country example 16). Research in the United States suggests that RPL may have substantial benefits, with twice as many college students who benefited from RPL obtaining two-year degrees as those did not so benefit (Council for Adult and Experiential Learning, 2010). But some countries, like Denmark, while having effective RPL systems on paper, have found it difficult to engage sufficient numbers in their effective use (Field et al., 2012).

### Country example 16. Recognition of prior learning in France

In France, a 2002 law establishes an individual right to the recognition of professional experience (validation des acquis de l'expérience - VAE) in the acquisition of an academic qualification. This allows an individual to obtain part or all of the qualification based on professional experience, validated by an academic panel in the case of higher education. The candidate prepares an application documenting their relevant professional experience, which is then examined by a panel including both academic and professional members. The panel may then either grant the full qualification, or alternatively set out the courses which need to be followed by the candidate to obtain it. The final qualification is the same as that which can be realised through academic study (Chaparro, 2012).

## PATHWAYS OF PROGRESSION

### *The attractiveness of HTE depends partly on access to more advanced education and training*

For HTE to be attractive to students, and serve their wider expectations and needs for lifelong learning, it cannot be, or be seen to be a dead-end. HTE may therefore be expected to offer avenues of onward development, including into bachelor's programmes, as well as other forms of higher level technical education and training. This can be a challenge, given that HTE stands to one side of the best known pathway – the well-travelled route from school to university. When graduates of HTE seek to transition into bachelor's programmes, it is very wasteful if students have to repeat what they have already learnt. But putting that principle into practice is hard. To do so requires a common currency of learning outcomes, allowing HTE to be meaningfully compared with subsequent programmes, and appropriate credit granted. But such descriptions in terms of learning outcomes may not only assist transitions, but also support learning, by clarifying the goals of a programme (for example CEDEFOP, 2009). Defined learning outcomes from an HTE programme also need to be backed by sufficient quality assurance to reassure the receiving institution that graduates have achieved the intended outcomes. The practical orientation of an HTE programme and its learning outcomes may also need to be configured so as to map to the more academic perspective of a university. One approach to this problem is the course numbering system in the state of Florida (see Country example 17).

### Country example 17. Florida's course numbering system

In Florida, the State Course Numbering System, created in the 1960s, aims to improve articulation between post-secondary programmes and institutions, including between associate degrees and bachelor's programmes. The system assigns the same number to courses that have the same content, and are taught by teachers with comparable credentials, regardless of the provider. All public institutions are required to comply with state-defined programme lengths and standards, reinforcing comparability. The numbering system covers few private providers – so obstacles remain in transitions between the public and private sector.

The state also defines core general knowledge and skills (equivalent to 36 hours of general education) that every student should acquire before transferring to a bachelor's programme and these can be linked to specific courses thanks to the numbering system. For example an Associate in Science degree usually contains between 15 and 24 credit hours of transferable general education.

See Kuczera and Field, 2013; Florida Department of Education, no date.

### ***Bilateral credit transfer arrangements can be burdensome***

Often, for HTE graduates to obtain the recognition required to transfer to a bachelor's programme, the HTE provider institution has to make a bilateral agreement with the receiving institution. But this programme by programme approach is burdensome; in the US state of Washington there are more than 6,000 registered articulation agreements between provider institutions (WTECB, 2013). To reduce the administrative load, countries sometimes establish credit recognition frameworks, which even if they do not require credit transferability, at least facilitate it. British Columbia in Canada maintains a systematic province-wide credit transfer system (see Country example 18).

### **Country example 18. Transferring from two-year colleges to universities in British Columbia, Canada**

In the 1960s, the provincial British Columbia government expanded post-secondary education to all parts of the province, allowing students in remote locations to pursue the first two years of a degree programme at a local college and then transfer to one of the province's universities to complete their studies. Today, the British Columbia Council on Admissions and Transfer facilitates admission and transfer arrangements among all the post-secondary institutions, and maintains an online transfer guide and website (see British Columbia Council on Admissions and Transfer, no date), allowing students to see which local college programmes offer credit transfer to specific four-year university programmes (Junor and Usher, 2008).

### **Policy pointer 7. HTE and equity**

*A strong system of HTE serves an important equity role, offering valuable technical training to those who have not entered a bachelor's programme and supporting lifelong learning for those already in work. It can also offer a bridge into bachelor's programmes. To fully contribute to equity, HTE needs to include measures to support both access and progression.*

## ASSESSMENTS

### ***Strong assessment provides quality assurance***

Good quality assessments, leading to the award of qualifications, are critical for HTE programmes. Often, demanding assessments will be the key element in the quality assurance of teaching and learning, setting a test of knowledge and skills which only those fully competent in the target occupation will be able to pass. These requirements provide assurance that all those with the qualification have the required skills, regardless of how they have been taught.

### ***End-point assessments facilitate alternative routes to qualifications***

Continuous assessment guides students regarding the progress they have made and the gaps in knowledge that remain, but it also often contributes to the overall assessment. One big attraction of strong end-point assessments, as opposed to reliance on assessments part-way through programmes, is that they lend themselves to more flexibility in the programme of study leading to that assessment (see Country example 19). Assessment of professional skills is demanding and resource-intensive, as a very diverse range of knowledge, skills and behaviours are necessary even to perform a rather simple job.

#### **Country example 19. Occupational examinations in Estonia**

In Estonia, around 500 occupational qualification standards are defined and regularly updated by employer groups in sector skills councils. The standards are linked to a set of occupational examinations which form the end-points of different routes of preparation (including school-based programmes, apprenticeships) and a direct route to the examination (recognising prior learning but usually augmented by some tailored preparatory courses). The standards and examinations are organised at basic and advanced (HTE) levels. Following an open competition managed by the sector skills council, an awarding body is franchised for five years to take responsibility for each examination and deliver the qualification. This system of occupational examinations provides a foundation for the entire VET system, rooted in employer needs (see Kutsekoda, no date).

### ***Basic standards of good assessments can be identified***

Some minimum requirements of good assessments can be identified, in line with criteria used in educational testing. The International Standard in Examinations for Professional Certification (ISO/IEC 17024) is not well known in the UK, but represents an agreed international standard developed by a working body. It governs the integrity of examination systems and covers matters such as the consistency and transparency of the examination criteria; the impartiality of the examiners and avoidance of conflicts of interest; the defining of competencies; the qualifications of examiners; and the independence of examinations. The standard is currently under revision (ISO, no date; Country example 20).



### Country example 20. Establishing standards for professional certifications in the United States

Within a deregulated environment, the American National Standards Institute (ANSI) offers voluntary accreditation for professional certification examinations in the United States. ANSI publishes accreditation criteria and procedures along with assessment results. A typical assessment involves inspection of written documents and onsite visits looking at examination and organisational practice. Certified organisations have to be reassessed about 12 months after the initial assessment. At the end of each assessment period, ANSI makes recommendations to accredited bodies which they must implement in order to maintain their accreditation. ANSI standards sometimes also conform to international (ISO) standards. ANSI estimate that only around 10-20% of certifications available in the United States would meet ANSI standards, if put to the test (ANSI, 2012).

#### ***A more professional approach to assessment in HTE is desirable in England***

In England, new apprenticeship standards depend heavily on the quality of end-point assessments, as will the new T-levels. While there is extensive experience with assessment techniques in technical programmes, particularly in the larger awarding bodies, more could be done to build on this experience and professionalise the very complex task of assessing occupational competency, drawing on international ISO standards.

#### **Policy pointer 8. Assessments**

*Despite their critical role in apprenticeships and other technical programmes, assessments in HTE (and in technical education generally) have been little studied, and there are few sources of information on the topic. Consideration should be given to how best to professionalise assessments, initially by sharing information and experience, and perhaps subsequently by establishing a centre of excellence and guidance on the topic.*

## CONCLUSION: STEPS TO FILL THE MISSING MIDDLE

This chapter first explores the different reasons why, compared to many other countries, England has a relatively small HTE sector, and describes the factors which have encouraged the development of HTE elsewhere. It argues that this relative lack of HTE represents a challenge, as it implies both efficiency and equity weaknesses in the skills system. The chapter advances some broad principles of reform, and lists the policy pointers identified in earlier parts of the report.

### CAUSES OF THE MISSING MIDDLE

#### ***Relative decline in HTE in England means that this sector is smaller than in other countries***

Part 1 of this report described a history of relative decline in HTE, at least since the 1960s. While post-secondary education opportunities have expanded massively over the last half century, HTE now plays a relatively small role, dwarfed by the growth of higher education at bachelor's level and above. Relative decline has more recently turned into absolute decline, especially in the context of large falls in the numbers of part-timers pursuing HTE. The result is that, as explained in Part 2 of this report, England now maintains a smaller HTE sector than most comparable countries.

Looking at qualifications comparable to level 4 and 5 in England, graduation rates in England are less than one third of those observed in Australia, Canada, Germany and Spain, and less than one seventh of those in the United States (see Figure 4).

However, in the last decade, level 4 and 5 apprenticeships have developed fast, and now represent approaching 20% of enrolments in HTE (see Table 2).

#### ***Competition from bachelor's degrees has been a major factor***

While the relative decline of HTE has had multiple causes, competition through the expansion of full-time bachelor's level education in universities has certainly been a significant factor, as discussed in Chapter 2.3. Not only have HTE and bachelor's programmes competed for student recruits, but also for public resources both for tuition and student maintenance, the attention of employers, and the focus and mission of higher and further education providers. The tone was set by the Robbins report, which prioritised full-time bachelor's level education, and despite some attempts to change direction, notably through the support given to Foundation Degrees, these priorities have changed little over the longer term. At the same time, through a process of 'graduatisation', bachelor's degrees have become the standard minimum expectation for many jobs and careers (see Focus point 9). Set against the attractions of a well-understood route to a bachelor's degree, the HTE offer has been a mixed and changing group of HTE qualifications and programmes, with limited institutional backing, and sometimes without much clear employer support.

#### ***Weak funding is a powerful factor***

As described in Chapter 2.3 and Figure 9, HTE tends to be less well-resourced than bachelor's level provision in many countries, but especially in the UK. The under-funding of HTE has long historical roots. Referring to the situation in the 1950s, when local authorities had discretion over maintenance grants "...university students usually got major awards, those at colleges of Further Education often had to be content with lesser ones or nothing" (Peters, 1967, p. 39). This suggests that the factors responsible for under-funding lie not in the specifics of changing funding regimes, but rather in the relative lobbying power and political influence of the main respective stakeholders, namely higher versus further education institutions.

***England displays more policy volatility than most other countries***

Norris and Adam (2017) have described how further education has been unusually subject to policy churn, with, since the 1980s, 28 major pieces of legislation bearing on FE, 48 secretaries of state with responsibility for the sector and many agencies, such as the FEFC, LSC and UKCES coming and going. Norris and Adam argue that while all Ministers want to visibly 'do something' in their area of responsibility, in the FE sector it is easier because the stakeholder institutions are relatively weak and therefore find it harder to oppose change. This degree of churn has damaged HTE, particularly in the context of competition with the more stable environment of university institutions and bachelor's degrees.

***Other countries usually display more stability***

Social partnership arrangements in some European countries create stronger anchors of stability for skills policy. Thus the main pillars of 'higher VET' in Austria, Germany and Switzerland have a long history, and the core model for professional examinations, the 'meister' qualification, has a history which goes back centuries. Elsewhere, community colleges and associate degrees in the United States and Canada, TAFEs and the qualifications they offer in Australia, in Korea the junior colleges and their two-year programmes, in Denmark the professional academies, and in Scotland the higher nationals, have remained in place for decades.

***Several other factors have supported the development of HTE in other countries***

Unlike the United States and Canada with their college systems, and Australia with its TAFE colleges, England does not have a college system which champions HTE qualifications as its core mission (although FE colleges in Scotland may play this role in respect of Scottish Higher Nationals). Population sparsity in North America and Australia plays a role, as one of the key cost drivers of 'college' relative to university provision is the possibility of living at home – a factor of less relevance in densely populated England. England's apprenticeship system collapsed in the 1970s and 1980s prior to its subsequent revival – a revival that has involved multiple challenges (Field, 2018a). This means that England does not have a large cohort of well-trained adults who might fuel programmes of upskilling through 'higher VET', as in these countries.

***Occupational licensing supports HTE in some countries***

Occupational licensing may support HTE more strongly in other countries, although weak data make it difficult to draw firm conclusions. One estimate is that in the UK in 2015, 19% of jobs were subject to licensing requirements, more than in some European countries, but less than in the United States, where 29% of jobs are estimated to be subject to licence (Kleiner, 2015). But there are some indications that, in England, rather few HTE qualifications are linked to the kind of licensing requirements that might give real impetus to HTE enrolment. This report has described how, in the 1960s and 1970s in England, bachelor's level qualifications increasingly became a requirement in professions where previously an HTE qualification was sufficient. By contrast, in the United States, nursing and some paramedical professions can often (depending on state regulation) be pursued with just an associate degree followed by state licensing. Of employed people in the US over 25 with associate degrees as their highest qualification, nearly one third also have some kind of occupational license (see US Department of Labor, 2016). In Austria, some small trades and craft businesses can only be managed by someone with a Meister professional qualification (Musset et al., 2013).

## WHY THE MISSING MIDDLE MATTERS

### ***Some might argue that the decline of HTE reflects labour market changes and student preferences***

It might be argued that the decline in higher technical education reflects changes in the labour market that make the intermediate technician role less important, as well as a widespread preference, among young people, parents and employers, for full bachelor's level qualifications. Given higher education fees that approximate full costs, customers for this form of education must (it might be said) make rational decisions on what they need and are prepared to pay for. The open market has decided, by and large, against higher technical education, and attempts to counter this market preference (it could be argued) are both inappropriate and futile. On this 'efficient market' view, the job of government, rather than seeking to promote HTE at the expense of three-year bachelor's programmes, is to provide student consumers with good quality advice and information about the costs and benefits of alternative programmes, and allow students to pursue their own preferences, in the context of a level playing field where any subsidies for alternative programmes are at similar levels.

### ***A homogeneous offer of full-time bachelor's degrees is not efficient***

Economists have lots of good theories regarding efficient markets, but they also know that many markets are very much less than efficient, sometimes because consumers are ill-informed about what they are buying, sometimes because sellers are collaborating to limit competition, and sometimes because of market regulation (and in England the post-secondary education market is highly regulated). One characteristic of efficient markets is diversity, as producers respond to variety in the needs of consumers. But the market in higher education in England has displayed an increasing homogeneity over the last half century, and with the recent collapse in part-time higher education, the higher education 'market' is more dominated than ever by full-time bachelor's degree students, the vast majority taught in university settings. While HTE itself contains much internal diversity, it is a small part of the market. Comparisons with other countries, including Scotland, cast further doubt on whether homogeneity is what the labour market wants or needs. England does not have a unique labour market, but it does have an unusually uniform offer of post-secondary education. Employers themselves recognise the (currently unrealised) potential of HTE: the Independent Panel on Technical Education quotes approvingly the conclusions of the Confederation of British Industry (CBI) "the delivery of level 4 and 5 qualifications in our skills system is currently confusing and, perhaps as a result, there is insufficient emphasis on delivery of these types of qualifications despite their being at the heart of the new labour market" (CBI, 2015).

### ***The labour market, and the economy, need more diverse provision***

The collapse in part-time provision cannot be because, despite profound concerns about the UK's productivity performance, there is no real need for reskilling or upskilling the adult workforce. Requirements for post-secondary skills cannot always demand three full years of study. The one certainty about future skills needs is that they will involve unpredictable changes, and these changes will require adults to adapt in the course of their careers with flexible programmes, typically shorter than three years, often part-time, and linked closely to labour market needs. This is higher technical education.

## PRINCIPLES OF REFORM

### *Diagnosis is easier than cure*

Diagnosis is easier than cure: it is easier to identify the problems created by weak or absent HTE than to re-establish HTE as a substantial and high quality element in the English skills system. Chapters 2.2 and 2.3 set out several concrete policy pointers, drawn from international experience, to this end. But any package of reforms will also need to meet some necessary conditions. The following paragraphs advance some principles of reform drawn from the findings of this report: first, an effective relationship with higher education; second, adequate funding; third, stability in the policy and institutional environment; and fourth, the engagement of employers.

## AN EFFECTIVE RELATIONSHIP WITH HIGHER EDUCATION

### *HTE should be able to compete with bachelor's level provision*

HTE should have a degree of independence from the rest of higher education that will allow it to compete with bachelor's degrees, offering a faster, cost-effective route to a job-relevant qualification. Where, as in England, bachelor's degrees represent the main offer of the higher education system, that competition will, for good reason, be seen as unwelcome by higher education institutions, because the success of HTE will mean that fewer people will pursue bachelor's degrees. At the same time, many HTE programmes will require the cooperation of higher education institutions to secure articulation between HTE and bachelor's degrees. This creates a natural tension in the relationship between HTE providers and higher education institutions. It is most readily resolved in higher status programmes, for example the KOSEN colleges in Japan, where higher education institutions compete with each other to take the graduates from programmes.

### *HTE can thrive in contexts where its governance is quite separate from the rest of higher education*

Looking at international parallels, in the Netherlands attempts to develop an associate degree (similar to a Foundation Degree) have been slow going, with the initiative in the hands of the universities of applied science. These institutions have been openly lukewarm about the initiative, which is being promoted by the government (Fazekas and Litjens, 2014), although more recently there has been an upturn in associate degree numbers. Conversely, in Switzerland, Germany and Austria, HTE, in the form of professional examinations and college-based short cycle post-secondary provision, is thriving, under regulatory and funding arrangements entirely separate from higher education (OECD, 2014). In Denmark, HTE in the professional academies, again managed quite separately from higher education, is again successful and growing. A proposed takeover of the professional academies by university colleges was abandoned several years ago following opposition from social partners, who feared that academic drift would mean that the academies would lose their links to labour market actors (Field et al., 2012).

## STRENGTHENING FUNDING

### *Funding reform is a basic precondition*

Underfunding in the HTE sector, as indicated in this report, is a longstanding problem. A recent report by the House of Lords Education Committee documents the quite complex factors involved in the underfunding of level 4 and 5 education in England relative to bachelor's degrees. It contrasts this underfunding with the evidence of skills shortages at this level, and argue that funding reforms need now to place level 4 and 5 on the same level as bachelor's degrees (House of Lords, 2018). The terms of reference for the Review of Post-18 Education and Funding show recognition of this point, and provides the right context for reform.

## DELIVERING STABILITY

### *Proliferation in qualification types is a problem*

Alongside the HNC and HND which date from the 1920s, the Diploma in Higher Education was added in the early 1970s (and later the Certificate in Higher Education). While the Diploma and Certificate in Higher Education were initially academic qualifications they have increasingly been used for career preparation. Finally, from the turn of the century, we have the Foundation Degree. Many other niche qualifications are also in play. This continued proliferation of qualification types, in this, as in other domains of vocational education, has been unhelpful and damaging. The creation of the Foundation Degree involved the assumption that it would replace other qualifications but this turned out only partly to be the case. Level 4 and 5 apprenticeships, and their linked assessments, now provide a further set of qualifications in the same space (see below). Now all these overlapping qualifications are on offer, and through mutual dilution, they reduce the chance that any one of these qualifications will acquire the profile to compete effectively with the bachelor's degree. Successful HTE programmes in other countries often reflect the way a limited number of qualification types have been encouraged and supported over many years. Scotland is an example, where higher nationals have received sustained support from government through the Scottish Qualifications Authority. Future efforts might therefore be best directed to rationalising and reducing the range of HTE qualification types available.

## ENGAGING EMPLOYERS

### *Employers have been relatively absent from support for HTE*

At no point, with the possible exception of the very early post-war period, were attempts to expand HTE driven by demand from employers. Instead, they were rooted in more abstract assessments of skills needs. At one level, this is not that surprising, given that most policy development in higher and often further education has been driven by a response to student demand, or a political/policy assessment of what skills are needed by the economy, rather than by demands from employers. The difficulty with HTE is that, in the end, the support from students and from the higher education industry for HTE has been limited, so that the absence of strong employer support for this level of education has been fatal. But while this is true as a generality, specific sectors have made effective use of HTE qualifications in niche professional areas.

***Reform might focus on funding and modes of provision***

Reform might therefore focus on modes of provision, as well as funding, leaving the current qualifications architecture unchanged or consolidated. On modes of provision, HTE, in the shape of two-year programmes, needs to demonstrate that it can deliver required skills packages quicker and therefore more cost-effectively than a more leisurely bachelor's degree. But, given the emphasis on speed, it is paradoxical that the mode of delivery of HNDs, Foundation Degrees and Diplomas in Higher Education is so often on the same 'term-time only' mode of delivery used across the university system. This is vividly illustrated by the way in which (the very successful) Swiss professional colleges deliver exactly the same nursing qualification over two years as the Swiss Universities of Applied Science do over three years, by the simple expedient of working throughout the year (with around six weeks of holiday) rather than just in university terms (Fazekas and Field, 2013a). One option might therefore be to continue efforts on building up two-year bachelor's degrees which are currently developing in a rather uncertain way in English universities. Of course, such programmes are at level 6, but if the objective of a student is to acquire, more quickly and at lower cost, a qualification of equivalent status and labour market value in comparison with bachelor's degrees, then two-year bachelor's degrees with a strong technical focus would be a logical option, alongside HTE. Pursuing the same logic, HTE programmes could be accelerated – for example by squeezing an HND into 18 months by teaching through a summer.

***Some clear principles of reform emerge***

In conclusion, reform needs to ensure a relationship between higher technical education and the broader higher education environment in which higher technical education both competes and articulates with bachelor's programmes, and offers a real alternative to bachelor's programmes. Strengthened funding and the engagement of employers are also important. Given a history of volatility in policy-making, reforms need to concentrate on consolidating and simplifying the higher technical offer and improving quality and modes of provision.

## POINTERS FOR POLICY

Set out below, by way of summary, are the policy pointers that emerge from the international comparisons.

### ***Policy pointer 1. Professional examinations***

Professional examinations offer the scope for substantial efficiency savings, and are used extensively in a diverse range of countries to certificate and encourage the development of higher level occupational skillsets. Such an examination system might therefore be used in England to develop HTE. This could be linked to the end-point assessments of apprenticeship standards at level 4 and 5, on the basis that these assessments, as in the apprenticeship systems of other countries, should allow direct access to the end-point assessment without going through an apprenticeship programme.

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### ***Policy pointer 2. International experience relevant to Institutes of Technology and other providers***

Two types of programme observed internationally might be relevant to the new Institutes of Technology and other providers. First, following models in Austria and Japan, level 3 T-level programmes might offer the option of continuing, within the same training provider, in a connected level 4 or level 5 programme. This would encourage progression and might also serve to make the T-level more attractive at the outset, through the clear offer of post-secondary continuation. Second, the Swedish model of higher vocational education, in which partnership with employers is built into funding eligibility, would be one option for tackling specific sectoral or regional skills needs, and promoting partnerships between training providers and employers.

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### ***Policy pointer 3. An effective relationship with higher education***

HTE, considered as part of higher education, is often marginalised because its characteristics do not sit easily in a higher education context. International experience shows that HTE often develops most effectively when its programmatic, institutional and governance base has sufficient independence from higher education to allow it to compete with bachelor's level programmes, while maintaining the collaboration necessary for articulation. To appeal to students and employers, HTE needs also to be distinct from bachelor's programmes, rather than just a smaller or lower status version of a bachelor's degree. The new Institutes of Technology may provide a context for such a distinct offer.

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***Policy pointer 4. Funding***

In many countries, and especially in England, fewer resources per student-year are devoted to HTE on average than to bachelor's programmes. In the absence of any reason in principle for thinking that HTE programmes are easier or cheaper to teach than bachelor's degrees, these resourcing differences will distort student choice. This issue should be addressed by the Review of Post-18 Education and Funding.

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***Policy pointer 5. Involving local employers in qualifications***

Outside the institutionally-determined qualifications of higher education institutions, there are advantages in HTE qualifications which reflect the requirements both of the labour market nationally, and sometimes also local employers. One model is to fix most of the programme and qualification in consultation with employers nationally, while allowing a proportion – perhaps around 20 per cent – to be determined in consultation with local employers.

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***Policy pointer 6. Workbased learning***

At all levels of technical education, workbased learning is a powerful learning tool and means of linking employers with students. In England, mandatory workbased learning is currently being implemented for new level 3 technical programmes for 16-18 year olds (T-levels). Consideration should be given to extending this principle to all level 4 and 5 programmes except those designed for part-time students already working in the field.

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***Policy pointer 7. HTE and equity***

A strong system of HTE serves an important equity role, offering valuable technical training to those who have not entered a bachelor's programme and supporting lifelong learning for those already in work. It can also offer a bridge into bachelor's programmes. To fully contribute to equity, HTE needs to include measures to support both access and progression.

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***Policy pointer 8. Assessments***

Despite their critical role in apprenticeships and other technical programmes, assessments in HTE (and in technical education generally) have been little studied, and there are few sources of information on the topic. Consideration should be given to how best to professionalise assessments, initially by sharing information and experience, and perhaps subsequently by establishing a centre of excellence and guidance on the topic.

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## REFERENCES

- ANSI (American National Standards Institute), (2012). *Policies and Procedures*. <https://www.ansi.org/accreditation/credentialing/certificate-issuers/documents>
- Barnett, C. (2002). *Prelude to industrial defeat: from the 1944 Education Act to the 1956 White Paper on technological education*. *RSA Journal*, Vol. 149, No. 5501 (2002), pp. 37-39. <http://www.jstor.org/stable/41380367>
- BBC News website, (2018). *Third of NI students leave for universities elsewhere*. <https://www.bbc.com/news/uk-northern-ireland-43070907>
- BIS (Department for Business, Innovation and Skills), (2013). *Privately funded providers of higher education in the UK*. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/207128/bis-13-900-privately-funded-providers-of-higher-education-in-the-UK.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207128/bis-13-900-privately-funded-providers-of-higher-education-in-the-UK.pdf)
- BIS, (2015). *Combined Triennial Review Of The Industry Training Boards*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/485876/BIS-15-686-combined-triennial-review-of-the-industry-training-boards-December-2015.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485876/BIS-15-686-combined-triennial-review-of-the-industry-training-boards-December-2015.pdf)
- BIS, (2016). *Understanding the Market of Alternative Higher Education Providers and their Students in 2014*. <https://dera.ioe.ac.uk/20959/1/he-alternative-providers-2014.pdf>
- Blair, T. (1999). *Bournemouth Party Conference Speech*. <http://www.britishpoliticalspeech.org/speech-archive.htm?speech=205>
- Board of Education, (1943). *Educational Reconstruction*. London, HMSO. <http://www.educationengland.org.uk/documents/wp1943/educational-reconstruction.html>
- Board of Education, (1935). *Compulsory Education beyond 14. Memorandum by the President of the Board of Education*. 15 July 1935. <http://filestore.nationalarchives.gov.uk/pdfs/small/cab-24-256-CP-143-1.pdf>
- Bolton, P. (2012). *Historical Statistics: Education*. House of Commons Library note SN/SG/4252. <http://dera.ioe.ac.uk/id/eprint/22771>
- Boniface, R., Whalley, G. and Goodwin, D. (2018). *Mapping the Higher Technical Landscape*. Report to the Gatsby Foundation. <http://www.gatsby.org.uk/uploads/education/reports/pdf/mapping-the-higher-technical-landscape-final-version.pdf>
- Broadberry, S. N. (2005). *The Productivity Race: British Manufacturing in International Perspective*. Cambridge University Press.
- British Columbia Council on Admissions and Transfer, (no date). <http://www.bctransferguide.ca/>
- Callender, C. and Thompson, J. (2018). *The Lost Part-Timers. The Decline of Part-Time Undergraduate Education in England*. Sutton Trust.
- Cameron, H. (2004). *Paving the Way? The Path to Uni for TAFE Students*. School of Social Work & Social Policy, University of South Australia.
- Cantor, L. M. and Roberts, I. F. (1972). *Further Education in England and Wales*. (Second edition). London, Routledge.

Carnevale, A. P., Ridley, N. and Fasules, M.L. (2018). *Certificates in Oregon: a model for workers to jump-start or reboot their careers*. <https://1gyhoq479ufd3yna29x7ubjn-wpengine.netdna-ssl.com/wp-content/uploads/CEW-Oregon-Report.pdf>

Carnevale, A. P., Rose, S. J. and Hanson, A. R. (2012). *Certificates: Gateway to Gainful Employment and College Degrees*. Georgetown University. <https://cew.georgetown.edu/wp-content/uploads/2014/11/Certificates.FullReport.061812.pdf>

CEDEFOP, (2009). *The Shift to Learning Outcomes: Policies and Practices in Europe*. CEDEFOP Reference series 72. [http://www.cedefop.europa.eu/files/3054\\_en.pdf](http://www.cedefop.europa.eu/files/3054_en.pdf)

CEDEFOP, (2011). *Vocational Education And Training At Higher Qualification Levels*. CEDEFOP Research paper no. 15. [www.cedefop.europa.eu/files/5515\\_en.pdf](http://www.cedefop.europa.eu/files/5515_en.pdf)

CEDEFOP, (2016). *Vocational Education And Training In Europe: Sweden*. CEDEFOP. <http://www.cedefop.europa.eu/en/publications-and-resources/country-reports/sweden-vet-europe-country-report-2016>

CEDEFOP, (2017). *Vocational Education and Training in Estonia. Short Description*. Publications Office of the European Union, Luxembourg. <http://www.voced.edu.au/content/ngv%3A78039>

Central Advisory Council for Education (England), (1959). 15 to 18. London, HMSO. (The Crowther Report). <http://www.educationengland.org.uk/documents/crowther/crowther1959-1.html>

Chaparro, T. S. (2012). *Recognition of prior learning and the role of quality assurance agencies. Accreditation of prior learning in France (VAE) as a case study*. [https://www.cti-commission.fr/wp-content/uploads/2012/03/CTI\\_ENQA\\_Mars2012.pdf](https://www.cti-commission.fr/wp-content/uploads/2012/03/CTI_ENQA_Mars2012.pdf)

Clark, J. (2002). *Non-prescribed Higher Education – where does it fit?* Learning and Skills Development Agency (LSDA), London.

College Board, (2018). *Trends in College Pricing*. <https://trends.collegeboard.org/college-pricing/figures-tables/average-published-undergraduate-charges-sector-2017-18>

Commissioner for Fair Access, (2017). *Laying the Foundations for Fair Access*. <https://www.gov.scot/publications/laying-foundations-fair-access-annual-report-2017-commissioner-fair-access/>

Confederation of British Industry (CBI), (2015). *Inspiring growth: The education and skills survey 2015*. <http://www.cbi.org.uk/insight-and-analysis/inspiring-growth-the-education-and-skills-survey-2015/>

Council for Adult and Experiential Learning (CAEL), (2010). *Fuelling the Race to Post-secondary Success: A 48-institution Study of Prior Learning Assessment and Adult Student Outcomes*. CAEL, Washington DC.

Crosland, A. (1965). *Speech at Woolwich*. 27 April 1965. <http://www.hepi.ac.uk/wp-content/uploads/2016/08/Scan-158.pdf>

Dent, H. (1969). *The Educational System of England and Wales*. University of London Press, London.

Department for Education, (2017a). *Level 4 & 5 technical education to be reviewed. Government to review how to extend technical education reforms to higher levels.* <https://www.gov.uk/government/news/level-4-5-technical-education-to-be-reviewed>

Department for Education, (2017b). *Institutes of Technology Prospectus.* [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/710149/DfE\\_IOT\\_Prospectus\\_Nov17.PDF](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710149/DfE_IOT_Prospectus_Nov17.PDF)

Department for Education, (2017c). *Further Education and Skills in England.* November 2017. Statistical First Release 62/2017. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/660580/SFR62\\_Nov\\_2017.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/660580/SFR62_Nov_2017.pdf)

Department for Education, (2017d). *Part-time Maintenance Loans. Government Consultation Response.* [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/597367/Part-time\\_Maintenance\\_Loans\\_-\\_Government\\_consultation\\_response\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597367/Part-time_Maintenance_Loans_-_Government_consultation_response_.pdf)

Department for Education, (2018). *Review of Post-18 Education and Funding. Terms of Reference.* [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/682348/Post\\_18\\_review\\_-\\_ToR.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/682348/Post_18_review_-_ToR.pdf)

Department for Education and Employment, (1999). *Learning to Succeed: a new framework for post-16 learning.* London, HMSO. <http://www.educationengland.org.uk/documents/wp1999/index.html>

Department for Education and Skills, (2003a). *21st Century Skills: Realising our Potential. Individuals, Employers, Nation.* Cm 5810. HMSO. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/336816/21st\\_Century\\_Skills\\_Realising\\_Our\\_Potential.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/336816/21st_Century_Skills_Realising_Our_Potential.pdf)

Department for Education and Skills, (2003b). *Skills for Success. What the Skills Strategy means for Business.* [https://webarchive.nationalarchives.gov.uk/20130321072555/https://www.education.gov.uk/publications/eOrderingDownload/SSEMP-skills\\_strategy.pdf](https://webarchive.nationalarchives.gov.uk/20130321072555/https://www.education.gov.uk/publications/eOrderingDownload/SSEMP-skills_strategy.pdf)

Department of Education and Science, (1966). *A Plan for Polytechnics and Other Colleges: Higher Education within the Further Education System.* White Paper. HMSO. <http://filestore.nationalarchives.gov.uk/pdfs/small/cab-129-125-c-70.pdf>

Department of Education and Science, (1972). *Teacher Education and Training.* Report by a Committee of Inquiry appointed by the Secretary of State for Education and Science, under the Chairmanship of Lord James of Rusholme. London, HMSO. <http://www.educationengland.org.uk/documents/james/james1972.html>

Department of Education and Science, Department of Employment and Welsh Office, (1991). *Education and Training for the 21st Century.* London, HMSO. <http://www.educationengland.org.uk/documents/wp1991a/1991-education-training-1.pdf>

Department of Education and Science, Department of Employment and Welsh Office, (1992). *Further and Higher Education Act.* <https://www.legislation.gov.uk/ukpga/1992/13/contents>

Departments of Business, Innovation and Skills and Department for Education, (2016). *Post-16 Skills Plan*. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/536068/56259\\_Cm\\_9280\\_print.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/536068/56259_Cm_9280_print.pdf).

Dougherty, K. J. and Callender, C. (2017). *English and American higher education access and completion policy regimes: similarities, differences and possible lessons*. Centre for Global Higher Education Working paper no. 24.

Eccles, D. (1955). *Memorandum on Technical Education*. 16 December 1955. <http://discovery.nationalarchives.gov.uk/details/r/D7657962>

Education and Skills Act 2008, *Explanatory Notes*. <http://www.legislation.gov.uk/ukpga/2008/25/notes/division/2>

Education and Skills Funding Agency, (2017). *Work placements – capacity and delivery fund from April 2018 to July 2019*. <https://www.gov.uk/guidance/work-placements-capacity-and-delivery-fund-from-april-2018-to-july-2019>

Education for Engineering, (2011). *Sandwich Courses in Higher Education: A report on current provision and analysis of barriers to increasing participation*. [https://e4esite2016.files.wordpress.com/2016/08/sandwich\\_course\\_report.pdf](https://e4esite2016.files.wordpress.com/2016/08/sandwich_course_report.pdf)

European Commission, (2015). *ECTS User's guide*. [http://ec.europa.eu/education/ects/users-guide/docs/ects-users-guide\\_en.pdf](http://ec.europa.eu/education/ects/users-guide/docs/ects-users-guide_en.pdf)

European Ministers of Higher Education, (1999). *Bologna declaration*. [https://www.eurashe.eu/library/bologna\\_1999\\_bologna-declaration-pdf/](https://www.eurashe.eu/library/bologna_1999_bologna-declaration-pdf/)

European Ministers of Higher Education, (2005). *Bergen declaration*. <http://ec.europa.eu/transparency/regdoc/rep/2/2005/EN/2-2005-749-EN-1-0.Pdf>

Evans, R. (2009). *Developments in the 1950s and 1960s. A Short History of Technical Education*. <http://technicaleducationmatters.org/category/publications/publications-ashte/>

Fazekas, M. and Litjens, I. (2014). *A Skills beyond School Review of the Netherlands*. OECD Reviews of Vocational Education and Training, OECD Publishing. <http://dx.doi.org/10.1787/9789264221840-en>

Fazekas, M. and Field, S. (2013b). *A Skills beyond School Review of Germany*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264202146-en>

Fazekas, M. and Field, S. (2013a). *A Skills beyond School Review of Switzerland*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264062665-en>

Field, S. (2018a). *Taking Training Seriously: Lessons from an international comparison of off-the-job training for apprenticeships in England*. A report to the Gatsby Foundation. Gatsby Foundation, London. <http://www.gatsby.org.uk/uploads/education/final-apprenticeships-and-off-the-job-training-may-2018.pdf>

Field, S. and Guez, A. (2018). *Pathways of Progression: Between Technical and Vocational Education and Training and Post-Secondary Education*. UNESCO, Paris. <http://unesdoc.unesco.org/images/0026/002659/265943e.pdf>

Field, S., Álvarez-Galván, J-L., Hénard, F., Kis, V., Kuczera, M. and Musset, P. (2012). *A Skills beyond School Review of Denmark*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264173668-en>

Field, S., Kis, V. and Kuczera, M. (2012). *A Skills beyond School Commentary on Spain*. OECD Publishing, Paris. <http://www.oecd.org/edu/skills-beyond-school/OECD%20Reviews%20of%20Vocational%20Education%20and%20Training%20-%20A%20Skills%20Beyond%20School%20Commentary%20on%20Spain.pdf>

Florida Department of Education, (no date). *Statewide Course Numbering System*. <https://flscns.fldoe.org/>

Foundation Degree Task Force. (2004). *Foundation Degree Task Force Report to Ministers*. Department for Education and Skills. <http://webarchive.nationalarchives.gov.uk/20130321072205/https://www.education.gov.uk/publications/eOrderingDownload/FDTF%201.pdf.pdf>

Greenwood, M. (2010). *Higher Education in Further Education Colleges*. EvidenceNet Synthesis Report. [https://www.heacademy.ac.uk/system/files/he\\_in\\_fe\\_synthesis\\_final\\_may\\_2010.pdf](https://www.heacademy.ac.uk/system/files/he_in_fe_synthesis_final_may_2010.pdf)

Grelet, Y., Romani, C. and Timoteo, J. (2010). *Les étudiants des STS et des IUT, comparaison des conditions d'orientation, des parcours de formation et d'insertion*. Net. doc no.65, Céreq, 2010. <http://www.cereq.fr/publications/Net.Doc/Les-etudiants-des-STs-et-des-IUT-Comparaison-des-conditions-d-orientation-des-parcours-de-formation-et-d-insertion>

Hare, J. (1962). *Cabinet Memorandum and draft White Paper by the Minister of Labour*. Cabinet Papers 23 November 1962.

Heywood, J. (2011). *Higher Technological Education In England And Wales Between 1955 And 1966*. American Society for Engineering Education. [www.asee.org/file\\_server/papers/attachment/file/0001/0960/LED1\\_A\\_fianl\\_2.pdf](http://www.asee.org/file_server/papers/attachment/file/0001/0960/LED1_A_fianl_2.pdf)

Higher Education Funding Council for England, (2006). *Higher education in further education colleges: consultation on Hefce policy*. <http://dera.ioe.ac.uk/6316>

Higher Education Statistics Agency (no date). *What do students study? Types of Subjects and Courses*. <https://www.hesa.ac.uk/data-and-analysis/students/what-study/coursesafterstudy>

Hogarth, T. and Baxter, L. (2017). *The re-emergence of vocational higher education in England. Case study of United Kingdom (England)*. In VET at Higher Education levels: Understanding the National Policy Dimension: Country Case Studies. CEDEFOP, 2017.

House of Lords, (2018). *Treating Students Fairly: The Economics of Post-School Education*. Economic Affairs Committee.

Hubble, S. and Bolton, P. (2018). *Part-time undergraduate students in England*. House of Commons Library Briefing Paper 7966. <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7966#fullreport>

Independent Panel on Technical Education, (2016). *Report of the Independent Panel on Technical Education*. <http://www.gatsby.org.uk/uploads/education/reports/pdf/report-of-the-independent-panel-on-technical-education1.pdf>

Institute for Apprenticeships, (2017). *Occupational Maps Consultation*. [https://consult.education.gov.uk/apprenticeships/institute-for-apprenticeships-occupational-maps/supporting\\_documents/Draft%20occupation%20maps.pdf](https://consult.education.gov.uk/apprenticeships/institute-for-apprenticeships-occupational-maps/supporting_documents/Draft%20occupation%20maps.pdf)

ISO, International Organization for Standardization, (no date). *General requirements for bodies operating certification of persons*. <https://www.iso.org/standard/52993.html>

Junor, S. and Usher, A. (2008). *Student Mobility and Credit Transfer. A National and Global Survey*. Educational Policy Institute. <http://www.educationalpolicy.org/publications/pubpdf/credit.pdf>

Juszkiewicz, J. (2016). *Trends in Community College Enrollment and Completion Data*. Washington, DC: American Association of Community Colleges. [https://www.aacc.nche.edu/wp-content/uploads/2017/11/TrendsCCEnrollment\\_Final2016.pdf](https://www.aacc.nche.edu/wp-content/uploads/2017/11/TrendsCCEnrollment_Final2016.pdf)

Kelly, S. (2015). *Raising productivity by improving higher technical education: Tackling the Level 4 and Level 5 conundrum*. HEPI Occasional paper 11. <http://www.hepi.ac.uk/2015/07/16/raising-productivity-improving-higher-technical-education-tackling-level-4-level-5-conundrum/>

Kirsch, M. and Beernaert, Y. (2011). *Short Cycle Higher Education in Europe: Level 5: the Missing Link*. <http://www.leidoacademy.nl/doorzeven/wp-content/uploads/2013/12/SCHE-in-Europe-MKI-31012011-with-country-chapters-for-PDF-long-def-met-haakjes.pdf>

Kirsch, M., Beernaert, Y. and Nørgaard, S. (2003). *Tertiary Short Cycle Education In Europe: A Comparative Study*. EURASHE. <https://studylib.net/doc/8935957/organisation-of-sub>

Kis, V. and Park, E. (2012). *A Skills beyond School Review of Korea*. OECD Reviews of Vocational Education and Training, OECD Publishing. <http://dx.doi.org/10.1787/9789264179806-en>

Kitson, M. and Michie, J. (2014). *The Deindustrial Revolution: The Rise and Fall of UK Manufacturing, 1870-2010*. WP 459, Centre for Business Research, University of Cambridge Working Paper No. 459. [https://www.cbr.cam.ac.uk/fileadmin/user\\_upload/centre-for-business-research/downloads/working-papers/wp459.pdf](https://www.cbr.cam.ac.uk/fileadmin/user_upload/centre-for-business-research/downloads/working-papers/wp459.pdf)

Kleiner, M. M. (2015). *The Influence of Occupational Licensing and Regulation*. IZA. <https://wol.iza.org/uploads/articles/392/pdfs/the-influence-of-occupational-licensing-and-regulation.pdf?v=1>

Kleiner, M. M. (2015). *Reforming Occupational Licensing Policies. Hamilton Project Discussion Paper*. [https://www.brookings.edu/wp-content/uploads/2016/06/THP\\_KleinerDiscPaper\\_final.pdf](https://www.brookings.edu/wp-content/uploads/2016/06/THP_KleinerDiscPaper_final.pdf)

Koumenta, M., Humphries, A., Kleiner, M. and Pagliero, M. (2014). *Occupational Regulation in the EU and UK: Prevalence and Labour Market Impacts*. Final Report, Department for Business, Innovation and Skills, School of Business and Management, Queen Mary University of London, London. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/343554/bis-14-999-occupational-regulation-in-the-EU-and-UK.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/343554/bis-14-999-occupational-regulation-in-the-EU-and-UK.pdf)

Kuczera, M. (2013). *A Skills beyond School Commentary on Sweden*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://www.oecd.org/education/skills-beyond-school/ASkillsBeyondSchoolCommentaryOnSweden.pdf>

- Kuczera, M. and Field, S. (2013). *A Skills beyond School Review of the United States*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264202153-en>
- Kuczera, M. and Field, S. (2018). *Apprenticeship in England, United Kingdom*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264298507-en>
- Kuczera, M., Field, S. and Windisch, H. (2016). *Building Skills for All: A Review of England. Policy Insights from The Survey of Adult Skills*. OECD Publishing, Paris. <http://www.oecd.org/edu/skills-beyond-school/building-skills-for-all-review-of-england.pdf>
- Kutsekoda, (no date). *Occupational Qualification Standards*. [https://www.kutsekoda.ee/en/kutsesysteem/tutvustus/kutsestandardid\\_eng](https://www.kutsekoda.ee/en/kutsesysteem/tutvustus/kutsestandardid_eng)
- Learning and Skills Improvement Service (LSIS), (2013). *It's about Work: Excellent Adult Vocational Teaching and Learning*. The summary report of the Commission on Adult Vocational Teaching and Learning. Learning and Skills Improvement Service. <https://www.excellencegateway.org.uk/content/eg5937>
- Leitch, S. (2006). *Prosperity for all in the global economy - world class skills*. Final Report. London: HMSO. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/243599/0118404865.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/243599/0118404865.pdf)
- Lord President of the Council, (1946). *Scientific Man-Power*. Report of A Committee Appointed by The Lord President of The Council, (Barlow report). Cmd. 6824 London HMSO. <http://www.educationengland.org.uk/documents/barlow1946/barlow1946.html>
- Middlehurst, R. and Fielden, J. (2017). *Alternative providers of higher education: issues for policy makers*. HEPI occasional paper no. 90. [http://www.hepi.ac.uk/wp-content/uploads/2017/01/Hepi\\_The-alternative-providers-of-higher-education-Report-90-04\\_01\\_17-Screen2.pdf](http://www.hepi.ac.uk/wp-content/uploads/2017/01/Hepi_The-alternative-providers-of-higher-education-Report-90-04_01_17-Screen2.pdf)
- Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation, (2017). *Diplôme universitaire de technologie (D.U.T.)* <http://www.enseignementsup-recherche.gouv.fr/cid20192/diplome-universitaire-technologie.html#specialites-dut>
- Ministry of Education and Research Sweden, (2013). *Skills beyond School. OECD Review of Vocational Education and Training. Background Report from Sweden*. <http://www.oecd.org/education/skills-beyond-school/SkillsBeyondSchoolSwedishBackgroundReport.pdf>
- Musset P, Bloem, S., Fazekas, M., and Field, S. (2013). *A Skills beyond School Review of Austria*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264200418-en>
- Musset, P. (2013). *A Skills beyond School Commentary on Flanders*. OECD Reviews of Vocational Education and Training, OECD. <http://www.oecd.org/education/skills-beyond-school/ASkillsBeyondSchoolCommentaryOnFlanders.pdf>
- Musset, P. (2014). *A Skills beyond School Commentary on Romania*. OECD Reviews of Vocational Education and Training, OECD. [www.oecd.org/edu/skills-beyond-school/ASkillsBeyondSchoolCommentaryOnRomania.pdf](http://www.oecd.org/edu/skills-beyond-school/ASkillsBeyondSchoolCommentaryOnRomania.pdf)



Musset, P. and Field, S. (2013). *A Skills beyond School Review of England*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264203594-en>

Musset, P., Kuczera, M. and Field, S. (2014). *A Skills beyond School Review of Israel*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264210769-en>

National Advisory Council on Education for Industry and Commerce, (1969). *Report of the Committee on Technician Courses and Examinations*. (Haslegrave report). London. HMSO. <https://ia800203.us.archive.org/24/items/opl269366-1001/opl269366-1001.pdf>

National Audit Office, (2017). *Follow up on alternative higher education providers*. <https://www.nao.org.uk/wp-content/uploads/2017/10/Follow-up-on-alternative-higher-education-providers.pdf>

National Committee of Inquiry into Higher Education (NCIHE), (1997). *Higher Education in the Learning Society*. (The Dearing report). HMSO. London. <http://www.educationengland.org.uk/documents/dearing1997/dearing1997.html>

Norris, E. and Adam, R. (2017). *All change. Why Britain is so prone to policy reinvention, and what can be done about it*. Institute for Government. [https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG\\_All\\_change\\_report\\_FINAL.pdf](https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG_All_change_report_FINAL.pdf)

O'Mahony, M., and de Boer, W. (2002). *Britain's relative productivity performance: Updates to 1999*. Final Report to DTI/Treasury/ONS. NIESR. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.202.2882&rep=rep1&type=pdf>

OECD, (2017). *Education at a Glance 2017*. OECD Indicators, OECD Publishing, Paris. <http://dx.doi.org/10.1787/eag-2017-en>

OECD, (2014). *Skills beyond School: The Synthesis Report*. OECD Reviews of Vocational Education and Training, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264214682-en>

OECD Education Database, (no date). <http://www.oecd.org/education/database.htm>

Open University, (no date). *Find your course type*. <http://www.open.ac.uk/courses/types>

Oxford Economics, (2014). *Macroeconomic influences on the demand for part-time higher education in the UK*. HEFCE.

Parry, G. (2005). *The Collegiate and Transfer Functions of Further Education Colleges in the United Kingdom*. Paper presented at the annual conference of the council for the study of Community Colleges, 8-9 April, 2005. [https://www.sheffield.ac.uk/polopoly\\_fs/1.97720!/file/Prof-I-.\\_Gareth\\_Parrys\\_article-Journal-.pdf](https://www.sheffield.ac.uk/polopoly_fs/1.97720!/file/Prof-I-._Gareth_Parrys_article-Journal-.pdf)

Parry, G. (2015). *English higher education and its vocational zones*. Research in Comparative and International Education 10(4), 493-509. DOI 10.1177/1745499915612187

- Parry, G. and Thompson, A. (2002). *Closer by Degrees. The past, present and future of higher education in further education colleges*. Learning and Skills Development Agency.
- Parry, G., Saraswat, A. and Thompson, A. (2017). *Sub-bachelor Higher Education in the United Kingdom*. Quality Assurance Agency.
- Parry, G., Blackie, P. and Thompson, A. (2006). *Managing Higher Education in Colleges*. London. Bloomsbury.
- Percy, E. (1945). *Higher Technological Education. Report of a Special Committee appointed in April 1944*. London: His Majesty's Stationery Office 1945. <http://www.educationengland.org.uk/documents/percy1945/percy1945.html>
- Peters, A. J. (1967). *British Further Education: a critical textbook*. London, Pergamon.
- Porter, N. and Simons, J. (2015). *Higher, Further, Faster, More. Improving higher level professional and technical education*. Policy Exchange. <https://policyexchange.org.uk/publication/higher-further-faster-more-improving-higher-level-professional-and-technical-education/>
- Powell, A. (2018). *Apprenticeship Statistics for England*. House of Commons Briefing Paper 06113. <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06113>
- Pratt, J. (1992). *Unification of higher education in the United Kingdom*. European Journal of Education, vol. 27, no. 1-2, pp. 29-44. <http://www.jstor.org/stable/1502661>
- Pratt, T. (2017). *The Open Access Dilemma: How can community colleges better serve underprepared students?* Education Next, Fall 2017. <http://educationnext.org/open-access-dilemma-community-college-better-server-underprepared-students/>
- Quality Assurance Agency, (2014). *UK Quality Code for Higher Education Part A: Setting and Maintaining Academic Standards*. The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies. <http://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf>
- Qualifications and Curriculum Development Agency (and devolved administration counterparts), (2009). *Referencing The Qualifications Frameworks Of The United Kingdom to European Qualifications*. <http://www.isfol.it/eqf/eqf-in-europa/rapporti-europei/regno-unito>
- Robbins, L. (1963). *Higher Education*. Report of the Committee appointed by the Prime Minister under the Chairmanship of Lord Robbins. London: Her Majesty's Stationery Office. <http://www.educationengland.org.uk/documents/robbins/robbins1963.html#11>
- Sastry, T. and Bekhradnia, B. (no date). *Higher Education, Skills and Employer Engagement*. <https://www.hepi.ac.uk/wp-content/uploads/2014/02/30/HEskillsandemployerengagementfull.pdf>
- Sellars, J. (1994). *Interview 25 January 1994*. Quoted in Fisher, R. *The Vocational Curriculum in England 1974-1994: A Socio-historical Study of the Business and Technology Education Council's National Diploma in Business and Finance*. Ph. D. thesis, University of Huddersfield, 1999. <http://eprints.hud.ac.uk/id/eprint/4848/1/323812.pdf>

- Swedish National Agency for Higher Vocational Education, (no date). <https://www.myh.se/In-English/Swedish-National-Agency-for-Higher-Vocational-Education/>
- The Complete University Guide, (no date). *Foundation & Undergraduate Tuition Fees 2018–19*. <https://www.thecompleteuniversityguide.co.uk/university-tuition-fees/reddin-survey-of-university-tuition-fees/foundation-undergraduate-tuition-fees-2018%E2%80%9319,-ukeu/>
- The European Education Directory, (no date). *Belgian (Flemish Community) Higher Education System*. <http://www.euroeducation.net/prof/belco.htm>
- UAS4Europe, (no date). <http://uas4europe.eu/home/>
- UK government, (no date). *Advanced Learner Loan*. <https://www.gov.uk/advanced-learner-loan>.
- UNESCO, (2012). *International Standard of Classification: ISCED 2011*. <http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf>
- UNESCO, (no date). *ISCED Mapping*. <http://uis.unesco.org/en/isced-mappings>
- Universities UK, (2013). *The power of part-time. Review of part-time and mature higher education*. <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2013/power-of-part-time.pdf>
- US Department of Labor, (2016). *Will I Need a License or Certification for my Job?* <https://www.bls.gov/careeroutlook/2016/article/will-i-need-a-license-or-certification.htm>
- Wettstein, E., E. Schmid, and P. Gonon. (2017). *Swiss Vocational and Professional Education and Training (VPET): Forms, System, Stakeholders*. hep verlag. Kindle Edition.
- Wilson, T. (2012). *A Review of Business–University Collaboration*. Department of Business Industry and Skills. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32383/12-610-wilson-review-business-university-collaboration.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32383/12-610-wilson-review-business-university-collaboration.pdf)
- Wilson, W. (1997). *Student grants, loans and tuition fees. Research Paper No 97/119*. [researchbriefings.files.parliament.uk/documents/RP97-119/RP97-119.pdf](http://researchbriefings.files.parliament.uk/documents/RP97-119/RP97-119.pdf)
- Wolf A., Sellen, P and Dominquez-Reig, G. (2016). *Remaking Tertiary Education: can we create a system that is fair and fit for purpose?* Education Policy Institute. <https://epi.org.uk/wp-content/uploads/2018/01/remaking-tertiary-education-web-compressed.pdf>
- Wolf, A. (2015). *Heading for the precipice: Can further and higher education funding policies be sustained?* The Policy Institute at Kings College London. <https://www.kcl.ac.uk/sspp/policy-institute/publications/Issuesandideas-alison-wolf-digital.pdf>
- Workforce Training and Education Coordinating Board (WTECB), (2013a). *Skills beyond School: OECD Review of Post-Secondary CTE – State Background Report for the US, Washington state*.





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