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The next steps for apprenticeship

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Foreword

The Cedefop-OECD symposium on apprenticeship took place as recently as October 2019, but, in the past few months, the world has changed in fundamental ways. The Covid-19 pandemic quickly became the worst health emergency in a century. It is quickly turning into an economic crisis resembling the Great Depression, with an unprecedented rapid rise in unemployment and underemployment, as many workers remained idle during confinement and find it difficult to remain in full employment.

These are circumstances which make the subject of that autumn symposium, and this collection of essays, all the more important. It was a key lesson from the great financial crisis of 2008 that young people living in countries with strong systems of vocational education and training (VET) were far better equipped to withstand steep rises in youth unemployment witnessed across Europe and the OECD countries.

Effective apprenticeships must be attractive to learners, employers and to society. Young apprentices should be confident that the skills they are taught will be relevant to their long-term prospects for high-quality jobs. For employers, apprenticeship should be a cost-effective means of ensuring new recruits have the knowledge and skills they require. Where both learners and employers win from the arrangement, so does society. Well-functioning apprenticeship programmes ensure that what young people learn will match skills in demand, underpinning personal and national prosperity, with employers contributing to the costs of preparing the next generation of workers across broad occupational sectors. It is through such balancing of interests, driven by strong social partnership, that millions of young people can be protected from the worst consequences of the economic recession that lie ahead.

As we are now looking at an uncertain future, the relevance of this collection of essays on apprenticeship is clear. Deep economic crises often serve to accelerate changes in the labour market and the underlying trends that shape them, such as automation and migration patterns. Effective vocational training and skills systems can contribute to making sure these changes do not lead to further disparities but offer new opportunities by continually improving the learning experiences of young people, enhancing equity while minimising costs.

The essays in this collection explore the megatrends that will continue to shape the labour market and societies that we live and work in. Drawing on insights from world-leading scholars based in many different countries, we are convinced that their insights will contribute to informing political decisions which shape the futures of the current generation of learners.

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The publication originates from the first joint Cedefop/OECD symposium on the next steps for apprenticeship that was held in Paris on 8 October 2019. We would like to thank all the authors of the papers included in this publication, many of which had the chance to present their work during the symposium. We would also like to acknowledge the contribution of the keynote speakers: Stefano Scarpetta, Director for Employment, Labour and Social Affairs at the OECD; Jürgen Siebel, Executive Director at Cedefop; Montserrat Gomendio, Head of the OECD Centre for Skills, and Antonio Ranieri, Head of department for learning and employability at Cedefop.

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CHAPTER 1.

Introduction

Anthony Mann (OECD) and Antonio Ranieri (Cedefop)

The recent Covid-19 pandemic showed how important it is for education and training systems to be prepared and agile to respond to external pressures. The combination of the emerging economic crisis together with long-term structural trends that affect our economies will entail a profound transformation of the world of work and require effective policy responses in the years to come.

In this context, the joint Cedefop-OECD symposium on the next steps for apprenticeship, held in Paris in October 2019, could not have been timelier. The symposium brought policy-makers, practitioners and researchers from around the world to Paris to explore the future of apprenticeship from the perspective of a number of external megatrends – such as sociodemographic changes, the accelerated adoption of emerging technologies and new forms of work organisation – and consider how they have affected, and will continue to affect, the design and delivery of apprenticeship in European and OECD countries.

The symposium included 24 speakers from eight countries across three continents. They were joined by experts in vocational education and training (VET) from six international organisations: Cedefop, the European Commission, the European Training Foundation (ETF), the International Labour Organization (ILO), the OECD and UNESCO. This publication includes 16 selected papers submitted following the call for papers for the symposium, nine of which were presented during the event.

1.1. The context

1.1.1. Apprenticeship: a saviour in many different guises

Political interest in apprenticeships has grown considerably in recent years. Apprenticeship promises to be an effective means of ensuring that formal education and training systems are well aligned with labour market needs. School-to-work transitions are smoother in countries where apprenticeship is well-structured, ensures deep engagement of employers, and is governed by strong cooperation between all education and labour market actors. The great financial crisis of 2007-08 offered further evidence of the capacity of countries where apprenticeships are strong to withstand surging youth unemployment. The crisis provoked a renewed, global focus on the important role that apprenticeships can play as a form of initial vocational education and training (VET) that prepares young people for jobs in real demand.

As a consequence of that crisis, in recent years governments across Europe and the OECD have invested considerable resources in improving apprenticeship provision, introducing and reforming apprenticeships to reach ever more learners, both young people and increasingly adults (Cedefop, 2019). The consistent aim has been to ensure that apprenticeships are attractive to learners, to employers and to society, providing apprentices with skills demanded by employers while contributing to societal and economic wellbeing (OECD, 2018a).

However, while interest in apprenticeship is strong and growing, consensus is still lacking on what an apprenticeship actually is or should be (Cedefop, 2018). There is broad agreement across Europe and the OECD that apprenticeships are rich in work-based learning and so stand in contrast to school-based vocational education and general education systems. However, while apprenticeships tend to share several common features, such as compulsory working in a place of employment, usually in combination with learning at an education and training provider, with a contractual link tying the learner and the employer, they can be fundamentally

different in their strategic function and purpose. This has implications for the way they are defined and situated within national education and training systems.

Where apprenticeships have a clear and established education and training function, they run as an education and training system in their own right. The aim is to provide people with full competence and capability to enter an apprenticeable occupation through qualifications that are unique to apprenticeship training, as in journeyman or tradesman qualifications. Where apprenticeships combine the education function with a strong employment function, they are positioned mainly as an alternative mode of learning delivery: apprenticeship provides a qualification similar to other VET pathways, while the specific aim is to facilitate transition to the labour market (Cedefop, 2018). In this, apprenticeships are often seen as a way of broadening the available educational offer and improving the attractiveness and inclusiveness of upper secondary education to potential learners (OECD, 2018a).

Apprenticeships are also highly heterogeneous on an organisational level. In some countries, on-the-job training and school-based learning alternate within a week; in others two years of VET school are followed by two years in a firm. In some countries, apprenticeship pay comes close to that of a skilled worker; in others it is no more than weekly pocket money. In some cases, apprentices are overwhelmingly teenagers fresh out of secondary school; in others they are much more likely to be older and come to apprenticeship after years of work experience. Apprenticeships can be narrowly focused in a small number of occupational areas, such as the traditional trades, or be found in offices and the service sector. Apprenticeships are commonly delivered at ISCED 3, but in an increasing number of countries they span ISCED 2 to 6.

Apprenticeships reflect the societies, economies and education systems in which they are located. Differences between apprenticeships make direct comparisons difficult, but not impossible, and in such variation lies opportunity for peer learning, empirical analysis and innovation. Scope emerges for researchers to observe how particular apprenticeship systems are responding to universal phenomena widely termed the megatrends of the 21st century.

1.1.2. All change! 21st century megatrends

The current Covid-19 pandemic can be expected to bring with it still further significant change, radically disrupting labour market demand and requiring delivery to adjust to the new realities of social distancing. Prior to the coronavirus spreading, the world of work was changing, with significant implications for apprenticeships. Changes can be expected to continue, even to accelerate in the new context the world faces. Megatrends include advances in technology (digitalisation, automation, artificial intelligence), continuing globalisation and the expansion of global value chains (including offshoring), ageing populations, dynamic migration flows and changes in the organisation of work (flatter workplaces, the 'gig' economy).

Technological change

As a result of technological change alone, over the next 10 to 20 years, a large share of jobs is at significant risk of radical change or even disappearance due to task automation (Nedelkoska and Quintini, 2018). Such change is of fundamental importance to all forms of education and training aimed at preparing people for work. Technological change alters patterns of demand for both technical skills and key competences which enable workers to be effective at work. In an era where demand for skills is changing rapidly, workers can anticipate needing to retrain more and, as another consequence of digitalisation, to upskill. While the extent of expected change varies between countries, it is clear that many of those most likely to be at risk of automation are in occupations based on more routine tasks, often entered through vocational pathways.

To an extent, such changes should bolster the importance of apprenticeship. Where technological change is rapidly altering the tasks which underpin production, the relevance of workplace learning grows. Workplace training gives learners opportunity to make use of state-of-the-industry equipment and working methods. Work-based learning reduces the pressure on education institutions to replicate contemporary industrial prac-

tice through expensive workshops staffed with hard-to-find teaching professionals. Even so, the pace of change is something that apprenticeships must respond to, ensuring whole frameworks for learning are regularly updated through deep, authentic relationships between programme designers and the industries which they serve.

Technological change is also linked, however, to trends that work against the continuing relevance of apprenticeships. Online technologies are fundamentally changing the character of work for millions of people. In the 'gig' economy, workers engage in work through online platforms in situations where there is no traditional employer to take responsibility for developing workers' skills. This way of working requires preparatory programmes that equip learners not only with the technical skills that their occupation demands, but also provide them with the skills essential for de facto self-employment. Arguably, the 'gig' economy presents a deeper, existential threat to the continuation of apprenticeship. Without employers, there can be no apprenticeship system. Flatter workplaces – where traditional hierarchies have given way to fewer gradations between management and employees – can also be seen as detrimental to the future of apprenticeship, based as it is on the relationship between novice and expert. In an era where workers will be expected to change tasks and occupations more frequently, a strong grounding in key competences and applied problem solving becomes more important. This has consequences for the level of academic content within apprenticeship programmes. Firm foundations in literacy, numeracy and the skills that enable personal effectiveness become more important as people need to reskill within the labour market. Arguably, in such circumstances, the comparative attraction of general education pathways will grow.

Demographic change

Technologically driven changes in the labour market raise new questions about who vocational education and training is for. In a world where retraining and upskilling becomes the norm, policy-makers are prompted to direct new attention to the potential of apprenticeships to equip adult learners with in-demand skills. Adults are increasingly participating in apprenticeship training, often due to policy interventions and measures that have removed barriers to participation and provided incentives (Cedefop, 2019). Adults, though, have different needs to young people. They can be expected to come to apprenticeships with much longer histories of work experience. Adult training plans should take account of an individual learner's previous employment experiences and prior education and be responsive to the motivation of adults. When it comes to the in-company part, it is important to acknowledge that adults typically need less supervision and intervention from their employers. Effective apprenticeship provision will avoid providing the same learning experiences for adults and young people (Cedefop 2019). Strong systems will recognise the knowledge and skills that learners bring with them to new training programmes (Kis and Windisch, 2017) and take into account the higher living costs of older workers. This is important because apprentice wages form a fundamental aspect of any cost-benefit analysis of the attractiveness of apprenticeships for both employers and apprentices.

Not only can apprentice learners be expected to be older in the future than in the past, they can be expected to be more diverse. As the OECD has illustrated, the proportion of young people from migrant backgrounds has grown rapidly over the last generation and this is especially the case in Europe. On average, across the OECD countries, 23% of 15-year-old students came from a migrant background in 2015 compared to 17% in 2003. In Australia, Canada, Ireland and Switzerland more than one in three teenagers is a first or second-generation migrant (OECD, 2018).

Increasing diversity represents both an opportunity and a challenge for apprenticeship provision. Many OECD and EU countries are faced with ageing populations. In 1980 on average across the OECD, there were only 20 people aged 65 and over for every 100 of working age; by 2015 this number had risen to 28 and by 2050 it is projected to reach 53 (OECD, 2017). For countries beset by skills shortages, migration represents an attractive opportunity to draw a new generation of learners into vocational education and training.

However, studies show that challenges still exist. Migrants commonly lack familiarity with national vocational systems. Whereas academic systems share many characteristics, VET systems globally vary significantly in how they are structured and in the strength of their reputations. As UNESCO has illustrated, the quality (and reputation) of VET in countries from which the greatest numbers of refugees have fled over the last decade is consistently low. For such first-generation migrants facing significant additional challenges in terms of language acquisition, students often need more time to achieve the academic proficiency which will make them attractive to employers. For all learners from migrant backgrounds, further obstacles exist in terms of weak social networks linked to apprentice employers. As the OECD has illustrated, countries can and are addressing such barriers through structured programmes (Jeon, 2019).

Societal changes

A third arena of change of importance to apprenticeship provision relates to young people's growing expectations of adult life. Every three years, the OECD's PISA survey asks hundreds of thousands of 15-year-olds around the world both what occupation they expect to have by age 30 and whether they plan to attend tertiary education. A clear trend is visible. Over time, young people are becoming significantly more determined to secure managerial and professional jobs and to follow education pathways that take them to higher education, which excludes apprenticeship in many countries (Mann et al. 2020). Even in countries with the strongest apprenticeship traditions, the attraction of university education has risen. Apprenticeship is facing an ever-growing threat, therefore, from competition from higher education for young people and it is responding. A recurrent theme of the symposium was the emergence of higher-level apprenticeships which offer graduate or degree level qualifications.

Risks to apprenticeship

These are all long-term structural trends that raise risks for apprenticeships. In simple terms, apprenticeships succeed because they offer learners (young people and, increasingly, adults) employers and society (as represented by governments) the same thing: a pathway to skilled employment. For apprenticeships to work, they must be attractive to all three stakeholders; hence, the efficacy of social partnership as a mechanism for bringing together employers, trade unions, governments and other stakeholders to ensure that interests are balanced. To young people, a clear danger is that apprenticeship in an era of labour market instability becomes detached from confident entry to skilled, stable employment. A significant risk exists that apprenticeship will become, as it has been in some countries in the past, a mechanism solely for securing the labour market integration of lower skilled workers. This concern is amplified for society by worry over the capacity of apprenticeships to be genuinely inclusive, offering a wide range of learners an attractive opportunity to secure an upper secondary or tertiary qualification. For employers, change threatens the fundamental attractiveness of apprenticeships: that costs will outweigh benefits (OECD, 2018a). This might be due to apprentices taking longer to become productive in work or due to changes in the organisation of work and employment itself.

1.2. Next steps for apprenticeship

Against this backdrop of external pressures, a number of key messages emerge from symposium papers and discussions in terms of how countries can respond to the opportunities and challenges presented to apprenticeships in the years ahead.

1.2.1. Safeguarding the purpose and function of apprenticeships to build a strong identity

According to Grollmann and Markowitsch, much will depend on broader developments in VET and the function assigned to apprenticeship. In their paper (Chapter 2), Grollmann and Markowitsch presented three scenarios for the future of apprenticeships in Europe. The three models reflected recent practice found across the con-

tinent. In scenario 1 (Apprenticeship as fake), apprenticeship would be predominantly used to fill low skilled positions with employers looking to reduce production costs by taking advantage of regulatory liberalism related to employment laws and active labour market initiatives. In a second scenario (Apprenticeship as brand), the recruitment of apprentices becomes a longer-term employer commitment. Here, apprenticeships are focused on higher skill levels with programmes of professional education designed not only to enable entry into the world of work, but to provide the basis for lifelong career development in an occupational area. Finally, in a third scenario (Apprenticeship as a label), apprenticeship has become a buzzword with many meanings, reflecting provision typical of both scenarios 1 and 2. The authors highlight the significant risk that 'fake' apprenticeships will become the norm, with apprentices enrolling on programmes of little educational value, low attractiveness and visibility, developing limited skills specific solely to individual workplaces.

Olofsson and Panican (Chapter 3) take a Swedish perspective to reflect on apprenticeship provision which, since 2011, has become a regular part of the upper secondary education system but has struggled to attract learners. They argue that the apprenticeship model, in countries in Europe where it is most developed, depends on specific institutional contexts linked to labour market and education system arrangements. Significant elements of a developed apprenticeship system, such as the cooperation of education and the labour market side, or institutional conditions linked to apprenticeship governance at various levels, have yet to be introduced or significantly reinforced In Sweden. Apprenticeship programmes must be genuinely attractive to both learners and employers if they are to thrive.

1.2.2. Embracing convergence

Change in demand for skills within the labour market raises questions of both general and vocational education. As Dieter Euler argued during the Paris symposium (Chapter 4), a convergence is happening in the requirements of the two learning pathways. In general education, new emphases on critical thinking, complex problem-solving, creativity and entrepreneurialism raise the importance of real-life environments, notably workplaces, as sites of learning. Equally, in many countries apprenticeship provision has acquired a stronger academic foundation, recognising growing labour market instability and the need for programmes of vocational education and training to offer a platform for lifelong learning. To Euler, key competences, expert knowledge and practice skills can be conceived as hybrid competences. 'Most work organisations', he argues 'require flexible people who are competent to integrate practical skills, have a cognitive understanding of work processes and key competences to show problems in teams, and contribute to innovations.'

Implicit in Euler's argument is a recognition that technological change is breaking down the historic divide between two styles of learning. For both general/theoretical and vocational/practical learners, technology allows knowledge and skills to become more easily accessible, with consequences for both educational preparation and workplace demands. As argued by Andreas Schleicher (Mann and Huddleston, 2016), the world economy no longer pays someone for what they know, but whether they can be personally effective in applying what they know in changing situations. Such an applied, problem-solving approach to learning, resonant in the competences that allow an individual to be effective in their work, is long-standing within vocational education. Clear opportunities exist for general education to learn from teaching approaches common in vocational education.

In the case of vocational education, the need for a stronger platform of cognitive skills also appears clear. In a world where workers must expect to reskill and upskill on a regular basis, the greater importance of foundational literacy and numeracy is clear. Certainly, significant variation exists between countries in the extent to which such general education is integrated into apprenticeship provision and rich opportunities exist for peer learning.

1.2.3. **Aiming high**

The sharper focus on academic content within vocational provision directs attention to the emergence of pathways that can take learners between general and vocational upper secondary education and onto tertiary qualifications. Such permeability is essential to the attractiveness of vocational education to both learners and, in an increasingly high skill world, employers. Attractive pathways enable progression and avoid career options being curtailed early. The symposium heard much about the emergence of degree or graduate level apprenticeship provision. Such qualifications present new opportunities to increase the reputation of the whole apprenticeship brand. In Scotland, the recent development of a Graduate apprenticeship in engineering represents successful evolution of provision. Stewart McKinlay (Chapter 5) highlighted the ways in which inclusivity, agility and relevance were built into the qualification, negotiating the balance between broader and more specific occupational skills. In the Scottish example, flexible entry requirements and targeted academic support to ensure a minimum level of mathematical ability are designed to broaden access to university level study. Substantial proportions of the programme are undertaken in workplaces, with work-based assessment of competence development. With other learning primarily delivered online, students are required to attend the campus only one day a month. After a successful first year, the graduate apprenticeship model has been expanded to business and information technology.

1.2.4. **Adapting to the new world of work**

Governments have invested so strongly in apprenticeship over recent years because it represents an attractive means of helping young people to enter working life with confidence in securing skills in long-term demand. For governments, such economic resilience is highly attractive, as is the capacity of apprenticeship to reduce full costs to taxpayers in delivering upper secondary qualifications. Where well delivered, apprenticeship creates a platform of knowledge and skills that prepares learners for lifelong careers (OECD, 2010; OECD, 2018a). It will be a matter of concern for governments, therefore, that essential employer engagement in apprenticeships is at risk.

After presenting five features of the new world of work (industry 4.0, globalisation, structural adjustment, labour movements and gig economy), Erica Smith in her paper explored how case-study companies are responding to them. She then established links with features of Australia's apprenticeship system that may also need to be adjusted in order to maintain the currency of qualifications and curricula and effectiveness of delivery systems.

The growth of non-standard forms of employment, which disproportionately impacts young people, and the particular emergence of the 'gig' economy, raise concerns. As Erica Smith argued in Paris (Chapter 6), the worker is the business in this new form of employment with companies such as Uber and Deliveroo driving work outside of much employment regulation. Can apprenticeship exist consequently without a 'real' employer?

It is timely in such circumstances, Smith argues, to focus afresh on the role of intermediary organisations in enabling apprenticeship delivery. In many countries, intermediary bodies have been established by government, by industry or as independent bodies to facilitate the initiation and/or delivery of apprenticeships. A primary purpose of such organisations is to enable greater employer engagement in apprenticeships. This is achieved by reducing administrative burdens, recruiting suitable candidates for apprenticeships, and delivering pre-employment and on-the-job training and support. In some cases, it is the intermediary which is the formal employer of the apprentice who is then 'leased' out. Such an arrangement can allow apprentices to train in a number of different workplaces over the duration of a training contract.

The attraction of intermediaries is particularly strong for smaller enterprises lacking capacity in human resource. Smith concludes by arguing for greater research into the roles of these organisations. Challenges will exist in balancing action to engage employers with ensuring that the workplace relevance and authenticity of the apprentice experience is not compromised.

Kimps, Lembrechts, Van Riel and Winnelinckx (Chapter 7) also explore the case of apprentice sharing or pooling, where apprentices rotate between workplaces. They argue that such sharing, at micro-level, may lead to certain disadvantages for apprentices and employers, which counterbalance the benefits and blur the perceived value of the initiative. However, more benefits are unveiled when looking at the macro-level, in terms of the overall attractiveness of apprenticeship for employers and the number of workplaces available for training. More careful design of such initiatives, on the basis of characteristics linked to sector, region or company size would, they argue, help tip the balance towards the advantages.

1.2.5. **Leaning in to change**

How can apprenticeship provision withstand the instabilities of economic and technological change and maintain a high-quality model of provision that serves the interests of learner, employer and of society? In a case study from the ICT sector in Switzerland, Barabasch and Keller (Chapter 8) offer an example of how an enterprise has leant into megatrends, changing the organisation of work to enhance the model of apprenticeship. Observing a new model for workplace learning, the authors find that innovation in training reflects new competence needs within a labour market shaped by the desire to maintain competitive advantage. In their case study, skills are developed through innovative project-working where apprentices follow personal interests to address company challenges under the guidance of a coach. Barabasch added during the symposium:

> 'The enterprise has prepared the ground for the development of skills such as critical thinking, problem solving, teamwork, communication and self-directed lifelong learning. With the implementation of agile approaches, it responded to the need for idea creation, quick prototyping and structured but still somewhat individualised team work. It particularly supports the engagement in creative endeavours and welcomes open-mindedness and high engagement. Applicants, who can show that they are willing to approach the opportunities and challenges that such a learning culture entails, are the winners of the run for a placement.
> The subjectively perceived training outcome is high among the learners, not least because they have the possibility to follow their interests and, in this way, not only become self-directed learners; they also realise throughout their apprenticeship how much else there is to learn and that learning itself will always be relevant in life.'

Digitalisation represents both an opportunity for improving provision and a need for change within apprenticeship systems. Although it has had some impact on how the majority of the German firms surveyed in Flake and Meinhard's study (Chapter 9) implemented apprenticeship, only a minority has introduced intensive and strategic changes related to digitalisation. The authors argue that both companies with a strong digital focus and those with little digital experience will need to address the impact of digitalisation. Although large companies and those with an intense use of new digital technologies serve as forerunners, there is still a lot of potential for all employers to promote the digitalisation in apprenticeships; also, the proportion of enterprises which state that they have a need for support in implementing digital developments into their apprenticeship training is large. Flake and Meinhard see a role for VET learners engaging in a broader range of qualifications in order to strengthen social and communication skills. From their perspective, innovative approaches can transform the role of in-company trainers from instructors to supporters of learning processes. Eight out of 10 German employers, they point out, have expressed support for the introduction of new supplementary qualifications and/or the modernisation of existing training occupations in the light of ongoing digitalisation.

Digitalisation and Industry 4.0 are making creativity increasingly important for apprenticeships and it is already regarded today as an 'indispensable prerequisite' for innovation. Barabasch and Fischer (Chapter 10) look at ways to unlock the creative potential of apprentices, exploring a variety of innovative measures undertaken by employers within workplace learning. They argue

that apprenticeship curricula, didactic approaches and practices need to be adjusted to include creativity alongside other transversal skills. They argue, however, that that creativity should be supported differently in different occupations.

In her paper (Chapter 11), Andressen studies the case of an employer working in the knowledge economy participating in apprenticeships. In this case, corporate structures and the heavily specialist knowledge-based nature of the expertise required by the company mean that traditional approaches to learning from an 'expert' or at a regular time or pace are necessarily challenged by the need to meet business deadlines and targets. Aspects such as limitations imposed by the geographic location of particular roles, patterns of home-working, matrix team working, multiple lines of management and the use of video conferencing affect the understanding and practice of some apprenticeship training. Within this context, apprenticeship has become an option for both people already employed by the organisation, and others who were recruited into a new role. Such factors challenge the traditional image of an apprentice sitting alongside, and learning 'skills' from, a 'master'. The case study shows that the delivery of apprenticeships in the non-traditional setting of a large corporate enterprise offers a different type of learning opportunity for learners, both by necessity and structure.

1.2.6. **Pursuing attractiveness and excellence**

Research from countries with strong histories of effective apprenticeship offered examples of excellence and success in their national context (Austria, Denmark, Germany, Switzerland), stressing that policy-makers can strike a balance between apprenticeship excellence and inclusion. Le Mouillour, Lippuner, Schuster and Gramlinger (Chapter 12) argue that excellence in VET implies systemic attractiveness for a wide range of learners who bring with them different expectations and academic foundations. Hence, apprenticeship programmes should be inclusive and not foster social stratification. At the same time, they should capture current trends in the professions, adapt well to labour market needs and stay attractive in the context of increasing academisation in some countries.

Striving for excellence, policy-makers may often turn their attention to apprentice profiles, academic performance at previous education levels and related entry requirements. Dougherty and Eriksen (Chapter 13) explore unintended and negative side effects linked to raising of general admission requirements for entry into apprenticeship in Denmark. The authors propose that educational screening tools should be aligned with employer approaches and preferences regarding recruitment of applicants. They also argue that in apprenticeship markets where apprentice drop-out is common, it may be more beneficial to focus on raising demand for apprentices than on screening out students.

1.2.7. **Reviewing apprenticeship reforms**

In his paper (Chapter 14), Hordern focuses on the generally welcomed introduction of apprenticeship standards in UK-England, to unveil limitations and new challenges. The central philosophy behind the apprenticeship standards approach is that an apprenticeship should be based around an occupation, so standards are expected to be considerably broad. However, early evidence shows that the standards development process has been dominated by large employers and this has led to the marginalisation of small and medium-size employers, which could result in too narrow an understanding of the occupation. There are also concerns over the extent to which standards align with similar occupations, potentially limiting the capacity for apprentices to move between organisations or across sectors. In contrast to more holistic approaches to curriculum design, standards development processes may lead to the exclusion of the more general educational aims of apprenticeship and overlook pedagogical, scholarly or critical capacities that would enable practitioners to adapt to changing occupations. While the standards may represent a more holistic direction than previous approaches to vocational education, it seems that further changes will be needed to ensure that the apprenticeship system in England supports fully fledged occupational competence and expertise across all occupations.

Hogarth and Gambin (Chapter 15) look at the recent introduction of the apprenticeship

levy in the United Kingdom and ask why it has not brought about the expected increase in apprenticeship starts. Among other reasons, the authors discuss the possibility that in a flexible labour market, investments in human capital are riskier than those in more coordinated systems where, for example, collective agreements reduce the number of free-riders. A second explanation relates to the high demand for people to work in relatively less skilled work. These points may affect the economic rationale of employers, with enterprises potentially being unwilling to make an investment in relatively high cost apprenticeships if they are not convinced that that they will be able to recoup their overall investment within a labour market that sees apprentice productivity vary between economic sectors but requires undifferentiated levy payments.

1.2.8. Supporting measures and structures to ease participation

When addressing challenges that arise outside of apprenticeship, it is natural for policy-makers to look at how apprenticeship systems are likely to respond. Sometimes the overall conditions regarding VET or complementing services need to be examined too, as a way to address the challenges related to apprenticeship provision. In their paper (Chapter 16), Barabasch, Scharnhorst and Leumann point out that the completion of an apprenticeship programme as the preferred, yet challenging option for inclusion of refugees within the labour market, is facilitated by peripheral policy initiatives. Traditional apprenticeship schemes in Switzerland are not modified or adjusted in response to new cohorts of refugee learners, but the overall system is adjusted to provide greater flexibility. This includes first language courses, coaching with an orientation to apprenticeship enrolment, and an extended provision of pre-VET courses to prepare refugees for dual VET in specific occupational fields facing skill shortages. Pre-VET courses are seen as a step towards allowing a smoother and managed entry into apprenticeship, complementing the recognition of prior learning. The authors also argue for the promotion of basic, cultural and social skills, through the socialisation of refugees within communities of workers prior to the commencement of the actual apprenticeship.

Kashefpakdel and Huddleston (Chapter 17) turn their attention to the important subject of career guidance available to learners before they enrol on apprenticeships. Effective guidance can be a means of addressing skewed skills supply and mismatches between qualifications and actual labour market needs. Lessons from a UK programme that brings together apprentices, their employers and key actors in the apprenticeship arena to provide reliable information, advice and guidance to prospective trainees shows how access to meaningful encounters with real apprentices and their employers can play a role in informing young people about the opportunities available and help to promote apprenticeship as a first-choice destination. The authors describe how apprentices can be brought into primary and secondary schools to provide authentic insights into the reality of their apprenticeship training and occupational progression.

1.3. Conclusion

Over the last decade, apprenticeship has been in the policy spotlight as a way to address high youth unemployment in the context of the employment crisis which followed the great financial crisis of 2007-08. Twelve years on from the crisis, the need for effective apprenticeship provision is still viewed as urgent. This was highlighted in the interventions from the European Commission, the ETF, the ILO, UNESCO, the OECD and Cedefop during the high-level panel that concluded the joint Cedefop and OECD symposium.

A common theme across the symposium was the need for VET systems to become more responsive to changing patterns of employer demand. Responsiveness drives changes in who is taught VET, what they are taught and how they are taught. The logic of the change being witnessed suggests the need for more rapid updating of curricula, a stronger emphasis on the workplace as a site of learning, and growing flexibility in provision with more targeted qualifications and more personalised learning. To avoid missteps, such responsiveness calls for ever

stronger relationships between the stakeholders related to VET provision. All those who have an interest in the successful delivery of VET need to be engaged in ensuring its effective design and operation. In the Covid-19 recession, where confidence among all stakeholders is fragile and labour market demand becomes still more turbulent, the need for collaboration to underpin the responsiveness and attractiveness of apprenticeships is an urgent priority.

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CHAPTER 2.

The future of apprenticeships in Europe: three scenarios

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2.1. Introduction

Since the global financial and economic crisis of the late 2000s, national governments and international organisations have put much effort into the development of work-based learning in vocational education and apprenticeship programmes, aiming at better matching of the education system and the labour market and a smooth transition to work for the young (European social partners, European Commission and the Council of the European Union, 2013).

This renewed emphasis on apprenticeships has also unearthed the tremendous variety of apprenticeship programmes in Europe. In some countries, on-the-job and school-based learning alternate within a week; in others two years of school are followed by two years in a firm. In some countries apprentice pay comes close to a skilled worker salary; in others it is no more than weekly pocket money. In some cases, apprentices are assigned a specific status but usually they are considered employees or also students. Often apprenticeship programmes are classified at ISCED level 3; in a few countries they range from ISCED level 2 to 6 and, occasionally, they are not classified at all because they are not considered part of the formal education system. This list of differences could easily be extended.

The question addressed in this contribution is: How will apprenticeships in Europe develop and which types are likely to prevail? While this question has many aspects, three issues are deemed central:

(a) the shape and purposes of institutionalised apprenticeship programmes in Europe. What is their main focus and design? A classification is used that was developed to capture and sort the multitude of apprenticeship programmes in European Member States (Markowitsch and Wittig, 2019);
(b) the future training and recruitment decisions of firms: how far are firms willing to engage in formal education as a strategy of recruiting and developing skilled employees? Summaries are given of findings and concepts from the literature on economics of education and a research project on recruitment strategies of firms based on case studies in Germany, Spain, Italy, Portugal, Slovenia and the UK. The project has looked at why firms are engaging in education and training as well as how they organise the on-the-job part (Grollmann, Blöchle and Jansen, 2018);
(c) the future socio-political status of vocational education: which role and value will society attach to vocational education in the future and what is the role of apprenticeships in comparison to other forms of work-based learning? This section offers general scenarios on the future of VET from a recent Cedefop project ([3]).

In the main part, the answers to the above three questions are integrated into three future scenarios for apprenticeships. The conclusion discusses the likeliness of the scenarios against the background of past and future trends in vocational education and work in Europe.

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2.2. The shape and purposes of apprenticeships in Europe

The new interest in apprenticeships in the aftermath of the economic crisis has also generated abundant comparative studies (Cedefop, 2018; European Commission, 2012; European Commission, 2013; OECD, 2018) illustrating differences and similarities between apprenticeship programmes. A proposal on how to explain these differences and similarities has recently been made by Markowitsch and Wittig (2019), who classify 40 apprenticeship programmes identified in 25 European countries according to four different institutional education logics on the basis of the programme's key purpose, organisation, and definition of content: enterprise training; professional education and training; school or university education; and public training as part of active labour market policy.

(a) The key purpose of enterprise training is to make sure that the specific skills needed by enterprises are available. The individual enterprise enjoys substantial autonomy over how to organise the training. Apprenticeships in this category are characterised by a diverse set of programmes and qualifications, by shorter training periods and more on-the-job learning. Skills are less transferable between employers and there is also a preference to offer training to incumbent workers rather than newcomers to avoid recruitment costs.

(b) The key purpose of professional education and training is to educate and train the younger generation of a professional community (sector, trade, craft, or other communities of professionals) so that they become full members of the profession. Apprenticeship programmes in this category are characterised by a focus on the professional standard jointly defined by employers and workers. Programmes mainly aim at young people; their status as learners (apprentices) is generally acknowledged and training periods are relatively long because enculturation into a professional community takes time.

(c) The key purpose of school education is to facilitate personal development of young people to become responsible citizens. Curricula are usually determined by public authorities and oriented towards the needs of society in general rather than certain professions or firms. Apprenticeships of this type usually have their origin in school-based vocational education, in which work-based elements have been strengthened so that the programmes now qualify as apprenticeships. The work-based learning component is often perceived as a supplement rather than the main part of the training and schools are partly or fully in charge of organising work placements and final examinations.

(d) The key purpose of public training schemes as part of active labour market policies is to increase the employment opportunities for jobseekers and to improve matching between jobs and potential employees. Apprenticeship programmes of this type only exceptionally date back before the 1980s and are often temporary in character. They are clearly addressed to the unemployed and young adults at risk of social exclusion. Employability and work readiness are emphasised and are more important than integration into a profession or access to further learning.

According to Markowitsch and Wittig (2019) most of the 40 apprenticeship programmes follow the logic of school education. There are only a few smaller programmes which follow the logic of public training schemes, notably in Greece, France, Italy, Portugal and Romania. There is no apprenticeship approach in Europe that could be clearly classified as enterprise training, although apprenticeships in UK-England and UK-Scotland share many features of the enterprise training logic: a high share of adult learners, a low amount of off-the-job training or education, a shorter overall duration of programmes, and a variety of qualifications (ibid.).

However, when looking at the number of apprentices instead of the number of programmes, the logic of professional education and training clearly dominates the landscape of apprenticeships in Europe. Apprentices in Austria, Denmark, Germany, Norway, Poland and Switzerland clearly represent the major share of all apprentices in Europe. Consequently, the logic

of professional education and training still dominates our image of apprenticeship in Europe despite the fact that most programmes considered as apprenticeship in the national jurisdiction follow a different logic.

2.3. Firms engaging in formal education as a strategy for recruiting and developing skilled employees

The willingness of firms to train intrinsically depends on their economic situation and human resources needs. Instead of recruiting and training young workers or apprentices they may opt to recruit skilled workers from the labour market. This might include 'poaching' a skilled person from another firm that had trained the employee before.

Despite this option, apprenticeships in some countries are an important channel for firms to recruit new workers and to develop required skills via work-based learning. Economists are therefore interested in motivation with regard to recruitment functions, the organisation of work-based learning, and the wider benefits and outcomes of such an engagement of firms in formal education. For the recruitment function, the screening of candidates through apprenticeship periods before providing a permanent employment contract can be an incentive to save costs incurred by bad recruitment decisions (Stevens, 1994). However, fulfilling this function does not necessarily require long-term formal apprenticeship contracts. Further motivation highlighted by economists regarding recruitment is the identification and development of a pool of suitable employees or trainees. This could explain the take-up of interns or apprentices beyond actual demand at a given moment.

In the economic literature, the most prevalent economic motives under discussion with respect to the organisation are production and investment (Lindley, 1975). By definition, the production motive can be assumed, when there is already a positive return on the employment of an apprentice during the period of apprenticeship. An investment motivation can be assumed when there remain net costs ([4]) after the termination of the programme. In this case the positive return would only become effective by the productive contribution of the skilled workers after having finished their apprenticeship.

Based on data on costs and benefits from a German survey (Schönfeld et al., 2016), the investment type of apprenticeship seems to prevail for German firms. By contrast, in Switzerland the (relative) level of remuneration is lower and apprentices are exposed to productive work assignments to a larger extent (Dionisius et al., 2009) so most Swiss firms provide apprenticeships based on the production motive. This underlines that despite relatively small institutional differences and similar organisational practices, considerable differences in the motivation to engage in apprenticeships may exist.

Given the variety across Europe in terms of institutions (e.g. length of work-based learning phases), wage-setting and financial and non-financial public incentives, the multitude of potential differences in firms' motivations to engage in apprenticeship should not be underestimated. This equally applies to organisational practices and how firms structure work-based learning.

Conducting case studies in Germany, Spain, Italy, Portugal, Slovenia and the UK, a recent project has not only looked at why firms are engaging in education and training but also how they organise the on-the-job part (Grollmann et al., 2018). The project selected car-service establishments and automotive production plants for examination ([5]).

([4]) Costs of training, of which the major determinant is usually remuneration. Important factors that influence the costs are the level of remuneration and the length of the apprenticeship programme. The productivity of an apprentice (measured by the costs of an unskilled or semi-skilled worker) and on a more long-term basis the saved hiring costs for skilled employees and the saved induction costs count as benefit.

([5]) The former represents a small enterprise perspective on dual arrangements, while the latter represents the perspective of large industrial firms. In both cases – automotive production and car service – we assumed relatively homogeneous products and processes across European countries.

In both sectors, across the countries, the project found that there is a high tendency to look at the option of recruiting young labour market entrants because of a lack of skilled workers; the screening motivation was predominant in firms' decision to take on trainees.

When looking at the organisation of work-based learning and the motivation in more detail, it became clear that larger establishments had a stronger commitment to the long-term development of employees. They often had established formalised recruiting mechanisms and aptitude tests for selecting employees, which to some extent fulfilled screening functions otherwise taken on by periods of work-based learning. Especially in the case of large industrial production firms, the investment motivation became clearly visible. Some predominantly applied dual models as a strategy of employer branding on the regional labour market. For the smaller firms with such a long-term perspective a case of a 'pooling' motivation was also identified: the firm had quite a distinct strategy of selection and screening and used the extension of work-based learning to develop a 'shortlist' of potential employees for potential future vacancies.

When looking deeper into the 'how' of work-based learning some cases showed relatively flat work organisation (vertically and horizontally), while others showed a higher separation of tasks within the car service workshops. Often the demarcation lines between job profiles in the latter cases were between low-skilled and more complex tasks, technical domains, such as electronics and mechanics and, *between different car makes*. The respective car makes provided considerable external training to apprentices. There is evidence of the correspondence of rather narrow and specific job profiles with a high production orientation. However, there are also instances of quality work-based learning where work was organised in broader job profiles and where apprentices were strongly involved into productive work tasks. Often this was connected to a designated commitment by the owner and a careful selection of adequate work tasks along the overall course of the programme.

The case studies also provided evidence that strong competition between firms for skilled labour resulted in some reluctance to engage in training because of the risk of losing prior investments. In such a situation the support to firms from sectoral cooperative structures or services provided by public VET provision might tip the scale in taking on a long-term investment view for the firm (Grollmann et al., 2017). However, the external apprenticeship training that trainees received in such cases from public provision was merely basic worker employability training focusing on aspects such as work safety regulations or similar content.

In order to become a significant systemic pillar of vocational education, work-based learning in VET needs to 'mature' (Gessler, 2019) from a screening instrument for firms to a longer-term strategy of recruiting and training skilled workers. It is more likely that firms with broader and complex job profiles and larger firms are ready for a long-term commitment. Firms' willingness to take on longer-term commitments to work-based learning may be stimulated by the fact that many sectors and EU countries face shortages of skilled work due to demographic reasons (Jansen and Pineda-Herrero, 2019; Pineda-Herrero et al., 2018). Encouraging firms to engage in apprenticeships will also hinge on the capacity of other actors in the vocational education system to complement individual firms' activities. Vocational education provision needs to cover services that are tailored to their needs and at the same time secure learning outcomes that go beyond idiosyncratic skills sets that are not applicable in other work contexts than those in which they were acquired.

2.4. The future role of vocational education and training in European education systems

The future of apprenticeships depends on the role and value that society in general attaches to vocational education and training in the future and the role of apprenticeships in comparison to other forms of work-based learning. The future status of VET can be assessed from scenari-

os recently developed in a Cedefop project ([6]). These scenarios are based on a comprehensive empirical trend analysis, scenario workshops and stakeholder surveys. The resulting model emphasises two important dimensions and tensions: pluralistic versus distinct development; and academic versus vocational drift. In a pluralistic environment, VET systems become more diversified, with fuzzier lines between them and general education. Conversely, where VET is seen as a distinct education and training strand, its profile is sharpened in aspects such as learning forms or curricula. Academic drift means programmes and institutions are less work- and practice-oriented and that general subjects and disciplinary knowledge are prioritised by education policy as well as learners. Vocational drift, means a stronger practice-orientation, including high flows of learners that choose vocational pathways (Cedefop, 2020). By combining these dimensions, three main scenarios for VET can be distinguished ([7]).

2.4.1. Pluralistic VET with lifelong learning at its heart

In this scenario the distinctions between vocational and general education become increasingly obsolete. Currently observed blurring boundaries between VET and general education at upper secondary level point in this direction. Emphasis will be on vocationally and labour-market-oriented learning at all levels and in all institutional settings. Vocationally oriented learning will not be restricted to institutions explicitly defined as VET providers but will form part of an integrated lifelong learning approach. The VET target group will be significantly broadened, notably by addressing the needs of learners of all ages systematically. There will be a strengthened relationship between initial and continuing VET. Progression in, and pathways of, vocationally oriented learning throughout life and portability of vocational learning will be a key feature of pluralistic VET. There will be a weaker link to specific occupations and job profiles.

2.4.2. Distinctive VET with occupational and professional competence at its heart

In this scenario VET is considered a distinct education sector that clearly differs from general education and dominates the education system: it could be called a 'VET hegemony'. As opposed to other education and training subsystems, learning at workplaces is regarded as a key defining element of VET and a 'gold standard' across occupational areas and at all levels, including EQF 8. This is seen as ensuring a basis for future progression in people's learning and professional careers. VET will be organised around the requirements and identities of clearly defined occupations and/or professions. This ensures a close link to the labour market and emphasises a need for a balanced commitment from education and training administrations, as well as employers and trade unions. In this scenario young people in initial education and training will be seen as the future core target group.

2.4.3. Special-purpose or 'marginalised' VET with job-oriented training at its heart.

In this scenario, specific forms of VET have survived in an education system which is dominated by general and higher education. VET's focus is on training for jobs, reskilling and upskilling for short- and medium-term labour market needs. Employability is of key concern, as is the ability to respond to groups at risk. Empowering people to develop a lifelong learning perspective, is taken over by general education at all levels. This reduced VET role forms a reactive policy that responds to short-term skills shortages and, in turn, limits the ability of traditional VET to 'compete' with other education and training sectors. Its target group is reduced, mainly to adults in short training courses in need of immediate re- or upskilling or at risk of unemployment and social exclusion. This scenario also implies radically different VET governance, where individual firms and sectors, as well as employment services, play a key role while the role of the public education and training system is limited.

([6]) Changing nature and role of vocational education and training (VET) in Europe.
([7]) For some more enriched descriptions of these three scenarios and a breakdown into six detailed scenarios see Cedefop (2020).

These scenarios are not meant to 'predict the future' and it is not likely that they will materialise in their 'pure' or 'ideal' form. On the contrary, they are likely to coexist, influencing and perhaps dominating VET systems and institutions in different ways. Nevertheless, they demonstrate VET's possible future purpose and role and the position VET is meant to have in relation to other policy areas and society at large. The following section discusses the types of apprenticeship programmes against the background of firm motivation and practices, as well as the future role of VET, and brings these together in three future scenarios of apprenticeships.

2.5. Three scenarios of apprenticeships

2.5.1. Scenario 1: Apprenticeship as a fake

In this scenario 'apprenticeship' programmes denote specific forms of employment contract that are targeted towards employer needs. Sometimes they are publicly supported in order to serve as an integration measure for those who are at risk of not entering the labour market. The ultimate aim of such apprenticeship programmes is easing access to the labour market or maintaining employment. Firms that employ workers on the basis of apprenticeship contracts take advantage of more favourable conditions as if they were hiring skilled workers from the external labour market based on ordinary labour law (fixed-term contract, lower wage). Firms almost exclusively follow production motives and make use of public support through active labour market policies where available. Apprenticeships are predominantly used to fill vacant low-skilled positions at the margins of work organisation, with high take-up of apprentices limited to economic upswings. Providers of labour market training receive considerable funding for such course-based offers. Off-the-job training concentrates on transversal, job-related content such as work safety regulations and general IT-skills. On-the-job learning is reduced to the essentials for the respective job, since firms often fear that workers might leave after the apprenticeship period. In some cases, where there are sector specific skills requirements, there are initiatives by branch organisations or other overarching bodies, such as global IT firms or specific car makers, to make sure that the supply of skilled work can be sustained.

Potential for public administration to take on a coordinating role in safeguarding a skilled labour supply is not utilised. Firms and individuals might develop a cash-and-carry mentality in respect of financial transfers connected to apprenticeships they would have offered anyway. The youth labour market will be sensitive to up- and downswings. Apprenticeship qualifications are not really valued, neither in education nor in the labour market.

2.5.2. Scenario 2: Apprenticeship as a brand

In this scenario a distinctive VET sector is assumed, and VET dominates provision at upper secondary level and in professional oriented higher education, which has become a fertile ground for the development of apprenticeship programmes of the professional education type. Apprenticeship is the archetypical institutionalisation of a distinctive VET system that supports education goals, vocational learning and integration into the labour market. Considerable attention is given to the design of occupational profiles by the State and social partners. Occupational expertise is integrated systematically into curriculum considerations. The principles of apprenticeship were extended to domains and levels of education previously served by other forms of education. Apprenticeships do not only offer smooth entry into the world of work but are also the basis for lifelong career-development in an occupational area.

Many firms have developed an investment-oriented human resources development (HRD) strategy. Smaller firms especially benefit from the services that education institutions, sectoral and local intermediaries provide. This has stimulated their engagement in recruiting apprentices. The firms that are involved in apprenticeship regularly see a good match between their skills requirements, curricula, examinations and assessment. Recruitment of labour market entrants is regarded as longer-term commitment. The corresponding development of vocational expertise

matches work in high- performance teams or client-centred business processes.

The scenario presupposes a high degree of willingness to cooperate among actors from education and the economy. Actual permeability between education sectors and mobility on the labour market might be hampered due to the distinct character of learning and contents of apprenticeship programmes.

2.5.3. Scenario 3: Apprenticeship as a label

In this scenario 'apprenticeship' has evolved into a buzzword with many meanings. The dominating logic of apprenticeship varies between pure enterprise training, school-based education and active labour market policies, depending on the motivation of the respective promoters. The general pluralisation and diversification of vocational education and training has supported this development.

Correspondingly, a wide spectrum of organisational practices coexists: from contract- and employment-based long-term apprenticeships to cooperative education structures between education providers and firms. Internships and work placements are also commonplace. Practices of work-based learning that are integrated into formal education are the common denominator. In a competitive market of higher education provision, the 'apprenticeship' label indicates a strong practical orientation of programmes that are closely coordinated with employers. This often happens on a sectoral or regional basis but is not necessarily connected to overarching national standards. In some cases of high engagement, apprenticeship has turned into an employer branding strategy in the local competition for talents. Both production and investment motives coexist, depending on the concrete skills needs in the respective firm. The dominant reason to engage in apprenticeships is the screening function of taking on board potential future employees in probationary periods of employment.

Often a stronger engagement in long-term apprenticeships remains an exception limited to certain economic sectors or larger employers. There is a general visibility and attractivity problem for apprenticeships. Often it is regarded as inferior to academic pathways and linkages to quality employment are weak, but this picture is thwarted by scattered examples of excellent higher apprenticeships.

Table 2.1. **Summary of the three scenarios for apprenticeships in Europe**

Fake	Brand	Label
Labour market integration	Educational goals, professional competence and expertise	Variety of logics, enterprise training, education, active labour market policies
Firms and education providers	Employers, employee organisations, public administration	Education providers, firms, sometimes sectoral organisations
Generalised and basic employability training	Development of vocational expertise	Length, status of learners, responsibilities and content varies
Filling vacancies at the margins	Long term commitment	Long-term and short-term strategies coexist
Majority in low-skilled jobs	High-tech work processes and/or client-centred business processes	Training in a variety of jobs
Subsidised screening Focus on early productivity	Human-capital investment Integration into HRD	Screening, taking advantage of the label, reputation gains, sometimes financial incentives
Low-value qualifications Cash and carry mentality Low coordination	Low permeability between education sectors partly slow, cumbersome processes	Specific economic sectors Low attractivity and visibility Fragmentation

Source: Grollmann, P. (BIBB) and Markowitsch, J. (3s Unternehmensberatung).

2.6. Conclusion

These apprenticeship scenarios are not predictions of the future. Instead they are pictures or snapshots of potential alternative futures and, as such, they could serve as reference points for strategic dialogue on the future position and purpose of apprenticeships and work-based learning in VET in Europe. This conclusion discusses the scenarios presented against the background of recent developments in VET in Europe and potential futures of work.

The recent development of apprenticeship programmes and enrolment numbers in Europe support the third scenario ('label') at the expense of the second scenario ('brand'). Quite diverse new apprenticeship programmes were (re-)-established in Spain, Italy, Slovakia and Sweden, including new regulations on the status and roles of apprentices, schools and firms. Substantial diversification of VET in terms of target groups, skill levels addressed, type of providers, learning approaches, funding and governance has also occurred (Markowitsch and Hefler, 2019). The number of apprentices has mainly increased in programmes following the school logic, as in France and Portugal. In contrast, apprenticeships have lost ground in dual-system countries, such as Denmark and Germany, and countries with equally strong school-based and work-based tracks, such as the Netherlands and Austria. The absolute numbers of apprentices, as well as apprentices relative to students in school-based VET and/or academic programmes, have declined in these countries (Cedefop, 2020).

At the same time, we see an expansion of VET out of its traditional 'heartland' in the upper secondary level of education and a general shift of the centre of gravity of VET from EQF level 3 to level 4 or 5 (Markowitsch and Hefler, 2019). Some European countries now have a separate strand of vocational higher education or have added new vocationally or professionally oriented higher-level degree programmes to their offers, including internships or new formats of dual or apprenticeship training (Cedefop, 2019). This process can be understood as an 'upgrading of the dual-training principle' (Graf, 2017, p. 7) and exemplified by the dual study programmes in Germany (Krone, 2015), Austria and the French-speaking part of Belgium. Other forms with a similar design include apprenticeships at higher education levels (in France, Italy and UK-England) and work-based bachelor programmes (in Norway). Professional doctorates are offered in the UK. This exemplifies the development of a 'distinct' vocational education. However, it is uncertain whether this will happen in a coordinated way, as in the 'brand' scenario, or merely dispersed across single higher education institutions or sectors as in the 'label' scenario.

In some countries the numbers of adult learners in IVET programmes, particularly apprenticeships, have increased substantially (Markowitsch and Hefler, 2019). In Germany, the number of graduates from general upper secondary education and dropouts from universities taking up apprenticeship programmes has increased in the last decade. In Finland, adults (25 and older) are the majority of participants in apprenticeships. The influx of migrants from third countries might additionally lead to a higher average age of IVET student populations. In the near future, the increase in adult students in IVET is expected to intensify in Western and Northern Europe due to migration, and in Central and Eastern Europe due to further shrinking youth cohorts and foreseeable labour shortages (ibid.). These trends are likely to encourage the 'label' or 'fake' scenario.

Practically all EU Member States have taken part in reform of school-based VET (the dominant form of VET in Europe) aimed at changing programmes towards preparing for broader vocational domains, enriching curricula by more theoretical and general subjects and offering qualifications allowing for access to higher education (ibid.). In school-based VET, programmes providing hybrid qualifications (Deissinger et al., 2013) have been more in demand than those which are limited to vocational qualifications only. This can be well be illustrated by the changes in the Visegrád countries but is also evident in many Western countries (as in France, the Netherlands, Austria) (Cedefop, 2020). This trend to hybridisation of VET, which is also typical for the pluralistic scenario, is also visible within apprenticeship tracks. There is an increasing num-

ber of apprentices preparing for a vocational 'bac' (baccalaureate) or 'matura' that provides general access to higher education, seen in Austria, France, Switzerland and recently also in Denmark. Both the demand for higher VET skills by the economy and changed student choices may be drivers of this trend.

Most of the recent developments in VET, although not exclusively, foster the 'label' scenario. However, the future of work and future demand for VET is highly uncertain. Technologies are rapidly changing. Robots, big data and artificial intelligence might render whole occupations redundant. New organisation of work, new bundles of job tasks and occupations might develop. In a future of strong, 'disruptive' effects of technological change and a development, repercussions may remain low. According to a scenario study of the World Economic Forum (2018) learning and technology are major dimensions of alternative futures of work. In these scenarios a distinction is made between a learning context that is rather stable, and characterised through continuous update of forms and content of learning, and development in which there are fundamental changes in learning and the ways knowledge is transferred. The 'fake' scenario may be closely attached to a future in which – as result of technological developments – apprenticeships serve a low skill and low-wage labour market, while higher skill positions would be filled with graduates of academic and semi-academic school-based programmes. The 'label' scenario corresponds to a new understanding of formal learning that involves work-based learning to a large extent. Skills and knowledge are very tightly connected to the ever-changing context of organisations and digitalised jobs. However, in this scenario national stakeholders will not have managed to integrate work-based learning into a coherent and sustainable strategy of transforming the education system; this also leaves room for the 'apprenticeship as a brand' scenario.

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CHAPTER 3.

Apprenticeship training in Sweden

© Jonas Olofsson ([8]) and Alexandru Panican ([9])

3.1. Introduction

Apprenticeship training in Sweden and many other European countries goes back to the middle ages. Yet, this special model of vocational education still attracts significant interest due to the challenges young people face in preparing to enter the current labour market. This is obvious both in Sweden and in other comparable countries. The apprenticeship model is primarily promoted as achieving two important goals: first, as a tool to achieve a better match between young people's qualifications of employer demands for skills; and second, as an education pathway that can make the transition from school to work easier and therefore contribute to social inclusion. Many initiatives to spread information and provide support have been rolled out in the European Union, with the intention to strengthen apprenticeships in EU Member States (European Commission, 2017).

This chapter discusses recent relevant experiences linked with vocational education (VET) and apprenticeship training in Sweden ([10]). The main issue relates to basic requirements that have to be in place for establishing an apprenticeship training model, and the challenges a country like Sweden – with its mainly school-based VET – will face when aiming to initiate more of a classical apprenticeship training approach within vocational programmes at upper secondary level.

The challenges from a Swedish point of view primarily concern establishing stronger links between schools and workplaces as well as guaranteeing the quality and breadth of workplace training within VET programmes. Sweden lacks strong partnerships between schools and workplaces, despite some initiatives through the so-called 'programme councils' where labour market stakeholders are represented at national and local level.

The tradition of apprenticeship training in Sweden, at least since the education reforms of the beginning of 1950s until the early 1970s that laid the foundation of the current school system, has been a concern for labour market actors. Apprenticeships as part of upper secondary education have, until its reform in 2011, been of minor importance. However, the old system of apprenticeships regulated through collective agreements still exists, especially within craft-related trades, such as the building sector, heating and plumbing. Electrical engineering is another sector with a deep-rooted apprenticeship tradition. To become a fully educated and fully paid worker, according to the standards in the agreements between these sector stakeholders, it is necessary to complete a regulated volume of working hours as an apprentice, with special instructions on workplace learning content. Such agreements do not exist in other trades within the Swedish engineering industry or in trades connected to health and social work. As a result, this traditional form of apprenticeship training, outside the school system and regulated by labour market parties, is connected to limited areas of the labour market. The Swedish experience deviates in this respect from the experiences of Scandinavian countries with stronger and more widespread traditions of regulated apprenticeship systems, such as Denmark and Norway. The Swedish tradition is even more remote from the experiences of German-speaking countries with their stronger apprenticeship tradition.

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3.2. Vocational training at upper secondary school level in Sweden

In Sweden, as in many other comparable countries, almost all students go directly from primary school to education at upper secondary level. The upper secondary school (*gymnasium*) is not compulsory in formal terms but, in practice, it is, as working life prospects are very limited without an upper secondary education. In Sweden, only 2-3% of a cohort do not begin upper secondary studies immediately after elementary school. Municipalities have responsibility to activate the young people who do not pursue upper secondary education (*aktiveringsansvaret*) through support and employment.

Upper secondary education consists of 18 national programmes, both preparing for university studies and vocational ones, for pupils who aim to find a job after they graduate. There are admission requirements for both paths. Pupils who do not meet these requirements are referred to special introductory programmes ([11]), which aim to prepare them for future studies in a national programme; they also open a possibility of vocational education at a lower level and so offer a path directly to the labour market.

Twelve of the national programmes prepare pupils for working life. VET programmes tend to have a rather broad content, including elements of general theoretical and academic subjects. This is a result of the establishment of curriculum-based upper secondary school in 1971 and programme-based upper secondary school in 1994. The trend towards a broad education has also been reinforced by students not selecting VET. The share of upper secondary students in vocational programmes was significantly higher during the era of curriculum-based upper secondary school than it is today. At the beginning of the 1980s, more than 70% of students choose vocational curricula in upper secondary school; today, this share is lower than 30%. At the same time, VET in upper secondary school has problems with dropouts. Since the 1990s, the job market has been highly limited for those without an upper secondary education. An incomplete education means an increased risk of unemployment and, ultimately, social exclusion for individuals as well as higher welfare expenditures for the State and municipalities.

The employment rate for young people (20-24 years) has dropped by 20 percentage points since 1990. One important explanation is the dramatic rise in the share of young people choosing university-level education. The employment rate for those without a recognised qualification at upper secondary level has dropped even more. In parallel, the Public Employment Service predicts an increasing shortage of upper secondary educated workforce in manufacturing, construction and healthcare; the number of employees should increase by a hundred thousand by the year 2030 if the share of the population employed is to be kept at today's level.

3.2.1. Latest reform outcomes

The 1991 school reform included the introduction of uniform three-year training programmes (Government Bill 1990/91:85). The intention was to expand the general theoretical elements of vocational training courses to give all students access to post-secondary education. The new training programmes were to have more general focus and provide greater scope for local adaptation and individual training choices. Academic and vocational programmes had the same general theoretical subjects; basic eligibility for higher education became an objective for all education. However, it became apparent that programme-based upper secondary education, particularly vocational programmes, was suffering major problems with dropouts; one-third of students failed to reach their education targets within three years (SOU 2016:77).

The Schools Inspectorate has noted in several reports that workplace learning is not meeting learning requirements and it is not linked with applicable curricula. In many cases there are also no competent supervisors in the workplace. Schools are finding it difficult to offer students workplace learning to the extent that should be

([11]) There are four introductory programmes. The largest is addressed to young immigrants and is almost entirely focused on developing language skills.

applicable according to the regulations; for students on school-based VET, at least 15% of their education time must be workplace-based.

Undesirable effects of the education reforms of the 1990s led to new reforms. A range of changes at upper secondary level education was introduced in 2011, the most significant involving the content of VET for achieving greater emphasis on vocational subjects (SOU 2008:27; Government Bill 2008/09:199); upper secondary education included 18 national programmes, 12 being vocational. All programmes result in a degree. VET students can select an apprenticeship training track; this was tested in 2008 and became a regular element of education in 2011. The volumes are still relatively small, and the apprentices are generally not employed. To be classified as an apprentice, at least half of the student's education must be organised in the workplace. The school and the workplace receive generous organiser funding for each apprentice.

Schools are obliged to establish local programme councils for each vocational programme, including representatives for companies and trade unions. At national level, there must also be programme councils organised via the Swedish National Agency for Education. The intention with these programme councils is to give representatives for working life greater influence over vocational programmes.

Another change with the reforms in 2011 was that VET no longer automatically led to basic eligibility for higher education; however, since 2013, it has been possible to study for this competence within the scope of all vocational programmes without having to select an extended course.

The proportion of students on VET has fallen in recent years, in direct contrast to the ambitions of the reform of upper secondary school system implemented in 2011, see Table 3.1.

The pattern is clear. In terms of the number of students, the attractiveness of vocational education has decreased over the past eight school years. Between 2011/12 and 2018/19, upper secondary vocational education has lost more than 6 250 students.

In terms of the share in relation to all students attending Year 1 at upper secondary level, the situation becomes even more worrying. The negative trend is broken in the most recent school years but, in relation to the school year 2011/12, and even more so compared to the 1980s and 1990s, the share of students on vocational programmes has decreased by 5.4%. More challenges lie behind this reduced interest in VET

Table 3.1. **Number and share of students in Year 1 on vocational programmes at upper secondary level in each school year from 2011/12 until 2019/20**

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Number	41 725	36 841	34 450	33 191	31 802	32 781	33 547	36 388	35 473
Share	31.4%	29.4%	28.6%	27.4%	25.6%	23.4%	24.0%	26.0%	26.1%

Source: Swedish National Agency for Education; statistics 2011/12 to 2019/20.

Table 3.2. **Number of apprentices and share of apprentices in relation to students on vocational programmes at upper secondary level between 2011/12 - 2019/20**

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Number	1 340	3 412	5 990	7 270	8 372	9 338	10 201	12 400	13 560
Share	3.2%	4.5%	5.6%	7.3%	8.8%	9.9%	10.1%	12.0%	13.3%

Source: Swedish National Agency for Education; statistics 2011/12 to 2019/20.

programmes. Pupils with foreign background are underrepresented, and many programmes have a distinct lack of gender balance. More than 91% of pupils in the Building and construction programme and close to 97% of pupils in the electrical engineering programme are male.

For the apprenticeship training track within VET programmes, the development is more positive, as Table 3.2. shows. It should be underlined that most pupils following an apprenticeship track of a VET programme aim for trades with a strong apprenticeship tradition, such as building or electrical engineering. Very few apprentices aim at trades in health and nursing or mechanical engineering. Young men and pupils with domestic background are also heavily overrepresented compared to women and pupils with foreign background.

It is clear that the attractiveness of apprenticeships has increased steadily for each school year since the reform of upper secondary school. This positive development can be assessed as a success. But, from the perspective of the ambitions that underpinned the reform from 2011, the outcome must be described as a failure. At the year of the reform (2011) the government target was 30 000 apprentices up to the school year 2014/15.

As noted in Table 3.1., the proportion of VET students has fallen dramatically since 2011/12. The apprenticeship track in Swedish upper education has not contributed to making VET programmes more attractive, as the proponents of the 2011 reform hoped. At the same time, companies report difficulties in recruiting individuals with vocational skills at upper secondary level. Youth unemployment is high, and rising very fast as a consequence of the Covid-19 crisis, but companies are finding it difficult to find applicants with the right skills. This mismatch is also related to the dimensioning of training courses. There is no link between the acceptance of students on various programmes and the demand for manpower with various training profiles. Until programme-based upper secondary education was introduced in the early 1990s, funding was distributed to the various vocational training courses according to assessments based on local and regional labour market requirements. The principle of free school choice reinforces the problems to a certain extent: schools offer programmes that students demand, regardless of the relevance for the labour market.

3.3. Conclusion

Apprenticeship training arouses great interest in Sweden as well as in other European nations. Within the EU, measures have been taken to strengthen the political interest in VET, especially apprenticeship training; there have also been several initiatives in Sweden in line with these aspirations. Due to education reforms in 2011, apprenticeship training became a regular part of the upper secondary education system.

3.3.1. Risks and benefits of apprenticeship systems

The research (Wolbers, 2007; Quintini and Martin, 2006; van der Velden, Welters and Wolbers, 2001; Ryan, 1998) highlights both benefits and risks connected to classical apprenticeship training. One benefit is that the apprenticeship system requires training places in working life, so the education corresponds to immediate demands among employers. This, in turn, creates conditions for a better match between the education system and working life. Workplace learning also contributes in a positive way to a young person's skills and ability to learn. Workplaces can be viewed as strong learning environments, not only in view of specific work skills but also in view of generic knowledge and in connection to social skills. Participation in 'communities of practice' often generates positive effects on identity development and possibilities for self-fulfilment.

However, there are risks with apprenticeship. Unregulated apprenticeship training can be too narrow in its content. Cheap labour might also be misused under the label of apprenticeship training. Apprenticeship training with a narrow content and with few connections to the education system will obstruct social mobility and contribute to uneven social conditions. Questions raised in research and connected to EU initiatives are about how to guarantee wide training content and

quality assurance as well as making it possible for apprentices to go further to higher education.

Research results (Steedman, 2011; Soskice, 1994; Greinert, 2004) suggest conditions for a functioning apprenticeship system. First, there must be a regulation of education forms and contents based on a combination of law and collective agreements. Second, labour market organisation must be involved in the education; well-developed apprenticeship systems require established structures for education governance in cooperation with relevant actors at local, regional and national levels. Third, there must be a lot of effort to guarantee the engagement of single employers; apprenticeship systems cannot be developed without interested and participating employers. This interest is not only a question of economic support from the public education system; schools and public authorities must also be prepared to offer regular pedagogic support and special structures for quality assurance at local and regional levels. The apprenticeship training system should build on close cooperation between workplaces and schools. Fourth, there should be well-developed guidelines and tools for quality assurance.

Comparative research (European Commission, 2013; Cedefop, 2011; Wolbers, 2007; Steedman, 2012; Ryan, 2011; Ryan et al., 2012; Rauner and Wittig, 2010) concludes that apprenticeship training has positive effects on youth employment and leads to favourable income development for youngsters, as well as reducing the risks of unemployment. It is also obvious that the positive effects decrease as young people get older (after 25 years of age) and the effects on youth connected to NEET seem to be weaker than on youth unemployment. Once again, these positive effects are conditional on the breadth and quality of training.

3.3.2. The Swedish experiences

In Sweden, VET developed in a school-based direction during the second part of the 20th century; the apprenticeship system never made real progress. Public investigation into upper secondary education and political reform has strengthened interest in school-based VET. Initiatives in recent years have marked a shift of interest and questions concerning training at workplaces and apprenticeship training have been seen as important in this context.

There is political interest in developing apprenticeship training in accordance with recommendations from the EU but experiences from recent years show that it has been difficult to get anchorage for the apprenticeship system in Sweden. There are still few apprentices in Swedish upper secondary schools. Investigations reveal shortcomings connected to equivalence and quality, especially in connection to workplace learning. Representatives from labour market organisations have criticised the working of programme councils at national and local levels; these councils have no independent role in relation to public authorities and local schools. How can apprenticeship training in Sweden be improved?

It is important to reverse the waning interest in VET. Perceptions of VET programmes need to change and their status has to rise (Olofsson and Panican, 2017). Study and occupational counselling should secure a more prominent position and a new subject, focusing on working life knowledge, should be introduced in the last year of lower secondary school. To prevent dropping out from primary and upper secondary school some kind of education guarantee should be introduced, offering possibilities for workplace learning as well as work-life experience. Further, there are several knowledge gaps regarding the VET system in Sweden. VET plays a key role in reducing the gap between school and work. In order to improve VET programmes at upper secondary level, more research is needed into the effects of workplace learning in the short and long term, as well as its quality (fast-changing labour market requirements can make knowledge and skills outdated) and the link to the skills demanded by employers. Some VET programmes have been little researched: hotel and tourism, and HVAC and property maintenance. There is also limited research into other aspects linked to VET, such as ethnicity, gender and class.

Sweden has more to learn from apprenticeship training systems in countries with similar labour market and welfare policy regulation, such as Denmark and Norway. School-based educa-

tion in the Scandinavian countries has a more prominent role in VET compared to Germany. It is likely that an apprenticeship system in Sweden, even in the far future, will be more school-based compared to the countries on the continent. Perhaps apprentices should spend their first year at school and have more workplace training during the second and third years. Closer cooperation between labour market actors and representatives for industry sectors should also be encouraged. The main labour market organisations have a special responsibility to consider the possibility to include decisions on apprenticeship training and workplace learning in any future main agreement.

The influence of programme councils at national and local levels should be strengthened. Programme councils at national level should have a direct mandate to make decisions influencing the Swedish National Agency for Education. The local programme councils should be supplied with economic, administrative and pedagogical resources to fulfil the same functions as trade councils in countries with developed apprenticeship systems.

Sweden does not yet have essential institutional conditions for a successful apprenticeship model. Therefore, it will most probably take time for apprenticeship training to take root.

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CHAPTER 4.

Shaping the relationship between vocational and academic education

Socioeconomic trends and their implications for the future of apprenticeships

© Dr Dieter Euler ([12])

4.1. Introduction

4.1.1. Challenges

Vocational education and training (VET) in general, and apprenticeships in particular, are comparatively high on the agenda of organisations such as the EU (Council of the European Union, 2018), ILO (2017), OECD (2018a), Smith and Kemmis (2013) or Cedefop (2018). High-quality apprenticeships supposedly provide valuable and attractive alternatives to academic pathways into working life, as has been the case for many years in countries like Austria, Germany, Switzerland and a few more. In these countries, quality apprenticeships explain the comparatively low share of university graduates. At the same time, the vocational sector and the academic sector have been highly separated in terms of their educational mission, social stratification, and economic function (Wolter, 2019, p. 24).

However, there are controversial views on whether this approach is still efficient for knowledge-based societies and economies based less on practical work and more on theory and research-driven innovations. Are apprenticeships relics from the age of industrialisation, but lack the power to deal with knowledge work, digitisation, and complex social and moral challenges? Is there a need for more graduates from universities and fewer from VET? Are apprenticeships attractive for the increasing share of school leavers eligible for university studies? Will apprenticeships remain for occupations in the craft and trade sector with less demanding theoretical requirements? Will VET erode in favour of academic education? Alternatively, will vocational and academic education converge?

A major issue for the future of apprenticeships is the relationship between vocational and academic education. This is particularly relevant for countries with a developed apprenticeship system, since part of the system overlaps with specific segments in the higher education system. Many of the following considerations come from the perspective of countries with developed apprenticeship systems, particularly Germany. However, these considerations may also be important for those who are about to design and strengthen their VET system.

This article starts from the assumption that the historic division into two separated education sectors is not appropriate to meeting the requirements of modern societies and economies. In contrast, both vocational and academic education need to reflect, with regard to certain segments, on how best to design programmes that combine practical skills, theory-based knowledge, and values empowering young people to master fast-changing work processes and become responsible citizens. From the policy point of view, this leads to the question of how best to design the relationship between the two key education sectors.

This chapter examines:

(a) socioeconomic trends: educational aspirations and preferences of school leavers, future skill demand, and developments in the higher education sector;
(b) the potential implications of these trends for the future of apprenticeships;

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(c) possible approaches ahead regarding the relationship between vocational education and academic education.

4.2. Socioeconomic trends

Academics and practitioners can only analyse and design VET systems within their societal, economic, and educational context. For example, apprenticeships need to be attractive for school leavers, correspond to a demand for qualified labour in particular economic sectors, and develop competences that are different to those in alternative educational programmes. Conversely, this means that the apprenticeships' importance and attractiveness depend on school leaver educational aspirations and preferences, employer recruitment policies, and the competence profiles of graduates from competing education institutions.

Following this line of reasoning, the position of apprenticeships might change if contextual factors such as young persons' educational preferences, employer demand and recruitment policies, and university academic programme profiles should alter. Before addressing the future relationship between vocational education and academic education, it is necessary to analyse major developments with regard to the following questions:

(a) what educational aspirations and preferences do young people pursue, particularly regarding their choice of vocational or academic programmes as possible pathways into working life?
(b) what kind of future skills and competences do companies demand to tackle future challenges in their economic sector?
(c) what competence profiles result from academic programmes offered specifically by universities with a strong emphasis on the employability of their graduates?

4.2.1. Educational aspirations and preferences of school leavers

Generally speaking, aspirations toward higher degrees have increased in almost all countries that belong to the Organisation for Economic Cooperation and Development (OECD) (OECD, 2018b, p. 55). The number of students has also increased, changing the student body composition and the character of many universities considerably. Between 1965 and 2010, the number of young people eligible for studying in universities rose from approximately 7% to 48.5% (Jacob and Solga, 2015, p. 163; Wissenschaftsrat, 2014, p. 107). However, not all those who are eligible, actually join a university. In Germany, in 2010, the transition rate of school leavers eligible to enrol in an academic programme at universities reached 77.8% while the rate at universities of applied sciences reached 39.9% (Wissenschaftsrat, 2014, p. 107). In 2017, 29.2% of newly enrolled apprentices in Germany were also eligible to study at a university (BIBB 2019, p. 141). Dropout rates at German universities are comparatively high: in 2016, the overall rate at the bachelor level was at 32% for universities and 25% for universities of applied sciences (Heublein and Schmelzer, 2018), compared to 10.5% in the UK in 2015/16 (HESA, 2018, Chart 9).

These statistical data depict the following trends:

(a) overall, there is a clear trend for young people to gain the opportunity of enrolling in academic courses and graduating from a university;
(b) while the number of students has increased considerably, the number of apprenticeships fell. Since 2013, the number of young people joining academic programmes in Germany has outnumbered those embarking on a dual apprenticeship;
(c) in Germany – and different from Switzerland – a large number of school leavers who are eligible to study at a university still decide to take up an apprenticeship.

What factors do school leavers take into account when deciding to embark on either a vocational or an academic programme? Research shows a number of reasons, which scholars can group into three types (Wissenschaftsrat, 2014, pp. 54-59):

(a) individual factors include the interest in a specific subject or occupational area. Certain school leavers also mention their reluctance to move too far from home: in this case,

they may favour an attractive apprenticeship in their home region over an academic programme in a city far away;

(b) economic factors refer to present and future earnings, financial independence, job security, degree of autonomy, and potential opportunities for career advancement;

(c) social factors address not only the social expectations of the parents and peer groups as the most influential reference groups, but also the status and prestige of an occupation or study programme. To a certain degree, the name of a study programme or an apprenticeship may affect the decision (Wissenschaftsrat, 2014, p. 59).

Research also shows that many school leavers take the decision for an academic or a vocational programme under uncertainty. In Germany, surveys show that more than 20% of school leavers who are eligible for an academic programme are uncertain about taking the right opportunity (Euler and Severing, 2019, p. 10).

The university sector's expansion resulted in a more heterogeneous composition of students. Increasingly students come from non-privileged social backgrounds. Many of them take up their studies at university after completing vocational programmes. For example, in Germany, graduates from apprenticeships can embark on an academic programme after two years of practice and an entrance test, even without having the formal entrance qualification for universities. In the UK – with a different admission system at universities – approximately 11% of graduates enter an academic programme after gaining a vocational qualification (UCAS, 2017). In the Netherlands, there is a smooth transition from a modularised, four-level vocational system into the HBO (*Hoger Beroepsonderwijs*), a kind of university of applied sciences (Busse and Frommberger 2019, pp. 60-61). In most countries, there are students who passed a certain kind of vocational programme before taking up their academic studies.

It is hardly surprising that a different composition of the student population also means different student motives and objectives. Research into first year student study motives in 2000 compared with those in 2011 revealed that career perspectives have gained more relevance. Job security, earning opportunities, occupational status, and labour market demand rank high in the list of decision factors (Wissenschaftsrat, 2015, pp. 53, 138-139, 148). While academic programmes are more compatible with these high-ranking motives, people regard vocational programmes as superior in serving motives such as reconciling family and job, immediate financial independence, and time for private interests. Interest in the scientific discipline is still a major motive but has partly lost ground to employability issues.

4.2.2. Future skills demand

Part of the traditional perspective on vocational and academic education is the simplified view that VET programmes promote practical skills and occupational socialisation, while academic programmes primarily result in a transfer of knowledge and scientific methods. This functional attribution corresponds to the view, or the equally simplified view, that competences gained in VET are relevant for qualified jobs at the middle level of the occupational hierarchy while academic competences qualify for management and professional tasks in the upper part of the hierarchy.

Irrespective of where the persons have acquired the competences and how management have organised work processes in companies, there is a trend in advanced societies toward more challenging, high-order skills and competences and increased demand for purported hybrid competences integrating practical action and theoretical reflection: knowing, doing and being, as well as systematic and case-based learning. At this juncture, it remains an open question whether these trends lead to academic drift (Neave, 1979) in VET or vocational drift in academic education.

Developments in digital technology – including artificial intelligence, robotics, nanotechnology and 3D printing – strongly influence the demand for future skills. These technologies and their application require entire industries and their employees to adjust. In contrast, education policies are often quite slow to respond to needs that emerge in the wake of disruption. Analyses

by supra-national organisations, such as the OECD (2016), World Bank (2016), International Labour Organization (ILO, 2015), and United Nations Educational, Scientific and Cultural Organisation (UNESCO) (UNESCO, 2016) try to isolate present developments and transform these into more or less imperative considerations for future trends. As a result, experts identify specific skills at quite a general level, which they then have to transform into concrete terms for policy-making in the various sectors of an education system, including VET. Based on this research, there is a shift from routine work tasks that machines and people do, to creative work that requires high-order cognitive skills (creating and innovating, evaluating and critical thinking, analysing) and key competences, such as social and entrepreneurial skills and ability in self-organised learning. Organisations usually expect that their future employees will accomplish complex problem-solving in technology-rich environments.

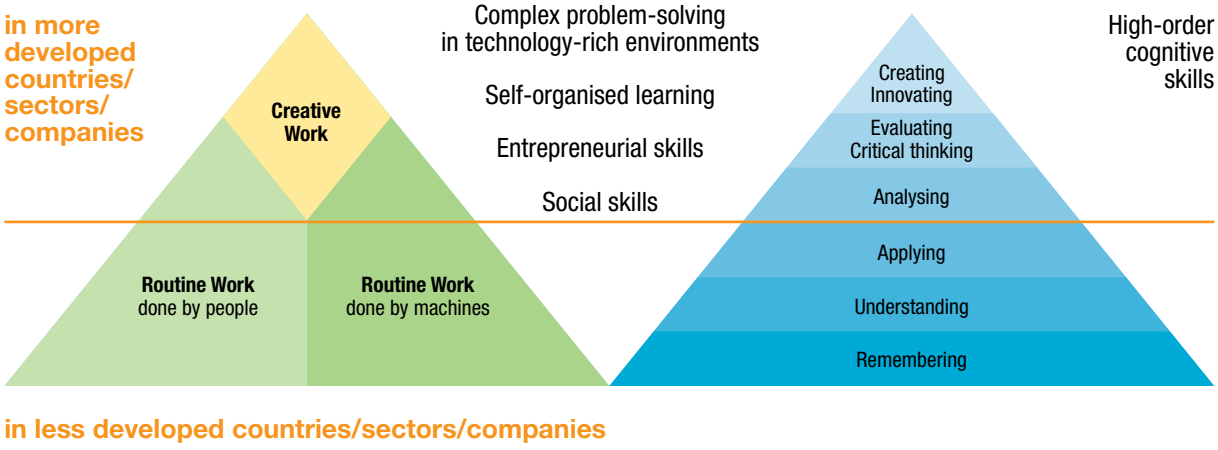
Education has to shift its practices toward the acquisition of key competences, which are relatively stable over time. Certain competences closely relate to coping with developments in digital technology, others are more generic and go far beyond problem solving in technology-rich environments (OECD, 2016). Key competences such as critical thinking, complex problem-solving, creativity, innovativeness, cognitive flexibility, and entrepreneurial attitudes need to be anchored in exemplary tasks and challenges. One cannot 'think critically' in isolation; critical thinking must be linked to given tasks, events, structures, and persons.

The combination of key competences, expert knowledge, and practical skills can be phrased as hybrid competences. This term indicates that separating practical from theoretical, and vocational from academic competences, as well as the corresponding assignment to different education sectors, does not adequately address the demand for future skills. On the contrary, modern work organisations require flexible people who are competent to integrate practical skills, have a cognitive understanding of work processes and key competences to solve problems in teams, and contribute to innovations.

Presumably, the described trend functions differently in diverse occupations. There might still be occupations, which predominantly rely on practical and other skills, while other occupations require high-end theoretical knowledge and research capabilities. With regard to vocational and academic education, there are segments in each area that remain specific and exclusive. However, there are also overlaps and converging areas focused on the development of hybrid competences, that cannot be clearly assigned to the vocational or academic area. Figure 4.2. draws the ideas together.

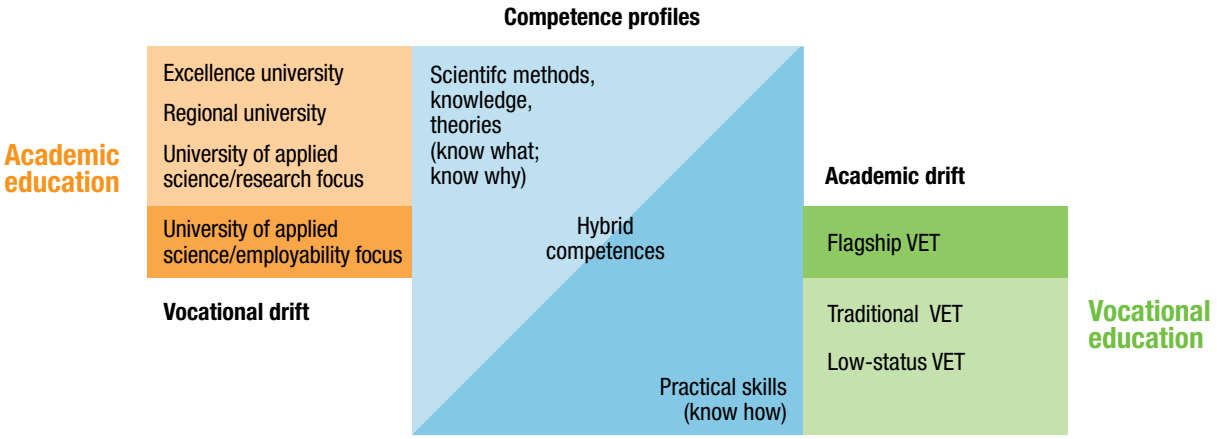
Since the number of employees in knowledge-based occupations with a considerable proportion of creative and/or learning tasks has

Figure 4.1. **Future skills that correspond to dominant labour market work tasks**



Source: Euler, 2017.

Figure 4.2. **Competence profiles within different areas of academic and vocational education**



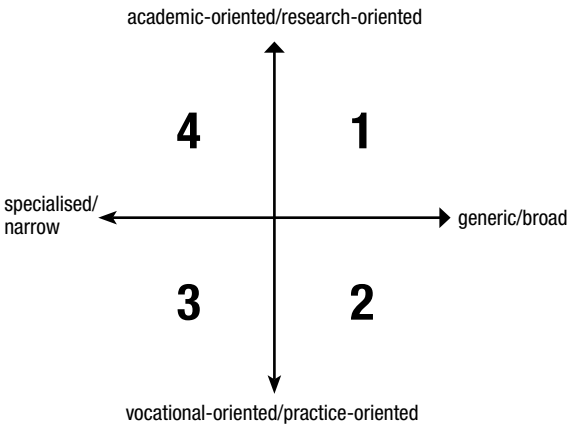
Source: Euler, D.(University St.Gallen).

increased continuously (Wissenschaftsrat, 2014, p. 30), it is likely that the area of hybrid competences will gain further relevance. How will employers react to these trends? Will they continue recruiting future employees via quality apprenticeships? Or will they favour the recruitment of graduates from universities?

4.2.3. Vocational drift in academic institutions

Figure 4.2. already suggests that academic and vocational education is split into different segments, due to the development of particular competence profiles for the various segments. For example, in vocational education there are apprenticeships with a strong emphasis on practical skills (such as hairdressing, plumbing) and those with a high share of knowledge work (including office management, computer programming). The same applies for academic education. Universities in most countries are vertically differentiated. While the terminology differs, in many countries there are older universities with a stronger emphasis on research and younger universities of applied sciences with a stronger focus on teaching. There is also a distinction between public and private, as well as multidiscipline and single-discipline universities. Certain universities accentuate their specialised character by describing themselves as an elite or excellence university, or they are proud to show that they are a member of a prestigious club like the Russell Group in the UK. Within this context, a segment of universities with a strong vocational orientation emerged over recent decades. Figure 4.3. presents a typology that allows placing vocational-oriented universities and/or academic programmes in a comprehensive frame.

Figure 4.3. **Typology of universities/study programmes**



Source: Euler, 2014.

The chart indicates that there are universities with particular study programmes which, in their mission and strategy, strongly pursue research or emphasise their proximity to societal and economic practice. At both ends, universities regard themselves as generic and broadly profiled or as specialised and narrowly focused. Individual universities may decide to pursue a very clear

profile and become research-oriented or vocational-oriented, or they follow a diversification strategy and offer programmes of both types under the same roof.

Overlaps with VET programmes occur when a university is partly or completely active in quadrants 2 and 3; the reasons for this may be diverse. A strong driver is the reality that, in many countries, universities of applied sciences originate from certain kinds of vocational institutions. While a few of these work toward research-oriented university status, many stick to their roots and offer practice-oriented programmes. Another reason relates to the Bologna process, with its stronger emphasis on employability. Employability as a characteristic of study programmes requires that education institutions explicitly consider non-scientific labour market requirements. Certain parties interpret employability narrowly and claim an immediate transformation of economic demands into curricula; others treat employability as a general principle, but not as a necessity for the design of study programmes. Certain private universities adopt the narrow interpretation of employability. They start their business in quadrant 3 by designing vocational-oriented programmes in occupations for which companies in their region expressed a demand. In certain countries, formerly vocational programmes (such as in the health sector) move into the academic sector, because interested stakeholders want to upgrade the branch's reputation.

4.3. Potential implications for the future of apprenticeships

The following trends seem relevant for the relationship between vocational and academic education:

(a) in a growing number of economic sectors, competences for dealing with knowledge-intensive work make up an increasing share of occupational profiles. Consequently, purported hybrid competences, which combine theory-based reflection and practice-related action, gain relevance;
(b) vocational and academic education are internally segmented into differently profiled study programmes at universities and apprenticeship occupations of different attractiveness in the VET system. Vocational-oriented study programmes and high-end apprenticeship occupations overlap in terms of addressing hybrid competences and preparing young people for similar types of work processes;
(c) based on this factual analysis, the key question for envisaging the future of apprenticeships is how the key actors deal with the already recognisable, but yet still open trends:
    (i) how will young school leavers who are eligible to study at a university decide whether to opt for a university or an apprenticeship when planning their career? Will they still opt for an apprenticeship, be it on transit into university or as a springboard into a non-academic career?
    (ii) how will employers adjust their recruitment strategy for qualified personnel if they can also choose between Bachelor graduates from practice-oriented universities and apprentices whom the employers socialised and trained in their companies?
    (iii) how will politicians who are committed to boosting VET act in this policy field? Will they restrict access to university? Or will they promote new ideas and concepts?

Depending on these actors' behaviour, apprenticeships and their relationship to academic education may evolve differently. Based on the analyses, it is possible to pursue two approaches:

(a) normative approach: academics draft a desirable future, along with a number of conceptual ideas on how educational institutions can achieve this future.
(b) descriptive approach: academics depict possible futures, along with a number of appraisals on the implications for the future of apprenticeships.

This chapter follows up on the second approach.

Table 4.1. **Strategic approaches and potential implications for apprenticeships**

	Strategic approach / implementation leverages	Potential implications for apprenticeships
1	Keep higher education exclusive – remove overlaps between vocational and academic education: • Reduce publicly funded places at universities • Regulate admission to universities restrictively, especially for VET graduates	• Traditional separation of general / academic and vocational education continues; permeability from vocational into academic education reduced; attractiveness of apprenticeships suffers • Sharpening the general education selection processes for gaining admission to exclusive institutions • Private universities might fill the gaps; social imbalances / polarisation increase • VET as a catch-all for low achievers and failures in general education
2	Increase attractiveness of vocational programmes and pathways: • Design a coherent transition from initial VET into continuous VET and attractive career positions (*Berufslaufbahnkonzept*) • Upgrade titles and descriptions of initial and continuous VET programmes and degrees (Wissenschaftsrat, 2014, p. 59) • Make attractive vocational pathways visible in career services and counselling	• Self-contained, multistaged pathways into a career on a purely vocational track. Impact depends on the companies' employment options and the school leavers' aspirations • Approach applies primarily for vocational occupations in the lower ranks of the reputation hierarchy with problems to fill apprenticeship vacancies • The perception already exists that upper-rank, VET system apprenticeships overlapping with academic programmes, are sort of flagships that provide particular options after graduation
3	Improve permeability from vocational into academic education: • Link apprenticeships with additional subjects / modules suitable to gain admission to academic programmes (e.g., *Berufsmaturität* in Switzerland) • Grant eligibility to academic programmes with vocational degree, with / without additional requirements • Extend target groups in VET eligible for admission into academic programmes (Wissenschaftsrat, 2014, p. 90) • Credit vocational degrees against modules in study programmes • Remove financial barriers preventing entitled persons from VET enrolling in academic programmes • Provide specific support for students moving from vocational into academic programmes	• Approach might increase VET's attractiveness, as it provides new opportunities after completing the apprenticeship. A few apprentices will make use of and combine competences in different sectors, while others will stay on in practice after apprenticeship • Risk of VET becoming a transit passage for academic education; ultimately, academic education is the gold standard • Paradoxically, VET supposedly gains attractiveness through the opportunity to leave the vocational track

	Strategic approach / implementation leverages	Potential implications for apprenticeships
4	Implement models merging vocational and academic programmes and degrees: • Improve the coherence of programmes aiming at an integrated provision of vocational and academic learning experiences • Strengthen dual studies (*Duales Studium*), especially the version that includes an apprenticeship ([13]) • Elaborate and test innovative models like study-integrated apprenticeships (*Studienintegrierende Ausbildung*) providing new options of merging vocational and academic programmes for new target groups ([14])	• Dual studies incorporating an apprenticeship strengthens VET if the vocational part provides a perceivable added value for the students • Dual studies only incorporating work experiences are increasingly attractive for employers, as they can match the practical part with the companies' requirements. This will weaken apprenticeships considerably. • Study-integrated apprenticeships increase the attractiveness of apprenticeships, as the decision with regard to the next stage in the educational pathway is postponed to the point when the apprentices have gained substantial experience in the vocational and academic parts of the programme. There is also, to a certain extent, soft pressure on the companies to offer high-quality apprenticeships in order to convince apprentices to stay on in the company after graduation.
5	Develop a parallel, but separate vocational track architecture covering the entire pathway from apprenticeship to academic degrees • Introduce dedicated bachelor and master degree programmes for students embarking on university studies from (initial / continuous) VET (e.g. Denmark; Cedefop, 2012, p. 14; Rauner, 2018) • Consider introducing short-course degree programmes (e.g., associate degrees similar to those offered in the U.S. or the Netherlands; Busse and Frommberger 2019, pp. 62-63)	• VET in general and apprenticeships in particular may be valorised, as academic degrees can be achieved without switching to general education curricula • Merging apprenticeships and academic programmes and crediting vocational achievements in academic programmes are easier to organise • Open issue: Does the formal equivalence between vocational and scientific study programmes correspond to the perception of equivalence by key actors such as school leavers and companies?

Source: Euler, D. (University St.Gallen)

([13]) There are many variants with different terminology (Wolter, 2019, pp. 35-38; Wissenschaftsrat, 2013). For example, in Germany there are dual studies along with an apprenticeship, and dual studies that only incorporate work experiences into academic programmes. In other countries, the latter is known as cooperative education (Canada, Deissinger, 2019b, p. 57) or degree apprenticeships (UK).

([14]) Study-integrated apprenticeships (Euler and Severing, 2019, pp. 12-14) cover an innovative concept that is currently in the process of being implemented in the German Federal State of Hamburg. Young people eligible to study at universities start an apprenticeship in one of the high-end occupations. On top of their vocational education in vocational schools and a company, apprentices complete modules in complementary bachelor programmes at a university. The curricula of the apprenticeships and the academic programmes are coordinated. Based on the experiences gained in the first year, the apprentices decide on the next steps in their education career: They either complete only the apprenticeship or they opt for dual studies and complete an apprenticeship and a bachelor programme. Beyond this, they may decide to quit the apprenticeship and focus on completing a bachelor programme. During the first year, the apprentices also benefit from a career coach who supports them in the decision-making process.

4.4. Conclusion

The relationship between vocational and academic education is ever changing. In countries with an elaborated apprenticeship system, developments occur in a tense environment comprising historically hardened segmentation, newly arising competition, and innovative new concepts (Hemkes, 2018, p. 2). Hence, everything seems possible in the future. The clock may turn back to the old separation, policy-makers might fine-tune existing approaches along the lines of extending permeability between the two areas, or they could introduce and implement new approaches up to, and including, fundamental institutional changes on a larger scale. There will possibly not be only one future scenario, but many different future scenarios at the same time in different regions and sectors.

The influences on the developments will come from two sides. On the supply side, stakeholders in the vocational and the academic sector might work for or against the implementation of any of the five strategies outlined above. Most likely, personal and institutional interests will differ; probably, different strategies will be explored and implemented in different economic sectors, regions, and institutions. On the demand side, the future behaviour of school leavers and companies as two key stakeholders will be vital. Most of all, these stakeholders will determine the future significance and weight of apprenticeships when reflecting on their aspirations and deciding on their pathway into working life and a career. Correspondingly, companies will do their cost-benefit analysis and decide on their preferred recruitment for qualified staff.

In many economic sectors, the occupational demand for qualified staff with hybrid competences is evident. This demand will clearly influence the design of educational programmes. It might strengthen the academic drift in vocational education, if former occupational areas in the VET system move into the higher education sector. Correspondingly, it might reinforce the vocational drift in certain segments of the higher education sector if specific types of universities or departments in universities design and offer study programmes with a strong emphasis on practical application in occupational areas. As a result, specific new types of universities, (multisector institutions), may arise. 'This institutional type is known by several names including colleges of further education, community college, polytechnic, technical college and technical and further education (TAFE)' (Friedel et al., 2014, p. 28). The design principles of quality apprenticeships (alternating learning venues; integrating work-based learning; merging theory and practice) serve as a major reference point for the establishment of educational programmes. 'Structural and didactical similarities and convergences between the two large education subsystems (higher and vocational education) indicate that vocationalisation is not fading but has the potential to emerge in a new coating' (Deissinger 2019a, p. 307). Therefore, organisational and institutional frameworks might change, but vocational education, in one form or another, will endure.

Open futures are always fertile grounds for research. Among others, the following (still broad) questions deserve consideration when designing future research agendas:

(a) given the emergence of some academic programmes turning more vocational and some vocational programmes turning more academic: will vocational education be merged into universities and largely disappear as a self-contained education sector? Will apprenticeships erode in favour of academic education? Or will education programmes with new competence profiles arise and spread the specific principles of apprenticeships on a new level?

(b) can the concept of hybrid competences provide a sound foundation to connect apprenticeships with requirements often summarised as 'future skills'? How can the concept be put into concrete terms to become operational in VET?

(c) which school leavers eligible to enrol in academic programmes will find high-quality apprenticeships attractive? Which factors do they take into account when deciding on their pathway into a career?

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CHAPTER 5.

The development and implementation of a graduate apprenticeship programme

Meeting the education and skills needs of engineering employers, employees, and the nation

© Stewart McKinlay ([15]) ([16])

5.1. Introduction

The Scottish Government's commitment to apprenticeships is well documented, with a target of 30,000 per year by 2020. This has directly contributed to record lows in youth unemployment rates. As part of their Programme for Government, and Scotland's National Skills Body (SDS, funded by the Scottish Government and supported by the European Social Fund (ESF)) expansion of the range of the apprenticeship family, the need to support the introduction of Graduate Apprenticeships was established.

In Scotland, Modern apprenticeships (MA) have always played a key part in the engine of the economy. Apprentices usually come straight from school and must be employed. The engineering MA consists of two vocational qualifications and an academic one completed at college, combined over three to four years in a national framework. This ensures that the apprentice is able to do the work their employer requires and that they have the knowledge and training to complete a similar job in another company or sector. Engineering apprenticeships in Scotland are not a traineeship dedicated to a small group of employers, a specific job or task or narrow sector.

The University of Strathclyde had no existing day-release programmes or online degrees which could be tweaked or modified and delivered as a Graduate apprenticeship, so this was an ideal opportunity to design a brand-new model which approached the needs of the employer and employee in a holistic manner to ensure maximum benefits in inclusivity, flexibility, and productivity. This chapter describes the journey that the university and its employer partners took to bring this concept to life.

5.1.1. The Engineering Academy (EA)

Whilst the drivers for the creation of an engineering graduate apprenticeship came from Scottish government commitment to increasing the number of apprenticeships, and SDS strategic plans, the DNA of the know-how for the apprenticeship came from the Engineering Academy (EA) at the University of Strathclyde and its engagement with employers around their skills needs. This programme was launched to support the Widening access agenda in Scotland, providing a route into University for those who may not normally get there due to the high academic entry requirements. This included those in the lowest two quadrants of the Scottish index of multiple deprivation (SIMD) and care-experienced individuals amongst others. This programme facilitates entry with lower academic qualifications coming from school (or alternative qualifications for mature students) and provides additional support for students along with the opportunity to gain paid industrial summer placements.

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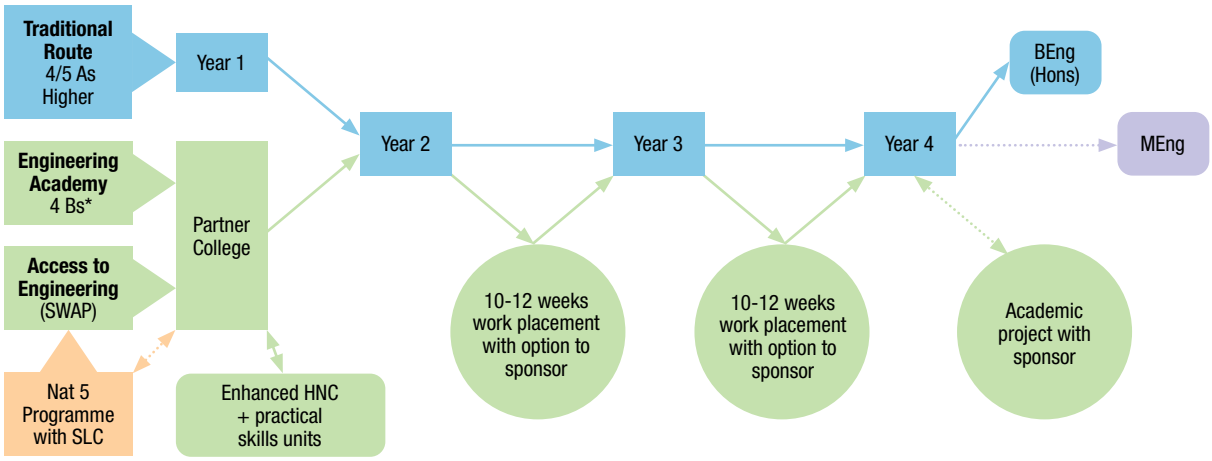
([16]) The author wishes to acknowledge Dr Andrew McLaren, Alan Roseweir, Dr Susanne Boyle, Professor Scott MacGregor and many others at the University of Strathclyde, the Scottish Government, Skills Development Scotland (SDS), IET, IMechE, and many hundreds of employers and employees in engineering and manufacturing companies across Scotland, England, Ireland and Wales for their contribution to the programme development and its continuing implementation.

Figure 5.1. **Engineering Academy model**



* Students from SIMD 20/40 can access with BBBC (Maths/Physics must be at B and Chemistry too if taking Chemical Engineering). Engineering Foundation Level Apprenticeship can be counted as one of other Highers.

NB Engineering Academy students are University of Strathclyde students from day 1 guaranteed direct entry to Year 2 upon meeting requirements

Source: McKinlay, S. (University of Strathclyde).

The diagram shows the path for the conventional entry route in blue and the EA route in green. This provided the university with a wealth of experience in working with school leavers with lower entry grades and mature students with different life experiences coming through the access route.

5.1.2. Reported skills gaps

As many employers continued to identify skills gaps for new graduates at the point of recruitment for jobs, it was clear that creating a work-based qualification which could be undertaken during summer placements and other work experience would address some of those needs. To identify what should be included was researched, asking employers what specific skills including 'soft skills' they thought graduates (from any university) should have at the point of graduation. This would then be developed into a work-based learning diploma; a vocational competence qualification.

15 employers who were vocal on skills shortages were asked to identify those 'soft skills' that graduates did not have, but should have at point of graduation, in a free text format. The feedback from this was collated and sorted into categories, of which there were ten (Table 5.1.).

Using these categories, research was then extended to over 100 employers and employees to validate and corroborate these findings. Contributors were selected to ensure representative coverage from employers of all sizes, sectors, engineering disciplines, and geographic locations across the UK (Scotland, England, Ireland and Wales). The final ranked results are in Table 5.2.

This provided a sound foundation to develop a work-based learning diploma which met employers' needs in the key areas. Feedback was specifically sought and included from senior personnel within the companies, as well as those who had been with the company for less than two years. This revealed some differences in what employers stated they needed, and what their own new staff members said was asked of them.

These figures also suggested that the skills many universities thought were developed as part of a conventional degree programme were not being delivered to the standard employers required, and that simply creating a day-release or online programme that mirrored what was currently delivered would not meet these needs either.

Table 5.1. **Initial employer feedback on skills needs**

	Categories of soft skills needs	% stating essential
A	(Technical) Report writing	>50%
	Teamwork including leading/managing small teams	>50%
	Communication skills	>50%
	Project management	>50%
	Presentation skills (formal and informal)	>50%
B	Commercial awareness	>30%
	Finance skills	>30%
	Problem solving	>30%
C	Health and safety (H&S) training	<30%
	Behavioural skills (including timekeeping, diversity, attitude, resilience, and responsibility for career development)	<30%

Source: McKinlay, S. (University of Strathclyde).

Table 5.2. **Final employer feedback on skills needs**

Skills needed	% stating essential
Communication skills	78%
Teamwork including leading/managing small teams	73%
Commercial awareness	69%
Behavioural skills (including timekeeping, diversity, attitude, resilience, and responsibility for career development)	67%
Presentation skills (formal and informal)	65%
(Technical) Report writing	64%
Project management	64%
Problem solving	62%
Finance skills	49%
H&S training	49%

Source: McKinlay, S. (University of Strathclyde).

5.2. Graduate apprenticeship birth

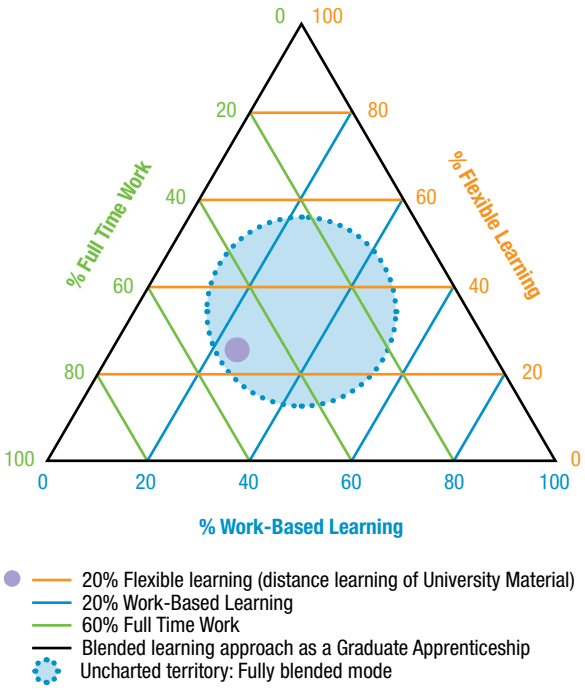
Around this time, SDS approached the university (as the largest provider of engineering graduates in Scotland and with a wealth of employer engagement at multiple levels) to create the framework for an engineering graduate apprenticeship.

The university then developed the first model based on discussions with employers and researching what other models were available. From these interactions, it was clear that the preferred option for employers was a framework that mirrored what was already available at a lower qualification level, the modern apprenticeship (MA) in engineering in Scotland. This is an internationally recognised brand, evidencing both academic ability and the competence to perform certain jobs. To enable this, the framework contains both academic and work-based qualifications that must be completed to achieve the apprenticeship. In the MA, one of the key criteria of the vocational qualification is that they are assessed and verified independently by experts who are not generally academic staff. The team proposed an engineering graduate apprenticeship which could contain any accredited degree as the academic component and, by including the work-based learning diploma being developed to evidence the vocational competence, this would also provide a parity of esteem for both the academic and work-based components of the programme. Additionally, it would also have improved linkages between colleges, private training providers and the universities offering graduate apprenticeships, as many of the assessors and verifiers would have been available in those partners. All agreed that the engineering graduate apprenticeship should provide an articulation route for those who had completed an engineering modern apprenticeship and wanted to progress using this path.

Further meetings and engagements were then held with employers and stakeholders, such as the SDS, based on the initial model. Employers and employees wanted a new type of degree which was broad-based in the first two years but could specialise (or remain broad-based in the second two years). Employers wanted flexibility of choice over the content and the delivery model. Employers, employees and the university recognised the critical nature of the vocational component and of having it assessed and verified to an agreed standard by a competent body or bodies. This ensured the consistent mapping of competences to the standard required for professional engineers. The SDS decided that Strathclyde could continue to develop and include the work-based learning diploma, but it would not be a mandatory part of the national final framework.

Discussions led to unchartered territory, as existing models of degree and work-based learning would not enable all of the above to be achieved. Solving this conundrum required a bold and ambitious plan to create a fully blended mode that operated in this space. The challenge was to deliver a programme that resulted in someone who was working full-time, could complete a degree which carried exactly the same weight and met the same standards as a full-time student, along with the additional vocational competences, in approximately the same time period. Figure 5.2. presents the basic parameters of the design philosophy.

Figure 5.2. **Work and study modes, fully blended approach**



Source: Dr Andrew McLaren, University of Strathclyde.

5.3. Graduate apprenticeship model

The final outcome was an innovative engineering graduate apprenticeship with a work-based learning degree, designed with monthly on-campus events complemented by bespoke online resources delivered via Myplace (Moodle). This eliminated the need for employers and employees to commit to a fixed day/s per week as the 'education' time, allowing flexibility to meet work and personal life commitments, but still providing time on campus for support and for face-to-face learning when online is not the best forum for success.

5.3.1. Curriculum and delivery

In line with employers' requests for a broad-based first two years, the model evolved but still contains the 120 credits per year for a degree.

Table 5.3. shows the four main areas; to support those full-time workers on the programme they are only studying two areas at any one time. The mathematics and numerical tools module is spread across the year and the other modules are completed consecutively. Within each of the engineering modules, 10 of the 30 credits are for work-based learning, for work that the employee is already undertaking as part of their job.

In years 3 and 4 (table 5.4.), 50% of the degree is a work-based project that employees

Table 5.3. **Curriculum and delivery, Year 1 and 2**

Mathematics and Numerical Tools 1	
• Fundamental principles • Applied tools (Excel and MATLAB)	**30**
30 credits	

Mathematics and Numerical Tools 2	
• Development of principles • Advanced maths and analysis tools	**30**
30 credits	

Design & Production 1		
• Introduction to design • Introduction to production & management • Integrating studies • Professional and transferrable skills		**30**
20 credits	**10 credits**	

Design & Production 2		
• Further design • Production & management techniques • Integrating studies • Professional and transferrable skills		**30**
20 credits	**10 credits**	

Mechanical Engineering Systems 1		
• Principles of mechanics • Principles of thermodynamics & fluids		**30**
20 credits	**10 credits**	

Mechanical Engineering Systems 2		
• Engineering materials • Development of statics and dynamics • Development of thermodynamics & fluids		**30**
20 credits	**10 credits**	

Electronic & Electrical Engineering Systems 1		
• Electronic & Electrical Principles • Electrical circuits		**30**
20 credits	**10 credits**	

Electronic & Electrical Engineering Systems 1		
• Electronic & Electrical Principles • Electrical machines and Control • Digital Electronic Systems		**30**
20 credits	**10 credits**	

Source: McKinlay, S. (University of Strathclyde).

Table 5.4. **Curriculum and Delivery, Year 3 and 4**

Year	Term 1	Term 2	Term 3
Year 3	Mechanical Option 1	Design & Production Option 1	Electrical & Electronics Option 1
	20 Credits	20 Credits	20 Credits
	Level 3	Level 3	Level 3
Year 3/4	Electrical & Electronics Option 2	Mechanical Option 2	Design & Production Option 2
	20 Credits	20 Credits	20 Credits
	Level 4	Level 4	Level 4
Year 4	Design & Production Option 3	Electrical & Electronics Option 3	Mechanical Option 3
	20 Credits	20 Credits	20 Credits
	Level 4	Level 4	Level 4

Source: McKinlay, S. (University of Strathclyde).

complete as part of their job, agreed in advance with the University. The other 50% meets employer and employee needs to be able to complete a broad-based degree or to specialise in one or more areas.

5.3.2. Vocational competence

A comprehensive mapping exercise was then completed with all the academic components of the degree programme against UK-SPEC for Incorporated Engineers (IEng), the UK standard for professional engineering competence. This provided the recognised standard for competence that employers demanded and is not the gift of university or the graduate apprenticeship framework.

Apprentices capture evidence of competence development in an electronic portfolio (ePortfolio) provided by the university; its assessors and verifiers visit apprentices in their workplace every six weeks to provide confirmation and guidance. The aspiration is that, at the end of the four-year programme, apprentices will graduate with the degree and have a portfolio of evidence to apply for and become incorporated engineers.

Being an incorporated engineer is recognition of practical competence as well as academic ability: 'Registration sets individual professionals apart from engineers and technicians who are not registered. It establishes their proven knowledge, understanding and competence. In particular, registration demonstrates a commitment to professional standards, and to developing and enhancing competence' (Engineering Council, 2013).

Incorporated engineers (IEng), must be competent throughout their working life, by virtue of their education, training and experience across five generic areas broadly covering:

(a) knowledge and understanding;
(b) design and development of processes, systems, services and products;
(c) responsibility, management or leadership;
(d) communication and inter-personal skills;
(e) professional commitment.

Each area has a number of subsets; for example, within Communication and inter-personal skills: D3 Demonstrate personal and social skills. This could include an ability to:

(a) know and manage own emotions, strengths and weaknesses;
(b) be aware of the needs and concerns of others, especially where related to diversity and equality;
(c) be confident and flexible in dealing with new and changing interpersonal situations;
(d) identify, agree and work towards collective goals;
(e) create, maintain and enhance productive working relationships, and resolve conflicts.

Examples to help identify activities to demonstrate the required competence and commitment for IEng registration here might include:

(a) evidence from colleagues of personal and social skills;
(d) contributing to productive working relationships.

Similarly, within Professional commitment: E4 Carry out and record continuing professional development (CPD) necessary to maintain and enhance competence in own area of practice including:

(a) undertake reviews of own development needs;
(b) plan how to meet personal and organisational objectives;
(c) carry out planned (and unplanned) CPD activities;
(d) maintain evidence of competence development;
(e) evaluate CPD outcomes against any plans made;
(f) assist others with their own CPD.

Examples here might include:

(a) keep up to date with national and international engineering issues;
(b) evidence of development through on-the-job learning, private study, in-house courses, external courses and conferences.

5.4. Infrastructure and support

The work-based assessors and verifiers employed by the University to assess the work-based learning are experts in their fields and not academic members of staff.

One of the challenges in servicing a wide range of employees completing much of their learning online and evidencing competences through the ePortfolio was the question around IT support. How could consistency and equity be ensured if some employees were provided with top of the range laptops while others were relying on personal smartphones? What if learners did not have access to the other software programmes they required to complete the academic learning? What if learners failed to submit course work because their computer was 'broken' and took weeks to repair. The university decided the best approach was to purchase and provide standard laptops preloaded with all the requisite software and a 48-hour repair or replace policy for all its graduate apprentices. At the end of the four years, the laptops will have all the software under academic licenses removed and the learners will keep the laptops.

The team also piloted and evaluated a model of data analytics to enable a strategy for the timely intervention of at-risk candidates. This provided some very useful and interesting information, as well as a few surprises. One of the apprentices appeared to be doing no work between assessments yet was passing them with high marks. Discussions revealed that two employees were completing the learning part of their academic studies on one laptop and it therefore appeared that one was doing no work in advance!

The team have provided sessions on mentoring for employers to encourage them to develop internal mentors for the apprentices, meaning someone who is not their line manager.

In line with all modern and graduate apprenticeships in Scotland, those undertaking them must be employees. As such, individuals must apply directly to employers and not to universities and the employer then chooses which university they want to work with. Universities bid each year to SDS for funding to run the graduate apprenticeships, based on evidence of employer demand. It was recognised from experience with mature entrants to the Engineering Academy, that current employees with vocational qualifications or aged academic ones may find the mathematics difficult; an online mathematics refresher course was created which introduces them to the concept of learning online and evaluates their readiness for the degree. Equally, the knowledge and experience of taking in school leavers with lower qualifications means that the team can advise employers on this, creating further opportunities for people who may not otherwise have had the chance to develop their future in this way.

In this collective way an engineering graduate apprenticeship was developed that met the vast majority of employer and employee needs,

while retaining the university's demands for a product that had integrity and met leading academic standards.

5.5. Outcomes

The university's first cohort started in September 2017 and consisted of over 30 employees and 15 different employers from international employers such as Thales to SMEs employing fewer than 20 people, like Rumbol Products, and included its own technicians. By October of 2019, the University of Strathclyde was expected to have over 100 engineering employees progressing through Year 1 to 3 of this particular engineering graduate apprenticeship. The retention rate of ~90% is higher than most conventional engineering degrees.

The timing of the release of funding for the first cohort was not synchronised with employers' recruitment cycles and this was reflected in the data, with 97% of starters being existing employees and only 3% being school leavers. Strathclyde's second cohort was around 21% of school leavers and early indications on the third cohort suggest this may rise to 25%.

The blended learning model, with only one day per month on campus, has enabled employees and employers to take part who may not have been able to access such a programme because of their geographic location. For example, learners from Montrose on the East coast of Scotland and Stranraer on the West Coast, both over a two-hour drive away, are able to participate; this would be difficult to do on a weekly basis, especially during the winter months.

Success in this provision has led to the creation of further graduate apprenticeships at the University of Strathclyde in IT, Business, and Civil Engineering, all following the same philosophy. Last year across Scotland the number of graduate apprenticeship frameworks doubled from six to 12, with 921 registered apprentices working with 346 employers and 13 institutions.

The team anticipate 150 new graduate apprentices starting in 2019/20 across all the Strathclyde frameworks and that this will double next year. Looking to the future, it is expected the number of graduate apprenticeship frameworks and graduate apprentices will continue to increase as the programmes evolve and mature.

5.6. Conclusion

5.6.1. Conclusions for international audiences

It is anticipated that many of the lessons learned from an international perspective would be most applicable for those with populations similar in size to Scotland. This is particularly true when considering scenarios where even large employers may only be starting four or five employees per year on the programme and SMEs might only be starting one every couple of years; this presents challenges for viability while meeting individual employer needs within the framework of a national model that ensures consistency, integrity, and portability.

Being bold and ambitious with aspirations for the programme supported the delivery of a model that advanced the parity of esteem between academic and work-based learning and improved the public perception of apprenticeships. This added to the development time as larger numbers of employers, national agencies, and other stakeholders were involved. Building such a robust business case also helped persuade colleagues within the university who were unsure of the merits of higher education institutes providing apprenticeships.

The advantage of having more relevant players involved meant a more collaborative approach which added real value when innovation was required. Finding a way to complete the programme in the same time as a conventional degree necessitated invention in the approach. This lead directly to the mapping of both work-based and academic learning and the blended learning with online material, one day per month at university and work-based learning assessors visiting employees at their workplace to complete the cycle.

Finally, apprenticeships are all about development of the individual and it was critical to create a training plan which is agreed by the ap-

prentice, the employer and the university, and reviewed annually to produce the desired result for all parties.

5.6.2. Looking ahead: further research suggestions

Given that one of the key drivers behind this programme was to improve productivity, it would be invaluable once a significant sample size of employees has completed, to conduct further research to determine if this has been realised.

A further area for research consideration would be a full cost-benefit analysis comparing the programme to those completing a similar degree programme as students not employees. This should include (but not be limited to) total cost of both options, time to reach full productivity, and staff loyalty as there is solid research demonstrating that apprentices on the whole are more loyal than graduates: does a graduate apprenticeship provide the best of both worlds?

It would also be worthwhile considering if the graduate apprenticeship programme could be integrated with Erasmus programmes to support mobility across the European Union.

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CHAPTER 6.

Getting ready for new apprenticeship arrangements for a new world of work

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6.1. Introduction

Apprenticeship has evolved over time in all countries, gradually adapting to changes in industrial processes, the economy, the labour market and education systems. However recent changes in the economy and the labour market have the potential to disrupt apprenticeship systems quite radically. Changes in apprenticeship systems themselves have partly met some of these challenges. In this chapter, the readiness of apprenticeship systems and practices to address developments in the 'new world of work' is explored: there is currently little empirical research in this area. Case study research in five Australian companies is used to indicate the potential of individual workplaces to attend to, and to incorporate, necessary changes to their apprenticeship training; and the potential role of apprenticeship intermediary organisations is discussed, as a facilitator for companies that need or would like additional support.

This chapter draws together the data from two pieces of research to present a generally optimistic view of current developments and the potential of apprenticeship to address future developments. It provides examples of good practice from employers and from intermediary organisations. It recognises the desire, and sometimes need, to change apprenticeship systems, such as the use of intermediary organisations, but also cautions against hasty developments which may later be regretted and difficult to undo.

6.2. Background and literature

6.2.1. The nature of apprenticeships

The nature of apprenticeships varies across the world. All involve a relationship between a company and a person who is in a workplace for the purpose of learning an occupation, but most constituent features differ among countries. For example, in some countries, apprentices are not actually employed and may receive no payment, or just a stipend. In Australia, by contrast, apprentices and trainees receive relatively high rates of pay, although less than a qualified worker. Also, the length of an apprenticeship may vary from six months (e.g. Indonesia) to four years (for example, a traditional trade apprenticeship in Australia). In some countries (such as Turkey), the length of an apprenticeship varies with the type of occupation and/or the prior qualifications of the entrant. In some, off-the-job training often results in acquiring a qualification; the training and the qualification are usually in the TVET sector, but universities and degree qualifications may be involved in some countries (as in UK-England); in others there is no qualification (Smith and Kemmis (2013). A large number of international comparative studies have been undertaken over the years, including several in the past few years (including Markowitsch and Wittig, 2019; Cedefop, 2018, Chankseliani et al., 2017; Fazio et al., 2016; Smith and Kemmis, 2013; European Commission and IKEI, 2012).

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6.2.2. Stakeholders and intermediary organisations

One aspect of apprenticeships common to all systems is the number of stakeholders in the system. These include, most commonly:

(a) employers and their representative bodies;
(b) trade unions and the representative bodies;
(c) training providers and their representative bodies.

At one remove are bodies such as sector skills councils, which often set the content of qualifications and may have more direct involvement in apprenticeships (such as the industry training organisations in New Zealand). Careers advice providers and bodies are also stakeholders in apprenticeship systems. Two separate government departments are generally involved: ministries of labour and ministries of employment. The large range of stakeholders means that there are a number of intervention points for governments, but also creates a certain amount of inertia in apprenticeship systems due to the need for all stakeholders to agree to changes.

In addition to stakeholder organisations, intermediary organisations have been set up in many countries by government, by industry, or sometimes as independent bodies, for-profit or nor-for-profit, seeking to facilitate the initiation and/or conduct of apprenticeships. The nature of these bodies varies from country to country and depending on particular needs. For example, in India 'third party agencies' have recently been set up, designed to lift some of the heavy burden of paperwork and reporting from employers and to help them claim the part-salary refund available from the government under recently instituted provisions. In India the apprenticeship system is notoriously complex and bureaucratic (Smith and Kemmis, 2013). In the United States, many new intermediary organisations (Sullivan, 2016) have a focus on recruiting apprentices as the US system is in a growth phase following the directive of President Donald Trump. In Australia, there has been some published research on the role of group training organisations (GTOs), either directly about GTOs or as part of other studies (e.g. Smith, 2010); these bodies act as quasi-employment agencies for apprentices, 'leasing' them to host employers to reduce the risk associated with the long-term commitment of employing an apprentice. It is quite likely that similar work has been undertaken in other countries but generally there is little published work, especially for international audiences (Unwin et al., 2012). A recent study funded by the International Labour Organization (Smith, 2019) draws together the literature that does exist and, focusing on intermediary organisations in UK-England, India and Australia, develops methods for classifying the organisations. These classifications relate to the function of the organisation and the stage of the 'apprentice life cycle' which they support; to the other services which the organisation provides (job placement, labour hire, provision of training); and to the sources of funding for the organisation.

6.2.3. Apprenticeships and the new world of work

This section examines five features of 'the new world of work': 'industry 4.0', globalisation, economic structural adjustment, labour movements, and new forms of employment and self-employment. These features have been emerging over some time but are now increasingly identified as a group in publications on vocational education and training (VET) (e.g. ILO, 2015). It should be acknowledged that all five features have multiple causes, and that there is considerable contestation about their relative benefits and disadvantages, and their links to broader political and economic trends. For example, divergent views on the links between neoliberalism and globalisation have been propounded for some time (Kotz, 2002).

'Industry 4.0,' or the 'fourth industrial revolution' (Schwab, 2017), has the potential to change many occupations. The term encompasses improved automation, machine-to-machine and human-to-machine communication, artificial intelligence, continued technological improvements and digitalisation in manufacturing, according to the Australian government which has set up an Industry 4.0 taskforce. Industry 4.0 creates new industries and occupations and also involves radical changes to existing occupations, for example the use of robotics in medicine and

retail, as well as manufacturing (Uh, 2016). Earlier fears of an overall loss of jobs to technology have largely been displaced by understandings of how automation can enhance most occupations and introduce new ones. The main consequence is likely to be upskilling in all occupations; a German research project (e.g. Yuen, 2017; Dreher, 2017) has been examining the ways in which human knowledge can be transferred to robots in certain tasks, and the implications for VET for those workers who will programme the automation. Loveder (2017), in a discussion of potential effects on apprenticeships in Australia, describes the need to attract a higher level of applicant to learn rapidly evolving jobs; and the need to revise qualifications to take account of Industry 4.0 changes. Oliver et al. (2018) provide case studies of apprenticeships in advanced manufacturing in Australia, one in a large multinational company and one in a small family company.

One reason for the diversity in apprenticeship systems among countries is that apprenticeships are locally rooted and culturally specific (e.g. Deissinger et al., 2006) and yet the economy is increasingly globalised. Many workers are employed in companies whose headquarters are in other countries, and hence their employers may or may not choose to participate in the apprenticeship systems of the country of operation. As a greater proportion of companies become global in their operations, the interactions of companies with local apprenticeship systems become complicated. Pilz and Li (2014) find two different models of apprenticeship for multinational companies: one where companies adopt local apprenticeship systems ('divergence') and the other where companies implement the German system as far as possible throughout all countries of operation ('convergence'), but they note that there has been little research into the topic.

Western economies have for some time been adapting to the move to service industries (e.g. Triplett and Bosworth, 2004); other economies are 'leapfrogging' manufacturing, moving directly from agriculture to service industries (e.g. ILO, 2012). The nature of the occupations covered by apprenticeships becomes an important consideration in these changes as, in many countries, apprenticeships have been more common in traditional trades and craft occupations. With structural adjustment, new apprenticeships may be created in occupations which previously were not considered as appropriate for apprenticeship. In the UK, which has experienced rapid expansion of its system, this has been called the 'apprenticisation' of occupations (Marsh, 2016). 'Higher level apprenticeships', for example, have been introduced in England up to university degree level (Bentwood and Baker, 2013). Countries vary in their systems for adding new occupations to the list of those which have apprenticeships; some have formal processes and others are quite ad hoc (Smith and Kemmis, 2013). In these processes, stakeholders need to consider which occupations are appropriate for apprenticeships, described as their 'apprenticeability' (Lerman et al., 2009).

As people increasingly move among countries, whether voluntarily or involuntarily, permanently or temporarily, governments have to make decisions about how this affects their apprenticeship systems. Generally, there are three issues which affect apprenticeships. First, in occupations where a completed apprenticeship and/or qualification is required in order to practise, some form of recognition system may be in place for already-trained workers coming from elsewhere; assessment services are provided in Australia, for example, by a body known as Trades Recognition Australia. Such recognition is designed to allow people to access work as a qualified tradesperson. Second, there is the consideration of whether migrants and refugees are allowed to undertake apprenticeships; in some countries, full citizenship is required to access either training or government funding for training. Third, some countries are net exporters of labour, for example India and the Philippines (Pernia, 2011); their systems may choose to include the training of people through apprenticeships to work in other countries.

The so-called 'gig economy', where workers are 'self-employed' and are paid for tasks performed – as Gershon (2017) puts it, the 'worker as business' – has led to a rapid increase in western countries of the proportion of people not in regular employment. This could be characterised as a new informalisation of the econ-

omy in developed countries; it is already having a profound effect on the labour market, with, for example, a reported 12% of Swedish workers working in the gig economy and five million UK workers involved in some form of digital-platform based working (Howcroft and Bergvall-Kareborn, 2018). While the importance and eventual impact of the 'gig economy' is contested (e.g. Healy et al., 2017) the implications for apprenticeships are undeniable, as all apprenticeship systems currently involve an arrangement with an employer, whether it is a formal employment contract or other arrangement. Where people are engaged in activities such as Uber driving, or in food delivery for companies such as Deliveroo (Howcroft and Bergvall-Kareborn, 2018), there is no employer as such; individuals operate as sole businesses or contractors, although they may be responsible to a web-based platform. Another matter of relevance is that any form of non-standard employment is likely to have a disproportionate effect upon young people (ILO, 2016); since young people are commonly seen as major beneficiaries of apprenticeship systems and policies, this is of significance.

6.3. Evidence from company case studies

The case studies are of five companies employing apprentices in the State of Victoria in Australia (Table 6.1.). These case studies were undertaken in 2018 as part of an international project *Tools for quality apprenticeships*, funded by the International Labour Organization (West and Chatani, 2018). The case studies were selected to cover a range of industry areas, and different sizes of employer. Ethics committee approval was gained, interviews were undertaken with senior managers responsible for apprenticeships, and in two cases tours of the workplace were provided. Interviews were taped and transcribed with permission, and follow-up conversations were undertaken by phone and email; documents relating to the management of apprentices were requested and analysed.

The focus of the case studies was on ways in which apprentices were managed, not on 'future work'; however, companies' practices were found to demonstrate current adaptation to some aspects of 'future work' and/or their potential adaptability to this work. This was despite

Table 6.1. **Case studies of Australian companies employing apprentices**

Company name (pseudonym)	Industry sector	Company size and location	Apprenticed occupations	Qualifications gained by apprentices
Heavy Metal Co	Metal fabrication	Medium (130) *Small town*	Welder	Certificate III in engineering (fabrication)
Pizza-Pasta Restaurant Co	Hospitality	Medium (100) *Regional city*	Chef	Certificate III in commercial cookery
Metropolitan Landscaping	Horticulture	Medium (70) *Melbourne – State capital of Victoria*	Landscape gardener	Certificate III in horticulture (landscape; and parks and gardens)
Regional Health Services	Nursing	Large (45,000) *Regional city*	'Enrolled' nurse	Diploma of nursing
High End Plumbing Co	Plumbing	Small (8) *Regional city*	Plumber	Certificate III in plumbing

Source: Smith, E. (Federation University Australia).

the fact that none of the companies saw themselves as particularly unusual or innovative. The 'future work' aspects of the case studies were analysed against the five themes of this chapter.

The heavy metal fabrication works produced very large items of agricultural machinery. The company had previously had difficulty recruiting and maintaining a workforce but then began to reconfigure its apprentice workforce and programme. The production methods had been increasingly automated and design processes were digital. Training processes also incorporated new technology, with the use of welding simulators. The company now attracted would-be apprentices by showing them these aspects of the business during an annual 'boot camp' where would-be apprentices worked for two days on-site and attended the local technical and further education (TAFE) college, the public VET provider, for three days, working closely with the welding teacher at TAFE. Once recruited, the apprentices moved well beyond the requirements of the welding qualification in the work that they performed, typically programming presses and managing robot welders, and the better apprentices also worked in the research and design area where products designed by the engineers were constructed and trialled. While operating within the traditional apprenticeship system, the company had extended it in a way that would readily incorporate further aspects of Industry 4.0.

The pizza-pasta restaurant company had a history of recruiting people arriving from other parts of Australia and the world; for example, 'backpackers', a common form of itinerant young worker from overseas on a temporary working visa. Many of its front-of-house staff and sous-chefs were recruited from elsewhere and had begun work on a casual part-time basis, eventually in some cases moving on to become apprentice chefs. Some workers left and then returned. The practice of recruiting 'walk-in applicants' who seemed promising allowed overseas workers, and also internal migrants within Australia, to find rewarding work leading to permanent employment via apprenticeships.

The metropolitan landscaping company also recruited workers from overseas. On a fairly regular basis, people came from other countries to work in the company for periods of time, as it had an international reputation; the company, for example, exhibited at the Chelsea Flower Show in London. While these visiting staff did not become apprentices, they widened the outlook of the apprentices by bringing in overseas design concepts into the company, and so globalised its outlook.

Regional health services had adopted an innovative traineeship programme for its 'enrolled nurses': a traineeship in Australia is a form of apprenticeship, usually in non-craft occupations. 'Enrolled nurses' have VET-sector diplomas, and work at a lower level than 'registered nurses', who must have a university degree. The diploma qualification is usually delivered off the job, full-time, but the company was dissatisfied with the graduates from the local TAFE course, and also had constant nurse shortages. It decided to provide the nursing diploma as a traineeship, in partnership with a local TAFE college, allowing the health service to have more control over the training. A number of regulatory and industrial relations obstacles needed to be overcome to do this. As a traineeship, a wider pool of applicants was attracted, including older people and new migrants who could not have afforded to be without an income while training full-time at TAFE. This is an example of an employer extending the apprenticeship system to an occupation that was not generally covered by the apprenticeship system, and also offering an apprenticeship at a higher level. These innovations were necessary because of the structural change in the Australian economy creating high demand for labour in the health industry.

The high-end plumbing company worked mainly on new construction, generally government and commercial buildings. Due primarily to immigration, the population locally was increasing rapidly, leading to an increased demand for the company's services; moreover, the population in Melbourne, 120km away, was also growing even more rapidly, leading to constant leaching of local plumbers to the State capital. The company was expanding rapidly and needed to take on apprentices but with minimum risk. For this reason, it recruited its apprentices via

a group training organisation (GTO). The manager did this because he knew he was able to send back apprentices if they were not suitable for the company; this meant he was more willing to take the risk of employing an apprentice. Before working with the GTO, it had proved difficult for him to find suitable applicants.

The discussion of these case study companies shows the ways in which they address or potentially address features of the new world of work. But there is also work to be done at the level of apprenticeship systems to help apprenticeships adapt. As with the company practices, some of these features are already in place in some countries, as found in a recent survey of apprenticeship initiatives in the G20 countries (Smith et al., 2018). The survey elicited examples of countries with well-established systems for updating qualifications and adding new qualifications, allowing them to introduce apprenticeships quickly to accommodate Industry 4.0 and also to cope with structural adjustment. There were countries heavily involved in international exchange of information about TVET curriculum and apprenticeship systems, thus both adapting to and facilitating globalisation of apprenticeships; and countries which welcomed migrants, refugees and asylum seekers into their apprenticeship systems, using apprenticeship as a response to global labour movement. Apprenticeship intermediary organisations can also assist (Smith, 2019), as in the plumbing company case. There is potentially a broader and more strategic role for such organisations, as discussed below.

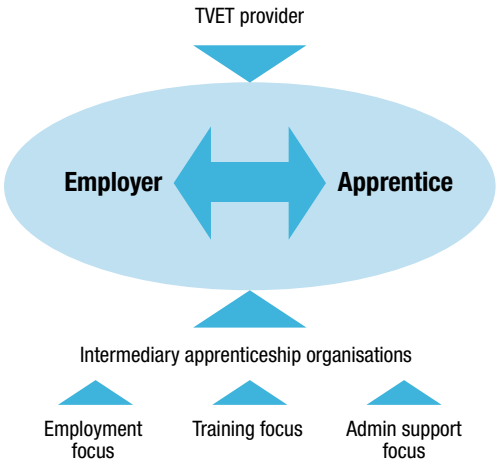
6.4. The potential role of apprenticeship intermediary organisations

The previous section (Section 6.3.) indicates the ways in which companies which employ apprentices and governments can help apprenticeships adapt for the five features of 'future work. While some companies have the resources and management capability to think about future development, others, perhaps struggling to maintain profitability, might find the task too daunting on their own. This is where intermediary organisations may have a broader role.

The GTO which worked with the plumbing company was an apprentice intermediary organisation which had the role of the employer of apprentices who were 'hosted' at a range of companies. It provided its services to smaller businesses but also to a small number of major client businesses. The company serviced traditional apprenticed trades and also service industries including healthcare, the most rapidly expanding industry area in Australia. Support services were provided for all apprentices and trainees, as well as employers, and there was a focus on disadvantaged people. Each apprentice and trainee were allocated to a field officer. In an increasingly regulated environment, the organisation assisted employers in meeting requirements such as workplace health and safety matters. The GTO also liaised with the training providers on behalf of the employers. Group training companies typically provide services well beyond their main function as the nominal employer of apprentices, indicating the potential for expansion of their role. However, they currently employ only about 10% of Australian apprentices.

Based on the analysis by Smith (2019), Figure 6.1. shows the three main focus areas of intermediary organisations in apprenticeships internationally.

Figure 6.1. **Main types of apprenticeship intermediary organisations**



Source: Smith, E. (Federation University Australia).

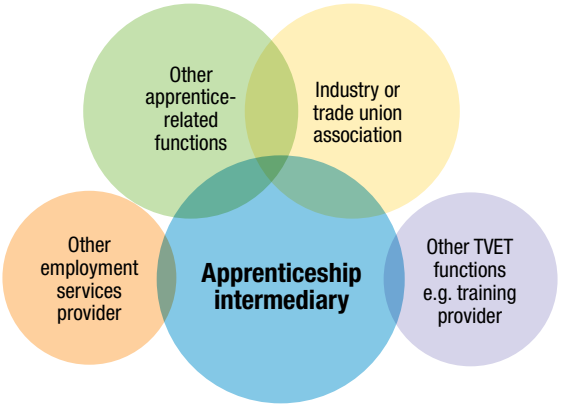
Those with an employment focus (group training organisations in Australia or apprenticeship training agencies in England) could provide quasi-employment for workers in the 'gig' economy and their systems for establishing networks with employers could enable them to find placements for gig economy workers. Their existing networks would provide them with contacts, so that employment-focused intermediary organisations working in transport or hospitality industries would have prior experience that would assist in home-delivery of food. They could also assist with the employment of refugees and migrants in apprenticeships, by developing special expertise with these groups of potential apprentices and assisting them towards placement with employers.

Intermediaries with a training focus would be well-placed to assist companies with adaption to Industry 4.0. Neither individual employers nor individual TVET providers might have sufficient expertise in new techniques nor the necessary equipment for training, but both could be found by collectives of employers who already operate intermediary organisations as in English group training associations. Such intermediaries could also assist with globalisation by disseminating information about other countries' practices in their training.

Those intermediaries focusing on administrative support (such as third-party agencies in India or Australian Apprenticeship Support Network providers in Australia) could provide invaluable support in several spheres. They could help companies recruit apprentices in rapidly growing areas of the labour market, especially where companies have little experience either in navigating government apprenticeship registration systems or in managing their own apprentices. This would assist with the structural adjustment of the economy. They could also advise companies who are considering employing migrants or refugees as apprentices by assisting with interpretation of legal matters or qualifications equivalence.

A particular feature of apprenticeship intermediary organisations is that they often form just part of an organisation which also incorporates other functions. Figure 6.2. indicates the most common overlapping types. Some intermediary organisations have dual or triple apprentice-related functions; some have other TVET functions, for example as training providers; some may undertake commercial labour hire or employment services; and others may be affiliated to employer or employee associations.

Figure 6.2. **Configurations of apprenticeship intermediary organisations**



Source: Smith, E. (Federation University Australia).

While there is always potential for conflicts of interest where intermediaries have multiple functions, there are also benefits, which include building and consolidating knowledge in apprenticeship and employment-related matters. These benefits are clear when considering developments in the world of work.

6.5. Conclusion

This chapter has provided an overview of how employers are starting to consider their futures and the necessary adaptations to their apprenticeship operations that will be needed to equip their workforces and practices for the future. It has also briefly explained the role of governments in this area and considered the fact that employers' adaptations sit within apprenticeship system features which may or may not encourage innovation. The fact that the companies that were researched were not selected on the basis of being innovative, but are nevertheless adapting, suggests that getting ready for the new world of work is a process not an event. Change

need not be fundamental or sudden; it might be minor or incremental.

Despite these optimistic signs, companies may well need assistance; even the most capable companies can benefit from pooled expertise and will wish to share their own good practices. This represents the current and potential role of apprenticeship intermediary organisations.

The discussion indicates that apprenticeship systems have the potential to adapt to meet the challenges of the future of work. However, should apprenticeship systems necessarily adapt to accommodate all aspects of 'future work'? For example, creating apprenticeships via employment-focused intermediary organisations to provide training for workers in the gig economy would appear desirable, yet the question of whether the gig economy should be legitimised by providing the respectability of apprenticeships needs to be considered. But if it is not, those 'workers' are denied a route for proper training, which Rubery et al. (2018) identify as a major issue for people in non-standard forms of employment. Moreover, aspects of Industry 4.0, particularly in design as opposed to operational tasks, may be 'too hard' (complex and difficult) for apprenticeships. Apprenticeship systems have typically belonged in vocational education and training (VET) systems, where qualifications are at a lower level and are often designed for school-leavers who are not proceeding to higher education. Changing the nature of apprenticeships to focus on higher-level skills could have adverse effects on youth employment. Finally, increased utilisation of apprenticeship intermediary organisations has the potential, if not handled properly, to affect adversely the fundamental employer-apprentice bond.

In considering a potentially expanded role for intermediary organisations, consideration should also be given to their funding sources. In different countries, intermediaries are sometimes funded by governments, sometimes by participating employers, or they provide services on a fee-for-service basis. Government funding has the advantage of providing levers for achieving desired outcomes, but also provides the risk of organisations entering the field for profit motives (Smith, 2019).

There is a clear imperative for further research, both to provide further empirical evidence of companies' changing practices and also to help resolve the problematic issues discussed above. Such research is needed in companies employing apprentices, in companies that might employ apprentices were more assistance available, and in apprenticeship intermediary organisations.

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CHAPTER 7.

Shared apprenticeships

Rotation of workplaces and its potential benefits for companies and apprentices

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7.1. Introduction

Apprentices are generally trained at one company during their apprenticeship. But, responsibilities in an apprenticeship can also be shared between different companies, through collaboration and external support, relieving the companies of the risks, time and effort associated with training an apprentice for an entire programme. Sharing apprenticeships is particularly relevant for companies which are too small (SMEs) or specialised to cover the whole curriculum of an apprenticeship, for companies which have a relatively short production horizon, or for those with limited availability due to seasonal or cyclical changes. For apprentices, rotating between different workplaces can be a solution whenever there is a shortage of companies which can cover the entire training programme.

Rotation can thus be a solution for companies and apprentices whenever an entire apprenticeship is difficult or impossible to attain. How this rotation is organised is not always the same: there are different ways in different countries, and some countries even have several forms of rotation. This study reports such examples of rotation in different countries and investigates the possible benefits for companies and learners, as well as the issues which should be addressed. From these examples, the study identifies a set of aspects of rotation, such as the type of learner and level of education, whether or not rotation occurs in the same sector, the order of workplaces, individual or group learning, how many companies are involved, what the type of agreement is and whether the apprentices are remunerated. The last aspect, who or what is responsible for the organisation of the rotation, is what categorises the different examples into different types of rotation: rotation where the companies, the apprentices or an external body is responsible for the organisation.

Methodological approach

The methodological approach included desk research on existing literature to gather and study examples of rotation from different countries, together with their respective issues and benefits for the apprentices and companies. The desk research was complemented with an in-depth analysis of grassroot examples in Flanders (Belgium) by means of interviews with key informants. The information gathered from both the literature and the interviews was then analysed and synthesised into a set of types and aspects of rotation, and into a summary of benefits and issues for apprentices and companies.

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7.2. Examples from Europe and beyond

This section provides a non-exhaustive list of examples of rotation in five European countries and Australia. Several countries have more than one type of rotation, with each type serving different purposes.

In Australia, group training organisations (GTOs) act as employers of apprentices. They 'lease out' apprentices to different companies, taking over an important part of the administration and coordination, and also relieving other companies of taking on an apprentice for a longer period. GTOs are mostly non-profit organisations supported by public authorities; they are often organised per region or sector, specialising in construction or hospitality, for instance. Next to screening and matching, arranging and monitoring (pre-)apprentice training, they ensure that apprentices receive a broad range of training experience, sometimes by rotating them to different companies (Smith, 2010, p. 118; Kuczera, 2017, p. 29; OECD, 2010).

The Austrian Vocational Training Act (BAG) makes it possible for companies to form training alliances (Ausbildungsverbünde) to share apprentices. If a company is not able to fulfil the required training on its own, the formation of a training alliance is mandatory. However, they may also be formed voluntarily to provide the apprentices with additional qualifications (e.g. digital skills, languages, soft skills, or even technical skills).

The training alliances are supported by the Federal Chamber of Economics, WKÖ. The regional economic chambers, often in cooperation with the provincial government or the Chamber of Labour, have set up entities, such as the apprenticeship offices (*Lehrlingsstellen*), to facilitate the formation of training alliances. Together they help to find partners for companies willing to create new training alliances (Kuczera, 2017, p. 57). They also help by finding suitable education institutions and apprentices, and they advise on legal obligations, incentives, and training requirements (European Commission, 2016, pp. 24-25; Bliem et al., 2014, pp. 114-115).

In Denmark, there are two types of contract available, which make it possible for apprentices to rotate between companies:

(a) combination training agreement: an agreement signed by the student with two or more companies; these partial agreements together constitute the entire programme;
(b) short training agreement: agreement between a student and one company for a short period.

Within the combination agreement and short training agreement, the companies have legal, economic and educational responsibility, but only for each of their periods included in the agreement. The choice of one contract or the other depends in part on the sector or industry. The short training agreement is more popular, which might be due to the fact that companies do not want to start with the combination training agreement for productivity reasons (European Commission, 2012, pp. 52, 215, 220, 229; Chatzichristou et al., 2014, p. 107.

Assisted by the business chambers, apprentices can be shared by means of 'collaborative training' (*Verbundausbildung*). There are different types of collaborative training in Germany (Kuczera, 2017, p. 36; Poulsen and Eberhardt, 2016):

(a) lead and partner company: the lead company has overall responsibility, but parts of the training are conducted in partner companies;
(b) training to order: some parts of the training occur at another company, on the basis of an order by the main company and against reimbursement of costs;
(c) training consortium: several companies collaborate and take on apprentices. If one company cannot provide a specific competence, the apprentice goes to another partner company. The companies sign a cooperation agreement, but they train the apprentices independently;
(d) training association: companies establish an organisation that takes over the organisational and administrative tasks, while the rest offer the training. The association sets up a general meeting and an honorary committee. The rights and obligations of the members are regulated in a statute.

Collaborative training is supported by the Jobstarter programme in Germany. This facilitates cooperation between the companies, the training counsellors at the chambers of industry and commerce, the Federal Employment Agency and other education institutions. Jobstarter provides support to the lead and partner company type, and the training consortium. In the latter, a Jobstarter staff member is responsible for coordinating the training (European Commission, 2016, p. 26; European Commission, 2012; Chatzichristou et al., 2014, p. 107).

Switzerland has training company associations (*Lehrbetriebsverbünde*) which form groups of companies that share apprenticeships. The State Secretariat for Education, Research and Innovation (SERI) provides funding to support these multi-company collaborations during the initial years, contributing to the costs of establishing a joint training programme.

According to Bliem and colleagues (Bliem et al., 2016, pp. 66, 72) and to a number of other sources (OECD, 2010, p. 124; Walther et al., 2005; Muehlemann and Wolter, 2014), there are two types of such training company associations in Switzerland:

(a) training/host company network: two or more companies form a network and train complementary parts of the training. The main company is responsible for the training while the partner companies cover specialised parts. The host company may also take care of organisational and administrative tasks;
(b) collaborative training alliance: A network of collaborative companies that includes a managing organisation. The managing organisation is usually not involved in the training of the apprentices but takes care of organisational and administrative tasks. The different participating companies of the alliance take care of the on-the-job training of the apprentice.

Following the model of Australia (European Commission, 2012), apprentices can be shared in the UK through apprenticeship training associations (ATA). These associations recruit, match, employ and arrange training for apprentices on behalf of employers. They also take on most of the administration. ATAs can offer flexibility in the delivery of apprenticeships, especially when employers may not be able to offer all aspects of the training, or when they are only available for short periods. The companies pay the ATA a fee, which comprises the apprentice salary and a service charge.

The ATAs must be listed on a register of approved ATAs, which is published online for companies to check and find a fitting ATA. Some of the ATAs focus on a specific sector, while others are organised regionally. These associations have been through an application process conducted by the Education and Skills Funding Agency (ESFA). The application process considers due diligence, finances and operation details ([24]).

7.3. Grassroot examples in Flanders

This section reports on three case studies of grassroot examples of rotation in Flanders. Each case study gives a short description of the training programme and specifies the different aspects of the workplace rotation within the programme.

7.3.1. **Case 1: The HEAT programme**

The Hands-on enterprise architecture training (HEAT) programme, taught at the IC Institute (training provider), has three components: a part-time master of science in enterprise architecture, spread over 18 months; soft skills training of at least 40 hours; three training periods at the workplace of six months each. These three parts reflect the importance of (inter)personal skills, specific knowledge and methodologies for enterprise architects (Gong and Janssen, 2019). All students enrolled are adults employed at one of the companies providing a workplace and it is important that they have already acquired a certain level of competence.

Each student is supported by two coaches: an experienced consultant and a supervisor from one of the partner companies. Students are

([24]) https://www.gov.uk/government/publications/apprenticeship-training-agencies

placed in this programme because they have not yet acquired fully fledged profiles. The participating companies take this into account and provide an apprenticeship assignment that offers sufficient opportunities for growth, is sufficiently clearly defined, and leaves some room for 'learning mistakes'.

Workplace rotation is done every six months: a student will spend six months at a first company (about 900 hours), six months at his current employer (although in a different role) and six months at a third company. This is done to ensure sufficient variation in learning environments, without severely damaging the employer-employee relationship.

In determining the content of the apprenticeships, the best possible balance is sought between the three components of the HEAT-programme. This means that the competences needed are determined first via an assessment model based on qualitative indicators. In this assessment, the apprentice will be assigned a maturity level on these competences, in order to find and select those trajectories in which the student will learn the most. The apprenticeships are thus aligned with identified areas of growth for the student, rather than with the pace of the master programme. However, students are encouraged to express challenges they are facing at their apprenticeships during classes, elevating the personal experience to a group-learning experience.

The order of rotation is mostly defined by the match between the student (and their current skillset) and the content of the apprenticeship. Rather than training a student to become strong in a narrow and technical set of skills, the enterprise architect is trained to become proficient in a mix of complex skills and capabilities, allowing him/her to bring value from the very beginning.

Due to the strategic importance of the role of the enterprise architect, same sector rotation is not allowed in the programme. This restriction is put in place to make sure no inside knowledge of strategic importance has to be disclosed to an apprentice employed by a competitor. An additional reason is that apprentices will be challenged more when outside of their comfort zone.

Students rotate between different workplaces in a certain direction, meaning that an organisation will receive students in their first phase and students in their third, keeping the balance. During the second phase, students will always return to their own organisation.

The organisation of rotation is done by the education institution (IC Institute) and in collaboration with the partner organisations, who will organise the actual apprenticeships (in line with the expectations of the education institution). Partner organisations sign a multi-party agreement, where every additional partner needs to be accepted by all involved partners who together form a steering committee. Students sign non-disclosure agreements given the above-mentioned sensitivity and strategic importance of the information disclosed during apprenticeships. Students are remunerated for their work.

7.3.2. Case 2: The THHI Tessenderlo programme

In September 2017, the education institution, Technisch Heilig-Hart Instituut (THHI), at Tessenderlo in Belgium, started an apprenticeship programme. The programme trains electro-mechanical technicians in upper secondary education. The school-initiated rotation between companies, since these companies are typically specialised and can only provide training for a part of the programme. THHI actively recruits more companies willing to engage in the programme and to form a carousel.

In the first and second years of the two-year programme, the whole group is divided into smaller groups of three students, in which they rotate between three companies. Placing the students in groups of three limits the time and effort invested by the company, but it also serves as a kind of buddy system. Thus, each company receives consecutively three groups of three students. Each year, each of the three groups of students spends 12 days in each company, at a rate of two days a week, for six weeks. This means that, in total, each student spends an annual 36 days in the companies. In the school year 2018/19, the companies received students for 36 weeks, even though part-time: students of the first year for 18 weeks (three groups, each group six weeks) and students of the second year for 18 weeks (three groups, each group six weeks).

The school coordinates the collaboration between the companies by preparing the schedules – taking into account the companies' suggestions - and assigning the groups of students to a specific company. Since each group is taught the same content and exercises, the order of rotation of the individual students does not matter.

At the companies, students almost always learn in groups, occasionally individually. Students sign an agreement with each of the three companies. They do not receive remuneration, because they are less than 20 hours per week at the company (Allinckx et al., 2019, p. 15).

The school and the companies define the content of the programme by mutual agreement. They also decide together which part of the programme is taught where. The course content offered by each of the parties is clearly defined. The general courses and the main part of the theoretical courses are taught at school. The companies mainly teach practical courses and organise exercises. However, the theoretical part is not exclusively taught at school; the companies also ensure links between the curriculum taught at school and their programme.

The companies are complementary in the curriculum they offer. Each company has its field of expertise and technical equipment, focusing on specific topics: safety, electricity, mechanics, pneumatics, hydraulics or automatisation. For instance, the safety topic is taught by a company in the chemical sector; mechanics and hydraulics are taught by a company in the crane building sector; and electricity and automatisation are taught by a company in the technology sector. The companies are in different sectors and together, they are able to cover all the subject matters the students should master. This provides students with up-to-date knowledge and skills in specific technical domains.

7.3.3. Case 3: the Plastics@Tielt programme

Plastics@Tielt is a case of a regional ecosystem within one sector, where one class of secondary students and their teacher train at up to seven companies. This ecosystem spans over the seven companies, the local school for technical education, the city services and PlastiQ, an intermediary organisation that supports the plastic processing sector in the region of Flanders.

Ten years ago, the local companies of the sector gathered in order to strengthen ties with the technical school in the city of Tielt. This school is the main provider of skilled workers for the companies in the region. Together as Plastics@Tielt, they made it their mission to promote technical education, and professions in the plastics industry in order to increase the influx of students into the training programme Mechanical design techniques. Their hope was to facilitate the search for skilled candidates in the region, which has been a challenge up until now.

From 2016 they started working together in the project *Duoleren*, in which the teacher and the students collectively go to companies to learn certain competences at the workplace. The project started as a pilot for the new apprenticeship model designed by the Flemish government. However, local stakeholders turned away from this model because they found some of the criteria not feasible for the programme. This means that the companies do not receive any of the (financial) incentives but, despite this, the project is continued, which proves an interesting example in the rotation of workplaces.

The involvement of the companies is determined by the speciality of the company, its size and availability. An important condition for collaboration is the complementarity of the different companies, in combination with the common interest of making young people choose for their sector.

The division of the training between the seven companies, was discussed during the first year of the project. The companies determined the content of the programme, together with the school, and translated the requirements into concrete activities. During a production process, for instance of a trolley, the processes and activities at the different companies are matched to the competences needed by the students.

The intermediary organisation, PlastiQ, coordinates the rotation in collaboration with the teacher of the school, the companies and the city of Tielt. It coordinates the order and frequency a company is visited. PlastiQ also provides

a training module for the mentors and promotes the project.

Since Plastics@Tielt operates outside the formalised apprenticeship model, the students sign internship agreements with insurance covered by the school but without remuneration.

Students in the first year learn for four hours a week in a company, rising to eight hours in the second year. The duration of learning at the companies is for six weeks in each year. In two smaller companies the students learn during one full day in the school year.

Training at the company takes place in groups not exceeding 10 students; where possible, students are divided into smaller groups. In some companies the production facilities are available as training infrastructure during slow periods, or group 'practice work posts' have been put in place. The groups are mentored by the expert member of staff, with room for limited customised guidance of students.

The teacher is also present and follows up on the different competences that should be acquired at the workplace. The practical experience for students is easily integrated into theoretical courses at the school because the teacher was present at the workplace. The presence of the teacher also helps the mentor to focus on the content of the training, while the teacher can take disciplinary actions towards students, if needed. This arrangement is more practical for the teacher as he/she does not need to go to different workplaces to follow up on different students at the same time, and he/she can follow up on practical arrangements with the companies. In this type of arrangement, the teacher's knowledge and competences with regard to the workplace component are automatically and regularly updated.

7.4. Types and aspects of rotation

Based on analysis of the examples in the literature and the case studies in Flanders, the following two sections (Section 7.4.1. and Section 7.4.2.) provide a synthesis of the different types and aspects of rotation.

7.4.1. **Aspects of rotation**

The different cases of rotation show that it can take many forms depending on the context. Table 7.1. presents a set of aspects that helps identify what the differences and similarities are between these cases.

The first two aspects relate to the target group and level of education involved in apprenticeships with rotation. The different European, Australian and Flemish examples show that the type of learner can be a secondary school student (e.g. THHI and Plastics@Tielt) or an adult employee (e.g. HEAT). The level of education, the second aspect, ranges from ISCED 3 to 7.

The third aspect has to do with whether or not rotation occurs in the same sector. It appears that rotation in different sectors supports company involvement because there is less competition (e.g. HEAT). Rotation in one sector occurs mainly between specialised companies offering parts of the programme, as in Plastics@Tielt.

Fourth, the organisation of rotation can be the responsibility of the education institution, an intermediary organisation, one or more of the training companies, or even the student to a certain extent. This aspect defines the different types of rotation, as will be explained in more detail in Section 7.4.2.

The fifth aspect relates to whether or not there is attention to the order of the workplaces, and what this order depends on. In several cases the order of workplaces depends on the content of the programme (and the specialisations of the companies). In others, the order depends on the assessment of student competences. As occurs with HEAT, the order is decided on by screening and matching the student with the right company in the right order, with focus on student needs and development. In other cases, the order of rotation is organised in such a way that the same company does not always host the students first all the time, since they are not always productive from the start. This is especially relevant for companies training for similar tasks in one sector and there may also be attention to which company trains the learner last, since these companies may have more chance of recruiting the learner at the end of the programme. However, in many cases the order is dependent on the availability of the companies. As the cases of HEAT and

Table 7.1. **Overview of aspects per case in Flanders**

Aspect per Case	HEAT	THHI	Plastics@Tielt
Type of learner	Adult employees	Students in secondary education	Students in secondary education
Level of education	Higher education (ISCED 7)	Upper secondary education (ISCED 3)	Upper secondary education (ISCED 3)
Same sector or not	Different sectors (finances, research, government, retail)	Different sectors (chemistry, crane building, technology)	Same sector (different specialities in processing of plastics)
Organisation of rotation	Education institution	Education institution	Intermediary organisation
Attention to order	Yes, the order is determined by match with student and content of the training programme, companies receive students from three phases	No	Yes, the order is determined by several factors: training programme, availability of company, 'slow period' in production
Individual or group learning	Individual learning	Group (three students), occasionally also individual learning	Group (max. 10), with room for limited customised guidance of students
Number of companies	Three companies spread over 18 months	Three companies each year	Seven companies spread over two years
Duration and rate	Six months full-time at each company, two-year programme	Six weeks in every company at a rate of two days a week per year, two-year programme	On average a half day during six weeks in the first year, and a full day during six weeks in the second year spread over the different companies, two-year programme
Type of agreement	Internship and non-disclosure agreement by the students/multi-party agreement by the companies	Internship agreement (SAO)	Internship agreement
Remuneration	Yes	No	No

Source: Kimps, D.; Lembrechts, I.; van Riel, J.; Winnelinckx, K. (SYNTRA Vlaanderen).

Plastics@Tielt show, the order may also be decided by a combination of the previous elements.

The sixth aspect takes into account whether the learner is sent to the different companies in a group or individually. Most learners go to a company on their own, but in groups is also possible (see THHI and Plastics@Tielt), and both have their pros and cons (see Sections 7.5.1 and 7.5.2).

The seventh aspect relates to the number of companies in the rotation. The different examples show that a learner may be sent to two companies or more during an apprenticeship.

In some (exceptional) cases the learner may be trained by seven companies (see Plastics@Tielt).

The eighth aspect covers the duration and rate of rotation, which is how long a learner stays at one company during the apprenticeship and how often the learner rotates. Some learners may go back to a previous company, for instance. Here the different cases show a large variety of possibilities (Table 7.1.).

The last two aspects relate to the type of agreements used and whether or not the learner is paid during the apprenticeship. The examples show that there are different types of agreements, which may depend on the type of rotation and who organises the rotation. This aspect also includes agreements between companies only, e.g. in HEAT and the German Training Consortium. Whether or not the learner is remunerated depends on the types of apprenticeship and legislation of the country or region.

7.4.2. Types of rotation

Taking the discussed examples into account, it is possible to categorise rotation into a set of types on the basis of who is responsible for the rotation, with the individual cases of rotation sitting on a continuum, rather than in mutually exclusive categories (Figure 7.1.).

Figure 7.1. **Types of rotation based on responsibilities**

Source: Kimps, D.; Lembrechts, I.; van Riel, J.; Winnelinckx, K. (SYNTRA Vlaanderen).

The top of the triangle captures those cases where rotation is mainly an external responsibility, with either an education institution coordinating the rotation, such as in THHI ([25]), or an intermediary organisation, such as the GTOs in Australia and ATAs in the UK. These intermediary organisations can be profit and non-profit organisations, with or without the support of the government, and organised per sector or region. They can perform the following (supportive) tasks: recruitment, screening and matching, administration and coordination, follow-up on legal requirements, mediate between students and companies, and even training.

The right wing of the triangle groups those cases where the companies are responsible for rotation, and share certain tasks, such as the 'training to order' model in Germany, and the training networks in Switzerland.

The training consortium and associations in Germany and the training alliances in Austria are examples of rotation types where the companies carry a large part of the responsibilities and tasks, but also receive support by intermediary organisations.

The signing of short training agreements with enough companies in Denmark is more the responsibility of the apprentices, but it does not entirely exclude support and responsibility from the education institute, which places them on the upper side of the left wing.

7.5. Potential benefits and issues

Rotation may offer a range of benefits for apprentices and companies, but it may lead to certain disadvantages for both parties as well. The following sections (7.5.1 to 7.5.4) list the potential issues and benefits for both apprentices and companies referred to in the literature and by the key-informants involved in the grassroot cases in Flanders.

([25]) See also the COTRAIN projects in Italy and Wallonia (Michel, 2019).

7.5.1. Potential benefits for learners

Rotation between workplaces during an apprenticeship is reported to have potential positive effects for the apprentices:

(a) when it is impossible to learn all skills in one company, it gives the apprentices reassurance that they can complete their apprenticeships (European Commission, 2012; Bliem et al., 2014, p. 114; Chatzichristou et al., 2014, p. 107) ([26]);
(b) when companies provide training for their specialities/expertise only, and the whole apprenticeship programme is a combination of these strengths, the apprentice is more likely to learn from the best for each part of the programme (Bliem et al., 2016, p. 66) ([27]);
(c) with the help of intermediary organisations and alliances, apprentices may attain a higher completion rate compared to those with individual companies. The quality of apprenticeships can improve when intermediary organisations or alliances are involved, and they can help to resolve issues between students and companies (Smith, 2019; Kuczera, 2017, p. 57);
(d) apprentices experience a range of employers and company cultures (Dekocker and Sodermans, 2018, p. 55) ([28]). They can learn the differences between small and big companies, and sectoral or regional differences. But this entails paying attention to these differences during the matching and coordination process of rotation;
(e) rotation avoids being trained for one specific company (Verhaest et al., 2018, p. 66; Walther et al., 2005; Muehlemann and Wolter, 2014) ([29]);
(f) apprentices are more likely to acquire transversal skills, adapt to different contexts, leave their comfort zones, and become independent faster (Dekocker and Sodermans, 2018, p. 55) ([30]);
(g) with group learning, apprentices may find it easier to face new challenges and environments in group (partly stay in comfort zone). It may also facilitate peer-learning ([31]);
(h) it is easier to build up a network as an apprentice in general (Verhaest et al., 2018, p. 13; Ryan, 2001); making contacts in different companies might enlarge the network;
(i) contact with different contexts of employment and career paths, will help to make an informed decision when applying for jobs (Dekocker and Sodermans, 2018, p. 55);
(j) step-by-step matching of activities and competences between the different companies has as a consequence that all partners, including students, know from the start what is expected of them; this leads to fewer issues during the programme (Michel, 2019);
(k) active involvement by the teacher (especially when they visit or work at all companies themselves, as in Plastics@Tielt), gives them the opportunity to update their knowledge of the companies and their activities. The teacher can learn new skills, allowing them to integrate new knowledge and skills into their classes ([32]).

7.5.2. Potential issues for learners

As well as benefitting, apprentices may be also affected negatively by rotation. The following issues have been reported:

(a) in Denmark, short training agreements lead to higher dropout rates compared to regular training agreements. Whenever a short training agreement expires it has to be extended or complemented with a new one. This diminishes the prospect of completing the programme, which may demotivate the student (European Commission, 2012, pp. 112, 231). However, this may be solved by providing external support by taking care of the matching and coordination;

([26]) Reported by key-informants of Plastics@Tielt, HEAT and/or THHI.
([27]) Ibid.
([28]) Ibid.
([29]) Ibid.
([30]) Ibid.
([31]) Ibid.
([32]) Ibid.

(b) it is more difficult to participate in long-term projects in a company ([33]);
(c) evaluations are complex as they are done by several mentors of different companies ([34]), but this can turn out to be a benefit if there is a personal issue between a student and mentor;
(d) rotation poses an extra mobility issue, especially for young students who rely on public transport; possible solutions to tackle this problem are carpooling from public transport stations to the company by other workers, transporting groups by bus, only including companies within a certain radius of the education institution, providing e-bikes or free tickets for public transport (Barabasch, 2019) ([35]);
(e) with intermediary organisations, the relationship between companies and their students can become detached if the intermediary organisations take on too many tasks or are driven by profit (Smith, 2019);
(f) when rotating to new companies a certain level of stress, caused by the need to adapt to different situations, may arise; this is especially the case for employees who are used to having an 'internal role' at their own company, as in HEAT; the 'external role' at new companies can be confusing and challenging for the employee ([36]).

7.5.3. Potential benefits for companies

Rotation can be beneficial for companies. The following advantages have been reported:

(a) rotation offers flexibility to companies, which is needed in certain sectors/industries or regions. Rotation may offer flexibility on two levels: in time or availability, and in what to offer. First, rotation gives employers the option to place an apprenticeship for as long as possible, and when it is possible. This is important for companies with short production horizons, or which are subject to seasonal or cyclical changes (European Commission, 2012, p. 87). Second, companies unable to train for the full range of skills can offer training for part of the programme, in line with trends in specialisation of products and services (European Commission, 2012, p. 229; European Commission, 2016, p. 23);
(b) time, efforts, responsibilities, and costs associated with apprenticeships are shared among companies which share apprentices (Verhaest et al., 2018, p. 66; Walther et al., 2005; Muehlemann and Wolter, 2014). With the help of intermediary organisations and alliances, companies can be supported in administration, regulations, coordination, screening and matching, and/or mediation between students and companies (Kuczera, 2017, p. 12; Smith, 2019; European Commission, 2015, p. 23; Muehlemann and Wolter, 2014). Companies also find short and group rotation as feasible and less demanding of their personnel ([37]). Last, it has been reported that material and preparations can be used/repeated for different students ([38]);
(c) rotation allows companies to screen and evaluate more students, which is positive for long-term recruitment and a way to avoid costly mismatches (Bliem et al., 2014, p. 72; Chatzichristou et al., 2014, p. 8; OECD, 2010; European Commission, 2012, p. 97; European Commission, 2015, p. 17);
(d) the step-by-step matching of activities and competences may lead to fewer issues during the apprenticeship, since all parties have a better understanding of the training programme and what is expected of them (Michel, 2019);
(e) contacts between companies can lead to new cooperation and business alliance opportunities which are unrelated to apprenticeships ([39]);
(f) rotation may have the effect that companies become more flexible, adaptable and innovative (Michel, 2019; European Commission, 2015, p. 17) ([40]). More students bring more new ideas.

([33]) Ibid.
([34]) Ibid.
([35]) Ibid.
([36]) Ibid.
([37]) Ibid.
([38]) Ibid.
([39]) Reported by key-informants of Plastics@Tielt, HEAT and/or THHI.
([40]) Ibid.

Teaching a variety of apprentices may also have positive effects on the skills of mentors, supervisors and other staff. They may become better at teaching new personnel in general. Companies can also learn indirectly or even directly from other companies; this is feasible when companies are not in the same sector/industry and are not necessarily competitors.

7.5.4. **Potential issues for companies**

Next to a number of potential benefits, rotation poses three important issues for companies, which should not be ignored:

(a) companies may be reluctant to train first, as students are expected to be less productive in the beginning of the training (European Commission, 2012, p. 229). This is mainly true when productivity is the main reason to participate in apprenticeships. However, as the Flemish cases show, it is less of an issue when rotation is across different sectors or specialisations;

(b) students might choose one of the other companies as employer after completion of the programme, which is problematic for companies with a recruitment objective ([41]);

(c) companies can risk disclosure of strategic information to competitors, but this can be countered by non-disclosure agreements, or rotation in different sectors/ specialisations ([42]).

7.6. Conclusion

Sharing of apprenticeships may lead, at micro-level, to certain disadvantages for apprentices and companies, but it offers a range of benefits as well. To tip the balance towards more advantages, the first step is to be aware of these potential benefits and issues, and to act accordingly.

At macro-level, it has the potential advantage of getting more companies, and especially SMEs, involved in apprenticeship programmes (Kuczera, 2017, p. 57), and thus contributing to the overall provision of workplaces. Sharing information on the benefits and possible solutions to issues with the different stakeholders is one way to motivate more companies and apprentices to consider rotation. Providing external support (by intermediary organisations) and facilitating alliances of companies seem to improve the feasibility and attractiveness of rotation. As the benefits and need for rotation depend greatly on the industry, sector, region, size and availability of the companies, it would be advisable to chart these characteristics in order to target and support relevant companies and programmes.

T evaluate the actual effects of rotation on the quantity and quality of workplaces, further research is needed, monitoring key indicators and questioning stakeholders, including apprentices.

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CHAPTER 8.

Innovative learning culture in apprenticeships

The Swiss telecommunication industry

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8.1. Introduction

Innovations at the workplace secure the sustainable development and welfare of a region. A modern education system that equips the upcoming workforce with the skills required in this environment is necessary (Gassmann et al., 2006; Marxt and Brunner, 2009). The role of vocational education and training (VET), however, has been underestimated in this consideration. Skills demands are shifting, not least due to digitalisation, and VET needs to respond to that. Product-specific knowledge loses importance and is often not transferable. High perception skills, openness and the ability to find and understand new information independently become more relevant. Learners have to take responsibility for their own learning, which requires a great deal of personal responsibility and discipline.

The information and communication technology (ICT) sector has seen a steep increase in the number of employees. Since 1991, it has grown four times as fast as other sectors and has become one of the biggest sectors in Switzerland ([45]). Parallel to the growth of the sector, the task complexity has increased. Competence demands for employees are generally higher and require the development of new job profiles (Aepli et al., 2017), which is particularly challenging for the telecommunication industry (Limacher, 2010; Ruiz Ben, 2005). VET programmes in this sector, which are particularly complex and intellectually demanding, comprise programmes in informatics and mediamatics (i.e. a field combining IT, multimedia and management) (Stalder, 2011). Alongside successful secondary school graduation, preconditions for starting an apprenticeship in these fields are strong performance in maths and languages. New competence requests challenge conventional qualifications and learning pathways that formerly have been common practice. For management, especially in human resources and those concerned with training, the challenge is not only to change the structural conditions of vocational learning at the workplace. There are also attitudes, beliefs and values regarding the ways in which apprentices are treated, the ways in which communication takes place, tasks are distributed, or expectations are expressed that require a transformation (Barabasch et al., 2019a).

The study detailed in this chapter concerns apprenticeship training at a large Swiss telecommunication enterprise, which trains about 960 apprentices. The way in which apprenticeships are organised is shaped by the specific requests of the corresponding economic domain. High innovation pressure in the telecommunication industry results in special demands and requests to have an internal development dynamic, or ability to change, which can be described with the construct of agility (Krapf and Seufert, 2017). It implies an agile work organisation, marked by iterative (repeating) working processes that are oriented towards the (changing) needs of clients, flat hierarchies, and a shift of responsibility from management to teams. Sequences of objective-stage reflection are an important component

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of enterprise culture when dealing with mistakes. The results of the case study provide insights into corresponding organisational VET structures in the company, practices and processes as much as attitudes, beliefs and values of all stakeholders involved in VET. The learning culture in this case specifically supports the development of 21st century skills such as creativity, self-reflection and autonomous action (Barabasch et al., 2019c; Caldart and Barabasch, 2019).

The argument for innovation in apprenticeship training, according to new competence needs at the labour market and the need to maintain the competitive advantage and innovativeness of enterprises, has been set. However, creating enabling structures and processes in apprenticeship training or adjusting them to new requirements alone does not necessarily lead to success. This chapter argues that the construct of 'learning cultures', which also includes values, attitudes and beliefs, helps to understand how and why apprenticeships work in enterprises. The claim is substantiated with the findings derived from the telecommunication provider study.

8.1.1. Workplace learning in VET

With about 70% of each cohort, Switzerland currently has the highest percentage of students enrolling in VET in Europe (Gonon, 2007, p. 8). After nine years of compulsory school, approximately 90% of students continue in tertiary education, of which VET is a part. Apprentices, also called 'learners', start working at a host company in a chosen occupation between age 15 and 17. They earn a salary that increases over time. Besides the training at the host company, they attend a vocational school for one to two days per week where vocational subjects and general education subjects are taught. Regular VET programmes take three or four years and lead to the Federal VET Diploma.

The dual structure of training, which can also be found in Germany and Austria, enables early labour market experience of young adults and employment opportunities after graduation. The maximum number of apprentices simultaneously trained in a host company depends on the number of skilled workers that a company employs (Wettstein and Gonon, 2009). To hire VET learners can be an advantage for enterprises because, in most cases, the productive outcome of the work of apprentices exceeds the training costs (Wettstein and Gonon, 2009; Schweri, 2019). Companies and labour market organisations profit from providing career prospects for young people because this secures the supply of skilled workers needed in a branch (Rupietta and Backes-Gellner, 2019; SBFI, 2017).

In countries with dual VET systems it is important that the 'involvement and commitment of industry and firms' is continuously strengthened (Gonon, 2007, p. 11). In Switzerland, the engagement of enterprises in training apprentices is supported by the development of new forms of vocational training at workplaces, such as intercompany-alliances in which enterprises work together in the training of apprentices, facilitating the development of branch-specific skills (Wettstein and Gonon, 2009, p. 122). Though it can be generally assumed that if the framework conditions for enterprises permit cost-effective training of apprentices, it is not necessary to have specific labour market regulations or institutions to offer training posts (Wolter et al., 2003).

Typically, 'on the job' training takes place while productive work is carried out for an internal or external client. During this process, instruction is secondary to production and training should not hamper productive work (Wettstein and Gonn, 2009). VET learners gradually work without supervision and are responsible for a part of the productive work, which can include highly demanding and complex work steps. Some VET learners are already taking over a lot of responsibility (Hoffman and Schwartz, 2015). Workplace training provides the opportunity for 'authentic learning processes'. The fact that what is learned at a workplace can be used within the workplace setting is considerably motivating for young learners (SBFI, 2015, p. 5). A study that compared school-based VET programmes to VET programmes at workplaces showed that 89% of young people in VET preferred workplace- to school-based learning (Mjelde, 1993 cited by Gonon, 2007).

The relevance of personal competences, such as creativity, taking initiative and working autonomously is increasing (Barabasch and Keller,

2019). Self-organisation of work is increasingly requested of workers and needs to be trained early. Regulation and control activities that were originally the responsibility of management are handed over to workers (Heinz, 2009). VET learners have to learn to reflect on why work processes are carried out in a particular way and have to find ways how they can be carried out more effectively (Billett, 2001). According to Filliettaz (2010) the organisation of workplaces is a decisive factor in the degree to which learning is possible. Learning can be provoked if the content is challenging, if employees can take over responsibility and increasingly self-organise their work, and if they are adequately supported (Nyhan, 2009). Innovation-oriented enterprises adapt their VET training according to these requests, for example providing flexibility and individuality in workplace training, project-based learning, or new forms of learning accompaniment.

Rauner (2017) developed a model to show how vocational competences can be developed and measured. He assumes that practical work should be the point of reference for validity of competence diagnostics in VET and conceptualises vocational competences based on practical work. Accordingly, he assumes that vocational learning should be based on relevant vocational tasks (Rauner, 2017). Essential for vocational competence (a concept that according to Rauner goes back to Roth, 1971) is knowledge as well as ability. Vocational competence is compiled of job- related, personal and social competences (Rauner, 2017, p. 44). These competences should lead to the ability to complete vocational tasks in a holistic way. The (holistic) completion of a vocational task requires: presentation/form/clarity, functionality, efficiency, sustainability, work- and process- knowledge, environmental compatibility, social acceptability and creativity. These requirements need to be trained in VET and in continuing education. This competence model can be an orientation for workplace training.

New competence needs challenge conventional qualifications and learning pathways that have formerly been common practice. Overall, competence demands for employees are higher and require the development of new job profiles (Aepli et al., 2017). What is underestimated in theories within VET research is the role of learning cultures within enterprises. A key issue for enterprises is how they can manage learning processes. For organisational management individual knowledge, as much as values and beliefs, needs to be turned into explicit forms so that it is available to all members of the organisation and not susceptible to loss when individuals leave. One of the consequences of this philosophy is that organisational design needs to shift from hierarchical structures to new organisational forms such as networks and team working (Ashton and Sung, 2002; Billett, 2001; Birdi et al., 2008; Eraut, 2004) already for the apprentices, so that knowledge is more easily acquired and maintained. Further, the emphasis on cooperation and consensus fits well with the new learner-centred approach in vocational education and training. This important policy trend is reflected within the focus on learning cultures.

8.1.2. **The learning culture of apprenticeships**

Workplace learning in VET is embedded in and shaped by a particular learning culture, as explained below. The concept is derived from studying the culture of organisations, which is grounded in a phenomenological perspective in which the organisation is viewed as an intersubjective construction of reality (Morgan, 1996). For Argyris and Schön (1996) the learning organisation culture relates to 'the ability [of the organisations] to see things in new ways, gain new understandings and produce new patterns of behaviour' (p. xix).

The TLC (transforming learning cultures) project (Hodkinson and James, 2003) conceptualised learning as being located in the interactions between context, concept and reality (Brown et al., 1989). It relied on the idea of learning being embedded within cultural settings and on the utilisation of cultural resources by Bruner (1996) in Hodkinson and James, 2003). For learning cultures in workplace settings, the context is specific to the sector and enterprise structure; concept relates to learning approaches in apprenticeships and reality to the perceived outcomes of training. Learning is related to people, organisations, time and place and a learning culture, and therefore

must include a set of innovative practices for the facilitation of workplace learning.

In order to gain a comprehensive understanding of the perspectives of all participants in training provision, and the organisation of learning as much as the individual learner, the learning situation, including the particular learning environment, needs to be studied. Therefore, the dispositions, positions and actions of the apprentices and their supervisors, workplace teachers, coaches and HR managers have to be considered in addition to the particular location and resources for learning. A learning location, such as the company's learning environment, can be understood as a practice constituted by actions, dispositions and interpretations of participants. The authors generally argue that expansive learning environments, in terms of the provision of manifold opportunities to learn in different contexts and tasks, provides the bases for the integration of personal, and also organisational development.

Culture consists of variables such as values, beliefs and attitudes that are common within a community and tend to perpetuate themselves, sometimes over long periods of time. It comprises collective memories, long held assumptions, common expectations and definitions (Li, 2015). In addition, Sonntag and colleagues (2004) claim that the learning culture is an expression of the importance of learning within the enterprise, which targets the development of competences and innovation. The learning culture is shaping individual, group- and organisational learning processes in connection with relevant framework conditions.

To summarise these findings, at a normative level learning culture is expressed through values, norms and attitudes related to learning. At the strategic level learning culture is related to framework conditions and support for lifelong learning. At the operational level, learning cultures find their expression within the manifold forms of individual, group-based learning and organisational learning. Learning cultures are an orientation for the members of the organisation in providing expectations of the results of learning and they can be actively shaped. In a modern innovation supportive learning culture, learning from errors is encouraged and errors are (to some extent) allowed as much as questioning previous assumptions.

Various scholars have identified aspects of learning culture and created questionnaires for staff and management (Seufert et al., 2007; Wardanjan et al., 2000). Relevant dimensions for studying learning culture in relation to apprenticeship training and support for learning include: participation in decision-making; time management conditions; quality of relationship with colleagues, support of self-initiative and working autonomously; and possibilities for further education and training (Wardanjan et al., 2000). Further, Sonntag and colleagues (2004) define and operationalise various aspects of learning cultures, for example expectations of learning among employees, personal development strategies, learning climate, forms of participation in decision-making, internal networking and knowledge exchange, as well as forms of learning within the enterprise and knowledge transfer.

8.1.3. Workplace learning innovation requires shaping of learning culture

The drive for innovation has various effects on workforce development within apprenticeship training. For a workforce in dynamic industries, routine skills loose importance while observation skills, process management skills, transfer- and problem-solving competences are becoming more important (Dreher et al., 2015; Hackel et al., 2015; Nickolaus and Schanz, 2008; Pitton, 2004). Rapid diffusion of new technologies and new production processes changes the daily work and current challenges in these occupations as well as corresponding VET and professional education programmes (Dreher et al., 2015; Hackel et al., 2015, Strahm, 2008; Weinert, 2002). This has implications for the ways in which workplace training is conducted to meet the needs of modern workplaces as much as individual development needs of apprentices. They also require the development of competences in innovation management and creativity since innovations and changes are often implemented within the duration of their VET programme (Barabasch, 2018; Limacher, 2010; Ruiz Ben, 2005).

Workplace learning is an integral element, as innovation entails learning and learning opens up the possibilities of innovation. Employees increasingly assume responsibility for change and innovation, especially, if there is openness to new ideas and trustful relationships as well as autonomy. The research yields evidence that workplace learning provides potentially strong levers for employee innovation, particularly for lower level employees. In this new approach, employee-driven innovation refers to the 'generation and implementation of new ideas, articles and processes originating from interaction of employees not assigned to this task' (Høyrup et al., 2012, p. 8).

Consequently, VET teachers and trainers have to adapt their teaching. Flexible structures and more action-oriented methods are requested. Using digital learning media can provide opportunities for self- directed, individualised learning. Today, teachers and trainers have to develop learners' innovation and creative competences. Their role is changing from instructor to coach. Teachers and trainers have to create room for learning, prepare and present subjects, give feedback, develop reflexive learning in a process that they moderate and accompany (Modrow and Strecker, 2016; Repp et al., 2007; Weicker, 2007). Education managers become promoters of modern learning cultures (Göhlich and Sausele, 2008). Those in charge of personnel development need to accompany teams in their problem-solving processes and learning and development needs (Arnold and Lipsmeier, 2006). As a result, flat hierarchies, a certain amount of freedom and high error tolerance are needed.

8.2. The Case study design

A case study design was employed to characterise the learning culture of the innovation-oriented enterprise. Case studies allow a holistic perspective of an object and are particularly suitable if the connection between a phenomenon and context is not evident (Yin, 2014), or when particular contextual conditions are relevant for understanding a case (Yin and Davis, 2007). Case studies are not representative in a statistical way: the aim is to understand a complex social phenomenon, to get an in-depth description of the case and to understand how it works. Data from different sources and different perspectives are included. Analysing several cases, such as how companies modernise VET training due to new competence requirements, provides further information (pursuit of replication through multiple case studies) (Yin, 2014).

In this case study the subjective level of knowledge of the participants was of interest throughout the data interpretation. To understand the learning culture, it was essential to understand motivators and anchors for orientation among those involved in VET. It was important to know how the learning culture is lived, instead of what might be officially communicated about it. Relevant to understanding was implicit knowledge, which serves as a point of reference for any action.

Throughout the study, a wealth of insights into the ways in which apprenticeships are conducted, shaped and pursued were collected. The goal of the inquiry was to gather information about attitudes, beliefs and values of individuals involved in apprenticeships in order to understand the parameters and constituencies of the current learning culture. A further goal was to determine which structural conditions are considered as innovative and how they have an impact on the new learning culture. Structures intended to support the development of creativity, self-reflection and autonomous action and initiative taking were of particular interest.

The following two research questions are addressed:

(a) which practices and innovations in the context of apprenticeship training within the telecommunication industry can be identified?
(b) how is learning culture in apprenticeship training characterised within a large Swiss telecommunication enterprise?

Data were collected from March to July 2018 and a multiple methods approach taken. Semi-structured interviews were conducted with 17 learners in VET programmes as IT specialist, ICT specialist, interactive media designer, commercial apprentice, retailing specialist and customer dialogue specialist. Five coaches who ac-

Table 8.1. **Central codes of the data analysis**

Themes	Discursive elements
General structural aspects	
Challenges	
Acting autonomously and taking initiative	
Flexibility / agility	
Problem solving competence	
Competition	
Past and present	
Transformation	
Digitalisation	
The future	
Relationships	Direct speech
Trust	Otherness
Conveyance	Me and others
Role models	Irritations
Conception of man	Imagery
Conditions for learning process	Cursing
Learning by doing	Choice of words related to 'generate'
Conditions for creativity	
Conditions for performance	
Feedback	
Win-win situations	
Motivation	
Passion	
Reflection	
Work-life-balance	
Recognition	
Coping with mistakes	

Source: Barabasch and Keller, 2019.

company and help guide learners through their apprenticeship were also interviewed, along with three regular workers that work together with the apprentices within specific projects and four members of management responsible for VET. The interviewers used a common interview guideline, aimed at provoking narrations on experiences of the interviewees in the framework of VET at the enterprise, related to everyday tasks, successes, difficulties and important or special events. The interviews lasted between 30 and 45 minutes for learners and between 45 and 60 minutes for coaches, regular workers and management. They were audiotaped and transcribed. In addition, the researchers conducted observations at different branches in the French, Italian and German speaking parts of Switzerland and compiled protocols about the research teams' observations. Locations and projects specifically considered as being particularly innovative were visited. The data analysis of the transcripts, field notes and company documents was guided by content analysis (see Kuckartz, 2016). This meant structuring the material in two dimensions: the cases, mainly individuals who were interviewed or groups of interviewees, and categories representing different research topics.

After a first inspection and review of the collected material, part of it was coded with a primary set of codes (Table 8.1., central codes of the data analysis). These codes were not chosen based on existing categories or theories, but because of the emerging major themes from the collected material (inductive development of categories). The coding system then was updated in a constant process based on subsequently emerging themes. In this way, a comprehensive and detailed system of categories was derived and applied in a second round of coding all the material. Additional proposals for codes were negotiated within the research team, especially concerning sub-codes. The final coding system was then applied in analysing all data. Reliability and validity have been established by coding the data in the team, the collective analysis of the data, starting with the development of a coding scheme, the coding itself as well as the interpretation and analysis of emerging themes.

8.3. How an innovative learning culture shapes apprenticeships

8.3.1. Agility as a driving concept for apprenticeship renewal

An innovative learning culture in the enterprise is the foundation for framework conditions that are conducive to the competence development of learners. A key feature of the relevant enterprise is agility or a culture of agility, in which the young generation is socialised. The term agility was originally conceptualised for the business of programming software but soon arrived in other sectors and functional areas (Graf et al., 2017). It became known through the concept of ‘agile manifest’ by Beck and colleagues (2001). Agility is central to the new learning culture within apprenticeships at the enterprise (Höhne et al., 2017; Porret, 2010; Printz, 2010). It consists of multiple organisational concepts, which are continuously extended and modified (Hooper et al., 2001). In the context of the study ’agility’ refers to the flexibility in which structural norms and regulations concerning apprenticeships are interpreted and realised. It also symbolises the flexibility given to the learners in choosing their individual pathways through the apprenticeship. The more conventional understanding of ’agility’ in the sense of changing projects, work locations, teams and roles within teams also applies to the apprenticeship approach at the researched enterprise. Here, learning facilitators or coaches assist learners in finding projects and applying for them.

Apprentices change individual projects throughout the duration of their apprenticeship. They search for projects on a ‘marketplace’, an online depository all employees use to advertise projects for learners. The Quali project provider (QPA), an employee who announces projects on the market place, supervises the apprentice in the project. The majority of projects require team effort, which is the most common way to work. While the QPA is the main point of reference for the learner, it is often the community, or rather the team, that is vital for competence development. Learners interact with other learners and regular workers and informally learn by working together with them. Methods such as ‘scrum’ are applied, where small working groups undertake different tasks. Teams have regular meetings for developing new ideas. The different sub-tasks are assigned according to different abilities of the group members. Apprentices can easily be integrated in such group processes and fulfil tasks according to their abilities. Teamwork is generally very motivating for them and often leads to high performance.

What was formerly a workplace trainer or industrial mentor has today been transformed into a learning facilitator or coach. These advise the apprentices throughout their entire apprenticeship. It is their responsibility to guide the choice of projects as well as in all other questions regarding the training (and often above and beyond that). Although coaches have their personal styles in coaching, they all adopt a ‘coaching- attitude’ in the sense that they do not prescribe what learners have to learn and they do not teach learners. Instead, the support offered is to help learners to find their own solutions to problems, to develop initiative, to strive for achievements beyond expectations and to find the strength to be persistent in their chosen pathways and finish their project work. Their support often goes

beyond career support and advice and may also include personal counselling. Formally, coaches are responsible for the documentation of the learning processes. They gather feedback from the QPAs, make sure that learners acquire all the skills needed for the final examination, and they coordinate with vocational schools. Each coach looks after about 40 learners and the contexts in which the learners work are heterogeneous. Often coaches are recruited among regular workers in different occupations; some have completed further training in coaching, others have a background in psychology or pedagogy.

The QPAs announce projects on the market place, conduct interviews with applicants, and provide professional support to those selected for the project. They are responsible for ensuring that the learners reach their competence development goals and care for the learners' skills development. About every three to six months the learners change projects, which requires a new application process. In this way, they acquire the skills to write applications and conduct interviews. In each project, learners work with new teams and have a new person, providing professional guidance.

The QPA is the key person for the learners to report to. Together with the coaches and the QPA, the learner sets personal milestones for their apprenticeship training, their single projects and their career progress (skills development pathway) within their apprenticeship. In this way, not only does the learner develop skills that are highly relevant within the enterprise, but also the skills that are set or prescribed by the curricular framework plan for federally recognised occupational degrees.

Agility, a concept originally derived from the field of informatics comprises a set of specific ways of working that are applied to generate ideas, steer outcome production in a very structured way and use the potential of employees in interdisciplinary ways, but also in different contexts. Some of the projects follow design-based methods, others apply the scrumming method. Apprentices are becoming familiar with these methods, can contribute to product development and benefit from a high flexibility to work individually on certain tasks at a workplace of their choice.

8.3.2. Structures and processes within the apprenticeship

The telecommunication enterprise Swisscom has over 17 000 employees, of which approximately 900 are apprentices, who are called 'learners'. In 2018, 483 learners worked in information and technology occupations (ICT occupations). The enterprise restructured VET training at the workplace beginning in 2003. According to Ghisla and Zgraggen (2004) the reorganisation of VET was initiated because of major societal and economic changes, as well as changed expectations towards VET. Swisscom operated in a field that was marked by increasing national and international competition, which lead to a frequent reorganisation and rationalisation that affected the VET department. This resulted in the request for more cost transparency in the VET sector as well as a better use of synergies between vocational training and qualification needs among affiliated companies. The main goal of the restructuring was that the existing approach to VET would become more dynamic. Instead of one year 'pre-training' at an isolated training centre and then working at one location for the whole duration of the apprenticeship (technical occupations), the learners should be flexibly employed where work is needed within the real business. The enterprise increasingly understood itself as a learning organisation (Ghisla and Zgraggen, 2004), in which employees and learners should be prepared for lifelong learning and enhance their employability (Ghisla and Zgraggen, 2004, p. 7). Learning was understood as something that is active and constructive.

The basic element of the new training structure in VET is that the learners complete their apprenticeship in the form of changing individual projects, of which most last between four and six months. The learners search projects at the firm-intern 'marketplace', an online-depository that all employees in the company can access and advertise projects for learners. Applications are competitive, and it is challenging to enter particularly interesting projects. Where learners cannot acquire a place in a project, they may work on tasks independently as preparation for a new project.

With the introduction of the 'marketplace', the manner in which the apprenticeship is pursued has changed a lot. Today the enterprise as a VET provider is very popular; there are often more applicants than open apprenticeship positions. More room is provided for following personal interests. Learners can choose new challenges, take initiative, work creatively, and get to know a large number of employees and different tasks and working environments. They become familiar with new forms of work organisation, such as flexible working hours, telework and work in the different language regions of Switzerland. Learners can also work in environments that support innovative work, for example co-working spaces, or they can use *Kickbox*, a tool for gathering ideas from employees, of which the best are realised.

As the apprentices choose their projects on their own, each workplace training is partly individualised. Apart from the main competences they have to acquire according to their curriculum there is also a degree of specialisation. The variety of contexts provides many opportunities for learning and skills development, helping build domain-specific knowledge. For the company the approach helps to identify talents. Learners work in productive projects, they learn from colleagues and from trying things out.

8.3.3. Competence development in an innovative learning culture

The great advantage of an apprenticeship is involvement in real work tasks. Most of the time in the company is spent contributing to real work. Only in cases of time between project preparation might work be done that is not connected to a productive task. Learning occurs while working, through trying and testing as much as struggling and failing, researching knowledge, exchange of information and ideas with colleagues, networking and learning from mistakes.

The ultimate goal of this learning culture is the development of self-reliant workers, who can steer their learning, discover their interests and special abilities and, based on that, negotiate new working tasks for themselves in which they can grow.

An important priority is to enable learners to take their individual pathway through the training, engage in the variety of learning possibilities, find out what they are passionate about and develop early independence. This does not work without difficulties and social support is essential. However, the individualisation goes as far as engaging in projects outside the enterprise or in projects meant for other apprenticeship programmes. If a mediamatics apprentice likes to try out sales for half a year, it can be arranged. In this way learners who realise that they would rather continue in another apprenticeship programme may have the possibility to switch internally.

Another central element of the learning culture is recognition. This is mostly realised by trusting learners to engage in projects without specific preparation in school. They experience being listened to, they are provided with the opportunity to try out new things and grow into an atmosphere with an open and informal communication culture, which diminishes hierarchical barriers. Alongside wide opportunities to develop one's technical competences, the work in projects and the interaction with many different workers (speaking up to four Swiss languages) across the country enables them to advance their social, communicative and intercultural skills.

A last feature of the learning culture, which is quite essential, is learning from mistakes. Management and apprentices alike are convinced that learning from mistakes is the most efficient way to learn and when apprentices are engaged in real work task mistakes will occur. As long as they do not occur repeatedly, they are not viewed as problematic. Coaches help students to reflect upon their mistakes and learn from them. Essential is the creation of a fearless atmosphere in which the learners are constantly encouraged to experiment, bring in new ideas, openly approach other colleagues, and learn how to express and promote themselves in the interviews for new projects or in convincing a coach about the start of an individual project.

8.4. Conclusion

The telecommunication enterprise is a forerunner when it comes to innovating apprenticeships. Driven by the need to develop innovative products, just as much as the need to build new employees that are equipped with the 21st century skills (Griffin and Care, 2015) that employers require, it has developed a unique approach to workplace learning in the context of apprenticeships. With project-based work across the different language regions in the country, across disciplines and across generations, young adults are integrated in the real world of work from the beginning. Provided with the trust that they learn best from mistakes they are permitted to jump right into tasks, although aligned to the competence pathway prescribed within the framework curricula, and develop their skills according to individual interest or passion. There are multiple possibilities to dig into different tasks and departments and, if help or support is needed, QPAs or coaches are the primary source for reflection and guidance.

The enterprise has prepared the ground for the development of skills such as critical thinking, problem solving, teamwork, communication and self-directed lifelong learning. With the implementation of agile approaches, it responded to the need for idea creation, quick prototyping and structured but still somewhat individualised team work. It particularly supports engagement in creative endeavours and welcomes open-mindedness and high engagement. Applicants, who can show that they are willing to approach the opportunities and challenges that such a learning culture entails are those awarded a placement. Although, school marks are important, the attitudes, beliefs and values of the new learners and the enterprise need to match.

The agile approach to competence development throughout the apprenticeship, and the openness to projects initiated by the learners, supports the development of creativity. The subjectively perceived training outcome is high among the learners, because they have the possibility to follow their interest. In this way, they not only become self-directed learners, they also realise throughout their apprenticeship how much else there is to learn and that learning itself will always be relevant in life. Such an innovative learning culture is crucial to the success of VET in order to secure sustainable preparation of the next generation of employees for their work challenges and for lifelong learning ([46]) (see also Hämäläinen et al., 2017; Woessmann, 2017).

There are numerous follow-up research questions resulting from this study. In order to come to more general conclusions, it would be helpful to have multiple case studies from different industries within Switzerland and also internationally. Further, the changing role of trainers becoming coaches needs to be understood and might provide lessons for VET teachers at vocational schools. Questions regarding the increasing autonomy of apprentices (learners), the engagement of enterprises in high quality training, or the establishment of an organisational culture of trust are open for further investigation in order to understand the supporting preconditions for modern learning cultures.

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CHAPTER 9.

Digitalisation of apprenticeship in Germany

Status quo and support needs of companies

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9.1. Introduction

Digitalisation is leading to many transformation processes within companies. This also concerns initial vocational education and training (VET) for apprentices. VET has changed and will probably further change in two ways: the contents of training (what do we learn?) as well as the methodology of training (how do we learn?).

Regarding the contents, there is the crucial question of which competences should be imparted in apprenticeship training. On the one hand, the competitiveness and innovative strength of companies need to be secured by appropriate training measures (Klös and Meinhard, 2019). On the other hand, the employability, as well as the individual career perspectives, of graduates need to be promoted. Existing studies on future skill needs in Germany suggest that, in the context of continuing digitalisation, core professional knowledge is going to remain important. In addition, knowledge of how to use informational technology adequately, as well as social skills like communication and organisational skills, are becoming more important; advanced skills in information technology, such as software creation, are also becoming more important but to a much lesser extent (Flake et al., 2019). This can be explained by the fact that advanced skills in information technology have become more important for a select group of employees whereas use of information technology is crucial for almost all employees.

Several studies into the methodology of training indicate that informal work-based learning is gaining particular importance (BMWi, 2016). Even though currently 'traditional' learning formats, like classroom training, are still the prime choice for instruction, digital learning media is increasing, both, with regard to initial and continuing VET (Gensicke et al., 2016). In vocational schools, digital learning media, like web-based learning tools or webinars, have become more prevalent, but mostly in addition to traditional, teacher-centred instructional training approaches. Within companies, the didactic potential of digital learning media is often not yet fully exploited as trainers do not feel enabled to implement e-learning in a didactically appropriate way. A lack of further education opportunities for the teaching staff as well the lack of equipment within schools are major challenges (Schmid et al., 2016). Hence, the role of media competence for professionals in apprenticeships – in companies as well as in vocational schools – will become more important (Krämer et al., 2017).

On the structural level, the first 'digital' changes in the apprenticeship system have been established. As a reaction to the fast-growing e-commerce sector, in 2017 the new State-recognised training occupation Management assistant for E-commerce was introduced (BIBB, 2019). Up to now, however, this creation of a new occupation to meet the changing demands of digitalisation is still a unique case. There are 327 State-recognised training occupations in Germany. Training contents are formulated in a technol-

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ogy-neutral way: the technologies used to gain a certain occupation are described in a generic way to allow adjustments of training content due to technological change, without the need to adjust the underlying legal basis. This explains why the last major changes happened 20 years ago. In 1997, regulations for IT occupations and, in 1998, a regulation for the mechatronics fitter were introduced. For training occupations in the metal and electrical engineering industries, in 2017 employer associations and trade unions started a so-called 'agile procedure' to extend the existing curricula in the context of the ongoing digitalisation. The actors aim to create and include an integrational element for all occupational profiles in this field which describes obligatory training contents for apprentices. Further, seven voluntary supplementary qualifications have been introduced (Gesamtmetall et al., 2017; 2018). A supplementary qualification on networked manufacturing has also been created in the chemical industry (BAVC, 2018). There is a broad consensus that the German apprenticeship system has to adapt to changes caused by new framework conditions: the question is whether these adaptations can happen within the existing system structure. Companies, associations and many policy-makers see a lot of opportunities for changes within the existing system, while denying a need for broad structural changes (Pfeiffer et al., 2016). Much 'digital change' is already happening at company level, accompanied by changes in vocational schools.

9.2. Survey among German companies

From mid-October until the end of December 2017, 1 022 German companies participated in an online survey on digitalisation of apprenticeship training as part of the IW-Personalpanel. The results show the degree of digitalisation within apprenticeship training, as well as the need for orientation of companies.

Among the participating 1 022 companies were 412 small, 409 middle-sized and 201 large companies. The company size differs with the sector: While more large companies are to be found in the service sectors, the industry and the construction sectors consists of more small and medium-sized companies.

9.2.1. **Survey results**

Digitalisation of business processes and its consequences for apprenticeships

To establish an indicator for the degree of digitalisation in business processes, companies were asked which of the following new digital technologies they already use (compare Seyda/Meinhard/Placke, 2018):

Box 9.1. **The IW-Personalpanel**

The IW-Personalpanel is a regular panel survey among German companies which is conducted by the IW Consult GmbH. The survey has changing thematic priorities. The companies are selected using a stratified random sample based on the number of employees and the business sector from a company database from the IW Consult GmbH. The sample includes companies, which have at least one employee, from the industrial sector (including the construction sector) and from the service sectors. To gain representative values for all companies the survey results are weighted based on data from the German company register. The weighted results can therefore be considered representative for German companies with at least one employee.

Three company sizes (1 to 49, 50 to 249 and 250 or more employees) and three sectors (industrial sector, construction sector, service sectors) are differentiated. The questions are answered by (chief) human resource officers and general managers within companies.

Source: German Economic Institute.

(a) digital distribution channels (online platforms, shopping systems);
(b) digital data exchanges with suppliers, service providers or customers;
(c) digital services (such as cloud services);
(d) networking and control of machines and plants via the internet.

In nine out of 10 companies at least one digital technology is used, though only 3% of companies are active in all four fields. Companies most often engage in digital data exchange with suppliers, service providers and customers (82%).

Companies which provided apprenticeship training at the time they were surveyed or during the five preceding years were also asked to estimate how intensively they have dedicated themselves to further digitalisation of their apprenticeships.

The results reveal a significant difference between the degree of digitalisation in companies and their engagement in the digitalisation of their apprenticeships. While almost all companies use digital technologies in their business processes, only two thirds have dealt with the digitalisation of apprenticeship (Figure 9.1.). Only 5% of companies active in apprenticeship engage themselves 'very intensively' in training, with a further 22% 'rather intensively'. In the industrial sector and in the service sectors around two third of all companies have dealt with digitalisation in VET (72% and 70%). In contrast, around half of all companies in the construction sector have not dealt with it. This discrepancy is partially related to the different company size structures, as there are more small companies in the construction sector. The more digital technologies are used, the more intensively companies engage in the digitalisation of their apprenticeships, although In general, the results illustrate that small and medium-sized companies (SMEs) need to catch up with digitalisation in their training activities.

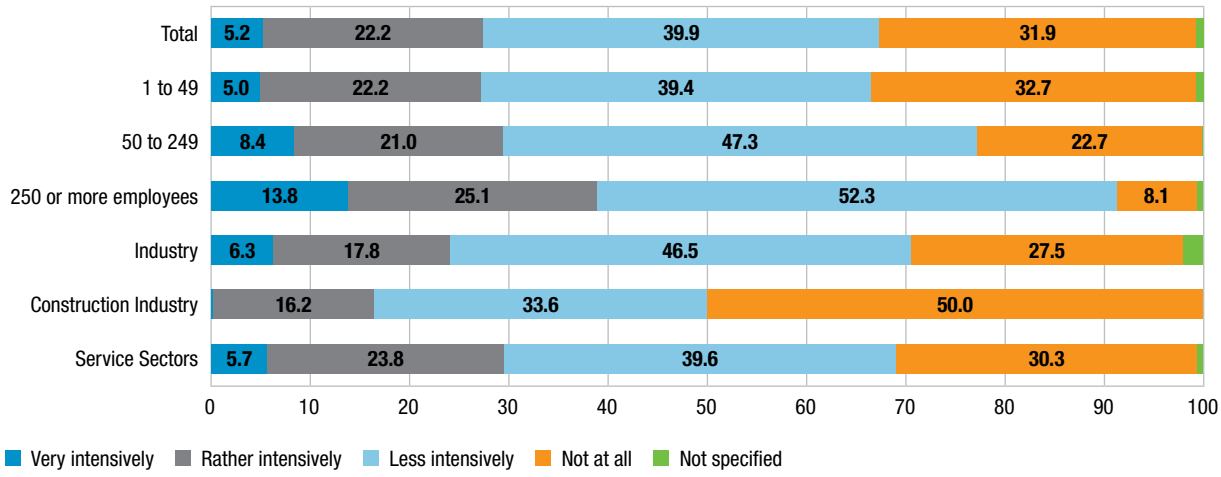
Digital changes in apprenticeships

Companies were also asked which concrete changes they already have adapted in their apprenticeships during the last five years (Figure 9. 2.).

Young apprentices are often very open-minded and curious about new technologies and have many ideas for, and experience in, using new technologies (such as social media). The results reveal that this attitude also influences their working life: change processes have most

Figure 9.1. **Engagement in the digitalisation of apprenticeships**

How intensively have you engaged in the digitalisation in apprenticeships?

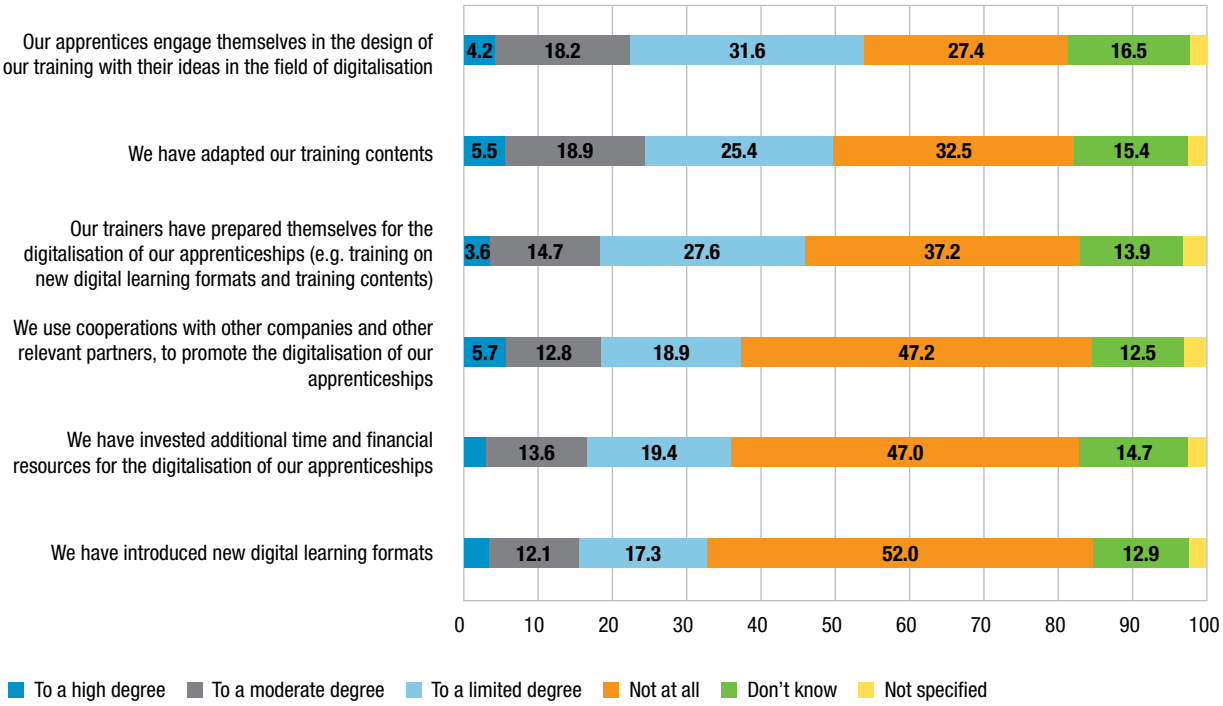


NB: Share of companies, which are currently providing apprenticeship training or have provided training within the past five years (in percent). Weighted results. N=830.

Source: IW-Personalpanel, 2017; German Economic Institute.

Figure 9.2. **Changes in apprenticeships**

What has already changed in your apprenticeships during the past five years due to digitalisation?



NB: Share of companies, which are currently providing apprenticeship training or have provided training within the past five years (in percent).
Weighted results. N=830.
Source: IW-Personalpanel, 2017; German Economic Institute.

often been initiated by stimulus from apprentices. More than half of all companies engaged in apprenticeship training have already adapted the organisation of their training based on ideas and experience from the apprentices themselves (54%). Companies may also use apprentices as a resource in a much more strategic way to improve the quality of their overall work-based training. Examples of good practices show that age-diverse teams allow companies to bring together digital know-how of apprentices with the broad professional experience of older workers. This idea of reverse mentoring should be much more of a focus for companies.

Even though a significant number of companies has already adapted their training contents (49.8%) or introduced new digital learning formats (32.8%), these numbers remain behind expectations. Not all companies which have adapted their training contents state that their trainers have prepared themselves systematically for the digitalisation of apprenticeships. One explanation for this phenomenon could be that, for some companies, technological change and continuous innovation are part of existing regular change processes and do not need explicit and separate preparation.

One third of companies use cooperation with other companies or external partners to promote the digitalisation of their apprenticeships. Two thirds which state that they have dealt intensively with the digitalisation of their apprenticeships, have established structures with external partners. In contrast, only one third of those companies that have not dealt intensively with the digitalisation of their apprenticeships, cooperate with other companies. However, the results do not allow conclusions about the direction or the causality of the effect. It might be that more digitalised companies engage more often in cooperation or that cooperation promotes digitalisation in companies.

Eight out of 10 surveyed companies have initiated at least one of the named changes in their apprenticeships. Those companies which have not initiated any change so far, are almost all small companies with less than 50 employees. These results show again the need for action for small and medium-sized companies (SMEs) to secure their future competences and the required skilled workforce through their own training activities.

Companies' need for support in the digitalisation of their apprenticeships

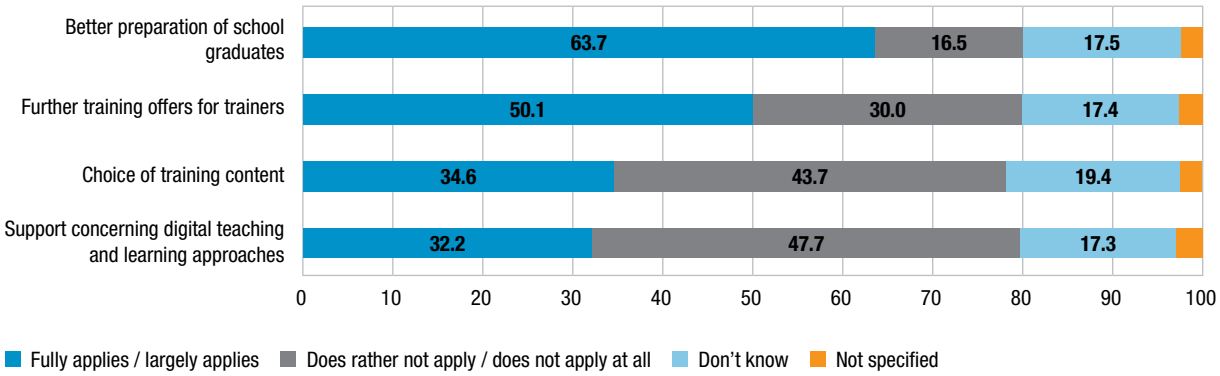
The digital change in companies' business models is not yet fully reflected in their VET activities. One explanation could be that companies are still adopting a wait-and-see attitude to what digitalisation is going to mean for their apprenticeships and so have not yet developed a strategy. Another explanation could be that companies have identified necessary changes but need more support to implement them successfully. Companies might also assess the current structural framework conditions (e.g. definition of occupations, curricula) as not sufficient to deal with digital change.

For this reason, companies were asked what kind of support they require for organising their apprenticeships. A first key result is that many companies had difficulties in assessing their need for support. Between 17% and 19% of companies stated for each question that they are not able to answer this question (Figure 9.3.). Almost two thirds said that the schools should prepare their graduates better for the demands of the digitalisation on the labour market. The surveyed companies seem to see fitting preparation of school graduates for the digital demands of the labour market as a part of the necessary apprenticeship entry conditions and want more support from education institutions. The better the prior knowledge and the individual dispositions, the more effectively the digitalisation of apprenticeships can be promoted in all training occupations.

Only one third of companies state that they need support in the choice of digital teaching and learning approaches. Half of them state a need for adequate training offers on digitalisation for their in-company trainers; this share is much higher in companies which have not stated that their trainers have prepared themselves for the digitalisation (Figure 9.2.). Companies which have not organised corresponding training might be less able to assess the market for further training or were not able to find adequate training offers for their own personnel. Their struggles may not necessarily indicate a lack of training mar-

Figure 9.3. **Need for support in the digitalisation of apprenticeships**

What kind of support does your company need in the organisation of your apprenticesships in the context of the digitalisation?



NB: Share of companies, which are currently providing apprenticeship training or have provided training within the past five years (in percent). Weighted results. *N=830.*

Source: IW-Personalpanel, 2017; German Economic Institute.

ket transparency but might also be related to the effort and lack of experience of the companies themselves. SMEs, especially, identify problems in the choice of training contents.

Relationship between the learning venues: companies and vocational schools

Digitalisation is more successful if companies and vocational schools alike include digitalisation in their training, for both the contents of training and the methodology of training. There should be a division of labour between preliminary theory in schools and practical applications in companies: cooperation between these two learning venues is the basis of the German dual system. Therefore, it is important to analyse how companies assess vocational schools as a partner in the dual system and whether they see need for action (Figure 9.4.).

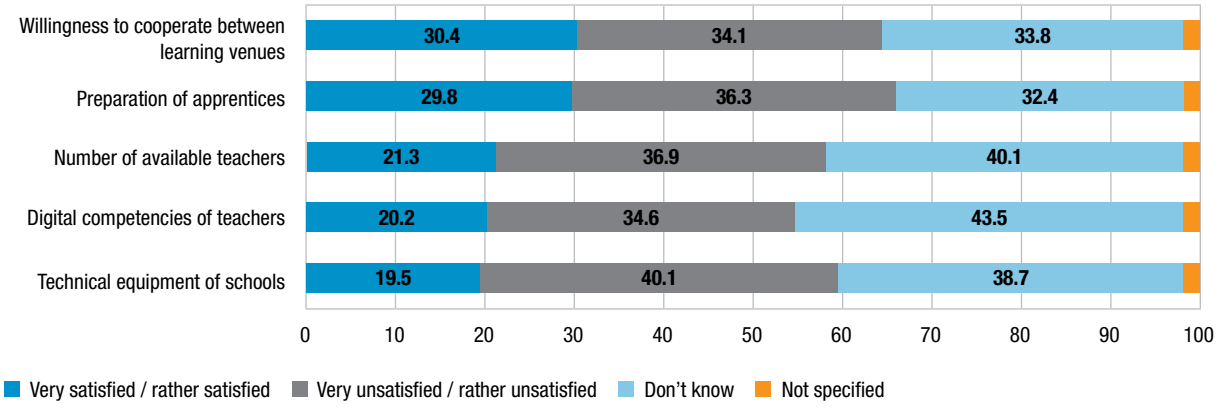
Many companies do not see themselves as capable to assess their satisfaction with the schools, particularly when it comes to the number of teachers or their digital competences. This could be interpreted as an indicator of a lack of regular communication between those institutions. Satisfaction with vocational schools is generally limited: even the willingness to engage in learning venue cooperation, the aspect assessed most positively, is only evaluated positive by less than one third of all companies. The companies which are satisfied are often large ones. This could be explained by the fact that large companies have more resources for organising cooperation with the learning venues. They also have a stronger influence on vocational schools due to their larger number of apprentices. However, large companies also see many aspects very critically. They assess, for example, the preparation of apprentices and the digital competences of teachers more critically than SMEs.

Less than 1% of all companies say that they are 'very satisfied' with the preparation of apprentices by vocational schools for the demands of digitalisation; 29% are 'rather satisfied'. Companies which say that their apprentices are very engaged in bringing in ideas for the digitalisation of their apprenticeship see the preparation by the schools less critically.

The satisfaction of the companies with the technical and personal equipment of the schools is even lower. Four out of 10 companies are dissatisfied with the number of available teachers and their digital competences. This illustrates a general scepticism among companies regarding the role of vocational schools in the process of adapting to digital transformation. Reasons for these results can partially be explained by experiences the authors made in workshops

Figure 9.4. **Satisfaction of companies with vocational schools**

How satisfied are you with vocational schools in the following areas?



NB: Share of companies, which are currently providing apprenticeship training or have provided training within the past five years (in percent). Weighted results. N=830.

Source: IW-Personalpanel, 2017; German Economic Institute.

with companies of the metal and electrical engineering industries in the southwest of Germany. Technical and didactic innovations in vocational schools often depend on individual active trainers or principals which promote respective developments. The need to rely on the activity of individuals reflects a structural problem in vocational schools which lack particular teaching capacity for such tasks. These tasks are often conducted by teachers in addition to their regular teaching load.

Companies' assessment of apprenticeship modernisation needs

Around one third of companies seek support in identifying training contents and/or in implementing new digital teaching and learning approaches (Figure 9.3.). A crucial question is whether this desire originates from the possibility that the current apprenticeship system and training occupations do not correspond to current labour market demands. One solution could be the introduction of new training occupations or the modernisation of existing training occupations, as they might serve as better orientation for companies.

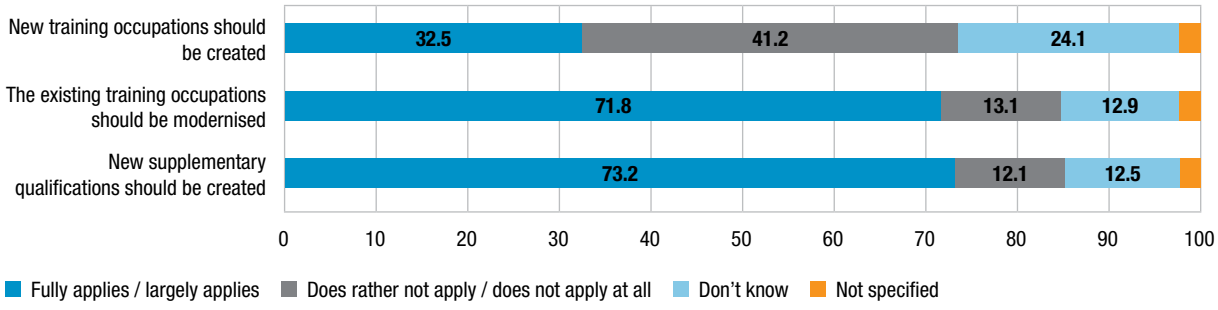
These possibilities of modernising training occupations are being discussed among employer associations, trade unions and policy-makers. Sector-specific analyses have been made, for example, for the insurance sector (Kohl et al., 2017), for the industrial sector (Pfeiffer et al., 2016) as well as for the metal and electrical engineering industries (Spöttl et al., 2016).

The discussion is not new, nor can it solely be focused on digitalisation as the apprenticeship system is being continuously modernised. What is new, however, is that digitalisation does not only concern tasks in selected training occupations but has consequences for nearly all occupations. The field of data security and data management is an example of an area which concerns many occupations and professions. Digitalisation also questions more strongly company business models than earlier technological changes (Klös and Meinhard, 2019). The question arising is if a new element of obligatory content should be implemented cross-sectionally for all occupations or differentiated, for example, in commercial and technical apprenticeships. The field of environmental protection, which has been considered in the reorganisation of training occupations since the late 1980s, could serve as a guidance (Brethschneider and Lorig, 2016).

The results of the company survey reveal that companies see a need for modernisation of the apprenticeship system. Three out of 10 companies agree that new training occupations should be created (Figure 9.5.). However, the desire for new voluntary supplementary qualifications in addition to existing training profiles, as well as the wish for modernisation of existing training occupations, is stated much more. In each case, approximately one fifth of companies either fully

Figure 9.5. **Need for structural changes in the apprenticeship system**

In the course of digitalisation, do you think structural changes are needed in the apprenticeship system?



NB: Share of companies, which are currently providing apprenticeship training or have provided training within the past five years (in percent). Weighted results. N=830.

Source: IW-Personalpanel, 2017; German Economic Institute.

agree or rather agree. One explanation could be that German training regulations are formulated in a neutral way concerning the technology to be used. This principle allows companies to train their apprentices always with the newest technology, if available, and encourages integration in business processes. Further, this is the reason why, for example, in the evaluation of the IT occupations – currently in place for more than 20 years – most participating companies did not see a need for revision of the training regulations (though the final report recommends a revision; Schwarz et al., 2016). The modernisation and implementation of supplementary qualifications bring the advantage that prompt implementation is possible. Successful revisions like the implementation of the 'agile procedure' in the metal and electrical engineering occupations, or the introduction of new elective qualifications in the chemical industry, are exemplary.

One question is whether the desire for structural changes is correlated with the intensity of use of new digital technologies or the need for support in implementing digitalisation in the apprenticeship system. Progressive companies might ask for structural change as they see limits in the implementation within the existing training regulations or because they want to communicate their modern apprenticeship approach externally to increase their attractiveness as apprenticeship provider. Alternatively, those companies, which still have a specific need for orientation might hope for help through structural changes. So, do the 'digital forerunners' support structural change or is it a cry for help by the 'digital latecomers'? These relationships were analysed in a multivariate analysis, using a linear probability model and four different sets of identical control variables and a varying independent variable of interest (Table 9.1.). The different needs for support are highly correlated among themselves, so they are analysed in the four separate regression models. The binary dependent variable has the value one if companies see a need for new training occupations, zero if they do not see a need. Only those companies which offered an assessment of the need for new occupations were considered.

Neither the company size nor the sector has a significant influence on the probability that a company sees a need for new occupations. Companies with a high degree of digitalisation, which already use more than two new digital technologies, state with a significant higher probability that new occupations are needed. The results also show that those companies which have not yet dealt with the digitalisation of their apprenticeship training have an even higher probability of seeing a need for new occupations than companies which have dealt at least a little with the digitalisation of their apprenticeship. A positive significant relationship can easily be seen between the need for support in organising apprenticeship and the wish for new training occupations: companies with a need for support in the provision of apprenticeships more often see a need for new occupations.

The same results can be seen when the dependent variable is the desire for supplementary qualifications or the modernisation of training occupations. There are two groups of companies which see a need for modernisation:

(a) companies with a leading position concerning digitalisation, which already use several digital technologies and which also actively promote the digitalisation of their apprenticeship. They have a vision how modernisation of apprenticeship should look like. This group can benefit from newly introduced supplementary or elective qualifications which offer them flexibility in designing their apprenticeship and, at the same time, make them an attractive apprenticeship provider;
(b) the latecomers to digitalisation, which have not yet dealt at all with the digitalisation of their apprenticeship, which state a need for new occupations. They hope for orientation provided by modernisation. This group might, however, not be helped by the modernisation itself. Much more important would be support in the implementation of digitalisation within existing or new training occupations.

Table 9.1. **Influential factors on companies' desire for new training occupations**

	Model A:	Model B:	Model C:	Model D:
1 to 49 employees (reference)				
50 to 249 employees	0,012	0,037	0,028	0,018
250 or more employees	0,062	0,057	0,072	0,051
Industry and construction sector (reference)				
Service sectors	0,044	0,033	0,066	0,098
Digitalisation Index 0 to 1 digital technologies (reference)				
2 digital technologies	0,021	0,033	0,021	0,011
3 to 4 digital technologies	0.294***	0.307***	0.326***	0.330***
Dealing with digitalisation in vocational training (reference: less intensively)				
Very intensively	-0,023	-0,044	-0,038	-0,019
Rather intensively	0,046	0,046	0,078	0,044
Not at all	0,271**	0,282***	0,209*	0,208**
Need of support				
Further training of trainers	0,204**			
Better preparation of (high) school graduates		0,273**		
Support in the choice of training contents			0,266***	
Support concerning digital teaching and learning approaches				0,226***
Constant	0,140	0,054	0,120	0,136
R^2	0,126	0,126	0,158	0,133
Prob > F	0,0022	0,0116	0	0,0002
F	2,910	2,388	4,368	3,578
N	612	617	607	609

NB: Dependent variable: New training occupations should be created (Yes = 1, No = 0).
***/**/*: significant on a one / five / 10% level.
Source: IW-Personalpanel, 2017; German Economic Institute.

9.3. Conclusion

To date, few German companies have dedicated themselves intensively to adapting their apprenticeship training to the digitalisation. This lack of engagement goes along with the fact that not all companies have implemented changes in their training. Yet digitalisation has found its way into German companies, though this often happened in a non-strategic way. Large companies and those with an intense use of new digital technologies serve as forerunners. There is still considerable potential for companies to promote digitalisation in apprenticeships.

The share of companies which state that they have a need for support in implementing digi-

tal developments in their apprenticeship training is large. In particular, SMEs lack resources for a strategic approach to digitalisation in VET. Companies state, for example, that they need more training offers for their in-company trainers as well as support in the choice of training content and the choice of new digital learning tools. Most companies, however, believe that schools should prepare their graduates better for a digitalised working environment. This is understood as part of the apprenticeship entry conditions.

In order to bring together core competences provided in apprenticeships with new requirements for working in networked structures, with new digital technologies and/or new communication tools, further development of the methodological and content-related design of in-company training is necessary in many places (Klös and Meinhard, 2019). VET staff must be broadly qualified for these tasks to identify and communicate new content relevant for constantly changing business models and working environments; this also includes the strengthening of social and communicative competences of trainers, teachers at vocational schools and apprentices. The role of in-company trainers changes from instructors to supporters of learning processes, who actively integrate the existing skills of the apprentices into the VET teaching-learning processes. As a consequence, the qualification of VET Staff is one current funding priority of the German Federal Ministry of Education and Research within the so-called *Initative Q 4.0* (BMBF, 2019).

Many companies do not feel capable of making an appropriate assessment of the quality of vocational schools: there is a lack of exchange and cooperation between the two learning venues. Those companies who offer an assessment tend to choose non-satisfaction than satisfaction with vocational schools. This assessment focuses predominantly on the technical equipment, the number of available teachers and their digital competence. In consequence, one third of all companies do not regard their apprentices as well prepared by schools for the digital work environment. Companies' assessment of the willingness of vocational schools to cooperate is balanced: the share of companies which are satisfied almost equals the share which is dissatisfied.

In the light of the continuing digitalisation, most German companies are in favour of structural changes in the apprenticeship system. More than eight out of 10 companies are in favour of the introduction of new supplementary qualifications and/or the modernisation of existing training occupations. Less often, companies see a need for completely new training occupations.

The results indicate a significant need for orientation by companies. Even though many companies also refer to necessary changes in the previous school system, there is still a lot of potential in apprenticeship itself to adapt to a more digital working environment; this means facing its challenges but especially reaping its benefits. Cooperation with learning venues should be intensified, training contents modernised and complemented, and new digital learning tools implemented.

More research in this field is needed to assess the need for support within companies, especially for SMEs which are a large proportion of companies in Germany, as well as in many other economies. International comparative analyses of VET and further training practices should be promoted as digitalisation is a global development; although it may vary based on cultural context, cross-cultural exchange has a lot of potential for mutual learning. The dissemination of examples of good practice could readily motivate more companies to engage in the digitalisation of dual training.

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CHAPTER 10.

Understanding creativity as an occupation-specific competence

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10.1. Introduction

Particularly relevant within vocational education and training (VET) in Switzerland is the acquisition of skills that support workers in seeking new solutions to workplace challenges: this means skills to think and act creatively. This new requirement is reinforced by the development and introduction of new technologies, which will replace workers in some fields and will require new jobs in others. Switzerland is considered an innovation leader in the world, with about 90% of innovation taking place within industry ([51]). Its research infrastructure and strong apprenticeship system are guarantors for this success: more than 70% of each cohort complete a vocational education and training (VET) programme at secondary II level (SERI, 2019). Taking into consideration that many innovative ideas come from workers at the lower hierarchical levels within an enterprise, it signals that this level of education is highly valued in the country and supports innovation. Accordingly, VET is particularly challenged to support the development of creative thinking skills and action competence, abilities that can be expected to support individuals in managing their careers successfully and advancing professionally through their creative contributions at the workplace.

Creativity is a complex phenomenon, only vaguely defined. There is disagreement on the scientific definition of creativity and there are different approaches to description and explanation. In vocational and business education, creativity is seen as an interdisciplinary competence as components of it belong to the area of self and social competence. Several authors claim that creativity (or at least parts of it) can be learned and be unleashed in apprentices.

Although, apprentices need to build up skills and competences, they are also a source of ideas that enterprises can build on when further developing their products or even working on radical innovations. Enterprises are increasingly discovering the creative potential of their staff and support new forms of work collaboration that help to unleash this potential and lead to innovation. Curriculum frameworks for vocational training programmes start to address creativity development as one competence development goal. There is a variety of skills, that are relevant to producing original work, such as suspending judgment, self-discipline, perseverance and nonconformity. Also, eagerness to work diligently is considered to be an essential component of high levels of creativity. While productivity and effectiveness are driving forces at the workplace, it helps apprentices to be provided with room to explore and play, either at school or, to some extent, in a protected space at the workplace. Particularly supportive is participation in teams that work creatively and develop innovations as much as the possibility to create individual projects with the provision of sufficient time and a realistic framework of expectations to realise them.

Conclusions from various studies on profession-specific creativity development suggest the need to understand creativity and creative potential in a domain-specific perspective as differences emerge across professional fields. Not much is known yet about creativity development within professions for which an apprenticeship

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([51]) https://www.globalinnovationindex.org/gii-2019-report [accessed 21.11.19].

would be the entry point. Similar to the notion of competence, the ways in which individuals actuate their potential depends on various contextual factors, including the required abilities related to each specific task. It is well known that different abilities are required in different job domains depending on particular work tasks that are typical of each domain.

This chapter summarises findings from studies concerned with creativity development among VET students. It first addresses the question of how creativity could be measured within professions. It follows with the question of how creativity is playing out in different professions and how it can be supported during workplace training.

10.2. Defining creativity

Creativity is a complex phenomenon and only vaguely defined (Schuler and Görlich, 2007; Palmer 2015). In scientific literature, there is disagreement on the definition of creativity and there are different approaches towards describing and explaining it. One of the most commonly used definitions is that of Amabile (1996). According to her, creativity is 'the generation of novel and useful ideas in any domain' (Amabile, 1996, p. 2). Creativity is attributed to a certain output orientation, since it is understood through the creation of results in the sense of new products. Oldham and Cummings (1996) broaden the understanding of Amabile (1983; 1996) by considering processes as well as new and useful ideas: 'Creativity refers to the development of novel, potentially useful ideas. Employee creativity refers to individuals' generation of novel and useful products, ideas and procedures' (ibid., p. 608). According to Oldham and Cummings (1996), an idea, a product or a process is new if either a recombination of existing materials or the use of a completely new material takes place. Another frequently used definition of creativity comes from Lubart (1994) and refers to creative potential as a latent ability to act creatively and to produce new, primal work that considers task bounds. Later, Lubart et al. (2013) and Caroff and Lubart (2012) make a further differentiation. Accordingly, creativity consists of cognitive facets, such as divergent thinking, analytic thinking, mental flexibility, associative thinking and selective combination, as well as conative facets, such as tolerance of ambiguity, risk taking, openness, intuitive thinking and motivation to create.

10.3. Studying creativity in VET

10.3.1. Can creativity in VET be measured?

In order to understand what role the transversal competence creativity plays in the professions, it would need to be measurable. Would it be possible to assess to what extent it may either exist or has been developed among professionals? A systematic overview was taken between July and August 2018 of the current status of existing studies (see Cooper, 1988) on measuring creativity in the occupational context. The review searched for publications in the following databases and journal hierarchies: EBSCO, ERIC, *International journal for talent development and creativity, PsycINFO*, Nebis, Swissbib and Google Scholar. Only studies that collected primary data were considered. Publications based on secondary data, such as other literature reviews, were not considered, as they already refer to studies with primary data. Among most existing studies there were methods to measure creative competences among workers.

In recent years, methods for measuring creativity in the professional context have largely been of a quantitative nature or based on a mixed-method approach. Questionnaires and test items were mostly used as survey instruments. In the publications examined, data collection was predominantly carried out through a combination of self-assessment and external assessment using prominent scales. Measuring tools have often been developed for a very specific professional context, such as design and language. The most frequently used is the 13-item scale of George and Zhou (2001) followed by the 30-item scale of Gough (1979) and the scale of Scott and Bruce (1994) to measure employee creativity. Applied test procedures are the EoPC (Evaluation of potential creativity) of Lubart et al. (2011) and the job-related creativity tests

TBK-GS (design and language related activities) (Schuler et al., 2013; Winzen, 2011), DBK-PG (planning and design) (Schuler et al., 2013) and DKB-TE (technology and development) (Palmer, 2015). The EoPC measures the creative potential of children and young people whereas the TBK–GS, DBK-PG, DKB-TE refer to the measurement of creativity in the previously mentioned occupational contexts.

The measurability of creativity is complicated by the many, and partly blurred, definitions. A large proportion of the studies that were examined view creativity as a multidimensional construct with different components, such as divergent thinking, problem solving, willingness to take risks, and openness. In contrast, only a few authors understand creativity as a one-dimensional construct and therefore do not explain what 'acting creatively' exactly means; it is difficult to make the inaccurate construct of creativity empirically ascertainable. It seems questionable whether those studies that interpret creativity as a one-dimensional construct really do justice to this very complex concept.

The idea of researching creativity in VET, including apprenticeships is relatively new and, so far, no measuring instrument has been developed for this area. Since creativity is contextual, measuring creativity in VET would first require an activity analysis of creative situations in individual occupations in order to identify the relevant occupational facets. These facets of creativity would then have to be made operational through suitable test tasks. Since creativity in VET is regarded as an interdisciplinary competence, the basic principles of competence measurement must be taken into account, such as problem-oriented learning. The test items would have to consist of real vocational problem situations that reflect as many facets of vocational competence as possible.

10.3.2. **Creativity in the professions**

In order to understand what role creativity as a transversal skill (SBFI, 2018) or 21st century skill (Chalkiadaki, 2018) plays within particular professions, the following assumptions are made: anyone can be creative and VET can contribute to supporting creativity in the context of work. These assumptions have led to an interview study, conducted in winter/spring 2019. The researchers investigated conative and cognitive facets of creativity in selected occupational fields. For this, practitioners were interviewed from the professions hotel communication specialist, retail trade specialist and commercial specialist (with the direction of trade). Since creativity research mostly features creative persons, these occupations were chosen because one would not necessarily assume creative potential in them. Further, commercial clerk is the most frequently chosen basic vocational training in Switzerland in terms of numbers (SERI, 2019).

First, education plans and VET ordinances for the relevant occupations were analysed. Then a total of 12 semi-structured expert interviews were conducted with vocational trainers from companies in the hotel and trade sectors. The interview partners were selected by experts from the relevant professional organisation (OdA) ([52]). The interview method used was the critical incident technique (CIT) according to Flanagan (1954). This method was chosen to collect precise creative descriptions of workplace situations in which the workers can or have to act creatively. The results were deductively evaluated according to the conative and cognitive creativity facets defined by Lubart et al. (2013). Such factors are joined-up thinking, creative communication, flexibility, openness and generating a creative product.

The results show that creativity as a 21st century skill is already represented either explicitly or implicitly in the framework curricula of the respected apprenticeships. While there are only indirect references to creativity in the education plan and VET ordinances for hotel communication specialist, creativity is shown in the education plan and VET ordinance for retail trade specialist as a technique and methodological competence. For commercial specialist, creativity is mentioned in the educational plan as a learning ability but is not addressed in the VET ordinance.

([52]) OdA are providers of Swiss VET. They define educational content, initiate the development of new occupations and organise intercompany courses.

The results show that different cognitive and conative facets of creativity are significant for the occupations studied. For the hotel communication specialist, the creative facets divergent thinking, creative communication, mental flexibility and openness have been identified. The following factors were determined for the occupations of retail trade specialist and commercial specialist on the basis of the occupational situations described by the experts: divergent thinking, analytic thinking, associative thinking, selective combination and intuitive thinking. These results suggest that creativity in apprenticeships should be promoted differently in different occupations, according to the facets identified by experts.

10.4. Supporting creativity within workplace learning

The understanding of creativity within professional practice is an important precondition for embedding it in curricula and training ordinances as well as developing teaching and learning methods to build up this competence. Both are relevant for teaching and learning at VET schools (Barabasch, 2019). However, training at the workplace plays a particularly relevant role in supporting the development of creativity. Based on various case studies in which industry-specific learning cultures in apprenticeships were examined (Barabasch, 2020), several situations have been identified in which creativity is supported in workplaces (Barabasch et al., forthcoming).

The dual training approach in Switzerland makes the enterprise the primary training place where the apprentice spends about three or four days a week and one or two days at VET school. Therefore, workplace learning in the enterprise is the major socialisation context for the world of work and vital to individual learning pathways (Barabasch and Keller, 2019). Examining a learning culture of an enterprise means studying attitudes, values and beliefs of the members of a community of practice: in this case, the staff involved in VET in the enterprises Swisscom and Login in Switzerland. The case studies involved interviews with 46 apprentices, 13 coaches, four employees closely working with apprentices and 24 managers at different levels. In addition, four focus groups were held with about six apprentices each. Observations were conducted at 14 working sites. Among these sites were venues where creative work was in the foreground (Barabasch and Keller, 2019). One of the interests in the data analysis was to find out how creativity is supported within different work environments throughout the apprenticeship training; several examples were identified.

Overall, there are large differences between the apprenticeships. While apprenticeships in occupations related to ICT provide a lot of scope for creative work, sales professions have this to a lesser extent and professions such as track builder at railway companies have almost none. The opportunities for working creatively seem to be connected to the different forms of work organisation, with those being able to work in agile work settings (Barabasch et al., 2020) being more inclined and supported to work creatively. Here, working in changing teams and projects contributes to opening one's mind, practising divergent and convergent thinking, and learning from being exposed to new experiences. This includes informal communication at eye level as much as new work structures. Forms of agile work have been introduced within occupations in informatics and media design, such as the scrumming method with its two-week long sprints, human-centred design (HCD) workshops that can lead to bigger projects or other projects for which the design-thinking method was used.

The project-based apprenticeship system introduced at Swisscom also offers apprentices the possibility to bring their own team together in an individual project. This supports identification with, and commitment to, work. Enthusiasm about working in real projects and taking over a lot of responsibility often creates high motivation and an experience of 'flow'. The working atmosphere is inspired by the interior design of the different working and learning locations. Apprentices in the IT field may especially have opportunities to work in hubs and meet employees from other departments or enterprises. Shared working spaces enable exchange, which can be especially valuable for the generation of new ideas.

A number of tools support creative work, such as the kick box, a tool for the generation of ideas. The enterprise is supportive of creative and entrepreneurial projects and provides funding for the further development of ideas. If they are approved as marketable products, at different stages, there is also further funding provided to take the project to a successful end. Within this culture, there is the spirit, that one should and can realise one's own ideas. Rooms are often flexibly furnished, so that they can be easily redecorated, which should encourage employees to experiment and play with ideas, which may help in finding new solutions. There is, for example, the Pirates Hub, a shared working space mostly for developers; the decoration is familial and friendly, and the rooms resemble a cosy coffee shop atmosphere. Several seating arrangements are designed for informal exchanges.

Alongside the methods agile work, creative workspace environments, design thinking approaches or the work with the kick box, the online market place, where projects are announced, is supporting and creating the preconditions for creative work. Cultural aspects manifest themselves further in the egalitarian form of communication, the coaching culture, the freedom and autonomy that apprentices have in their worktime and workplace decisions as much as in choosing among a number of projects according to their competence requirements or creating a project themselves. A positive culture of encouraging and communicating about mistakes, trustful relationships and plenty of opportunities to network all support creative work among apprentices.

While the telecommunication industry is by character widely innovation-oriented, the public transport industry also introduces various innovations, often connected to new digital technologies. Apprentices work within this innovation dynamic and understand how important it is to contribute to it. Innovation needs creativity and creativity is enhanced by leaving one's comfort zone and being exposed to new challenges and experiences. Enabling creative work has become an incremental aspect of the learning culture wherever possible.

The enterprise Login is the main provider for VET programmes in the public transportation sector in Switzerland. It operates as a training company for various occupations. In many cases, to cover all the requested competences set in the framework curricula of each apprenticeship programme, apprentices learn at different sites in different companies. Due to this rotation (often apprentices change training places at enterprises several times over the course of their apprenticeship), they can familiarise themselves with different workplaces of the public transportation sector and gain a more holistic insight than they would acquire remaining in one specific field of work at the same enterprise. An apprentice may work for one year at the Swiss Federal Railways (SBB), the main train operator in the country, then at a logistic enterprise, a bus operator or ferry company on one of the lakes or rivers, a local historic train company and eventually return to the host company where the journey started.

The enterprise employs apprentices for VET programmes that require high levels of general subject knowledge and good school grades in maths and languages, such as the VET programmes to become an IT specialist or mediamatician. There are also apprenticeships that require less general subject knowledge and students with lower grades can enter their compulsory school exams, such as specialist for customer dialogue or specialist for maintenance management. The diversity of VET students in the enterprise is high and the enterprise uses this plurality as an advantage to benefit from the diversity of ideas and approaches. Social connectedness is a central aspect in its learning culture. Since workers as much as apprentices are widely oriented towards their team, a functioning culture of trust is a central pillar for working creatively. This must be reinforced by workplace trainers, who tend to trust apprentices in making informed decisions, finding solutions and managing challenging situations successfully.

Acting creatively is particularly relevant in communicating both with customers and colleagues, in developing marketing tools or shaping workplaces and in sales more generally. In situations where apprentices assume a lot of responsibility (such as managing an entire train

station with mostly apprentices), finding creative solutions to problems arising is particularly important. Initiative-taking and planned action are demanded in this respect. A certain tolerance towards making mistakes helps apprentices to learn from challenging situations, especially when timely and constructive feedback is provided by workplace trainers.

Login uses so called innovation expeditions, a tool in which apprentices from different partner firms work on topical questions on the world of transportation. Including the views of the apprentices is considered especially valuable in early project phases. For example, the topic can be the establishment of new teaching and learning conditions or finding a recruitment strategy for a career for which it is difficult to recruit the requested number of apprentices. The innovation expeditions provide an easy way for (further) development through actively including the main target group in idea generation. The different topics (that can be introduced by Login or one of the partner firms), are sometimes worked on in mixed teams of apprentices and experienced workers and sometimes by a team of apprentices only.

Apprentices can also contribute to improvement through the apprentice-committee, which represents all Login apprentices. Its members gather requests and ideas for improvement from apprentices, elaborate possible steps for improvement and bring them to the management board. After evaluations by the apprentice population, the apprentices of the committee help to make sense of the results and respond to further questions. The committee has an internal platform through which they can be contacted. In being active in the committee, apprentices learn how to communicate with different target groups (peers, management, fellow workers), develop ideas and turn them into action or products, but also learn about participatory methods of decision-making and inclusive participation.

Some occupations in the transport world require high creative competences, as with apprentices working in the rail-service-management (*Zugverkehrsleitung*). Events such as delays or accidents cause unforeseen situations and consequential effects that require finding and implementing adequate solutions as soon as possible. In many other occupations of the sector, routine skills, reliability and teamwork competences are required while the development of creative solutions may be constraint due to safety regulations. Nevertheless, there is a common attitude that apprentices can and should contribute to improvements in their daily work and speak up if they have good ideas.

The relevance of apprentice (creative) contributions is introduced in the introductory week (*Einführungswochen*). Workplace trainers (that work in the partner firms but are trained by Login) are sensitised to the fact that apprentices need space to ‘play’ and try out different ways of doing something to find their own strategies. The provision of junior stations and junior business teams enables apprentices learn within holistic work situations and learn in different challenging situations. They can learn how to lead an office, work with clients, plan work and personal resources and how to do accounting. Workplace trainers are generally in the background and intervene, if needed, as a coach. Examples of how apprentices contribute with their creative ideas are also found in many other workplaces, such as trainers trusting apprentices to work on challenging tasks. For example, the apprentice or a small group of apprentices may have to find an adequate solution to a problem, supported by the workplace trainer when needed. Other apprentices plan activities for junior days when pupils come to the Swiss Federal Railways to be informed about the different apprenticeships. Many partner firms have tools to gather ideas from their employees, such as an idea-blackboard for announcing new ideas.

The public transportation sector is a more traditional sector where change is largely related to digitalisation. This carries the expectation that workplaces will disappear or be modified in the future and young adults need to be prepared to adjust to these challenges. Job rotation, work in apprentice teams, increasingly taking over responsibilities, acting within diverse teams of colleagues or finding and realising solutions in a particular setting of time and place contribute to the development of creativity and creative work. Apprentices can already be initiators of

innovative approaches and develop early leadership skills, solving challenging situations in the team creatively.

10.5. Conclusion

Creativity as a recognised 21st century skill and indispensable requirement for numerous professional tasks and positions has, so far, been insufficiently researched in VET. Yet current challenges such as digitalisation and industry 4.0 are making creativity increasingly important in VET and it is already regarded today as an 'indispensable prerequisite' for innovation (Schubert, 2009, pp. 10-13). The Danish creativity researcher Tanggaard (2017) concludes that 'the creative potential of trainees must be encouraged' if Europe is to maintain its innovative performance potential. Consequently, the promotion of creativity should take place in VET at all sites of learning, e.g. school, company and inter-company classes. Initial research results suggest that creativity in VET, including apprenticeships should be supported differently in different occupations, since different facets of creativity are relevant within them. It will be important to recognise the relevance of transversal skills, including creativity, in training ordinances and curricula. Based on the belief that they need to be trained, teaching and learning practices may respond to it, including the development of new didactic approaches. Initial findings from the learning culture project in Switzerland point to a variety of innovative measures undertaken by companies to support the development of creativity within workplace learning. These might inspire other enterprises to follow. More research is needed to understand how the different 21st century skills can be supported collectively, what kind of training teachers and trainers will need, and how new approaches to workplace learning can be implemented in different apprenticeship training.

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CHAPTER 11.

Tensions and innovations in apprenticeships in England

The impact on learning in 'non-traditional' organisational settings

© Dr Eleanor Andressen ([53])

11.1. Introduction

This chapter sets out the initial findings of a case study conducted within a large, multi-site company offering apprenticeships with little or no previous tradition of employing and training apprentices. While job-specific training has been offered previously in a variety of settings, the introduction of the apprenticeship levy in England has resulted in apprenticeships being delivered in many more organisations. In the context of this chapter, therefore, 'non-traditional' refers to those workplace settings which did not, and would previously have been unlikely to, offer apprenticeships. Reforms to apprenticeships in England were accompanied by government targets of three million new apprentices or 'starts' by 2020 (HM Government, 2015). To hit this target, the government needed apprenticeships to be offered more widely.

The reforms included the introduction of a levy, or tax, of 0.5% on the pay bill of organisations with annual wages of over GBP 3 million, which may be claimed back and spent on apprenticeship training. If the organisation fails to spend all of the levy within the financial year, the surplus becomes an additional tax revenue for the government and is lost by the employer. One consequence of this is a rise in the delivery of apprenticeships in workplaces such as large corporates, where previously a graduate training scheme might have been the more usual way of attracting and training early-career talent. Since its introduction, the rules governing the ways in which the levy can be spent have loosened, enabling, for example, the use of up to 25% for training those employed by businesses in an organisation's supply chain. The need to 'use or lose' the levy payment continues to change the definition and delivery of apprenticeships, and the profile of those working towards them.

The relationship of employers with vocational education and training has long been problematic in England. Learners tend to be steered towards the academic track through a combination of policy and funding trends, by schools and parents, and through an entrenched belief in the superiority of the academic track among these same stakeholders. Potential employees are filtered by qualifications on their curriculum vitae, and since A levels (one of the final academic examinations of compulsory education) have been in existence since the 1950s, most people are familiar with them and their representation of achievement in the upper secondary phase. This is not always the case with newer programmes of study. These behaviours have contributed to a shortage of skilled workers (Andressen, 2016). However, the increasing availability of apprenticeships in corporations, and of degree apprenticeships in particular, where the learner can qualify while being paid – and not accumulating debts of up to GBP 9 000 per year in university fees - mean this route is becoming increasingly attractive to those who might not previously have considered it.

The efforts of successive governments to address the skills shortage have been only partially successful, with many failing to address long-established issues with vocational education in the England. The skills shortage has been partly masked by the free movement of people

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within the EU, and the consequent ability of employers easily to hire skilled staff from outside the UK. The current political situation in the UK has brought further into focus the need to upskill the homegrown workforce. Improving apprenticeship provision is seen as an important way to achieve this post-Brexit.

Corporate structures and the heavily specialist knowledge-based nature of the expertise held within some areas of the case study organisation mean that traditional approaches to learning from 'an expert' or at a regular time or pace are necessarily challenged by the need to meet business deadlines and targets. Other aspects affecting the understanding and practice of some apprenticeship training include limitations to access imposed by the geographic location of particular roles, patterns of home-working, matrix teams, multiple lines of management and the use of video conferencing, which affects traditional methods of discussion and communication. Such factors challenge the traditional image of an apprentice sitting alongside, and learning 'skills' from a 'master'.

The case study focuses on the experiences of apprenticeships in a variety of job roles and at different stages of their careers; some were already employed by the organisation and others were recruited into a new role. The initial insights come from a combination of voluntary input via surveys and interviews from current and qualified apprentices who indicated, as part of their survey answers, that they would be willing to discuss their experience in more detail. The case study sought to answer the questions of why the individuals had chosen to pursue an apprenticeship, how they had found out about the options available to them, and what their experience of apprenticeship had been in this specific organisation.

11.2. Literature review

There is an extensive body of literature available on apprenticeships both nationally and internationally. As the case study organisation is located in England, this chapter focuses on that which is most relevant to the development and implementation of apprenticeships in England with some reference to the UK more widely. It concentrates on the impact of apprenticeships on learning in the workplace, in large organisations, which may not have traditionally offered such provision, but which now do so in response to the obligatory payment of the levy used to fund them.

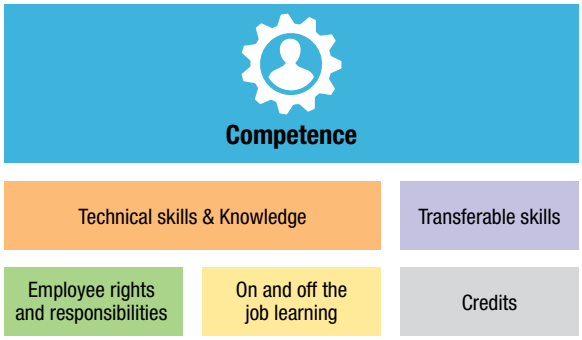
The reform agenda for apprenticeships in England was triggered by the Richard review of apprenticeships (Richard, 2012), envisaging apprenticeships as a partnership between the learner, the employer and society, all of whom should benefit. In 2014 major reforms were announced to the apprenticeship system in England, which were due to be fully implemented by 2020 (BIS, 2014).

The Post-16 Skills plan (DBIS and DfE, 2016) placed employers at the heart of standards development and of setting the assessment strategy for standards-based apprenticeships. The skills and competences making up the 'standards' for a particular job role are defined by an employer group on no more than two sides of paper. It is then clear to employers and other stakeholders what must be achieved by the apprentice. The previous 'framework' could be populated by a variety of achievements and qualifications, many of which were unfamiliar to stakeholders, and of varying quality. The intention of the standards was to set out for all what an apprentice should achieve. Figure 11.1. and Table 11.1. illustrate the two different approaches.

A number of potential issues arise from the development and sign-off of standards by a small number of employers from a sector. Employers are not a single body: they vary by size, location, business focus, for example. Unlike northern Europe, England is a liberal economy and employers in most sectors are not used to coming together to act as a social mechanism; they tend to be motivated by their own ends, so consistency and transferability can be problematic. Only a handful of potential employers in a sector will have the capacity or desire to support the creation of occupational standards. While employers may know what skills are required for roles within their organisation, the limited number defining standards means that a representative set of knowledge and skills for all the occupations in

that area of a sector, fit for use in any region and size of business, is very difficult to achieve. This may result in issues of transferability for those achieving the apprenticeship.

Figure 11.1. **Model apprenticeship framework: apprentices must successfully complete each element of the framework or demonstrate that they have already done so (credits).**



Source: http://www.afo.sscalliance.org/introduction-to-frameworks/

The corporate context prompts examination of the impact of structures and practices on learning in the workplace: how existing physical and cultural structures within an organisation support or hinder learning (Ashton, 2004). While the artefacts (Schein, 1990) may be evolving, culture can be slower to move. Strauss and Howe (1991) consider to what extent the concept of an apprenticeship, building knowledge and skills over time, creates tensions with current expectations around the length of time Millennial employees, for example, might expect to remain with an organisation, and the impact they may wish to have in that potentially short timeframe. There are also issues of transferability of highly specialised knowledge, summarised by Wiewiora et al. (2013) as 'know-what, know-how, know-why and know-when', which takes time to acquire and which may not be immediately useful or obviously transferable in a different working context.

The concept of expansive learning environments (Fuller and Unwin, 2004) is highly relevant to the current incarnation of apprenticeships in England. A number of assumptions exist around the creation of apprenticeship standards: that the groups of employers developing the standards are representative of their sector(s); that employers are best-placed to decide how and when to assess the competence of individuals in their employment; that similar apprenticeships delivered by multiple different organisations, es-

Table 11.1. **Standards-based apprenticeships: apprentices must complete all their on-programme training and learning and be signed-off by their employer before progressing to their EPA, which is assessed by an industry expert independent of the employing organisation**

On-programme training and learning On-the-job and off-the-job training and learning needed to develop apprentices' knowledge, skills and behaviours • No mandatory requirement for qualifications (unless they are a requirement such as a licence to practice (LTP), or are written into the standard by the Trailblazer group) • All apprentices will be required to develop their maths and English skills
Gateway to end-point assessment Employers sign-off on each apprentice to say they are ready for their final assessment
End-point assessment (EPA) Apprentices are assessed as competent through a variety of methods such as professional conversation and observation; or more traditional tests (MCQ)

NB: Behaviours, in addition to knowledge and skills

Source: http://www.afo.sscalliance.org/introduction-to-frameworks/

pecially when that organisation has no previous history of apprenticeship delivery, with result in consistent, transferable outcomes; and that the intended modes of learning and training in relation to different apprenticeship standards and levels will be possible and successful in organisations which have no previous history of apprenticeship delivery.

There are many competing pressures relating to delivery of apprenticeships, and these may differ depending on the size of the organisation. One aspect of this is to explore the impact of pressures and practice in a large organisation on the ability of apprentices to gain the support and training they need while fulfilling their employee role. The following table (Table 11.2.) includes elements of the expansive-restrictive framework that seem to be most challenging in the context of apprenticeship delivery in a non-traditional delivery organisation.

These particular extracts from the framework seem to resonate most clearly with what is a common position in large organisations paying the levy, and with the organisation on which the case study is based. There are tensions between the vision for the expansive experience for all apprentices and the day-to-day needs of the business. Newly recruited apprentices will benefit from the structure of an apprenticeship, with the learning and assessed elements being a way of measuring their progress. Senior employees, who are more likely to participate in apprenticeship training since the Levy introduction, may seek to mould and adapt the apprenticeship to suit their own, already mature, role within the organisation and may anticipate some element of recognition of prior achievement or validation of their role. This could put two apprenticeship experiences at odds with each other as they have two very different purposes.

In *The great training robbery*, Richmond (2018) argued that the levy system has had a detrimental effect on the take-up and quality of apprenticeships. He also argued that there was a risk that the definition of apprenticeship had been stretched to the point where there is a danger of 'losing sight of the core features of what makes apprenticeship work, what makes them unique' (p. 5). The profile of apprentices taking part in this research does not reflect that of individuals at the beginning of their career, learning a skillset from one or more individuals and pursuing a career supported by technical skills honed and updated over the years in a community of practice. If, however, employers are finding that the schools system and universities are not preparing young people for work (Cranmer, 2006; Fettes, 2018) because such skills are difficult to develop in the classroom, what is wrong with calling modern 'apprenticeships' enabling

Table 11.2. **Expansive versus restrictive framework in the context of apprenticeships (extract)**

Expansive	Restrictive
Apprentice has dual status as learner and employee; explicit recognition of, and support for, individual as learner.	Status as employee dominates limited recognition of, and support for, apprentice as learner
Apprentice makes a gradual transition to productive worker and is stretched by employers and providers to develop expertise in their occupational field.	Fast transition to productive worker with limited knowledge of the wider occupational field.
Apprentice is a member of an occupational community with access to the community's rules, values, history, occupational knowledge and practical expertise.	Apprentice treated as extra pair of hands with access to limited knowledge and skills to perform job.
Apprentice participates in different communities of practice inside and outside the workplace.	Training restricted to narrowly defined job role and workstation.

Source: *The expansive-restrictive framework in the context of apprenticeships.* (Fuller and Unwin, 2004).

employers to develop these skills in the workplace alongside wider relevant knowledge and skill development?

The first recommendation of the report resulting from the Edge Foundation's conference publications *Our plan for apprenticeships: broader, higher quality, better prepared* (2019) is that the age/stage balance needs to be readressed so that the majority of apprenticeships are made available to young people starting a career; the current picture is of 50% of starts being 'conversions' from those already in work.

There are a number of issues underlying this viewpoint: if businesses are paying the levy but do not use if for training, they lose that money, which will drive possibly unexpected behaviours including the use of levy funding to 'apprentice' staff already working in the business. There may be insufficient 'new' roles in businesses into which it is possible to recruit apprentices, and again, if the levy is not used it will be lost; in an age where many people may expect to work until they are around 70 years of age, there may be an argument for enabling them to progress or pivot in their careers through this training route (Garrett et al., 2010).

11.3. Methodology

The case study organisation was made up of multiple sites around England. As the number of apprentices at any one time within the organisation is over 100, the research was intended to be exploratory rather than systematically comprehensive in nature. Apprenticeship delivery over time, according to needs such as job role need and location meant that there was no consistent set of circumstances from which to sample apprentices. For this reason, the survey was of all apprentices at a given moment in time, inviting a voluntary agreement to be approached for a lengthier interview. This resulted in a self-selecting group of contacts who were then interviewed according to availability and interest within a fixed window of several weeks, to accommodate other commitments as far as possible.

The survey was sent out to 119 apprentices, of whom 59 responded; 24 were willing and 12 were actually interviewed in depth. Of those answering the survey, only eight had been with the organisation for less than two years, while 10 had been there for more than five years. Of these, the level of their apprenticeship varied from EQF level 3 to 7, suggesting that the majority of apprentices are current, even long-term employees, and that apprenticeship schemes are being used among this group to provide training to existing employees rather than new employment opportunities. The range of available apprenticeships – including project management, business administration, team leadership and marketing – reflects the needs of a corporate organisation.

Interview questions for the apprentices focused on their status as a newly recruited apprentice or an established employee, on their experience of their first three months on the programme, their experience of training and learning and how this fits both time and relevance-wise with their role and apprenticeship, and their overall view of the programme and the likelihood that they would recommend such a programme to others.

11.4. Indicative findings

The early interviews with apprentices revealed a number of potentially significant findings about the delivery of apprenticeships in the case study organisation. The feedback from apprentices about their apprenticeship experiences was overwhelmingly positive, with all individuals interviewed or surveyed able to identify benefits to the individual, the team in which they are located and to the business as a whole. Below are some indicative findings from the survey and interview data.

11.4.1. **Becoming an apprentice**

Newly recruited apprentices tended to be degree apprentices who had chosen to pursue this route straight from school. The main reasons were that they did not want to incur the debts that would result from paying university fees, and wanted to earn while learning, rather than a positive choice per se in favour of this qualification. None of them were familiar with the case study organisation before starting their apprentice-

ship. At first, their choice had been treated with scepticism by school, family and friends. Each of them, however, was relentlessly positive about the benefits and how much they were enjoying their experience.

For those already working in the organisation, an apprenticeship was seen as a way to acquire business skills, even for graduates. It was also, a way to move into a role within the organisation for which the required technical skillset or specialist knowledge was partly or wholly lacking. However, on one occasion this led to a misunderstanding between an existing employee apprentice and their line manager, with the latter expecting the recruit already to have some of the skills and knowledge required for their role, and the former expecting to develop them over time.

11.4.2. **Degree apprenticeships**

The experience and value of newly recruited and previously established employees pursuing a degree apprenticeship varies according to a number of factors: the training provider (which might be a dedicated, private apprenticeship training provider, a college of further education or a university); the extent of their work experience; and the sector in which their apprenticeship is based.

One established employee found that the training provider through which they pursued the off-the-job training element of their apprenticeship, was not used to dealing with experienced workers. While a variety of units of subject matter are available for training in principle, in practice the units of knowledge are preselected and delivered in a uniform way through the college. The date of delivery is fixed and, in the view of one established employee-apprentice, does not offer any flexibility whatsoever either in content or timing. Other established employee-apprentices doing their training element via a university have experienced far greater flexibility.

The group of newly recruited degree apprentices, for example, have built a supportive community of practice, whereas 'conversion' degree apprentices appear to feel isolated in their learning within the organisation because they feel that no difference in their circumstances is acknowledged. All apprenticeships follow an 80/20 model of delivery: four days per week in the workplace (80% of the time) and one day per week training (20%). For established employees, however, their time is fully committed despite a nominal commitment to 80% 'on-the-job'; in some cases this means making up 20% of their full-time job in their own time.

11.4.3. **The learning experience**

While apprenticeships delivered in a non-traditional setting may be different in character to a more traditional view of learning a skillset more or less from a single source, several interviewees were very positive about this. Although they might need input from several experts, those experts were available to them when needed, for aspects ranging across software development, an understanding of legal matters, and the development of financial plans.

Differences in experience seem to be rooted less in subject differences, location or line management, but more in the status of the individual as an established employee or an employee recruited to the apprentice role. There are different approaches to training delivery in colleges and universities, with the former sometimes struggling to respond flexibly to the interests and working reality of those pursuing an apprenticeship who are already in full time employment.

This may be due to the fact that the universities concerned have far greater experience of dealing with mature students, while the colleges at present deal mainly with upper secondary provision; such learners may start their apprenticeship with fewer demands content-wise as they are not yet aware of what their role entails, and are able to start within a more structured timeframe as they are not trying to overlay it on existing responsibilities. The success of communications between the organisation and respective learning providers also seems to vary.

The delivery of apprenticeships in the non-traditional setting of a large corporate offers a different type of learning opportunity for learners, both by necessity and structure. While apprentices in some departments may continue to work in a 'silo', the reality is that projects and initiatives in the setting of this particular organisation are providing opportunities for apprentices to plan and complete projects impacting on

product development, customer services, marketing, quality assurance, events management and project management.

In relation to the restrictive-expansive framework, there is some early evidence that this employer at least is struggling to ensure that higher-level apprentices who are already established employees have a similar learning experience to newly recruited employees. In the terms of the 'restrictive' elements of their framework, established employee-apprentices report that their status as an employee dominates; rather than being enabled to transition gradually to their role, the reality is that they are already in their role. They are not treated as 'an extra pair of hands' and sometimes feel they are expected to do even more than their full-time role because of the need to demonstrate the value to the business of the training they are undertaking.

They are already part of an occupational community and may be trying to fit a new set of values and rules with an existing – and potentially clashing – one. Their problem may be less that they are 'restricted to a narrowly defined job role and workstation' than that their working life is already at capacity. Due to restructuring, one marketing apprentice is now located in a web editorial team. While some of the generic business skills they bring are highly valued by that team, opportunities to develop and apply the specialist marketing learning from the apprenticeship are limited. An opportunity has been created to enable them to complete their programme, but it is unlikely that there will be a permanent role for them at the end of it.

11.5. Conclusion

Apprentices generally seem very positive about the learning opportunities available to them. For degree apprentices who are already employees, however, the organisation needs to respect the work/training balance (80/20) and ensure that the training is a distinct opportunity and not 'business as usual'. Training providers also need to ensure that their offer is differentiated to suit those just starting out in employment and those coming to their apprenticeship with work and life experience. While some of Richmond's (2018) concerns about what constitutes an apprenticeship may be valid, in the case of the organisation involved in this research, apprenticeships have at least two clear purposes: to provide a new skill-set to recruits, and to upskill existing employees.

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CHAPTER 12.

Going for attractiveness and excellence

A cross-country review of excellence in apprenticeship in Austria, Denmark, Germany and Switzerland

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12.1. Introduction

For more than a decade, experts have been discussing features, strengths and challenges of various models of vocational education and training (VET) systems at European and international levels. Some countries – including Austria, Germany, Denmark and Switzerland – are contributing to this debate on political, implementation and scientific levels, sharing their experiences in dual-track VET.

Programmes in this field often refer to a classical apprenticeship-model that implies the combination of practical training in companies with theoretical learning in VET schools. These countries developed an apprenticeship-toolbox contributing to the European alliance for apprenticeships ([58]). They share the notion of international experts that apprenticeships support the transition from education into skilled employment, because of a high employer involvement ensuring that programmes fit current and relevant labour market needs. Considering these aspects, as well as other current debates on VET, this apprenticeship-toolbox provides information about a range of features such as attractiveness and excellence ([59]).

Excellence is increasingly emerging as a new buzzword in Europe to make VET programmes, including apprenticeships, more attractive to young learners but also adults. There is a vision that VET shall become a first choice. The European Commission recently called for the development of centres of vocational excellence ([60]) to contribute, for example, to regional development or smart specialisation ([61]).

All education systems including apprenticeship are faced with challenges because of megatrends ([62]) such as sociodemographic changes and socioeconomic long-term structural trends, new technologies and labour market changes, new forms of work organisation, and trends in education and training. It might be that education systems fostering academic and practice-oriented education on equal terms and including substantial contributions by the private sector to education and training activities show more resilience in facing these challenges. Since academic education stays attractive, competitive and innovative through focusing on excellence, it might be of value to adapt this concept to VET as proposed by the Commission and to focus national development VET initiatives on excellence as well.

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([58]) www.apprenticeship-toolbox.eu / EAfA

([59]) Other features are governance and regulations, social partners and companies, financing, programmes and pathways, standards and matching, training and teaching.

([60]) The development of centres of vocational excellence is already being piloted under the Erasmus+ and shall be fully implemented under the next Erasmus programme 2021-2027.

([61]) This initiative considers debates in VET since the start of the Copenhagen process that have been highlighting the need for 'high levels of quality and innovation in VET', 'excellence in VET skills', 'vocational excellence', 'cooperation to promote innovation and excellence in VET' and 'promotion of VET Excellence and inclusion' (DG EMPL, 2019).

([62]) For an overview on the megatrends see Cedefop, 2018.

The following reflects on the issue of excellence in VET by focusing on apprenticeship systems and specific initiatives in Austria, Denmark, Germany and Switzerland, asking whether and why, or to what extent, they might emphasise excellence. All four countries have a long tradition in establishing and developing their apprenticeship system, with a collective skill formation approach and strong decentralised governance modes ([63]). The four VET systems, nevertheless, represent differences in terms of governance that mirror the design and purpose of their concepts and initiatives for VET development. Hence, they are explicitly developing initiatives for promoting excellence in VET to varying extents. The main part of this contribution relies on a review of VET policy developments in Austria, Denmark, Germany and Switzerland. The conclusion of the reflection addresses the meaning of excellence in the apprenticeship concept over the range of qualifications offered by country-specific education systems, its characteristics, normative-prescriptive grade and (potential) impact; it also considers the links between the concepts of excellence, accountability and inclusiveness in education. The closing part of the contribution hints at the dilemma the excellence concept might bring into apprenticeship systems at national and possibly European level.

12.2. Defining excellence in VET

So far, no unique definition of excellence has been provided. The concept is widespread within higher education where it relates to outstanding and remarkable research activities and innovative milieus ([64]). However, it has not yet established itself so widely in VET, although some apprenticeship programmes in European countries provide remarkable branch-specific skills and knowledge relevant to innovative labour markets. Excellence might be the new quality. The concept links strongly with comparative surveys and rankings like PISA, starting a fierce competition towards excellent education models. Excellence is also promoted in international VET cooperation with the establishment of centres of vocational excellence, possibly following more of a school-based VET than an apprenticeship approach. Since apprenticeship systems perform quite well in terms of access of graduates to the labour market, these programmes might be considered as excellent. Focusing on excellence in VET is also a way for making the respective programmes attractive for a society traditionally preferring academic education.

Following the recommendations of the European Commission, VET excellence can be characterised by a holistic approach that emphasises smart specialisation, inter-disciplinary cooperation and quality assurance on individual, organisational and (inter-)national level. In this context, vocational education and training:

(a) 'is an integrative part of skills ecosystems, contributing to national and regional development, innovation, and smart specialisation strategies;
(b) is part of knowledge triangles, working closely with other education and training sectors, the scientific community, and business;
(c) enables learners to acquire vocational and key competences through high-quality provision that is underpinned by quality assurance, builds innovative forms of partnerships with the world of work, and is supported by the continuous professional development of teaching and training staff, innovative pedagogies, and internationalisation strategies' (DG EMPL, 2019, p. 2).

Within the four countries, excellence in VET takes many forms such as labour market employability, mobility, career prospects and rich opportunities to participate in lifelong learning; cost-efficiency is also an aspect. Developing and establishing excellence has a direct impact on the attractiveness of VET qualifications and training pathways for all stakeholders in terms of individual and systemic performance. Excellence is a multifaceted concept, as illustrated by the Swiss example that follows. Data for Switzerland show that VET programmes are attractive to the young and their parent generation because VET

([63]) Greinert, 1998; Busemeyer and Trampusch, 2011.
([64]) Rostan and Vaira, 2011.

qualifications boost job prospects on the labour market; they are also a solid foundation for lifelong learning as there are no dead-end qualifications. VET programmes with options for a wide range of talents ensure integration as well as excellent performance. Apprenticeships are attractive for gifted learners because of their clear profile and connectivity to education pathways at tertiary level. VET programmes are also attractive for companies because apprenticeship training brings an economic net benefit ([65]). Other aspects that shape excellence are national recognition of qualifications provided by authorities in cooperation with the labour market, that lead to clearly defined professional profiles, the comprehensiveness of quality assurance mechanisms, the ability to adapt curricula in reaction to rapid changes on the labour market, and general horizontal and vertical connectivity of VET systems to further education. Further, considerable efforts are spent on innovations in VET systems and in VET research, both to improve the attractiveness of VET for all key stakeholders and in monitoring the attractiveness ([66]).

Excellence derives from quality and the four countries are striving to provide best possible vocational education and training to learners, taking into account at least two learning places (VET schools and practical training in companies) and core governance mechanisms (including consultations and joint decision-making with social partners). At European level, the four countries fulfil most of the criteria included in the European recommendation on a European framework for quality and effective apprenticeships ([67]).

Major challenges to the four dual-track apprenticeship systems are megatrends such as digitalisation, sustainability, increasing job mobility and flexibility, rising demands and globalisation affecting the supply and demand of apprenticeship positions. Apprenticeship supply and demand are influenced by structural changes reflecting the long-term needs of the labour market, economic fluctuations, maintenance of a sufficiently high level of company involvement in offering apprenticeship places (critical ratio), demographic changes and the interests of young people and their parents. Since all education systems, including apprenticeship, are challenged by megatrends, it might be appealing to apply the particular concept of excellence relevant in the higher education sector to the apprenticeship sector too, because academic education stays attractive, competitive and innovative through focusing on outstanding and remarkable research activities and innovative milieus.

Excellence for and within apprenticeship systems implies evidence-based agenda setting, in cooperation with all relevant stakeholders. This aims at adapting apprenticeship to continuing challenges stemming from the education system, making changes within the labour market, and developing its resilience towards facing up the megatrends. Excellence relates to apprenticeship innovation and attractiveness, as illustrated in the following initiatives described. The concept of excellence in VET is discussed along three lines of policy action: developing excellence, maintaining excellence and promoting excellence. This highlights the objectives and parameters of VET policy actions and reflects on the links between the excellence and attractiveness of VET, and, more specifically, apprenticeship.

12.3. From systemic innovation to professional skills

Initiatives and activities for promoting VET excellence in Austria, Germany, Denmark and Switzerland are presented below, revealing similarities and differences between the four countries (cross-national comparison) at implementation level.

12.3.1. Developing excellence: initiatives and reforms

Apprenticeship systems are not immobile: incremental changes are parts of the systems. Governments and stakeholders are continuously seeking improvements to develop excellence. Highly concerned by technological, social and economic changes by their nature and strong

([65]) Strupler and Wolter (2012); www.apprenticeship.toolbox.eu
([66]) www.apprenticeship-toolbox.eu
([67]) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0502%2801%29

inherent orientation towards the labour market, research and innovation are core elements for modernisation. Developing excellence implies not only that a wide range of VET stakeholders invest capacities in grasping and adapting apprenticeship to current and foreseeable changes but also in adapting the systems to changes within the education and training systems. The well-established corporatist coordination and cooperation patterns are a strength in that regard. Selected initiatives for systemic innovation and future development of the German, the Danish and the Swiss apprenticeship systems illustrate this approach:

The German initiative Innovations for an excellent VET (InnoVET) aims at establishing future oriented innovation clusters in VET. Excellence is indirectly defined as responding to labour market and companies' needs, prompting young people's interest in entering VET and ensuring equivalence (*Gleichwertigkeit*) between dual and academic/school-based education. Quality in the initiative should be ensured by involving State or Federal level decision-makers and further stakeholders in the projects. The selection criteria include:

(a) increasing the attractiveness, quality and equivalence of vocational education and training;
(b) support for enterprises, in particular small and medium-sized enterprises in recruiting and training future professionals, managers and business successors;
(c) development of VET into an innovative, permeable and high-quality system;
(d) development of innovative VET offers at further qualification level (particularly level five of the German qualification framework) which are geared to the needs of companies and provide incentives for young people to enter vocational training;
(e) creation of innovative, high-quality cooperation between learning venues, for example for the transfer of knowledge and new developments from universities and research institutions via VET into company practice, especially in SMEs;
(f) early adoption of new developments in VET, such as artificial intelligence and the development of corresponding qualification concepts for vocational education and training.

As of July 2019, 30 project proposals passed the first selection round. The conceptual frame for the German initiative emerges from the characteristics of the dual apprenticeship-concept. With these in mind, excellent VET consequently means excellence at the level of occupational standards and qualifications, at the level of learning venues and at the level of cooperation between stakeholders ([68]).

In Denmark, a variety of political initiatives aim at strengthening quality, attractiveness and permeability in the VET system. Since 2014 students are required to have a minimum grade 2 in Danish and mathematics or to have a signed training agreement to get accepted at a VET college. In 2015 a reform of the VET system outlined four goals for improvement considering the views and experiences of stakeholders such as primary schools, VET colleges and companies. VET programmes should address the potential and the needs of a wide range of the young generation (challenging and motivating) to attract more young people coming out of compulsory education (25% in 2020) and to improve the completion rate in VET programmes (60% in 2020). In 2018 a DKK 2.3 billion political agreement started 10 additional different initiatives to ensure better conditions for VET schools, as they will support excellence in education and at the same time assure for integration. Those initiatives should boost the number of VET qualifications. They include vocational professionals and professional guidance in primary school, greater responsibility in VET at regional level, strengthening of general education and entrepreneurship in VET, and hence permeability to further education, and bureaucracy simplification processes. Further, 10 knowledge centres have been established in Denmark with public funds for the period of 2017-20; they will strengthen connectivity between VET and industries, leading to VET quality and attractiveness. They are appointed to

([68]) Hartmann et al., 2018.

provide professional skills and competences to apprentices that match the needs of companies facing a changing labour market. These centres will also build new linkages to other education institutions and sectors, businesses and technology centres, creating or supporting networks and facilitating competence development for teachers and training staff from VET colleges. They will also support other VET schools in digitalisation and new teaching and training methods to attract more talented young people. However, the special capacity of the knowledge centres shall be available to all students and highly gifted apprentices could receive additional support via talent tracks, training camps and host training camps for students taking part in skills competitions. The knowledge centres will provide annual reports to the Agency for Education and Quality in the Ministry of Children and Education to ensure high and consistent quality in all deliverables.

In Switzerland, the public and private partners (PPP) of VET have recently adopted the mutual declaration Vocational and professional education and training (VPET) 2030. This creates the frame for joint and target-oriented action by collective governance of the Confederation, the cantons and the private sector. The partners declared that the VPET system, consisting of apprenticeships, the vocational baccalaureate, tertiary-level professional education and job-related continuing education and training, is well prepared to move forward and remain successful. Considering future challenges, they defined strategic guidelines that may respond to megatrends such as digitalisation, increasing job mobility and flexibility, rising demands and globalisation. Following the vision that VPET secures Switzerland's prosperity, stays attractive and open to everyone, and enjoys national support as well as international recognition, the PPP defined their mission:

(a) VPET is a central part of the Swiss education system and considers the needs of the labour market and those of society; therefore, education models need to be flexible and permeable for offering individual learning pathways;
(b) VPET anticipates branch trends and needs and adapts accordingly; this requires modern, competence-oriented training content which ensures that learners keep pace with developments;
(c) the three partners share responsibility for VPET. Hence, they are committed to creating efficient structures and high quality, which clear assignment of tasks, responsibilities and financing ensure.

The partners address some key features of Swiss VPET ([69]) which build the baseline for 10 strategic guidelines to maintain the attractiveness of VPET in Switzerland:

(a) provides young people as well as adults from different educational and professional backgrounds with sustainable skills for the labour market and offers prospects for lifelong professional development and integration into society;
(b) is at every stage permeable both horizontally and vertically;
(c) is flexible to assure that programmes are designed considering labour market needs and new developments such as digitalisation;
(d) is always up-to-date. Therefore, innovations for practice, research findings and exchange with other countries provide basis for action;
(e) recognised nationally and internationally. Measures make sure the public understands and is committed to the social and economic value of VPET;
(f) is efficiently structured and has a sound financial basis. The partners share relevant responsibilities and establish a win-win-situation for all stakeholders.

Implementation started in 2018, focusing on life-long-learning, flexibility, career guidance counselling over the life-span of the working population, strengthening governance, digitalisation and new technologies and reduction of regulation-complexity (bureaucracy). The last two topics are transversal ([70]).

These country-specific initiatives and reform activities focus to varying degrees on developing excellence, but all rely on cooperation between VET stakeholders for ensuring attractiveness of

([69]) In total, the Swiss PPP regarding VPET defined eight key features: www.berufsbildung2030.ch (in German).
([70]) https://berufsbildung2030.ch/de/leitbild-und-stossrichtungen (in German).

VET programmes on all levels. Developing and maintaining the attractiveness of apprenticeship systems is a precondition for systemic and individual excellence in VET. Initiatives and reforms address the interests, talents, outstanding performance, inclusion and needs of young people and sometimes adults, and the interests of employers and of education providers alike. VET has to offer attractive career pathways and good salaries as well as (economic) incentives for the provision of apprenticeship positions; it has to enable learning pathways towards higher qualification levels (permeability). One of the transversal core elements remains quality assurance through curriculum revisions. For instance, the Austrian Ministry of Economy took the decision to evaluate and renew the training regulations of all 200 occupations every five years to respond to rapidly changing conditions in society and the economy.

12.3.2. Maintaining excellence: research and monitoring

All four countries have measures for maintaining the attractiveness of their VET systems. They all acknowledge the value of research and monitoring for designing effective reforms and for ensuring quality in implementation. As stipulated in the German VET Act, VET research has to clarify the fundamentals of vocational training, track domestic, European and international developments. It must and pave the way for further development, including instruments for VET provision ([71]). VET applied research in Germany is mostly carried out at the Federal Institute for Vocational Education and Training (BIBB).

The VET research landscape is varied in the four countries examined. It plays a specific role in Austria, carried out by extra-university research organisations and institutes rather than academia VET. The Ministry of Education, Science and Research initiated in 2008 a biannual conference for VET research as a stimulus to bring the scientific community together and give researchers a floor. With the *Berufsbildungsforschungskonferenz* (BBFK) the ministry also awards a prize for young VET researchers. Recently the Ministry of Economy agreed to finance a five-year full-professorship for VET research at the University of Innsbruck. Quality assurance in VET is of paramount importance for maintaining and constantly improving the (high) quality of apprenticeship training. There are two quality management systems for the two learning places in the dual system: one for in-company training (Quality management in apprenticeship) and one for the learning in vocational schools (QIBB, the Quality initiative in VET). The Austrian economic chambers annually evaluate indicators, which comprise apprenticeship dropouts and the number of apprentices who (do not) sit for the final exam, as well as the number of apprentices who (do not) acquire an apprenticeship certificate.

In contrast, Swiss universities contribute substantially to VET research and monitoring on vocational education and training (VET) and professional education (PE) to provide solid research findings to Swiss VPET policy-makers. In accordance with the Vocational and professional education and training Act (VPETA) the Swiss confederation supports and funds VET research in leading houses (LH) for example. A scientific advisory committee provides the State Secretariat for Education, Research and Innovation (SERI) with recommendations on funding and plays a key role in scientific quality assurance regarding the VPET research programme. LHs ([72]) foster the next generation of researchers, serving as a competence network for VPET at national and international levels. Their research addresses researchers and professionals.

VET policy-makers in the four countries base their decision-making processes on regular analytic and statistical work. Every four years the Swiss Coordination Centre for Research in Education (SCCRE) publishes the national education report Switzerland. In Germany, the VET report and VET data report are published yearly follow-

([71]) www.apprenticeship-toolbox.eu (Chapters: Governance and regulation; Research and monitoring; Attractiveness and excellence; Quality assurance)

([72]) Currently, the SERI programme provides funding to three Leading Houses, coordinated by one or more Swiss University chairs: Leading House Economics of Education: Firm Behaviour and Training Policies (LH Econ), University of Zurich / Bern; Leading House Technologies for Vocational Training (LH Dual-T), Ecole polytechnique fédérale de Lausanne EPFL; Leading House Governance in Vocational and Professional Education and Training (LH GOVPET), University of St. Gall.

ing discussion between VET stakeholders and in the German Parliament. These reports ([73]) provide a synthesis of knowledge from research, statistics on VET developments, existing mismatches and regional differences, enabling an assessment of the system performance. As well as these reports in Switzerland and Germany, all countries carry out a series of regular studies: examples include monitoring of decision-making by young pupils in transition from compulsory education to upper secondary education (SERI), and panel studies on companies offering apprenticeship (BIBB). The analyses are supported in their completion by different VET stakeholders at Federal, regional (Länder, cantons) and sector or branch level.

In Denmark statistics play a central role, since the VET system is governed by target and quality performance management. The setting up of different initiatives to monitor, evaluate and research different aspects of the VET systems is managed at national level. The Ministry of Children and Education supports the Danish research community and since 2012, the university college sector has carried out research. The University College Copenhagen has developed the Danish National Centre for the Development of Vocational Education and Training (NCE) and initiated research projects since 2013. The Roskilde University, the Aarhus University and the Danish Centre of Applied Social Science (*Det Nationale Forsknings- og Analysecenter for Velfærd*) conduct VET research. The Ministry of Children and Education has commissioned the latter to monitor the implementation of the 2014 VET reform ([74]).

Development and research supports quality assurance. Danish legislation stipulates that colleges must have such a system in place. The Ministry of Children and Education is responsible for inspection and quality assurance. It outlines its approach considering the European quality assurance in vocational education and training (EQAVET) principles. An important aspect of quality assurance is monitoring the output of VET providers following indicators such as completion rate. Although the Ministry has overall responsibility, other actors play important roles: the social partners, particularly trade committees and local training committees, but also the apprentices/trainees themselves, as well as enterprises through employer associations. An important part of the monitoring of VET providers is organised through the action plan for increased implementation (*Handleplan for øget gennemførelse*). All providers must use this performance and management tool in their quality and strategy work. Action plans aim at achieving the goals defined in the VET reform 2015 (Section 12.3.1.) The second plan addresses the matching of apprenticeship contracts to student demands, the third a common fundamental pedagogical and didactic concept allowing for differentiated teaching. The fourth addresses a specific theme of the year.

Research and development activities are largely applied VET research. The results are being transferred in standards development, definition of initiatives and programmes. They are also the basis of cooperation and debates between the apprenticeship stakeholders. The results are also transmitted to the wider public by mass and social media.

12.3.3. Promoting excellence: skills competition

The four countries have various measures to reinforce the positive image of VET, to support the provision of apprenticeship positions and to acknowledge young VET professionals; all this contributes to anchoring apprenticeship in the societal context and reinforcing its potential. Apprenticeship image campaigns, particular marketing for some occupations, selective campaigns for 'hot topics' in VET and the organisation of skills competitions are some of the tools in use. All measures might promote systemic, branch-specific or individual excellence to some extent, but only the skills competitions have individual professional excellence in focus.

The promotion of excellence in VET through skills competitions has a very long tradition. The first international competition dates back to 1950, when the first edition of WorldSkills took place ([75]). At EuroSkills up to 700 young VET tal-

([73]) The Swiss report concentrates on the range of preschool to continuing education; the German report on initial and continuing VET.
([74]) www.vive.dk
([75]) https://worldskills.org/what/competitions [accessed 2.9.2019].

ents compete with one another; at WorldSkills 1 000 young professionals from more than 50 different countries demonstrate their skills against demanding international standards. Since 1953 Germany and Switzerland have participated in the WorldSkills as founding members, Austria joined in 1958 and Denmark in 1998. Participants at WorldSkills are recruited by means of national skills competitions.

Austria has a clear goal that apprentices qualify for WorldSkills and EuroSkills competitions and perform well. Austria however does even more focus on award ceremonies that draw attention to apprenticeship training and to training companies. The Ministry of Economy offers two different prizes to address the outstanding achievements of training companies, highlighting the attractiveness of apprenticeship training. First, the accolade State-honoured training company is awarded for special achievements in apprenticeship training. The criteria are: success in apprenticeship leaving exams, success in provincial or national competitions, and special involvement in career guidance ([76]). Second, every two years, the State prize Best training companies – fit for the future is conferred by the Ministry of Economy in the categories small, medium, and large enterprises. The objective of this prize is to improve quality, innovation and sustainability in apprenticeship training ([77]). Skills competitions in Switzerland have, however, a long tradition. The foundation SwissSkills supports the SwissSkills competitions to highlight individual excellence in VET that is highly supported by the systemic attractiveness of VPET mentioned in Section 12.3.1. Each year, numerous trade associations representing approximately 60 occupations send their young professionals to compete with each other at SwissSkills competitions. Apprentices can qualify for participation in their last year of the apprenticeship. The competitions challenge and support self-initiative, stamina, creativity and pioneer work. The event is open to the public and used for promotion for VPET. In 2014, the first centrally organised SwissSkills competition was held in Berne. Because of its success, this event format has been organised every second year since 2018. In Denmark, national competition DK skills takes place every year and prepares for Danish participation at world-skills. This supports the promotion of VET among young people. Skills-competitions in Germany are following a similar approach: all apprenticeship and VET stakeholders engage in regional, national, European and international competitions. Skills competitions focus on demonstrating the skills and competences of apprentices in all VET professions. The competitions are also inclusive, addressing learners with disabilities.

12.4. Conclusion

Austria, Denmark, Germany and Switzerland are four countries with well- established dual-track apprenticeship systems, permitting reflection on the meaning of excellence within and of VET. In contrast to school-based VET systems, the private sector (companies, trade associations and chambers, social partners etc.) is highly involved in the provision and development of these workplace-based VET systems, with a strong focus on apprenticeships. Therefore, policy-makers operating in such countries typically consider the short- and mid-term needs and interests of the public and the private sector alike while developing their VET systems and keeping them attractive for apprentices or VET learners with a wide range of talents.

The leading institutions set the frame in consensus with their decision-making peers. In cooperation they strive for excellent innovation, but also sustainable inclusion, they collect data to support informed policy-making and they showcase the excellence of professionals and trades to promote the positive image of apprenticeships in those countries. Apprenticeship stakeholders carry out development of initiatives and reforms, activities in research and monitoring, as well as the promotion of excellence through skills competitions.

([76]) For a list of all training companies with State awards since 1993 see: https://www.bmdw.gv.at/dam/jcr:6f925811-9c03-400c-9ef8-0be17a0c5ab3/Liste%20der%20Staatlich%20ausgezeichneten%20Ausbildungsbetriebe.5.5.2019.pdf

([77]) https://staatspreis-fitforfuture.submit.to [accessed 2.9.2019].

All four apprenticeship systems are market-based. Employers from all sectors offer VET programmes (apprenticeship positions) and learners apply for apprenticeship contracts. Several factors such as digitalisation, increasing job mobility and flexibility, rising demands, globalisation and academisation affect the supply and demand of apprenticeship positions and may also cause mismatching. Maintenance of quality in VET and supporting systemic and individual excellence through the measures and activities described are essential for keeping the system functioning. This is not only a concern of public VET bodies but of all stakeholders and organisations engaged in the system. Close and systematic dialogue between all stakeholders is vital and has to be supported by frequent campaigns aimed at enterprises and their willingness to provide apprenticeship places.

The four countries' excellence in VET demonstrates systemic attractiveness for a diversity of learner profiles and expectations as well as individual performance. Apprenticeship programmes should be inclusive and not result in social stratification. At the same time they should capture current trends in the professions, adapt well to labour market needs and stay attractive in the context of increasing academisation in some countries.

It could be argued that an excellence concept similar to that of the higher education (HE) sector puts specific stress on VET. Initiatives for more excellence in VET might be an interesting way to attract learner attention to apprenticeship options have in comparison with other programmes offered by the education system; they might also be an incentive for better organisational efficiency among apprenticeship providers. Nevertheless, policy-makers in Austria, Denmark, Germany and Switzerland may only cautiously or selectively focus on vocational excellence but more generally on attractiveness of VET by aiming at further developing and strengthening their apprenticeship systems. This supports both professional excellence and inclusion at the same time.

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Website

Apprenticeship toolbox: https://apprenticeship-toolbox.eu

CHAPTER 13.

The importance of GPA requirements for VET and low-income students

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13.1. Introduction

Vocational apprenticeship training is increasing in interest in several countries and policy contexts. This is seen partly through increased funding for research in vocational education and training (VET) and apprenticeship programmes in several countries, such as the US and the UK ([81]), as well as in the work of several organisations such as Cedefop. The renewed interest in VET is largely driven by policy concerns about large pools of unskilled labour, poorly compensated when employed and more likely to suffer unemployment than workers with educational credentials (Cedefop, 2020). Apprenticeship models are often seen as mutually beneficial to workers and firms: the former receives pay, albeit below market levels, for participating in on-the job training, while the latter creates a pipeline of workers who are trained to work in their industry using state of the art equipment and techniques.

Several academic papers and policy reports emphasise the substantial differences in existing VET apprenticeship programmes (see e.g. Cedefop, 2019; Muehlemann and Wolter, 2020; Wolter and Ryan, 2011). Generally, however, there is little high-quality evidence about the causal impacts of VET system features. In particular, the innovation and expansion of apprenticeship type programmes suggests an interest among nations in expanding the models of VET available to meet policy goals of full employment and reduced reliance on the provision of social safety net programmes for individuals with less formal training.

The expansion of VET programmes, including apprenticeships, and recent innovations in the use of entry screening into these programmes makes policy evaluation of new programme features important (see e.g. Cedefop, 2019). While many policies and their impacts are well understood, lacking evidence on the effects of certain programme features supports the notion that such evaluations should be mandated and build into the implementation of new policies. Partnerships between government and industry to understand priorities and pre-requisites have the potential to create better policies which, when evaluated, can provide evidence of the efficacy of prioritising particular criteria or requirements when screening individuals to participate in an apprenticeship programme.

This chapter provides an evaluation of a policy change aimed at providing firms with academically better apprentices by screening out prospective students who were academically less well-performing. This screening was achieved through the imposition of grade point average (GPA) requirements for entry into upper secondary VET. The policy can in effect be viewed as a type of academic drift similar to what Cedefop (2019) identifies in various forms in several European countries. In 2015, the Ministry of Education in Denmark changed the requirements for participation in VET programmes that include a formal apprenticeship as a multi-year component. To improve the talent pool for apprenticeship-focused VET programmes, students whose primary school GPA in either literature or mathematics was below 2.0, the pass-

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([80]) The authors wish to thank Joshua Goodman, Linh Tô, Jacob Rubæk Holm, Michael Blanga-Gubbay, Elisa Macchi, Barton Lee, Davide Cipullo, and participants at APPAM International 2019 and CVER 2019 Conference for helpful comments.
([81]) In the US, the Institute for Education Studies has initiated support in 2018 for ongoing research in career and technical education e.g. in Tennessee. The Centre for Vocational Education Research located at the Centre for Economic Performance at LSE was initiated in 2016 with the purpose of investigating VET in the UK.

ing grade, were no longer eligible to enrol directly in upper secondary VET programmes but would have to pass additional tests in these courses. The purpose of the reform was to filter out students who were unlikely to be successful. This approach relied on the strong, but not previously substantiated, assumption that GPA in primary school served as a good proxy for the skills and abilities that firms would ultimately use to make decisions about who to hire as apprentices. At the time this chapter was written, there had been no evaluation of this policy to understand its effects, particularly on the composition of VET participants, and the outcomes of those who were pushed out of the possibility of participating in VET.

This evaluation of the Danish policy change identifies effects on enrolment into the VET programme and apprenticeships using rich administrative records from Denmark. It shows that implementing academic GPA requirements lowers the share of students from low-income families that enter VET programmes, with a consequent economic equilibrium effect on firms' intake of apprentices.

The results suggest two main policy implications. First, when screening students for VET programmes with apprenticeship content, initial screening mechanisms for entry into VET should be aligned with factors firms screen on when choosing apprentices. Screening on variables that correlate negatively with firms' screening can remove part of the pool of likely apprentices. These students are likely to come from low-income homes. Second, the results suggest that in demand constrained apprenticeship markets, focusing on firm apprenticeship procedures can be a more effective tool for increasing maintained enrolment in VET programmes than focusing on initial enrolment.

13.2. Setting

On 24 February 2014, the Danish government enacted reform of the Danish VET system with the support of opposition parties. The purpose of the reform was to increase the intake of high-performing students and the share of students who persisted in the VET system. The primary tool to reach this goal was a change to the internal structure of the VET programme, including a new minimum GPA cut-off for students finishing primary school. Before describing the reform in detail, the Danish education system is outlined, with particular emphasis on the VET programme for those unfamiliar with it.

13.2.1. The Danish education system

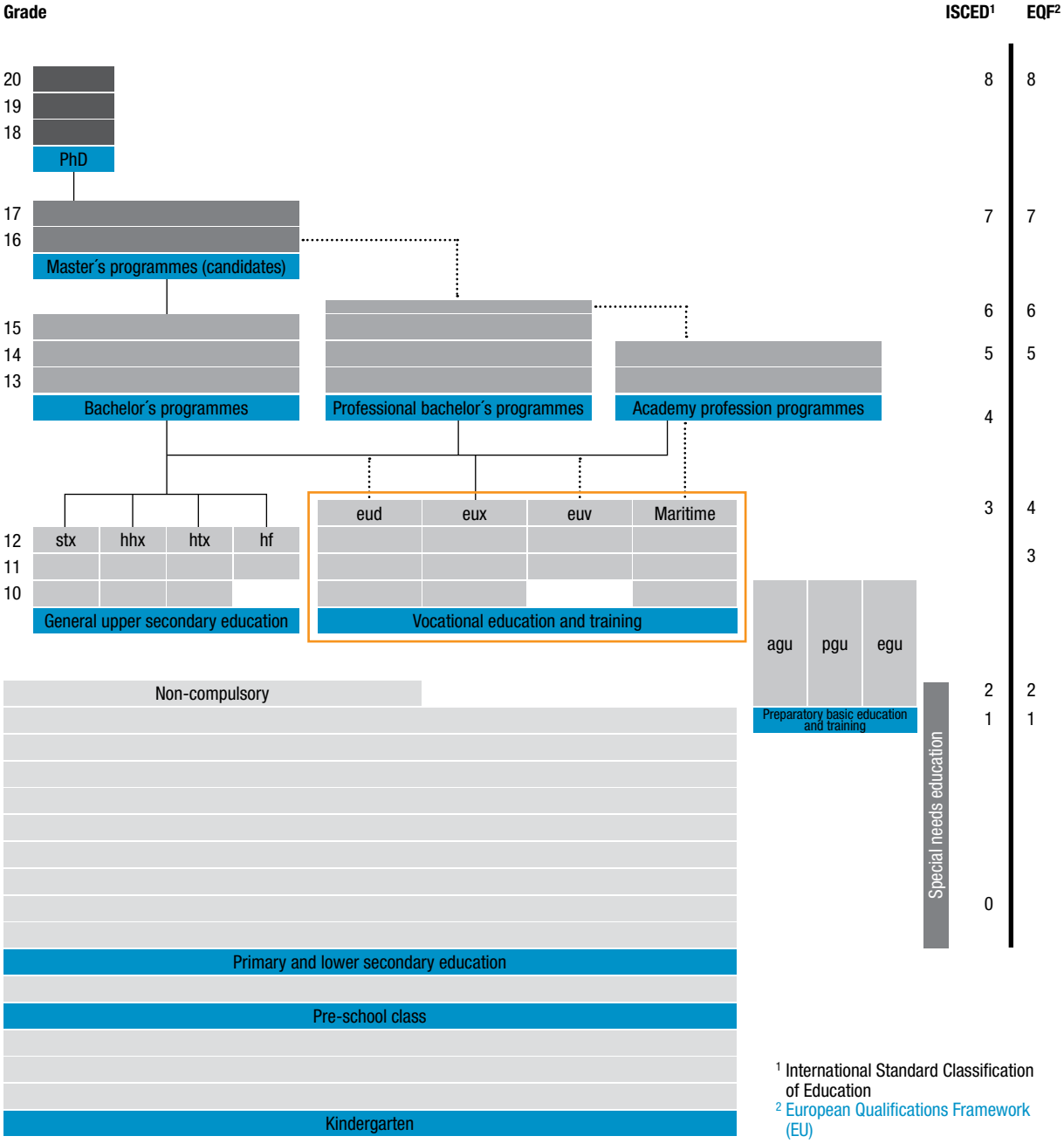
The Danish education system is divided into four levels: primary, lower secondary, upper secondary, and tertiary education. Figure 13.1. provides an overview of the system. Primary and lower secondary education together comprise compulsory grades 0-6 and 7-9. By ninth grade, students can choose to pursue either an optional 10th grade in lower secondary, to start upper secondary education, or to stop participating in the formal education system. Upper secondary education is split in two main directions – academic high school, and VET – and a limited set of other options meant to prepare students for high school or VET education. Before the academic year 2014/15, there were no formal GPA requirements for entry into upper secondary education. With the 2014 reform, entry into VET now requires a pass GPA in both maths and Danish in final lower secondary exams (either ninth or 10th grade).

Having obtained their upper secondary education, students can decide either to join the labour force or pursue tertiary education. Tertiary education is split between academic bachelor and master degrees, four-year professional bachelor, and two-year professional academy educations. Until the 2014 reform, access to tertiary education was limited for VET students; now, VET students meeting particular curriculum requirements have easier access to the two-year professional academy programmes.

13.2.2. The VET system and the 2014 reform

Danish VET is a dual system comprising both school- and apprenticeship-based learning similar to the apprenticeship systems in Germany and Switzerland. Cedefop (2012) and the Danish Ministry of Education (2019) provide introductions to the VET system before and after the 2015 reform. Most VET programmes are designed to last four years, of which the first year is spent in school. The remaining three years are

Figure 13.1. **The Danish education system**



Source: Danish Ministry of Education, 2018.

split between a firm-based apprenticeship and formal schooling. The 2014 reform primarily affected entry into the programme and the structure of this first year.

Before the 2014 reform, students chose one of 12 entry tracks when entering VET ([82]). These 12 tracks had an average length of 20 weeks but could vary by student need. Following the first

([82]) Cedefop (2012) gives an introduction to the Danish VET systems as it functioned from 2008 to 2014, before the reform. The 12 tracks (with number of specialisations in parenthesis) were automobile, aircraft and other transportation (8), building and construction (15), construction and user service (3), animals, plants, and nature (9), body and style (3), human food (10), media production (7), commercial (7), production and development (27), electricity, automation, and IT (9), health, care, and pedagogy (4), and transportation and logistics (7). The total number of specialisations was 109. Other specialisations further into the programme allowed students to pursue a total of 301 different vocational qualifications.

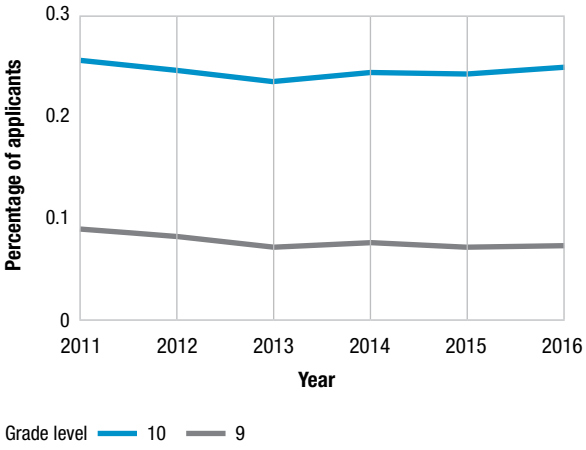
part of the programme, students chose their main programme among the set of specialisations available within their entry track. The second part of the main programme typically lasted until the end of the first year. Following the reform, students choose from four entry programmes, each lasting about 20 weeks. They then choose their main programme at the end of the entry programme, similar to before the reform. The introduction to the main programmes then follows, with about 20 weeks of schooling together with the introductory section making up the first full year.

At the end of the first year, students are required to enter into an apprenticeship position to continue their programme. This holds true before and after the reform. Most students pursue apprenticeships at private firms or in the public sector, while a few are offered school-based apprenticeship positions (working at their VET institution). For the remainder of the VET programme, students with an apprenticeship position will transition between three or four school stays and their apprenticeship. Students finally graduate from the programme by taking a comprehensive exam (*Svendeprøve*) within their subject.

The share of students applying for VET with first priority varies by upper secondary grade level, ninth or 10th, from which students apply. Figure 13.2. shows the share of students from each graduation year that apply to VET in the administrative data sets. The share of ninth grade students who choose VET as their first priority secondary education is between 8% and 9% of each cohort for students graduating from 2011 to 2016, while about 25% of 10th grade students apply to VET. This is persistent both before and after the reform.

The 2014 VET reform instituted several changes to the VET system (Danish Government, 2014). Most important for the study, the reform set up a new minimum GPA requirement for entry into VET programmes for students finishing lower secondary school. Before the reform, there were no GPA requirements for students wanting

Figure 13.2. **Share of 9th and 10th grade students choosing VET as first priority among education choices, 2011-16.**



NB: The share is calculated from all students who apply to any education from lower secondary. Students that do not apply are not included in the total count.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

to enter VET. After the reform, students were required to have pass level GPAs in mathematics and literature from lower secondary final exams to enter into the VET programme. On the Danish seven-point grade scale ([83]) a pass is grade 2. Students who do not pass either or both of these courses cannot be admitted directly to the VET programme following the reform. Students who still want to participate in VET, however, can retake exams in subjects not passed and try again. The additional test is administered by VET schools prior to the start of the new school year in August. Students who pass are admitted to the programme while those not passing are not admitted ([84]).

The reform also implemented a set of other changes to the VET system. First, the programme structure changed from an initial 12 entry tracks to four, with separate 'adult' classes for students above the age 25. Second, the government started additional academic VET programmes – named 'EUX'– to the ones that already exist-

([83]) The seven-point grade was introduced in 2007. The values in the scale are –03, 00, 02, 4, 7, 10, and 12. Higher values indicate better grades.

([84]) One programme, social care, allows an exception. Students applying to this programme and not passing their additional entry test ensuring literature (Danish) and mathematics proficiency, can still get access provided they also enrol to a relevant set of qualifying courses within the programme.

ed. These programmes integrate academic high school curricula with apprenticeship positions and give direct access to all categories of tertiary education, subject to curriculum requirements. Third, all VET programmes now give access to tertiary two-year professional academy programmes, subject to students meeting curriculum requirements. Finally, the number of hours in class was established at a minimum of 25 per week, where there were no similar requirements prior to the reform.

The first two changes were expected to increase entry rates into VET but are unlikely to affect student decisions for those around the GPA cut-off that are of interest. The third change, access to higher education, is also unlikely to affect students' initial persistence rates but may affect the overall educational attainment of students who do graduate from their VET programme. The additional in-class hours may increase retention rates for students used to faring well in regular classroom settings, and so might increase retention rates for academically well-performing students. The effect, however, is likely to be small around the GPA cut-off considered in this chapter. In total, these additional elements in the reform are not expected to show the effects of using academic GPAs as limits to programme entry for academically lower-performing students.

13.3. Data and empirical strategy

The empirical analysis is based on Danish administrative data from several sources, merging data at the individual student level on personal social security identifiers ([85]).

Applications

Data collected from the Danish Ministry of Education covers applications to other programmes from students finishing ninth or 10th grade in primary school. The data set covers all applications to secondary education, including VET and high school, and alternatives, such as so-called 'production schools' that are preparatory for students to enter VET or highs school in the future. The register also identifies the schools the student applies from and to. The register contains information for school cohorts finishing from 2009 to 2017.

Grades

Grades information comes from the grades register for primary school students. The register contains each final grade students obtain at the end of primary school, including separate grades for compulsory oral and written literature and mathematics exams. This allows constructing average grades by course for each student in the sample. The register covers grades from students graduating between 2002 and 2017, though the sample is restricted to grades for students finishing primary school from 2011 to make GPAs comparable over time.

Educational enrolment

Education enrolment data comes from an education register containing information on each entry and exit from all officially recognised education programmes in Denmark. The register indicates for each point in time whether the student is enrolled in a programme, as well as details about the programme such as programme major. It covers all entries into education from 1980 to mid-2017, showing the education participation of students graduating in the summer of 2015 for up to two years and three months, and for students graduating in 2016 for up to 15 months.

Background characteristics

Parental and child characteristics are collected from other registers with varying coverage. The child must at any point in time before the end of 2017 have had an income, either from doing work in their spare time or working full time ([86]). Information is used for the following periods of

([85]) All individuals living in Denmark are required to obtain a social security number. All information on the educational attainment and pursuits of children is registered by government agencies by this number. This ensures that the capacity to merge data sets across sources for all children finishing either ninth or 10th grade.

([86]) Available data sets are based on the IDA database that allow researchers to link individuals to firms in the Danish registers. The data sets, however, are limited in coverage to individuals that have ever been affiliated with the labour market. Full population data sets exist but were not available for this project. For a full introduction to the IDA database, see Timmermans, 2010.

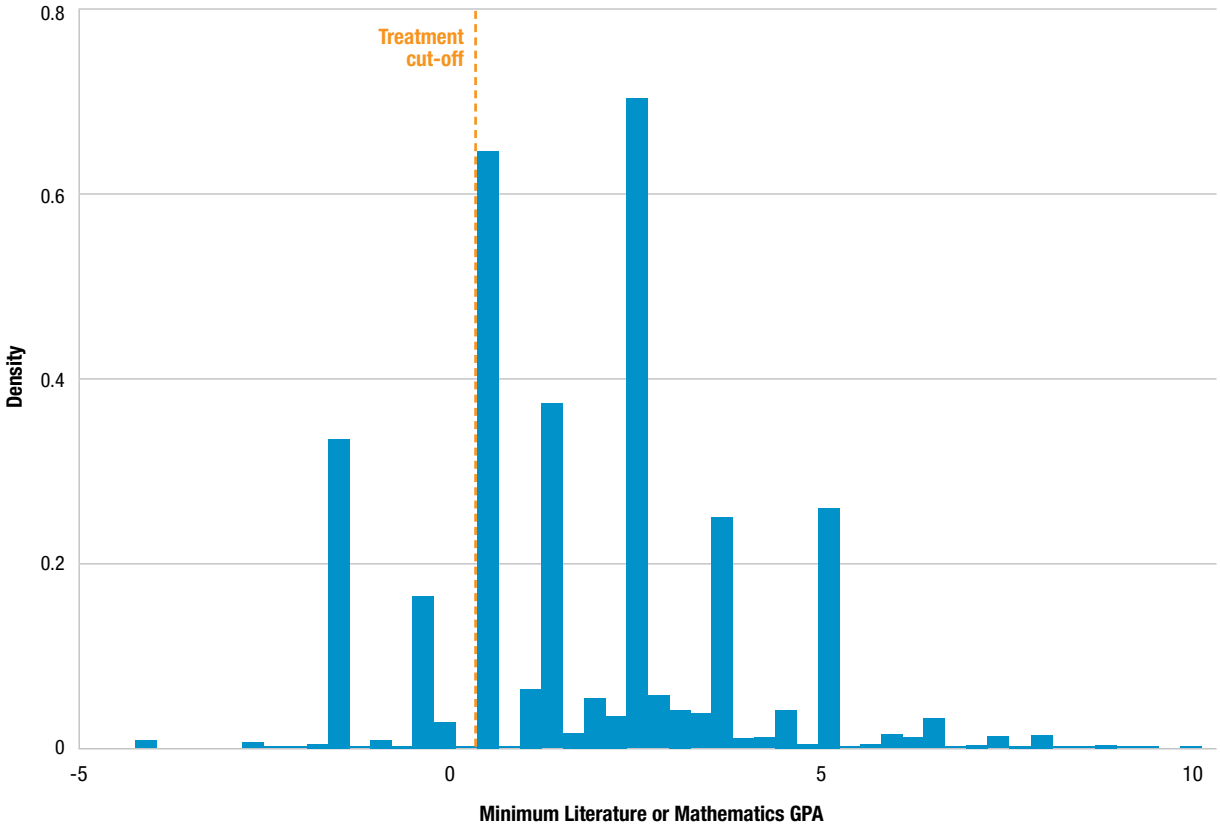
time: labour market participation (yearly), 1980-2017; gender, ethnicity, parent identity, and family type, 1980-2017; employment information with employment dates and employer identification, 2008-mid 2016.

Empirical strategy

A difference-in-differences empirical strategy is used to estimate the effects of the policy change which created a firm cut-off to VET access in Denmark (e.g. Angrist and Pischke, 2009). Though the nature of the policy change could permit the use of a regression discontinuity design, the lumpy nature of the forcing variable (Figure 13.3.) and the relatively thin density of the GPA at some value limits using this strategy. The GPA cut-off, however, helps define two groups that likely differed in the effect of the policy. Those who had a GPA below 2.0 were no longer eligible for VET after the 2015 policy change, whereas those at or above remained eligible. The effect (and intent) of the policy would be to reduce the chance of VET participation among treated students with low GPAs while having no impact on non-treated students with higher GPAs.

The timing of the policy announcement was such that students or educators could not have changed GPAs in the short-term ([87]). In the first year of the policy, students with above and below passing GPA can be deemed not affected and affected by the policy. The policy applied to all students but should only have been binding for the lower-GPA group. This is supported with evidence that students do not appear to be sorting differently after the implementation of the reform in Section 13.2.

Figure 13.3. **Distribution of the minimum of maths or Danish GPA for VET applicants**



NB: The figure shows the distribution of the minimum of a student's literature (Danish) or mathematics GPA in final lower secondary education exams (ninth or 10th grade) for all years 2011-16. The red line indicates the GPA cut-off at 2, re-centred to 0 as in the following figures.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

([87]) Anecdotal evidence suggests that most students were not even aware of the GPA requirement when taking their exams in 2015 (Rysgaard, 2015).

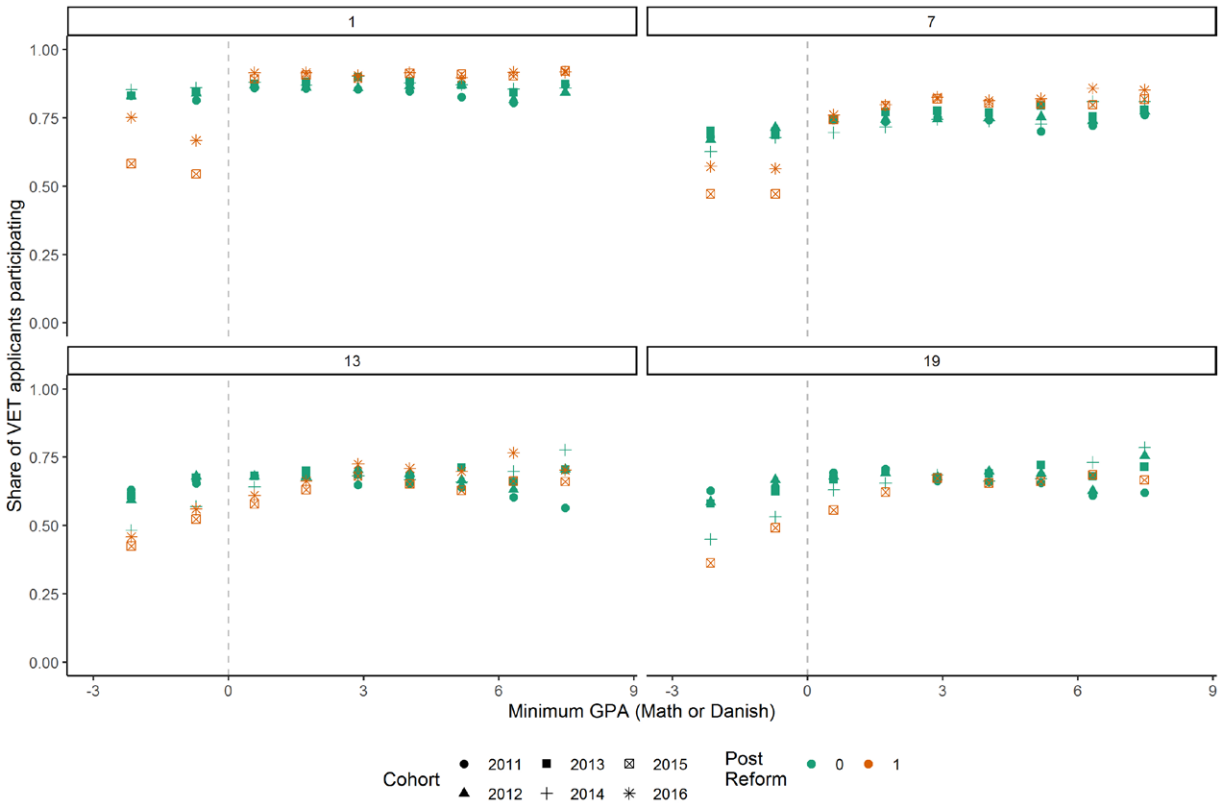
13.4. Empirical findings

Investigating the pattern of VET enrolment by cohorts at one, seven, 13 and 19 months after expected enrolment into the VET programme is done graphically. Figure 13.4. plots the share of applicants enrolled in VET by their minimum literature or mathematics GPA from primary school and by months after expected enrolment.

At month one, students above the GPA cut-off enter at the same rate of about 80 % before and after the reform. Before the reform, students below the cut-off enrolled at about the same rate of 80% as the students above the cut-off. In 2015, enrolment of students below the GPA cut-off dropped by around 30 percentage points, leaving the entry rate at 50% for 2015. Around 20 percentage points fewer below cut-off students enrolled from the 2016 cohort compared to pre-reform years. Figure 13.4. suggests that nearly one third of students who would otherwise have entered a VET programme before, are screened after the reform. There is not a 0% enrolment rate for students below the cut-off as students are permitted to take the additional entry exam to pass mathematics, literature, or both, depending on which course they did not pass in lower secondary; the graphical evidence suggests that 50% of students who wanted to enter, took the complimentary exam and entered the programme.

Half a year into the programme, at month seven, there remain large differences in programme participation before and after the reform. Across GPA levels, between five and 10 percentage points of initial applicants drop out from month 1 to month 7 before and after the reform. The enrolment effects of the reform, therefore, persist at month 7.

Figure 13.4. **Probability of participating in VET by minimum GPA and month after expected enrolment, 2011-16 cohorts**



NB: The figure shows binned means of the minimum of student's literature or mathematics GPAs. The grey line indicates the 2015-reform GPA cut-off (passing 2), re-centred to 0.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

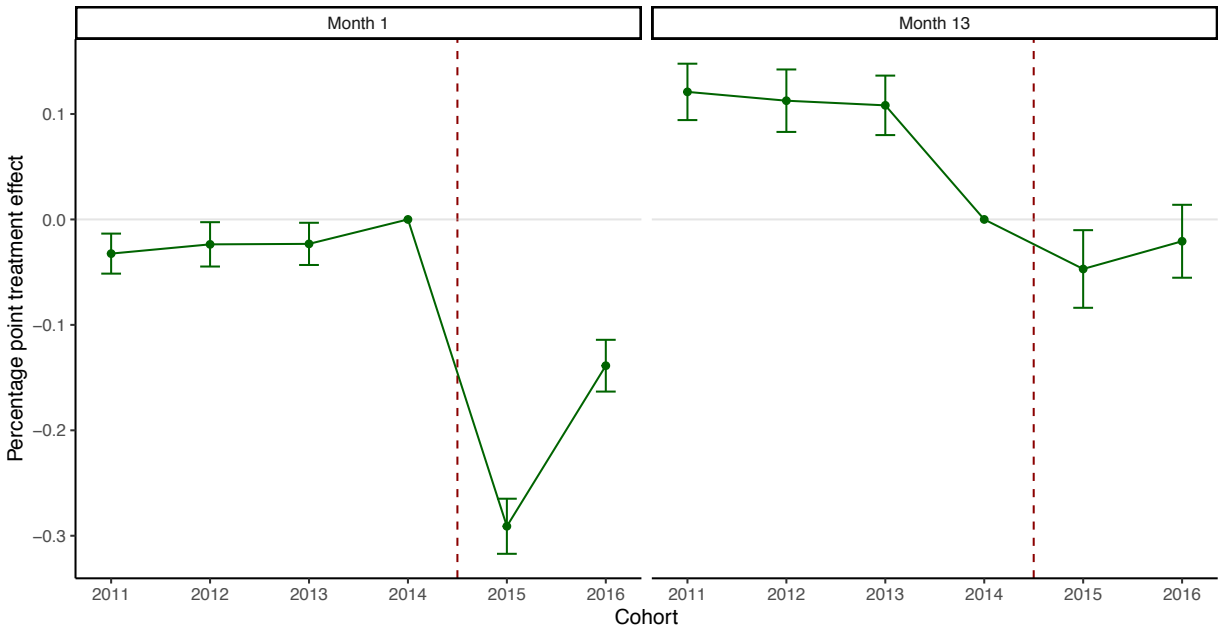
A year into the programme, at month 13, distributions converge slightly for students below and above the GPA cut-off. Prior to the reform, students above and below the cut-off remained in VET programmes at about the same rate of 65%. After the reform, low-GPA students remained in programmes at a 50% rate while many students above the cut-off remain at about the same pre-reform level of 65%. However, students slightly above the cut-off also appear to be doing worse after the reform, as only around 55% of them remain in their programmes. The findings from month 13 in general persist.

Some students from the 2014 cohort with GPA below the cut-off also appear to have been affected by the GPA requirement, as the share of applicants remaining in their VET programmes drops to post-reform cohort levels. This happens despite the 2014 cohort not being affected by the reform at their initial enrolment. This could happen, for example, if students drop out of one VET programme to attempt to enter another, and are therefore subject to the GPA requirements as the 2015 and 2016 cohorts.

Event study graphs with parametric effect estimates are shown in Figure 13.5. These results are used to support the non-parametric findings from Figure 13.4. The estimates are based on a difference-in-difference regression comparing outcomes of students just above and below the GPA cut-off by year, relative to the 2014 cohort. The estimates are based on observations falling within a 2-grade point interval around the cut-off. Bars show confidence intervals based on standard errors clustered at students' lower secondary school which can capture unobserved but correlated heterogeneity from shared backgrounds among applicants.

The left-hand side of the figure shows the large drop of 30 percentage points in enrolment for students just below the GPA cut-off at month 1. This is consistent with the graphical evidence

Figure 13.5. **Event study graph of effects of the reform at one and 12 months into the VET programme**



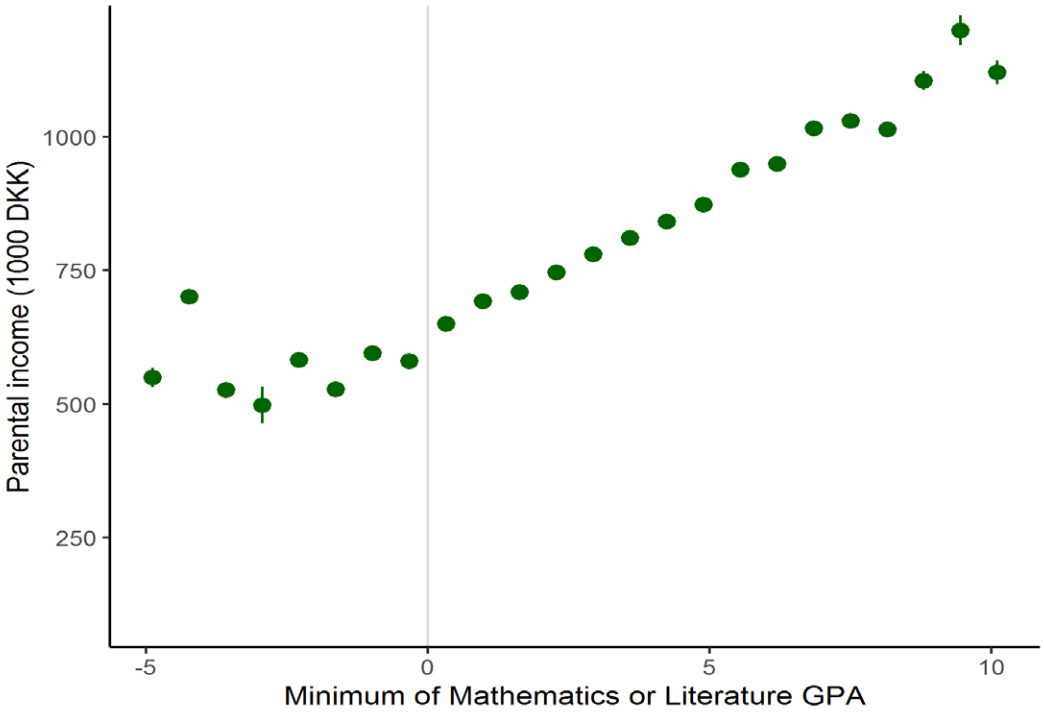
NB: The figure shows the effect on the likelihood of being enrolled in VET from being just below the GPA cut-off versus being just above the cut-off. Estimates use observations falling within a bandwidth of two grade points on either side of the cut-off. Bars around points show confidence intervals for estimates based on standard errors clustered at the level of students' primary schools to account for correlations in errors e.g. due to neighbourhood or school characteristics. The red line indicates the time of the VET reform implementation.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

from Figure 13.4., showing that the reform did, in fact, screen out a large share of applicants who did not initially pass both literature and mathematics. The right-hand side shows a substantial drop in enrolment by 10 percentage points at month 13 for the students below the cut-off GPA in the 2014 cohort relative to previous cohorts (also observed in the previous figure). This suggests that at least some of the students making the cut-off in 2014 were otherwise affected by the reform in subsequent years.

A further finding is that the initial effect on enrolment patterns among students above and below the cut-off decreases substantially in month 13 compared to month 1. This is consistent with a scenario under which low-GPA students who re-test into the programme remain at higher rates than those screened out would have. However, as share of enrolled applicants falls by the same percentage points in 2011-13 and 2015-16 for low-GPA students, this scenario does not appear to sufficiently explain the faltering effect of the reform. A second explanation, consistent with the apparent fall in enrolment rates just above the GPA cut-off (seen in Figure 13.4.), is that students just above the cut-off fare slightly worse after losing some of their lower-GPA peers. In the second case, the reform hurt not just students who did not pass either literature or mathematics, but also some of the students who did. As the application pattern also does not indicate increasing VET application shares after the reform, the goals of increasing the share of VET applications and the share of graduates from VET programmes appear not to have been aided by the introduction of the GPA cut-off.

Figure 13.6. **Parents' income and children's minimum GPA in mathematics or literature**



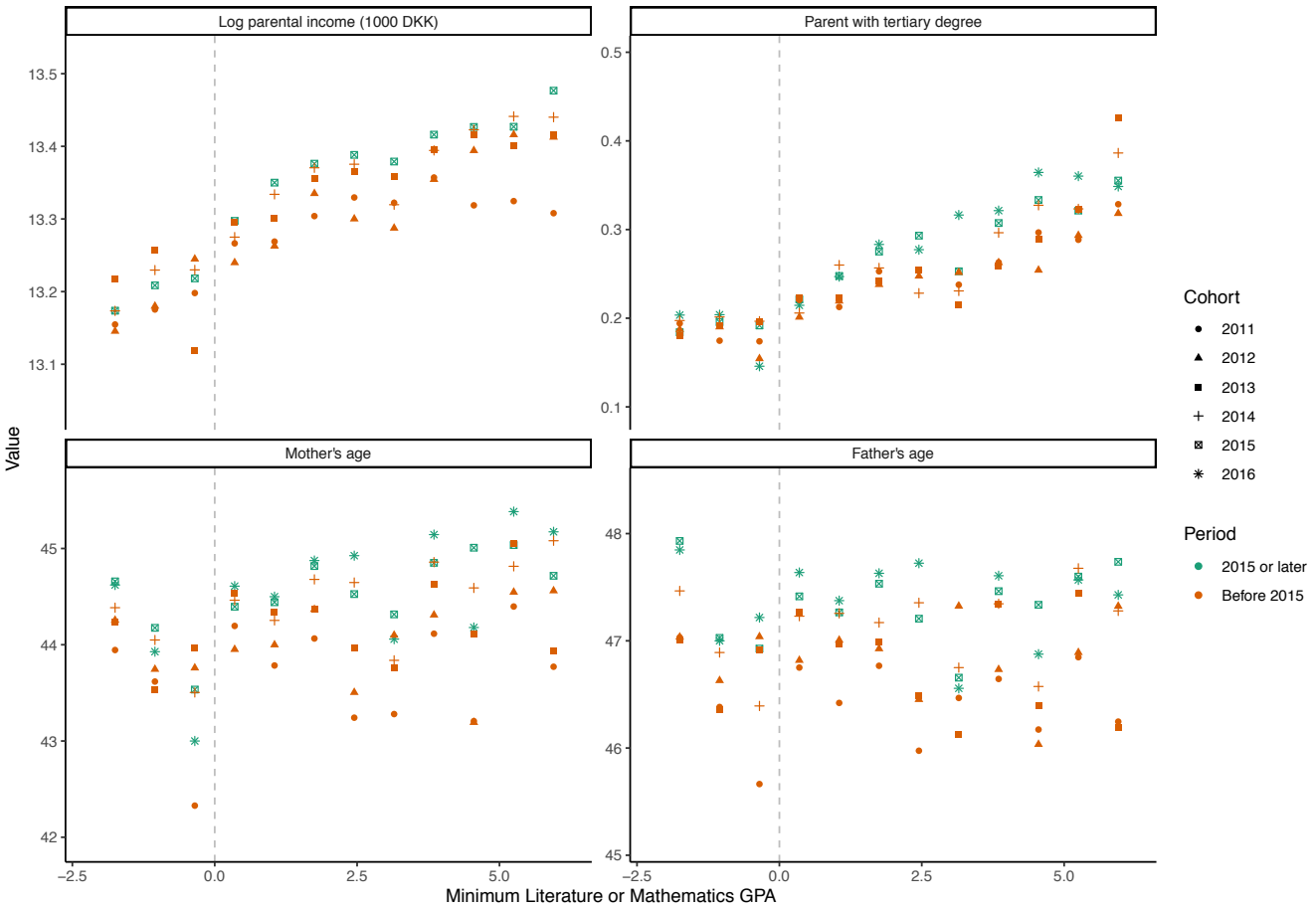
NB: The figure shows binned means of parents' income, measured in 1,000 DKK, by children's minimum GPA in either literature or mathematics from final exams in lower secondary school. Incomes are deflated to 2015 levels using the Danish CPI. The sample includes all students who graduated from lower secondary education (ninth or 10th grade) and applied to upper secondary education between 2011 and 2015, The grey line indicates the GPA cut-off at 2, re-cantered to 0 as in the other figures.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

Two important characteristics of the VET programme participants and the apprenticeship market are relevant to understanding the result. The first is the income background of the children who are affected by the reform and the second is the indirect evidence on the importance of the firm side of the apprenticeship market in a Danish context.

First, low-GPA students tend also to be low-income students. Figure 13.6. shows the relationship between children's minimum GPA in literature or mathematics and the sum of the parents' income within the application year, using binned means as in Figure 13.4. Figure 13.6. documents a strong positive relationship between parents' income and students' GPA. The average parental income of children with less than passing GPA is around 30% lower than that of students with average grades. In addition to having access to fewer economic resources, these students are also generally less likely to graduate from education beyond lower secondary. When pursuing upper secondary education, they are more likely to enrol in VET than non-vocational upper secondary options, compared to their peers with higher GPA. By reducing access

Figure 13.7. **Parental characteristics by minimum mathematics or literature (Danish) GPA among VET applicants**



NB: The figure shows binned means of student characteristics for all primary school graduates who applied to VET by cohort and applicants' minimum GPA in either literature or mathematics. Parental income is the sum of earned, capital, and personal business income as well as taxable social transfers. The grey lines indicate the GPA cut-off at 2, re-centred to 0 as in the other figures.

Source: Eriksen, J. (Aalborg University) and Dougherty, S. (Vanderbilt University).

to VET, the reform reduced education opportunities for students who are already at risk of dropping out of the education system after the completion of mandatory education, before obtaining additional educational qualifications.

Second, there does not appear to be strong evidence in support of the notion that firms use primary school GPAs as a screening tool when choosing among apprenticeship applicants. While additional information on apprenticeship participation is required for in-depth analysis, the evidence does not suggest that firms in Denmark screen students directly on the basis of their GPA when hiring potential apprentices after the applicant's first year in VET. This would show up as a substantial positive relationship between overall VET enrolment, which includes apprenticeship participation, and primary school GPA. This suggests that the screening tool chosen by the Danish government does not screen on the same characteristics that firms do when hiring apprentices. The large drop in enrolment at month 13 also suggests that the apprenticeship market is demand-constrained; firms' demand for apprentices appear to set the level of later enrolment in VET programmes.

13.4.1. **Robustness check**

A potential challenge to the empirical investigation of the effects of the 2015 VET reform is that students may be sorting differently into education programmes before and after the reform was implemented. For example, if students who used to be below the cut-off suddenly get better grades, and thereby sort themselves differently, this would conflate students expected to have below cut-off GPAs with those expected to have GPAs above the passing level. This would argue against the idea of comparing similar students in the groups above/below the cut-off before and after the reform, an identifying assumption in estimating the effects of the reform (Angrist and Pischke, 2009, pp. 230-233). Whether students start to sort differently cannot be inferred since there are no data on choices had the reform not been implemented. Indirect evidence of such sorting, however, can be inferred from investigating whether the reform appears to affect variables that cannot be changed by the GPA cut-off, such as fixed parental characteristics. Shifts in distributions of students by parents' income, seemingly as a result of the reform, would indicate that the econometric assumptions are not met.

Testing for indications of differential sorting involves non-parametrically investigating whether parental characteristics, including parental income and education level, as well as mother's and father's age, appear to have been affected by the reform. Figure 13.7. shows no changes in pre- and post-levels of any of the variables above and below the cut-off. While this is not a perfect validation of the econometric assumption, it suggests that there are no large compositional effects driving the main results.

13.5. Conclusion

This chapter investigates the effect of a Danish reform from 2015 that instated a GPA requirement for entry into VET programmes. The reform had the purpose of increasing the quality of students in the programmes, and thereby the likelihood of students finding apprenticeship positions with firms.

Danish administrative data, together with a difference-in-difference estimation strategy, are used to evaluate the reform. This shows that the reform screened out low-income students from entry into VET programmes, despite options for taking second tests to enter VET programmes. However, it also shows that the reform did not have the intended effect of increasing the rate of maintained enrolment in VET programmes. Students neither above nor below the cut-off become more likely to remain in VET programmes after the reform.

The results suggest two main policy implications. First, when attempting to improve graduation rates among VET participants, screening should not be based on measures that are negatively or nor at all correlated with firm demands for apprentice characteristics. Screening on academic performance appears particularly to have hurt VET participation rates for low-income students in Denmark, without improving overall participation rates. Optimal screening tools should

be developed in collaboration with firms to avoid excluding relevant candidates. Second, results suggest that in demand-constrained VET markets, focusing on increasing firms' willingness to hire VET students can be a more effective tool for increasing maintained enrolment than using entry requirements to remove students.

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CHAPTER 14.

Are apprenticeship standards in England supporting expert vocational practice?

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14.1. Introduction

This chapter reviews the current process and criteria for the development of apprenticeship standards in England, one of the key elements in reform of apprenticeship policy in the country, and asks whether these standards are sufficient in supporting the development of occupational expertise. It is argued that this question can usefully be examined by exploring the contrast between a 'learning outcomes' and 'holistic' approach to vocational curriculum design outlined by Addis and Winch (2019); this suggests that occupational curricula can either be derived from a focused analysis of discrete activities, or by reference to the aims and values of the occupation (and a broader conception of what occupational participation entails). Addis and Winch (2019) also highlight the significance of how we understand occupational practice and the criteria by which excellent performance of the practice is evaluated. It can reasonably be argued that the development and continuing iteration of such criteria requires the participation and leadership of expert occupational practitioners and researchers who understand both the internal goods of the occupational practice (Hager, 2011), and how the work of the occupation is being reshaped by economic, social and technological change. Such a view has considerable implications for the governance and development of the vocational curriculum, including for apprenticeships. On the basis of this framework for analysing the developing of occupational standards and curricula, it can be argued the process by which apprenticeship standards are developed in England lies somewhere between a 'learning outcomes' approach and a 'holistic approach', and that, ultimately, further changes will be needed to ensure that the apprenticeship system in England supports fully fledged occupational competence and expertise across all occupations.

14.2. Apprenticeship standards in England: development and existing critique

The introduction of apprenticeship standards in England followed from the 2012 Richard review of apprenticeships and the 2013 Government response to that review (HMG, 2013). From 2014 onwards, the standards have been progressively replacing the previous system of apprenticeship frameworks, which were developed by sector bodies and tended to be focused around the achievement of a qualification. The progress from frameworks to standards has been relatively quick: in the 2017/18 academic year 44% of apprenticeship starts were on standards, whereas in 2016/17 only 5% were (Powell, 2019, p. 6). In July 2020 all remaining frameworks were set to be withdrawn for new apprentice starts, with an expectation that standards would be in place for all occupations by that time (ESFA, 2019). Frameworks were criticised for potentially allowing apprentices to complete qualifications without the necessary competences to undertake their roles in the workplace. There was a concern that apprentices were simply accumulating certificates without sufficiently relating their education to their occupational practice (IATE, 2017). Frameworks do not include a requirement for a synop-

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tic assessment at the end of the apprenticeships, and therefore there is no requirement to evaluate the cumulative competence of apprentices.

The move towards standards is part of a wider reform of the apprenticeship system in England, under way since the 2012 Richard review into apprenticeships. This has included the introduction of the apprenticeship levy which came into effect in April 2017, a commitment to increase the length and quality of apprenticeships, and a pledge to boost both the overall numbers of apprentices and their numbers at higher and degree level (HM Government, 2015). The levy applies to all employers with a pay bill of over GBP 3 million a year and is set at 0.5% of the value of that bill. The minimum length of apprenticeships is now 12 months, which is still considerably shorter than in most other European countries (Newton et al., 2019), and apprentices must also be employed for 30 hours a week. Over the course of the apprenticeship, at least 20% of time must be spent on off-the-job training. Apprentices and employers must sign an apprenticeship agreement, which specifies the duration of the apprenticeship, the training involved and the conditions of work. There is also a requirement to agree a commitment statement between employer, apprentice and the training organisation regarding the schedule and content of the training involved (Powell, 2019). The term 'apprenticeship' has also been protected in law by the 2016 Enterprise Act, to prevent its misuse. A Register of apprenticeship training providers (RoATP) was introduced by the government in 2017, and all organisations who wish to deliver apprenticeship training at a value in excess of GBP 100 000 a year must be listed on the register and meet certain requirements. In addition, a Register of end-point assessment organisations (RoEPAO) has been introduced, which lists those organisations that have been approved to conduct end-point assessments for apprenticeships which have a standard.

The reforms to the apprenticeship system have resulted in changes to the numbers and types of apprenticeships undertaken. The introduction of the apprenticeship levy and associated funding changes has reportedly resulted in a reduction in the number of apprenticeships, with criticisms of system complexity, inflexibility and the extent of the minimum training requirement (20% of time off-the -job) (Powell, 2019). There have also been gradual but decisive increases in the numbers of apprenticeship starts at higher and degree levels (Powell, 2019), with 7% of all apprenticeship starts in 2016/17 at level 4 and above (Newton et al., 2019).

The central philosophy behind the apprenticeship standards approach is that an apprenticeship should be based around an occupation, and that the apprenticeship should be employer-designed. A key development has been the introduction of end-point assessment (EPA), which is designed to assess the competence of apprentices against the requirements of the occupation. Standards have to be developed by employer-led trailblazer groups, who must be a group of employers recognised by the Institute for Apprenticeship and Technical Education (IATE) and 'reflective of those who employ people in the occupation, including small employers' (IATE, 2019a). The trailblazer group then needs to develop a proposal which should specify why the proposed occupation requires its own standalone standard. The proposal should demonstrate transferability of the role across a range of employers, recognition by relevant professional bodies, regulators, other employers and existing practitioners, and that the occupation is sufficiently 'broad, deep and skilled' in terms of its requirement for education and training (IATE, 2019a). The proposal develops an 'occupational profile' and should include the 'indicative duration for the apprenticeship…indicative occupational level…the amount of off-the-job training required…evidence of skills transferability….and how it fits in with any existing apprenticeship standards' (IATE, 2019b). This proposal is then submitted to the IATE who will decide whether it is approved. If so, the trailblazer group then turns its attention to developing an apprenticeship standard for the occupation which will be used by future employers, apprentices and the wider public as a specification of the apprenticeship. This needs to be accompanied by an EPA plan, which will set out the requirements for the final assessment of the apprentice's competence against the occupational standard. These

are considered by the IATE; if approved, a funding band is determined for the cost of apprenticeship delivery and the standard is published and ready for use by employers and providers developing apprenticeships.

The introduction of the standards has been welcomed by many, including those who have noted how standards-based approaches have operated in other developed nations (Kuczera and Field, 2018). However, the rapid proliferation of standards has also taken England out of step with those nations (Kuczera and Field, 2018), with most apprenticeship systems in advanced economies operating with fewer standards. The standards in England have been criticised for being too narrowly focused on specific roles (Newton et al., 2019; Bishop and Hordern, 2017; Kuczera and Field, 2018) and insufficiently aware of shared knowledge and understanding across similar occupations (Bishop and Hordern, 2017); this may impact on the potential for apprentices to move to other organisations or across sectors. The standards also continue to exclude apprenticeships from connections with general education, with the clear guidance that the apprenticeship must be developed from the standard which must be defined from the trailblazer groups' specification of the occupation. Research suggests that the standards development process has been dominated by large employers (Newton et al., 2019; Bishop and Hordern, 2017) and this has led to the marginalisation of smaller and more medium size employers and could result in a narrow understanding of the occupation. There has also been concern about the lack of specified qualifications in many of the standards (Newton et al., 2019), and how this might impact on the progression of apprentices and the longer-term recognition of their experience. The idea of the end-point assessment has not proved popular with many apprentices (Industry Apprentice Council (IAC), 2017), and there are criticisms of the potential for competition to undertake the assessments and around possible lack of consistency (Kuczera and Field, 2018). Overall, as Newton et al. (2019) state, apprenticeships remain 'narrower, shorter and involve less off-the-job training and less general education than our international competitors' (2019, 19) and the introduction of standards has not alleviated this. The workplace experience of apprentices remains unregulated, unlike in many other advanced economies (Kuczera and Field, 2018), and the separation of training provider from employer, and in many cases also assessor, suggests that considerable potential for disconnect in the apprenticeship experience will continue, despite the introduction of the standards.

14.3. Conceptualising vocational expertise and the curriculum

A useful means of further exploring the development of the standards is to examine underpinning theory of vocational education as a means of developing 'ideal types', models or heuristic devices which can be used to subject the apprenticeship system and the standards process to analysis. The recent work of Addis and Winch (2019) on education and expertise can be used to this effect, particularly by focusing on their characterisation of a 'learning outcomes' and 'holistic' approach to apprenticeship, and their 'criterial account of expertise'.

Addis and Winch (2019) make the distinction between a 'learning outcomes' and 'holistic' approach to curriculum design in vocational and professional education. The learning outcomes approach focuses first on what practitioners do, and then on 'what he has to know in order to do what he has to do' (Addis and Winch, 2019, p. 13). A process of listing and describing tasks is usually the starting point, followed by working out what types of knowledge and understanding are needed to achieve those tasks and associated activities. A curriculum is not strictly necessary, as long as practitioners can demonstrate their competence in appropriate situations. Addis and Winch (2019) note that this model is often concomitant with an employer-led approach to developing a qualification system: the employers work out what their existing competent employees are doing, this is written down in a specification, and then an education institution or training provider can work out what

course of study, or apprenticeship programme, can best help apprentices or learners achieve competence. This contrasts with a 'holistic' approach, which commences with consideration of the aims and values of the occupation and what an expert practitioner might be expected to undertake to practice expertly. This might include acting as a 'scholar', to 'master underlying theoretical knowledge…but also to maintain knowledge in the field', acting as a 'technician' to apply procedures to the highest standard, and acting as an 'educator' to support the pedagogical development of new practitioners (Addis and Winch 2019, pp. 13-14). Expertise in the holistic model thus may have a degree of polyvalence as practitioners become 'relatively' more expert (ibid. p. 3): this means taking on new advanced capabilities beyond the technical strand of expertise. Holistic approaches 'tend to stress high-level objectives within a moral and civic context' (Addis and Winch 2019, p. 15), as opposed to a learning outcomes approach which claims to start from the actualities of practice.

Addis and Winch's work is informed by their 'criterial account of expertise' and the distinction they make between 'constitutive' and 'relative' expertise. The criterial account stresses that an agreed conception of occupational expertise is only possible with the development and use of formal and informal criteria, which are formed and reformed by a 'community' equipped to 'distinguish between novicehood, competence and expertise' (2019, 7). Expertise is therefore 'attributed to some by others', but this is 'far from arbitrary' (ibid. p. 7). It is the 'ability to meet relevant criteria, as evidenced in action' (ibid. p. 7) that makes it possible to attribute expertise. The criteria need to exist 'independently' of the evaluator so that judgements of expertise 'can be validated' (ibid. p. 8) (for example by a third or fourth party). This, crucially, points to the importance of an identifiable 'practice in which the application of the criterion operates' (ibid. p. 8), and to which a sufficient number of practitioners are committed and accountable. As Rouse (2007) and Hager's (2011) work suggests, ideas of practice that highlight mutual accountability, commitment and purpose are useful for considering the character of such a practice. By introducing this criterial account, and the notion that a specialised form of practice is required to underpin it, Addis and Winch (2019) develop a conceptualisation of expertise that can handle expertise in terms of the achievement of recognised competence (which they term constitutive expertise) and in terms of comparisons of degrees of expertise (termed relative expertise). A community of practitioners, if committed to the occupation and accountable to each other, their clients and other occupations, is likely to be interested in ensuring that the advanced criteria by which higher levels or expertise are assessed are iterated in the face of new developments in knowledge, policy and technology (Hordern, 2016). Thus, the ever-extending nature of expertise can be grasped and disseminated throughout the community of practitioners, on the basis of this criterial account.

The next section (Section 14.4.) uses these ideas to evaluate the existing process for the development of apprenticeship standards.

14.4. The existing approach to apprenticeship standards

The standards represent aspects of a holistic approach in that they are intended to emphasise 'full competence' in the occupation, as opposed to a fragmented or partially integrated set of discrete activities or tasks, which might or might not be related to occupational context. This has also involved developing an approach to assessment that is 'holistic' in the sense that it seeks to 'include synoptic assessment', 'provide consistent and reliable judgements' and 'ensure independence' (IATE, 2019a) in the assessment process. Apprenticeship standards should also show how they 'align with regulatory requirements and professional recognition' (ibid.), suggesting that, where possible, apprenticeships should be integrated with pathways towards higher levels of expertise. The use of trailblazer groups which should be 'autonomous and self-forming' and 'inclusive and independent' (IATE, 2019c) could also be seen as commitment to developing a community which can establish a meaningful set of criteria by which occupational competence can be judged.

However, the structure of the apprenticeship standards represents aspects of a learning outcomes approach that reflects the legacy of vocational education in England, in maintaining a separation between the role itself and the knowledge and 'skills' needed to undertake it. The process of developing the standards requires that the 'knowledge' 'skills' and 'behaviours' of the standard are 'derived directly from the duties' (IATE, 2019a) that an occupational practitioner undertakes in the workplace. This immediately narrows the purview of occupational competence to existing duties in the current work context, and this may lead to a specific emphasis on those duties that are practised more regularly or routinely, as opposed to forms of expertise that could be required in unusual situations. It may also exclude the forms of knowledge and awareness that would support the pedagogical, scholarly or critical capacity that would enable practitioners to assist the occupation in meeting future challenges and supporting the professional development of new practitioners. Defining the occupation in terms of existing duties may also reduce consideration of the overall aims of the occupation and neglect the context of changes in work. Further, the focus on duties specific to the occupation may continue to exclude more general educational aims from vocational education in England, and engagement with the broader 'work process' to which the occupation contributes. While the standards may represent a more holistic direction than previous approaches to vocational education, it seems that substantive outcomes-focused features remain.

A brief review of some examples of apprenticeship standards confirms this analysis. The level 3 Advanced carpentry and joinery standard (IATE, 2019d) covers the roles of both 'advanced site carpenter' and 'advanced architectural joiner'. It lasts just 12 to 15 months and yet the roles involve 'carrying out advanced skilled work' and 'complex job tasks, requiring high levels of practical skills and knowledge, in addition to managing their own work and leading small teams' (IATE, 2019d). The 'core skills and competences' and the 'core knowledge' sections are both set out in 'learning outcomes' format, outlining what the apprentices will need to be able to do on completion of the apprenticeship. There is no sequencing of knowledge acquisition or sense of how the apprentice will progress from novicehood to competent practitioner: skills and knowledge could apparently be acquired at any time. Some specific, more detailed technical requirements are also set out for the specific roles: these may be helpful in their detail, but do not specify what the relevant knowledge is to undertake these activities or how this may be acquired. A list of generic behaviours is provided, and it is stipulated that apprentices should complete a national vocational qualification in wood occupations at level 3. The separation of the different elements within the standard does not suggest a holistic conception of what is required to achieve constitutive expertise in the occupation, nor what criteria of excellence might look like. There is no inclusion of the development of pedagogical or scholarly capabilities, and yet these apprentices may find themselves supporting the learning of others and needing to gain further knowledge of materials or technology in order to complete their work. There is, to a very limited extent, an acknowledgement of the need for these apprentices to engage with the wider work process, as the standard includes a requirement to 'understand building information modelling (BIM) and its impact on construction projects' so that tasks can be planned and executed 'accurately' (IATE, 2019d).

Slightly different, although no less concerning, issues are demonstrated in the level 3 standard for advanced baker (IATE, 2018), which has been developed by 10 large baking employers. The knowledge, skills and behaviours required are presented as a long list in the standard, with little sense of how the acquisition of these can be supported coherently within the apprenticeship. The importance of forms of underpinning scientific knowledge is acknowledged (e.g. to 'select correct ingredients for specific applications' (ibid. p. 2), but there is no guidance as to how this knowledge can be accessed. No qualifications are stipulated in the apprenticeship as such, and yet the technical and quality assurance competence required is at an advanced level. Further, similar to the carpenter and joiner standard outlined above, there is an expectation that advanced bakers will 'lead others'. While the

standard outlines some 'team working expectations', it does not incorporate the pedagogical capabilities required to support the development of novice colleagues.

This persistent outcomes-orientation is evident also in the structures of the apprenticeship system, many of which continue to echo, and in some cases may exacerbate, the divisions of the past and prohibit the development of more holistic approaches. For example, a split of responsibilities across stakeholders between specification of the standards (led by employers), the employment and workplace experience of apprentices (employers), the provision of education and training (providers, and in some exceptional cases employers) and assessors (for the independent EPAs) could result in a fragmented and incoherent apprenticeship experience. Further, the insistence on advancing a market-let, albeit more fully regulated, approach to the selection of training providers and assessors, does not necessarily mean that the quality of that education, training and assessment will be improved. On the contrary, it may result in apprentices experiencing increasing generic training offers which do not adequately build upon and enhance their workplace experiences. This is highly problematic, considering the argument that we cannot assume that transversal abilities (such as project management, communication) are transferable beyond similar work contexts (Winch, 2013). The standards development process does not necessarily support pathways for apprentices to acquire increasingly polyvalent capabilities (e.g. as pedagogues and scholars) at higher levels, although these may be evident in some of the higher-level apprenticeships. A focus on generic input may make ungrounded assumptions about how apprentice expertise is acquired and neglects the requirement for higher-level capabilities which develop from participation in the occupational practice itself.

Ultimately, however, there remain difficulties with any claim that apprenticeship standards development has pushed conclusively in a holistic direction. If it is claimed that those who fully participate in the practice of the occupation are best placed to define the criteria by which competent practice is evaluated, then the current process of standard development solely via trailblazer groups seems problematic. These groups 'must be…employers recognised by the Institute and reflective of those who employ people in the occupation' (IATE, 2019a), with no obligation to involve the vocational educators or expert practitioners who we might expect to take a leading role in establishing and iterating practice criteria, along with researchers and representative bodies with substantive knowledge and interest in the occupation and its future. The commitment to ensure the groups are 'inclusive and independent' (IATE, 2019c) to some extent contradicts the commitment that the groups are 'autonomous and self-forming'. Groups that form themselves, with no requirement to incorporate diverse voices and different kinds of stakeholder or 'social partner', will not be genuinely 'inclusive'. They are also highly unlikely to become genuinely 'independent'. In fact, the recognition of a 'self-forming' and 'autonomous' trailblazer group as an authority on an occupation offers dominant and entrepreneurial organisations opportunities to advance their versions of what occupational roles should look like, with no space for challenge within the discussion from the perspective of practitioners, vocational educators or education researchers.

14.5. Conclusion

14.5.1. How could apprenticeship standards in England work in the future?

Vocational education policy in England is not currently underpinned by a coherent philosophy of vocational education; in the case of apprenticeships, at least, it is still suffering from the after-effects of previous vocational policy initiatives. This chapter seeks to argue that all those interested in vocational education in England (and elsewhere) need to make better use of important educational ideas to inform the development of governance, policy and curriculum. While the move towards apprenticeship standards may be welcome as an improvement on previous approaches to defining apprenticeship, there remain significant problems. This fi-

nal section sets out some brief directions which the development of apprenticeship standards could take.

(a) Rethinking community – the current emphasis on employer leadership in 'autonomous' and 'self-forming' trailblazer groups that are then deemed to be authorities on specifying an occupational profile and apprenticeship standard is problematic. While the previous process of developing apprenticeship frameworks via issuing authorities may have been problematic or frustrating for some, there was less of an opportunity for large employers to dominate the process. Communities for developing apprenticeship frameworks should be equipped to establish a set of criteria by which expert performance of the apprenticeship can be evaluated (Addis and Winch, 2019). This entails involving practitioners themselves, in addition to a programme of research and inquiry into the nature of the practice. It also involves thinking about how expert practice can be sustained in future apprenticeships and implies considering the pedagogical and scholarly role of practitioners and other educators.

(b) Rethinking practice – Addis and Winch's criterial conception of expertise suggests that how we think about practice itself is important for developing apprenticeship standards. A learning outcomes approach conceptualises practice reductively, by focusing predominantly on the 'here and now' of practical action. It can also be excessively individualistic, ignoring some of the relationality of practice. This approach downplays those aspects that are needed to make practices function successfully, including the development of the transversal abilities that Winch (2013) discusses, the role of pedagogical and participative capability, and understanding of wider work processes that form the context in which situational judgements need to be made. This can help shift the approach in a more holistic direction.

(c) Rethinking the interface both with the workplace and with general education – the absence of regulation of the workplace experience of apprentices, as highlighted by Kuczera and Field (2018) may undermine apprenticeships in those workplace contexts which are more 'restricted' than 'expansive' in terms of their learning opportunities (Fuller and Unwin, 2003). Apprenticeship standards, in tandem with greater regulation, could be a vehicle for considerably enhancing workplace learning. However, this should not overlook the potential also for apprenticeship standards to remove opportunities to access other education pathways, and to continue to benefit from general education opportunities. The move away from frameworks to standards has created avenues for the accreditation of finely grained occupationally specialised expertise (via the EPA); however, this greater occupational specificity may also reduce opportunities to move on to other education routes in the future if types of knowledge and expertise that are useful across occupations and sectors are not identified and embedded with the apprenticeship standards approach and any qualifications that are mandated within them. Apprenticeship standards still provide the conditions by which apprentices are excluded from educationally powerful knowledge (Wheelahan, 2007), suggesting that a clearer expression of how their experience develops their overall education knowledge is required.

(d) Further research is needed to evaluate the development of standards in England with comparable curriculum frameworks and standards in other countries. This entails not only a comparative analysis of relevant standards and curricula but also scrutiny of the processes by which such standards and curricula are designed, including identifying which stakeholders are involved. This research could also assist the continuing pursuit of underpinning principles for apprenticeship design that will be useful internationally.

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CHAPTER 15.

The Anglo-Saxon model: policy twists and turns along the road to creating a demand-led apprenticeship system in England

© Terence Hogarth ([90]) and Dr Lynn Gambin ([91])

15.1. Introduction

England has had a long tradition of apprenticeship training, of one kind or another, stretching back several centuries. Over recent decades policy-makers have sought, through the introduction of publicly funded apprenticeships, to renew this form of training and establish it as a mainstream vocational pathway not only into employment but also as a means of equipping people already in jobs with new skills and/or accreditation of their existing ones. It is an interesting case, insofar as what one might refer to as the necessary conditions to create an apprenticeship system of a type found in, say, German-speaking countries, have not been traditionally in place: those necessary conditions are a social contract based on collective bargaining and investment in skills mutually reinforcing economic performance. The apprenticeship system in England has had no such social contract to fall back on such that it has had continually to demonstrate its value and versatility in meeting the needs of those employers who might be prepared to take on apprentices. This is no easy feat.

As the evidence will show, policy-makers have faced an uphill battle to increase participation levels in a relatively flexible market where the ever-present poaching externality makes employers wary of investing in skills. There has been a range of innovations which have sought to increase employer investment in apprenticeships and, at the same time, ensure that training supply is matched market demand. By giving employers increased responsibility for the content of apprenticeships for which, in return, they are expected to bear more of the overall cost of training delivery, there is a view that apprenticeships will more readily confer skills on employers and apprentices which have value in the labour market.

By providing a synopsis of the policy twists and turns in England over the last quarter of a century it is possible to understand the challenges faced in developing an apprenticeship system in a liberal market economy (Thelen, 2004; Hall and Soskice, 2001). Doing this perhaps demonstrates the limits of what can be achieved in Anglo-Saxon type economies.

15.2. The roots of publicly funded apprenticeship system

Apprenticeships as a State-funded and regulated form of workplace-based training were first established in England in 1994. Prior to that, apprenticeship training had been largely run and self-financed by industry. But even before publicly funded apprenticeships were first introduced, it is fair to say that it was a form of vocational preparation that had never fully taken root compared with countries such as Germany, as the participation figures amply demonstrate: at the start of the 1980s, 6.3% of the workforce comprised apprentices in Germany but the

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corresponding figure for Great Britain was less than half at 2.6% (Broadberry, 2003) ([92]). These statistics reflected, at the time, England's long-standing failure to develop a vocational education and training system comparable to that of its competitors. From the 1865 Royal Commission on Technical Education (the Samuelson report) onwards there had been a succession of reports bemoaning the country's poor technical skills development and the consequent erosion of its competitiveness (Gambin and Hogarth, 2017). Over the 1970s and 1980s the Manpower Services Commission (MSC) – the government agency then responsible for training – sought to support the provision of apprenticeships in the face of declining participation resulting from, amongst other things, the steep fall in employment in those sectors where apprentices were concentrated and the emergence of alternative forms of post-compulsory schooling available to young people (Gospel, 1995). But the MSC's support was to no avail; especially so after the 1979 election of a government instinctively suspicious of apprenticeship training because of its association with collective bargaining and restrictive working practices. Instead of a mainstream apprenticeship system, England was reliant upon vocational education delivered in the classroom and, in the face of rapidly rising youth unemployment, the introduction of the Youth training scheme (YTS, later Youth training) in 1983. This much-derided intervention sought to provide employment and training to the 40% of young people who did not enter post-compulsory education (further education). Commentators have pointed to the classroom-based vocational education delivered at the time as having little impact other than increasing staying-on rates (Gospel, 1998), and YTS was seen as providing employers with subsidised, cheap labour but little for the young person by the way of training or skills acquisition (Fuller and Unwin, 2003). In the meantime, the number of apprentices continued to fall, in part because apprenticeships were being supplanted by Youth training.

In 1993, the same government which had been suspicious of apprenticeships announced its intention to introduce the Modern apprenticeship initiative. This impetus seemed to stem from recognition that this form of training conferred economic advantage on those countries where it was well-established. But Modern apprenticeships (later Apprenticeships) in England were to be introduced into an employment and skills environment which had been subject to much change over the 1980s and which differed in so many respects from that which supported apprenticeship systems in other countries. A number of factors are salient here.

(a) Employment protection regulation had been substantially reformed over the 1980s to bring about a more flexible labour market whereby the risks faced by employers in hiring workers were reduced by making it easier for them to flex the size of their workforce to match the rise and fall in demand for their goods and services. The intention was to increase both job creation and, by implication, job mobility, since workers were expected to move between jobs more than had been the case hitherto.

(b) Social partnership had been further eroded with the abolition of various tri-partite organisations and the general weakening of trade union power and influence. Skills policy was characterised in the 1990s by the emergence of largely employer-dominated bodies (such as industrial training organisations) designed to bring about increased employer ownership of the skills system. This was seen as essential to the skills system producing skills the labour market needed.

(c) The creation of an external market for training whereby public (further education colleges) and private providers took over the provision of initial vocational education and training which might have previously been provided in-house by employers. The entry of private providers was of critical importance in ensuring that further education colleges were subject to competition. The creation of an ex-

([92]) Data for Germany are for 1980 and for Great Britain for 1981. The focus of the chapter is on England since the apprenticeship system under analysis relates to that country, but historical data are sometimes only available for Great Britain (England, Scotland, and Wales) or the UK (Great Britain and Northern Ireland).

ternal market for training was further supported by the introduction of national vocational qualifications (NVQs) in 1986 which created a framework of standards to be achieved by demonstrating competence and, in doing so, delivered a system of transparent, transferable qualifications which could, in theory, be delivered by any training provider.

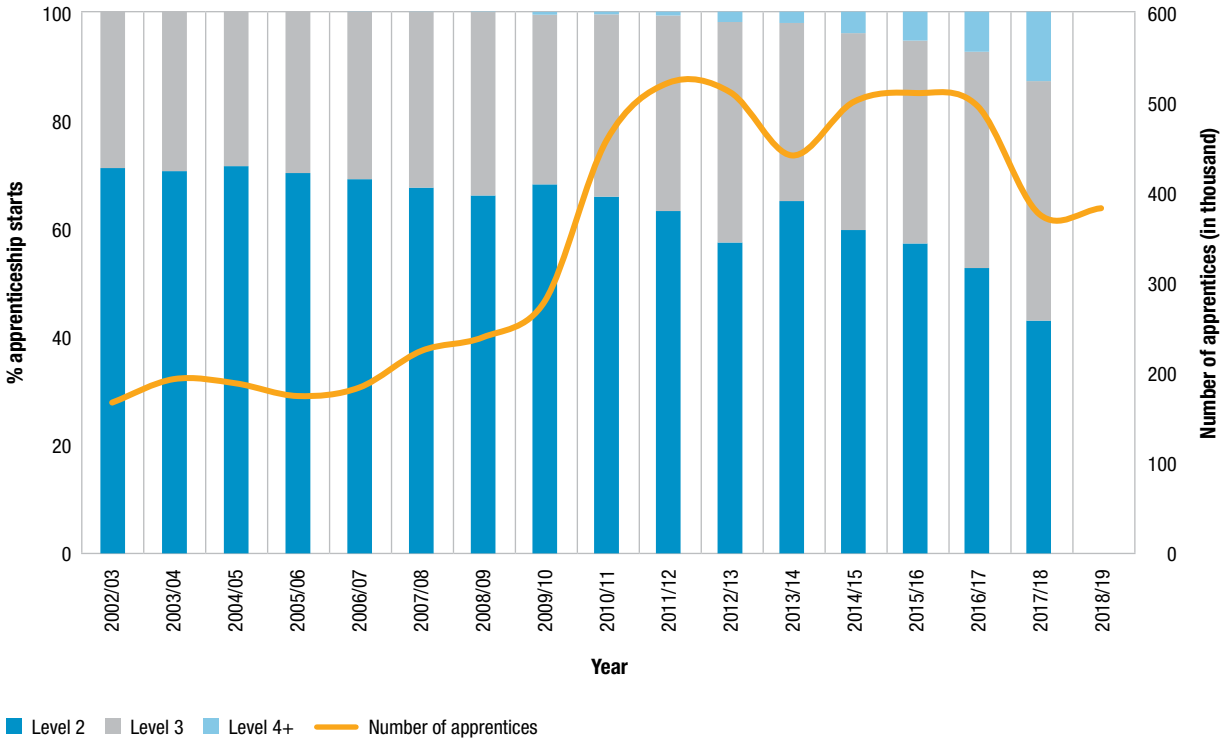
These are all relevant to understanding why apprenticeships in England developed along a path which was - and perhaps still is - unique in the world of vocational education and training.

15.3. Creating a mainstream apprenticeship pathway into employment

Modern apprenticeships were eventually introduced in 1994. The inclusion of the 'modern' was important as it signified that it offered something different from the traditional notion of apprenticeship and could be delivered to those sectors and occupations not typically associated with this form of training (including customer service, social care) (Fuller and Unwin, 2003). Following its introduction, it was readily apparent that it had been able to penetrate a wide range of what might be loosely referred to as traditional and non-traditional apprenticeship sectors and occupations. In its initial stages it was also very much oriented towards achievement of a level 3 qualification (the level typically associated with completion of upper secondary education), but it quickly came to supply training at level 2 as well (equivalent to the level of qualification typically obtained at the end of lower secondary education). As Figure 15.1. demonstrates, most apprenticeship starts were at level 2, largely reflecting demand from employers, especially in sectors new to apprenticeships.

From the start the intention was to ensure that apprenticeships delivered skills in demand

Figure 15.1. **Apprenticeship starts by level, 2002 to 2018**



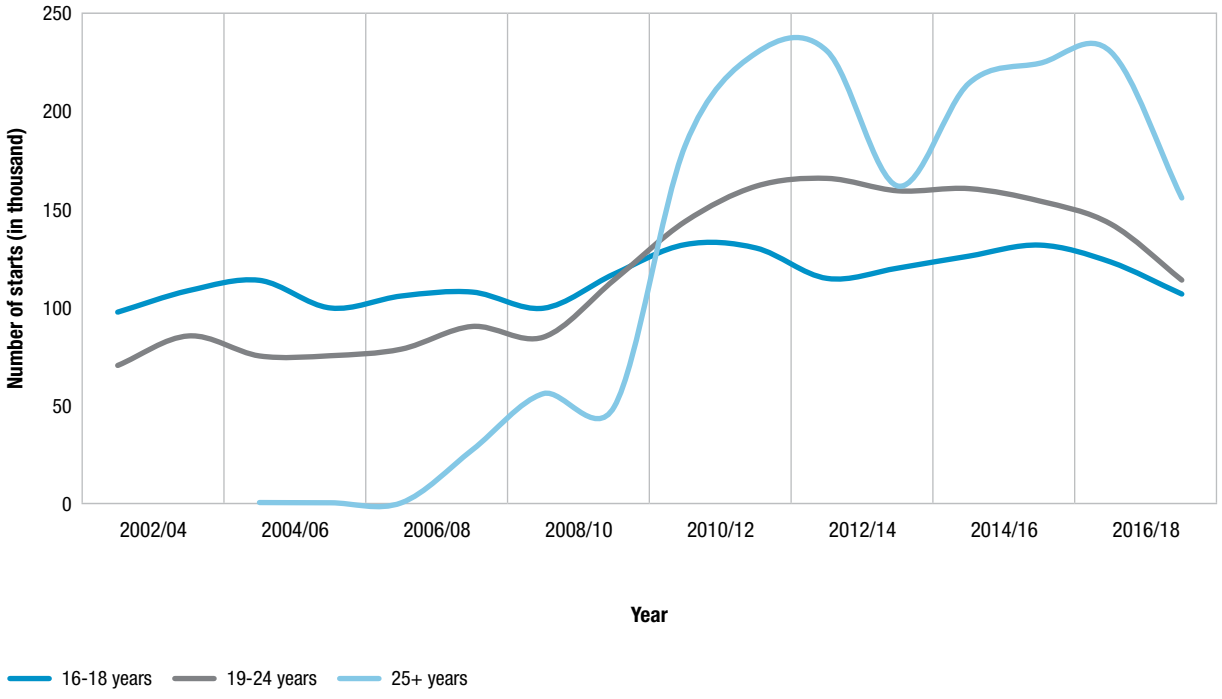
Source: Department for Education (2019). *Apprenticeship statistics.*

in the labour market. This was all part of the wider reform of vocational education and training in England designed to bring about a demand-led system. The supply-side (further education colleges and private training providers) had been, to that point, seen as providing what they had the capacity to deliver rather than that which the labour marked needed. The training content of an apprenticeship was now to be determined by industrial training organisations that represented specific sectors/occupation and which were employer-led. Frameworks were drafted for each apprenticeship which specified how the apprenticeship was to be delivered and the skills to be learned. The inclusion of a qualification – an NVQ (though a non-NVQ qualification could be included too) – was also a break with the past in that previously apprenticeships had not always included the award of a qualification.

No sooner had Modern apprenticeships been established then a series of comparisons emerged which suggested that it fell well short of what constituted an apprenticeship in Germany with respect to both the quality and level of provision (Ryan and Unwin, 2001). The criticisms of the system ushered in a series of reforms designed to increase participation levels and the quality of provision which continue today (Hogarth et al., 2012a). Nevertheless, the sense that the apprenticeship system delivered something different from that typically associated with apprenticeships elsewhere can be gleaned from looking at the statistics on the characteristics of apprenticeship starts. Figures 15.1. and 15.2. provide information on the number of apprenticeship starts over the past 15 years. Two features are readily apparent. First, despite the initial intention to ensure that provision was at level 3 – something which was reiterated in the government commissioned Richard Review of Apprenticeships (Richard, 2012) – there has over time been a strong employer demand for apprenticeships at level 2. Second, it is apparent that, over time, apprenticeships have been increasingly taken up by people aged over 25 years of age.

The provision at level 2 reflects, in many respects, employer demand for skills. Employers wanted – and continue to demand – skills at a fairly low level in sectors such as retailing

Figure 15.2. **Apprenticeship starts by age, 2002 to 2018**



Source: Department for Education (2019). *Apprenticeship statistics.*

which have accounted for a relatively large number of apprenticeship starts every year. While Modern apprenticeships were initially aimed at young people, over time they have become open to people of any age. The initial increase in the number of apprentices aged 25 and over resulted, in part, from Train to gain being replaced with apprenticeships. Train to gain was a programme designed to improve the skills of existing employees, typically those aged 25+, to support their employers' product market strategies. It was discontinued in 2010, with the training it delivered transferred to apprenticeships (Augar, 2019). But this was not the only reason why the number of older apprentices increased. First, apprenticeships provide a ready-made means by which older people can update their skills (Fuller et al., 2015); and second, government recognised that training existing employees aged over 25 was an efficient means of driving up the number of apprentices since it could be used to accredit existing skills (Augar, 2019; Hogarth et al., 2012b). In 2018, 41% of apprentices were aged over 25 at the start of their training. While the age of apprentices is likely to have risen as a consequence of apprenticeships becoming available at higher levels (such as degree level) where entrants are by definition older, in 2010/11, when there were few higher-level apprenticeships available, the percentage of those aged 25 plus at the start of their apprenticeship was still 40%.

The training of older people has raised concerns about the quality and content of apprenticeships in some specific instances. It was estimated that 32% of apprentices in 2017 were existing employees of the company that had enrolled them on an apprenticeship, down from 38% in 2015 (DfE, 2017). There is nothing inherently wrong with apprenticeships being offered to adults or those who are existing employees, with the evidence suggesting that it can do much to improve their skills (Fuller et al., 2015). At the same time, where apprentices are existing employees rather than being specifically recruited as apprentices there has occasionally been a suspicion that it has been used as a means to manage labour retention and accredit existing skills rather than providing new skills (Hogarth et al., 2012b). This is something which policy has addressed with the Richard review, stipulating that an apprenticeship should be for a job or role that requires sustained and substantial training (Richard, 2012).

15.4. Recent reforms and the apprenticeship system today

While it would be wrong to suggest that policy-makers were not concerned with the quality of apprenticeship provision over the early stages of the initiative's development, it is also fair to say that there was, initially, a need to increase levels of engagement and create a critical mass of activity. Training those aged over 25 might be said to be the low-hanging fruit in this regard, in that it provided a relatively low-cost means, in many cases, of accrediting the existing skills of many employees. It has also been an initiative that has been subject to review and reform to improve the quality of provision and deliver the skills required in the labour market. Latterly there has been a series of reforms which have further transformed the provision of apprenticeships. These relate to:

(a) increasing levels of employer ownership, enhanced through the shift from frameworks to standards;
(b) directing funding to where demand is highest, such that training providers are more dependent for their public funding on delivering the skills employers require; and
(c) offering apprenticeships at higher levels (e.g. at degree level).

The Richard review (2012) pointed to the content of apprenticeship training being largely under the control of government despite the intention from the start to have a strong employer voice in its design. While employers had a voice in determining the content of apprenticeship frameworks – the documents which provided the specification for a particular apprenticeship – their influence over these documents was considered to be relatively weak. Following the Richard review, frameworks have been replaced by standards.

Standards are developed for an occupation by groups of employers – who are representative of the population of employers employing people in that occupation, including SMEs – working in conjunction with the government agency responsible for apprenticeships (the Institute for Apprenticeships). Whereas frameworks were regarded as being qualification-led, the standard is based on understanding the knowledge, behaviours and skills which are considered essential for carrying out the job. An assessment of whether an apprentice has acquired the required level of competence is carried out through an end-point assessment (at the end of the apprenticeship) by an external agency (a registered end-point assessment organisation). While there is scope to include a qualification within the apprenticeship it is not mandatory.

Apprenticeship funding has been substantially reformed in the period since 2015. In the past, the State paid for the direct costs of training: the costs borne by the training provider in delivering the training stipulated in the framework or standard. The employer was responsible for all other costs, including apprentice wages. Payment for training was delivered directly to the training provider, with a percentage held back until the apprentice had completed the apprenticeship (outcome-based funding). Before the apprenticeship levy was introduced, the intention was to deliver funding to the provider via the employer (employer-routed funding) with an expectation that that the employer would contribute to the costs previously borne by the State (shared investment). Under the new arrangements it was expected that employers would negotiate with training providers to obtain the best price for delivering apprenticeship training. The State would set a cap for the cost of each framework or standard with the state paying 90% and the employer paying the remaining 10% (from April 2019 this was reduced to 5% and only applies to non-levy payers). So, it would be in the interests of the employer, other things being equal, to agree a lower price with the provider in order to reduce the amount it would have to contribute to the overall cost of the apprenticeship. An ex-ante assessment suggested this would have relatively little impact on training volumes or costs because, where the apprenticeship was relatively low-cost (where the course was at level 2, of short duration, requiring relatively little off-the-job training) employers could readily find ways of offsetting any additional cost (Hogarth et al., 2014). And where employers were delivering relatively high-cost apprenticeships (of relatively long duration requiring substantial off-the-job training often involving the use of costly equipment), the direct training element tended to comprise a relatively small share of the overall cost borne by the employer (relatively high wage costs which were not offset by the productive contribution of the apprentice).

Before shared investment could be rolled out across all employers, an announcement was made in November 2015 to introduce an apprenticeship levy from April 2017, where employers pay a levy of 0.5 per on their payroll above 3 million or more. An employer's levy payment is the amount it can draw down to fund its apprenticeships. The introduction of the levy reflected a view that there was underinvestment in apprenticeships by employers and the State. The combination of setting targets for the number of apprenticeships starts and an outcome-based funding system, it was claimed, had resulted in too much training being of short duration and low quality (Wolf, 2015a). Implicit in the idea of introducing the levy was that it would develop a stronger tie between employer and apprenticeship; the employer would want to receive relatively good quality training in return for their levy payment and so would drive up quality. A plausible alternative or supplementary explanation for the observed levels of investment in apprenticeships suggests that system was responsive to skill demand. The principal problem was the relatively low demand from employers to train apprentices at level 3 or higher because their product market strategies did not warrant demand for apprenticeship training in either greater volumes or at higher levels. This is likely to have some bearing on the capacity of the levy to boost the demand for apprenticeships in general and on higher level ones in particular (Gambin et al., 2016). Supply-side considerations have a role to play too. The recent review of further education funding noted that while income from

Table 15.1. **Types of apprenticeships available in England**

Type	Regulated qualification level (England)	Type of qualification	European qualification framework equivalent
Intermediate	**2**	2 5 GCSE passes at grade A*– C or 9 – 4	**3**
Advanced	**3**	2 A level passes/Level 3 Diploma/ International Baccalaureate	**4**
Higher	**4, 5, 6, 7**	4, 5, 6 and 7 Foundation degree and above	**5, 6, 7**
Degree	**6, 7**	Bachelor or master degree (delivered via a university)	**6, 7**

Source: National apprenticeship service guide to apprenticeships: https://eacea.ec.europa.eu/national-policies/eurydice/content/national-qualifications-framework-93_en; Eurydice.

the levy is not formally hypothecated, there is an assumption in current government spending plans (2019) that the costs of all apprenticeship training – for levy and non-levy payers – will be covered by it (Augar, 2019). So, there is a potential public funding constraint on the volume and level of apprenticeship provision.

The final major change has been the extension of apprenticeships to higher levels, including the introduction of degree level apprenticeships delivered mainly by universities. The decision to extend apprenticeships to higher levels reflects concerns about the mismatch between the skills held by university graduates and those required in the labour market, and the need to provide progression routes to those at pursuing apprenticeships at lower levels. Table 15.1. summarises the current provision of apprenticeships at different levels.

15.5. The persistent demand side challenge

Even the briefest perusal of Figures 15.1. and 15.2. reveals that the reforms – notably the levy – have not really brought about much of a boost to the number of apprenticeship starts. Following the introduction of the levy the number of starts has declined, though this may reflect teething problems rather than any structural shift in the demand for this form of training. In many respects the problem is a demand side one but there are supply-side constraints too. There have been, for instance, concerns that the combination of reductions in expenditure on further education (Wolf, 2015b), together with a shift to a more demand-led system, has reduced the capacity of training providers to deliver apprenticeships, especially those which have relatively high costs attached to them (Augar, 2019). It has constrained their ability to invest in the types of apprenticeships – and other forms of training – that are seen as particularly important to improving the country's economic performance. While this impact of this should not be underestimated, the demand side issues are perhaps more formidable.

This can be explained with reference to the economic rationale of employers to invest in training. Where employers invest in some apprenticeships, they typically end up with a net cost at the end of the formal training period. In a flexible labour market such as that found in England it is difficult to recoup that cost in the post-training period. If the employer were to pay the now fully trained former apprentice less than the going rate for the job post-apprenticeship, then they would be likely to lose that employee to a non-training employer who is able to pay that rate. Arguably in systems where rates of pay are collectively agreed, this free rider problem does not exist to

the same extent (Acemoglu and Pischke, 1999). In practice, it is evident employers willing to endure a net cost at the end of the training period have developed the means to retain the employer at the end of the training period typically by using the apprenticeship as a bond between employer and employee and providing career development within the firm's internal labour market. But these are typically employers who regard the skills conferred on the organisation by the apprenticeship as essential to their business and ones that cannot be found through other types of training. They regard the investment in apprenticeship as long-term (Gambin and Hogarth, 2017). Other employers may be much more risk averse. Under the levy, employers may well be unwilling to make an investment in relatively high-cost apprenticeships if they are unconvinced that that they will be able to recoup their overall investment where it is substantially in advance of their levy payment (Gambin et al., 2016). In other instances, typically at lower levels (intermediate level apprenticeships) employer investment is more short-term, where the cost to the employer of training the apprentice has to be repaid over the period of the apprenticeship: the employer marshals the apprentice's productive contribution over the formal training period to cover the costs of training. For example, in sectors such as retailing, the apprentice is able to undertake to job of the fully experienced worker after a relatively short space of time, such that their productive contribution covers their employment and training costs (Hogarth et al., 2012b). In this way the investment in the apprenticeship is almost risk-free.

This provides a plausible demand-side explanation for the reasons underlying the performance of the apprenticeship system in England. There are a number of plausible explanations why the levy did not bring about the increase in apprenticeship starts, which are not mutually exclusive:

(a) the system is still in a process of settling down after which the number of starts will begin to increase as employers look to recoup their levy payment;
(b) smaller, non-levy paying employers may be being squeezed out as providers concentrate upon the levy payers for their recruitment of employers and apprentices;
(c) the demand for skill is simply not there. The system is responsive to demand side signals but there is limited demand for skills such that this is reflected in the volume of training;
(d) in a flexible labour market, investments in human capital are riskier compared to those in more coordinated systems where, for example, collective agreements reduce the number of free-riders.

The last two points hint at the inherent difficulties, or the limitations of delivering apprenticeships, in a labour market where there is a high demand for people to work in relatively less skilled work and one in which it is relatively difficult for employers to appropriate the return on their training investments. Even where employers pay the levy and reclaim it, they are still in the position of facing a net cost at the end of the training period which they may not be able to recoup. One policy response has been to develop an alternative to the apprenticeships.

T levels are new courses expected to be available from September 2020. These will be equivalent to three A levels (a level 3 qualification similar to an advanced apprenticeship). These will be two-year courses which, like apprenticeships, have been developed in collaboration with employers so that they meet the needs of industry (DfE, 2019). T Levels will offer students a mixture of classroom learning and on-the-job work experience, with an industry placement of approximately 45 days. By way of comparison they seem to have something in common with the school-based vocational education in the Netherlands (*Beroepsopleindende Leerweg*, BOL) where students typically spend four days a week at a training centre and one day at an employer on a work placement. In many respects, the Netherlands faced the same problem as England: how to persuade a sufficiently large number of employers to provide apprenticeships (European Parliament, 2017). The solution was to provide a school-based alternative, as a complement, that delivered something very similar with regard to the skills obtained at the end of the training period.

15.6. Conclusion

Apprenticeships in England are regarded as a relatively effective means of delivering training. The evidence points to the employment and wages returns being relatively good (e.g. Bibby et al., 2014), hence policy-makers' persistence in trying to develop and expand the apprenticeship system. There has been much policy innovation in an attempt to improve the operation of the apprenticeship system. This has been concerned with:

(a) increasing apprentice volumes;
(b) improving the quality of provision (where an important component of quality is meeting labour market demand);
(c) increasing the efficiency with which apprenticeships are delivered and apprentices achieve competence.

Despite continuous policy innovation to develop a mainstream training programme that delivers skills of value to learners and employers, the evidence points to the limits of what might be reasonably expected from an apprenticeship system in a labour market which has relatively strong demand for lower level skills (Level 2) and high levels of job mobility. This tends to place the discussion in the realms of the varieties of capitalism debate which see liberal market economies as being almost inimical to the implementation of a German style apprenticeship system (Thelen, 2004). Nevertheless, there have been manifold initiatives which have striven to overcome the various barriers facing the development of an apprenticeship system in a flexible labour market. Policy has had to navigate the imperative to raise skill levels in order to boost productivity levels within a system that, arguably, makes employers risk averse to investing in human capital given uncertainties regarding their appropriation of any returns. Only time will tell if the introduction of the apprenticeship levy will solve this conundrum.

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CHAPTER 16.

Including refugees in the labour market: the Swiss approach

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16.1. Introduction

With rising numbers of refugees entering Europe the question of how to include the newly arrived in the local labour market becomes both prevalent and controversial. The education and training system within the host countries will play a major role in preparing the new workforce for job placements; this includes the recognition of prior learning, cultural and language integration. All of this has to be addressed while resident permits might only allow residing in a host country until a safe return to the home country can be expected. Switzerland has a long tradition of immigrants entering the country and its VET system (where the apprenticeship track is predominant) has played an important role in integrating them into the labour market. Immigrants due to humanitarian reasons ([96]) represent only about 4% of all foreign residents and just under 1% of the total population of Switzerland. However, 60% of the asylum migrants are under 26 years old and will probably stay for a long time ([97]), so integrating them into VET and the labour market is important. In recent years, a significant number of those arriving did not speak a Swiss national language, had little school education and no knowledge about the culture of their host country. A lot of different aspects need to be taken care of in the education and training system in order to integrate them, such as how to cope with heterogeneity in the classroom and at the workplace, the recognition of prior learning and prior education, special education and support for those in need or alphabetisation (Schneider et al., 2014). It is important to provide a number of preparatory stages for refugees to enable them to enter an apprenticeship-based VET programme. Switzerland has implemented a number of active integration policies and also took steps within its VET system to ease the transition of migrants into the local labour market.

This chapter outlines the specific situation of asylum migrants in Switzerland and the challenges to include them in the VET system and in the labour market. It describes the possible pathways into the labour market and elaborates their impact and capacities. Requirements for the VET system to meet the needs of refugees as much as society's needs for their successful integration are also discussed.

16.1.1. Europe's challenges with refugee integration

Research findings suggest that effective integration policies benefit not only immigrants but also the receiving society. Countries with inclusive integration policies tend to be better places for everyone to live in (European Commission, 2016). However, the capacity to manage effective integration policies depends very much on the possibility to govern migration flows and to avoid massive increases over a short time span concentrated in a few territorial areas (European Parliament, 2017).

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([96]) Three categories of asylum migrants are distinguished in Switzerland: recognised refugees, temporarily admitted refugees and other temporarily admitted persons. For details regarding their residence permits and the underlying legal acts see SEM, 2019a.
([97]) https://www.sem.admin.ch/dam/data/sem/integration/agenda/faktenblatt-integrationsagenda-d.pdf [accessed18.11.19].

Integration policies remain primarily a national competence. There is strong empirical evidence that the entrance channel impacts the integration path (European Parliament, 2016). Refugees are one of the most vulnerable groups in the labour market, being more likely than the native-born to have low pay and irregular jobs, although in many host countries they generally have higher chances of becoming citizens ([98]) than other migrants (European Parliament, 2016; 2017; European Commission, 2016; Desiderio, 2016). Further, the large flows of refugees and terrorist attacks have increased prejudices and reinforced discrimination.

16.1.2. **Refugees in Switzerland**

For more than 100 years, Switzerland has been an immigration country. Today, about 30% of young adults in the country have one or two parents from abroad. Therefore, the country has a lot of experience with integrating groups of foreign people into society, including into the labour market. Considering asylum migration, only 2.4% of all asylum applications in Europe in 2018 were filed in Switzerland. However, the figure of 1.9 asylum applicants per 1 000 residents was still significantly higher than the European mean (1.2 applicants per 1 000 residents). The highest application rates in 2018 were registered in Greece (6.2%), Cyprus (6.0%), Malta (5.0%), Luxemburg (3.7%), Sweden (2.1%) and Belgium (2.0%) (see SEM, 2019b). The so-called protection rate – the number of persons who are granted asylum or are temporarily admitted in all first instance decisions in Switzerland – was high at 60.5% in 2018 (SEM, 2019b). Asylum seekers mainly come from states outside of the EU: in 2019 they came especially from Afghanistan, Algeria, Eritrea, Syria and Turkey (SEM, 2019c). The employment rate of refugees in Switzerland was judged as too low and unsatisfactory by the OECD in 2012; this contrasts with the employment of other immigrants, which was higher than in other OECD countries (Liebig et al., 2012). A possible explanation for this low performance was seen in the lack of clearly structured and labour-market oriented integration programmes for asylum migrants (Liebig et al., 2012, p. 2).

A first longitudinal study of the labour market integration of asylum migrants (arrivals 1997 to 2000) was available in 2014 (KEK-CDC Consultants and BSS, 2014) and was later updated (arrivals 2000 to 2004). The update (see document indicated in Footnote 97) showed that the employment rates of the subgroups developed differently after they were assigned their residence status; after 10 years of residence 51% of the recognised refugees were employed but only 34% of the temporarily admitted persons ([99]). The most successful evolution was observed in the group of the so-called hardship-cases ([100]) whose employment rate reached 73% after 10 years. Overall, these reported employment rates are relatively low compared to those of Swiss nationals or other persons with foreign status living in Switzerland. More recent data from the State Secretary for Migration (SEM, 2018) on the employment rates of asylum migrants cannot be directly compared with these figures because they are based on different methodology. However, the reported employment rates after seven years of residence still seem rather low, at 40% for refugees and 47% for temporarily admitted persons.

In principle, refugees and temporarily admitted persons have free access to the labour market in their canton. Only asylum seekers are not allowed to work for the first three months after filing their application. Since January 2019, employers have simply needed to give notice that they have hired a refugee or a temporarily admitted person so that quicker integration into the Swiss labour market can be encouraged. The former authorisation procedure no longer applies. Wage and work conditions apply as to any

([98]) Obtaining the Swiss citizenship takes time for first generation migrants (10 years of residence before an application may be filed) and the process is difficult as it involves three administrative levels (confederation, canton, community).

([99]) The asylum application of temporarily admitted persons was rejected but their expulsion cannot be carried out (e.g. travel documents cannot be obtained, expulsion would violate international laws or would not be reasonable).

([100]) The status assigned to asylum applicants, rejected applicants or temporarily admitted persons may be considered as a case of personal hardship so they receive a residence permit. Such permits are only issued for persons who lived for a minimum of five years in Switzerland and are well integrated. Protection is no longer the deciding factor but the question whether it is still reasonable for these persons to return as they have built up a solid personal, economic and social perspective.

other worker. However, many asylum migrants will not easily find access to the Swiss labour market, which is highly structured and oriented towards standardised VET qualifications. They therefore need time and appropriate integration measures to increase their employability.

The individual reasons, which may support or obstruct integration into the labour market, comprise language skills, the willingness to take on work of a lower status, and psycho-physical impairments or traumata (KEK-CDC Consultants and BSS, 2014). Next to structural obstacles, a lack of self-confidence, stamina and learning abilities hinder professional advancement. Also, managing such multiple burdens as caring for family members, language learning, keeping a household, taking care of health issues and balancing all of this with work is a challenge. For the refugees, the potential to bring their families to the host country is very important. For those who are temporarily admitted, insecurity about the possibility to remain enhances or obstructs the inclination for integration. This perceived instability and insecurity also affects employers' willingness to hire.

The motivation to take on jobs is quite high among refugees and often they have a wealth of work experience in their home countries. However, these experiences do not correspond to the expectations regarding VET qualifications in Swiss enterprises. Usually, the basic requirement for qualified work is an upper secondary Federal VET diploma (three or four-year VET programmes) or a Federal VET certificate (two-year VET programmes with lower requirements). Switzerland has therefore developed various measures to help refugees to start an apprenticeship-based VET programme.

16.2. Swiss measures for labour market integration

Institutions and procedures are in place to manage the influx of asylum applicants and to assign them resident status (SEM, 2019a). Under the revised Asylum Act ([101]), in force since March 2019, most asylum procedures are now completed within 140 days. These accelerated procedures ([102]) follow stages with a strict timetable to shorten the waiting time for asylum applicants who first get a residence permit with restricted options for employment or education. Further, considerable efforts were undertaken since 2014 to support the integration of migrants in a coherent way across all Swiss cantons.

The State Secretariat for Migration (SEM) started to allocate funds for the Cantonal integration programmes (KIP) according to four-year agreements following a national strategy with common goals in eight domains of integration. In the first KIP phase (2014 to 2017), the confederation and the cantons spent a total of CHF 614.02 million: more than two thirds of that went into the language training (36%) and promotion of employability (34%) ([103]). Of the Federal funds covering for nearly two thirds of the total sum, CHF 257.19 million were flat-rate payments for the integration of recognised refugees and temporarily admitted persons as laid down in the Foreign nationals and integration Act (FNIA) (Article 58, Paragraph 2) ([104]). The one-time flat rate was still CHF 6 000 per person in the first KIP phase, a modest amount considering that many of these people need different integration measures over several years before they find access to regular VET structures or to the labour market. Besides jointly financing the KIP, the confederation finances programmes and projects of national importance which aim at the development of quality assurance, the evaluation of effectiveness, the testing of innovative projects and new solutions to close gaps in existing programmes.

([101]) https://www.admin.ch/opc/en/classified-compilation/19995092/index.html [accessed18.11.19].
([102]) https://www.sem.admin.ch/sem/en/home/asyl/asylverfahren.html, and https://www.sem.admin.ch/sem/en/home/asyl/asylverfahren/nationale-verfahren.html [accessed 18.11.19].
([103]) https://www.sem.admin.ch/dam/data/sem/integration/foerderung/kip/finanzen-kip-2014-2017-d.pdf [accessed 18.11.2019].
([104]) https://www.admin.ch/opc/en/classified-compilation/20020232/index.html [accessed 18.11.2019].

Another milestone was reached in April 2018, when the Integration agenda Switzerland (IAS) ([105]) was accepted by the cantons and the confederation. It led to increased Federal funding of integration measures for refugees and temporarily admitted persons (the one-time flat rate of CHF 6 000 per person was tripled), the formulation of clear integration goals, and the definition of a binding integration process for all actors involved.

The first language courses and coaching to promote labour market integration have been organised within the framework of the KIP and the IAS. Motivated refugees and temporarily admitted persons who have the potential and have attained the required level of language ability (at least level B1 in the Common European framework of reference for languages, CEFR) are coached to start a dual, apprenticeship-based VET programme in order to acquire a recognised upper secondary qualification. Dual VET programmes last for two, three or four years, depending on their requirements. They are accessible for young people aged between 16 and approximately 23 years but, to be able to enrol, an apprenticeship contract with a host company is needed. If this is not yet possible, there are non-certifying pre-VET programmes that usually last for a year and combine school and work-based training. For many years, the cantons have offered specific pre-VET programmes for young migrants coming to Switzerland towards the end of, or after, the period of compulsory education to prepare them for certifying initial VET. They focus on teaching of a local language (German, French, Italian) and of the academic skills required for VET as well as on transmitting norms and values of the Swiss culture of learning and working. The students also gain practical work experience and are supported to find a host company to start initial VET. However, most cantons set an age limit (21 to 23 years) for these pre-VET programmes, because it may be difficult to find a host company to start an initial VET programme after the age of 25 years.

With the arrival of many refugees in December 2015, the Federal Council decided to help finance additional pre-VET programmes for a pilot period (2018 to 2021). These new programmes also last for a year and were set up in cooperation between the cantons and professional organisations to prepare refugees and temporarily admitted persons for dual VET in specific occupational fields that are looking for a future workforce (Scharnhorst and Kammermann, 2019). Many of them are also accessible for young adults (up to approximately 35 years). So far, these new programmes have been successful according to a recent presentation (mid-November 2019) of first evaluation results ([106]). The participants, as well as the cantons and the companies, are satisfied with the programmes. Of the first cohort (750 students), 80% finished their pre-VET programme in summer 2019 and, considering the dropout-rate, about two-thirds of the participants that started received an apprenticeship contract and have taken up a certifying dual VET programme. Another 5% directly found a job in the labour market. Others could take up branch-related continuing education options and the rest has not yet found a solution to continuing their education and training. In May 2019, the Federal council extended the pilot phase for another two years (until summer 2023).

Besides strengthening language and basic academic skills needed for VET, the pre-VET programmes are considered as important for socialisation into a community of workers in which basic work skills, as well as cultural skills and knowledge about Switzerland, can be acquired. Here, refugees have contact with locals and learn with them and from them; this also covers behavioural standards which they are expected to comply with, including punctuality, politeness, honesty, service orientation towards customers, dress codes at work, taking initiative and asking questions in decisive moments.

The regular initial VET programmes are strongly labour market-oriented as the professional organisations define the occupational qualification profiles. The main partners of the VET system (confederation, cantons, professional organisations) share the conviction that the low-threshold two-year VET programmes are the main gateway

([105]) https://www.sem.admin.ch/sem/de/home/themen/integration/integrationsagenda.html [accessed 18.11.2019].
([106]) https://www.sem.admin.ch/sem/de/home/aktuell/news/2019/2019-11-12.html [accessed 18.11.2019].

to access certifying initial VET for those with low achievement due to sociocultural disadvantages or learning impairments. These programmes are academically less demanding, but the graduates hold a Federal vocational certificate (FVC) and are skilled workers for simpler occupations for which there is demand in the labour market. An FVC also ensures permeability towards the corresponding three- or four-year VET programmes which lead to a Federal vocational diploma (FVD) and give access to professional education at tertiary level.

The Federal authorities and their partners consider the existing flexibilities in the VET system as sufficient to promote the acquisition of a recognised vocational qualification. In addition to the support measures to promote successful learning and graduation of all VET students (such as remedial courses at vocational schools, prolongation of the VET programme for one year), there are specific support measures for students in two-year VET programmes. They are instructed in smaller school classes with teaching methods adapted to weaker learners and are entitled, if needed, to get individual tutoring which comprises all learning venues (training company, vocational school, branch courses) and the social environment to support successful development that may be hindered by different factors (SBFI, 2014a). The Federal VET agency (SBFI, 2014a, p. 4) further underlines in its official guide for two-year VET that these programmes are conceived to allow as many young people as possible to obtain a recognised VET qualification; for those who cannot yet stand their ground with the available support measures, specific solutions outside regular VET have to be found to prepare them.

A Swiss education policy goal stipulates that 95% of all residents (which includes accepted refugees and temporarily admitted persons) have an upper secondary qualification by the age of 25 years. The VET system plays a central role in reaching this goal because about two-thirds of the young people in Switzerland enrol in initial VET after compulsory education. National monitoring data show that the 25-year-old Swiss nationals born in Switzerland almost meet this goal (graduation rate of 94%) but migrants born in Switzerland (86%) or abroad (73%) are still far from it (BFS, 2018). It remains to be seen how the new Integration agenda Switzerland and the pre-VET programmes for refugees will contribute to improving this situation.

16.3. Four pathways for adults into the labour market

The clearly structured, full-time initial VET programmes are targeted at adolescents or younger adults. But older adults (over 25 years), who have different needs and conditions, may also get an initial or a second vocational qualification according to the Vocational and professional education and training Act (VPETA) ([107]) and the Vocational and professional education and training ordinance (VPETO) ([108]), both in force since 2004.

There are four ways for unqualified adults to get an initial VET qualification (FVC or FVD). Two require attendance of a formal apprenticeship-based VET programme, either a regular programme or a shortened one, if some previously acquired competences are recognised. Both options require a contract with a host company besides attending lessons at vocational school and a standard final examination. The two other ways are meant for adults with at least five years of work experience (partly in the desired occupation) and do not necessarily require formal education. One is direct admittance to the final examination, with self-organised preparation or preparatory courses provided by different schools. The other is validation of prior formal and informal learning results which are either judged as fully equivalent to a final examination in the desired occupation, or which need to be supplemented by some additional courses but without having to take a final examination. Validation procedures only exist for 20 of about 230 initial VET qualifications and are not offered in all the cantons. Validation would be the least costly way for interested adult refugees and for the State but often they are neither the quickest, nor the easiest way. A comprehensive validation dossier

([107]) https://www.admin.ch/opc/en/classified-compilation/20001860/index.html [accessed 18.11.2019].
([108]) https://www.admin.ch/opc/en/classified-compilation/20031709/index.html [accessed 18.11.1209].

must be compiled so that professional experts can judge the equivalence of the competences acquired through prior formal and informal learning. This requires cognitive and language skills and often needs support by coaches. Therefore, regular or shortened apprenticeships are often easier and quicker ways for many adult refugees (Spadarotto, 2019). In principle, the legal foundations (VPETA, VPETO) allow for flexibility regarding the four ways to obtain an initial VET qualification for adults: vocational classes with adapted schedules, part-time study courses, modular courses with partial examinations which would facilitate the recognition of prior learning results, and dispensation from some modules. However, such offers are only available in certain cantons or occupations or are still in the process of being established (SBFI, 2014b).

The current initative *VET 2030* ([109]) might also help to flexibilise VET for adults further. Increasing digitalisation sets new challenges and calls for a more open system of lifelong learning, for the young and adults.

With about 400 000 adults (total in Switzerland) between 25 and 54 years without post-compulsory certification, the potential for qualification is considerable (see Tsandev and Salzmann, 2017). However, in comparison, the number of certifications acquired by adults is relatively modest and only marginally increasing over time: in 2014, only 7 643 persons aged 25 years or more completed upper secondary education, of whom two-thirds completed regular or shorter initial VET programmes. The pathways created for adults - direct admission to the final examination and the validation procedure - are far less frequently followed and, depending on the canton and profession, the proportion taking these routes varies greatly (see Wettstein, 2016).

16.4. Factors impacting refugee work integration

The Swiss experience shows that if refugees have successfully acquired a Federal VET certificate or diploma, they are eligible to work as qualified workers in their profession. This not only provides them with a steady income and makes individuals self-reliable, it also is a key to social integration. Often colleagues help with the various issues and challenges that refugees face when trying to understand the new culture and new behavioural expectations. For society, the benefit is that refugees can work in fields needing employees and bring their knowledge and skills to enhance or stimulate new approaches to work. The cultural exchange between refugees and their colleagues contributes to the development of inter-cultural competence and helps when workers go abroad or cope with international individuals as customers or colleagues.

Integration into the labour market is not an easy or straightforward endeavour. The immigration of many young people with a long-term perspective to stay in their host country at an age where they can start VET brings with it several challenges for the VET system and its institutions. These are briefly outlined below:

16.4.1. **Risk of discrimination**

The risk of discrimination in the social and occupational integration of those from a migrant background should not be underestimated, especially among employers who have little or no experience with such employees and whose market and customer relationships are regionally oriented (Scherr et al., 2015). A perceived 'lack of training readiness' in refugees promotes a culturalising perspective and might contribute to a social selection in decisions about admission to education, and hence to discrimination against young people with a migrant background (Hormel, 2016). Although a future workforce is needed and many of the refugees could be recruited, even those who are adequately qualified often have difficulties finding gainful employment. There is also a hierarchy of recruitment preferences, with companies and organisations initially actively recruiting workers based on the free movement of persons' policy within the EU/EFTA. This also reduces the opportunities for refugees to find employment. Based on the Federal Constitution (Article 121a) and the For-

([109]) https://www.sbfi.admin.ch/sbfi/de/home/bildung/berufsbildungssteuerung-und--politik/projekte-und-initiativen/berufsbildung-2030.html

eign nationals and integration Act (FNIA, Article 21a, Paragraph 3, see Footnote 104 for this act), Switzerland has introduced a regulation to exploit the domestic employment market potential better before hiring workers from abroad; this applies in the professions, areas of employment or economic regions with an above-average level of unemployment (i.e. 8% until December 2019 and 5% as of January 2020). Employers must therefore notify the public employment agencies of vacant positions so that access to information about these vacancies is restricted for a limited period to persons registered with public employment agencies in Switzerland. Refugees and temporarily admitted persons are residents of the country and therefore a part of the domestic employment market potential.

16.4.2. **Training design**

The heterogeneity of the refugees and their experiences require not only new perspectives and patterns of action, which can be an enrichment for the working world, but also an openness of all workers to joint learning. For education and training, especially in the workplace, this means a broader understanding of work and experiential knowledge as well as how this can be made visible and usable for the work process. On-the-job learning must normally be supported during the introductory phase, as with mentoring programmes, but this requires extra staff capacity.

16.4.3. **Access to dual VET**

There are many vacant apprenticeships (mainly in the area of water supply, trade, construction and hospitality according to the apprenticeship barometer of April 2019) ([110]). Refugees could be encouraged to apply for these apprenticeships. The new pre-VET programmes created in cooperation with professional organisations should also generate apprenticeships in occupational fields that need a skilled workforce in the future. More generally, involvement in value-added working life also contributes positively to integration in society. In order to achieve this, the insight and trust of employers must be motivated to provide enough training places for refugees. Since direct entry into dual VET often fails due to a lack of prior knowledge, transitional pre-VET programmes, are a first step to allowing a slow and accompanied entry into vocational training.

16.4.4. **Motivation obstacles**

There are several soft factors that can hamper adult learning, such as low self-learning skills, low stamina, multiple family and work-related issues, lack of social and operational support, or fear of failure. Many refugees need more than traditional structural support to understand the rules, trust themselves, and establish a healthy work-life balance.

16.4.5. **Social integration and support**

In addition to preparing for the labour market, VET also largely fulfils a social function, supporting socialisation in the workplace and integration into society. Apprentices can learn important basic behaviours and make contacts with colleagues. However, employers are often overwhelmed by the scope of additional integration needs, especially explaining basically expected social behaviours. In order to be able successfully to shape the integration in training and the labour market, the support of case managers and coaches is highly important.

16.5. Public institution integration challenges

Increasing immigration efforts place special demands on canton administrations. Their tasks, in the context of the integration of refugees into work processes, essentially include placement in language courses, advice and support with regard to the recognition of foreign diplomas, and placement in education and the labour market, including pre-employment measures (see Heckmann, 2015). These stages of development are ideally framed by coaching and counselling services that will support both the refugees and the trainers.

Networks between communal organisations emerge as part of refugee integration when the

([110]) https://www.sbfi.admin.ch/sbfi/de/home/bildung/berufliche-grundbildung/nahtstellenbarometer.html [accessed 18.11.2019].

division of labour has led to a fundamental division of functions. A distinction is made between the domains of social protection (such as social assistance), work integration, and education (such as vocational guidance, language courses). At the same time, organisations can focus on their core competences and, with fewer human resources, choose teamwork based on trusting collaborative relationships and process orientation (see Mayntz, 1992). The successful integration of refugees into the labour market thus requires institutions that manage the organisation of measures as well as the counselling and support of participants in the cantons (Barabasch et al., 2016a).

The Swiss integration policy is anchored in the Foreign nationals and integration Act (FNIA) and the premise is 'promote and demand'. Demand includes encouraging foreigners to take responsibility for their own lives, while funding involves Federal financial contributions to the cantons, which coordinate and implement social and occupational integration measures at the cantonal level (see Jörg et al., 2016). Sustainable vocational integration of temporarily admitted persons and refugees is one of the most important strategic goals. According to the SEM (2018), there are several major goals to be achieved within a certain timeframe: a language level of A1 has to be achieved by all after three years of arrival; two thirds of refugees between 16 and 25 years old are in post-obligatory education; and half of all refugees are integrated into the regular labour market seven years after their arrival.

Inter-institutional cooperation (IIZ) in Switzerland supports the development of institutions and structures for the integration of migrants. It has been operating at national level since 2010 and supports the integration efforts in the cantons and cooperation between them ([111]). Institutions for VET, social security, health or employment cooperate in this framework.

Depending on the canton, the concrete measures and programmes for the social and occupational integration of provisionally admitted persons and refugees are delegated to national, regional or local NGOs or to public institutions at cantonal or community level. In some cases, this is also the responsibility of a specific department of the cantonal or municipal administration. According to a report commissioned by the SEM (see Jörg et al., 2016), there are currently about 50 smaller or larger specialist organisations across Switzerland with a broad range of services, from coaching and consulting, assessment and work integration to qualification measures.

16.6. Conclusion

Despite many challenges for both the administration in the receiving country and the refugees themselves, successful labour market integration is crucial and to individuals' benefit. Switzerland has a comprehensive infrastructure in place for refugees and temporarily accepted persons. Experiences have shown that early preparation for VET in connection with the recognition of prior learning serves socialisation in the world of work. If this is achieved, much of the support needed by refugees throughout the integration is then provided by colleagues.

There are several challenges that remain. Language education is key to successful integration. The Swiss programme Fide ([112]) supports the acquisition of language skills and ensures the adequate qualification of language trainers. Quality assurance and high efforts in language training are the foundation for ensuring that language learning opportunities are in place. The second step is successful integration into the labour market, for which new pre-VET programmes were created to facilitate the transition to dual apprenticeships. Overall, the goal to increase successful integration into the labour market will remain and is a priority for all institutions involved.

([111]) http://www.iiz.ch/ [accessed 18.11.2019].
([112]) https://www.fide-info.ch/de/wasistfide/entwicklung [accessed 18.11.2019].

16.7. References

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CHAPTER 17.

Apprenticeship as a top tier destination: how can we make apprenticeships more attractive to learners?

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17.1. Introduction

In many parts of the world, apprenticeship and vocational education and training (VET) more generally are regarded as second-tier pathways to adulthood, designed for less academically able students and those from less advantaged backgrounds (European Commission, 2015; Loo and Jamieson, 2017; Ryan and Lorinc, 2018). Roberts (2019) suggests that 'enrolling for vocational courses is widely taken to mean that the young people are considered not good enough to tackle more demanding options' (ibid. p. 3). While this may have been a reflection in the past of the capacity of vocational provision to enable the progression of young people into attractive skilled employment, in many European and OECD countries, things are changing. Driven by concerns over persistently high youth unemployment, continual complaints from employers about the difficulty of finding young people with the skills they need (Huddleston, 2012) and recognition of the skills strategies of German-speaking countries, interest in apprenticeship as a mechanism for smoothing the transition of young people into skilled employment is growing strongly (OECD, 2018).

'All too often, the full potential of young people is not realised because they do not have access to productive and decent jobs. Although they are an asset, many young people face high levels of economic and social uncertainty. A difficult transition into the world of work has long-lasting consequences not only for youth but also for their families and communities' (ILO, 2018, p. iii).

Cedefop (2019) suggests that apprenticeships can be a way of addressing labour market imbalances and that there is a need to raise awareness amongst young people about the opportunities available beyond traditional higher education routes into the labour market. The European Commission (2015) has also recognised the need to 'increase the attractiveness of apprenticeships so that many more young people are inspired to follow this route', and asks, inter alia, 'what role can career guidance play?' (ibid. p. 2).

Contemporary labour markets are characterised by precarity and uncertainty, with young people taking longer to enter sustained stable employment (Standing, 2014; Fleming, 2017). A 'job for life' is no longer the experience of most workers: 'Now a typical worker – most likely to be a woman – can anticipate having nine employers before reaching the age of 30' (Standing, 2014, p. 62). This argues a case for the provision of better focused and more relevant work-related and work-based learning experiences, including work experience and work placement, industry-devised assignments, job shadowing and informed careers advice and guidance for young people to obtain a more realistic insight into current labour markets.

Necessary prerequisites involve exposure to real workplaces, authentic tasks, practising technicians and crafts people for young people to secure an accurate picture of what is available outside higher education, and of the steps required to get there. Strong pedagogical links between the development of knowledge and practical skills and appropriate assessment tech-

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niques are essential in forging an appreciation of what it means to be a competent professional within a recognised community of practice. This should be at the heart of apprenticeship design, as should a 'clear line of sight' to ultimate employment opportunities.

According to Roberts (2019) the EU defines youth as 20 to 34-year-olds; in UK-England young people tend to enter their first-time full-time job at 19. However, this does not imply a straightforward transition from unemployed to employed status. Many young people churn in and out of low paid, part-time, insecure jobs and between different public schemes and interventions aimed at directing the disengaged into employment (Maguire and Huddleston, 2009). Roberts (2019) characterises the situation thus: 'most young people are pulled down or up into the centre of the occupational structure, leaving smaller numbers embarking on elite careers and, at the other extreme, trapped in a precariat class' (ibid. p. 3).

Today's young people in many developed countries are more qualified, with higher proportions obtaining a bachelor degree or postgraduate qualification than ever before. This trend has been accelerated by initiatives designed to encourage young people to consider higher education as the preferred option after compulsory schooling. In the UK, Widening participation, Higher education access programmes, Aim higher and similar initiatives have specifically targeted those groups previously unrepresented in higher education. The efforts of schools have increasingly focused on preparing school leavers for university entrance and often neglected to make young people aware of other opportunities available to them, including apprenticeships. This has been exacerbated by schools declining to allow representatives from colleges of further education (vocational institutions) into schools to advise pupils about vocational courses, including apprenticeships, available in the area.

This has led to a situation where young people are prevented, or frustrated, from gaining informed and trusted access to impartial advice and guidance about the vocational opportunities, including apprenticeships. Employers have expressed concern about young people's lack of knowledge or interest in pursuing an apprenticeship; set against this is the knowledge that some apprenticeships, in specific sectors, are highly sought after and oversubscribed. Since 2010, 42% of UK starting apprentices have been over the age of 25, rather than being young people finding their way into work (Raikes, 2015, p. 23). Younger potential apprentices risk being 'squeezed out'. This could be because young people, their teachers, parents and carers are uninformed about apprenticeship, or because they view it as a second-tier option.

The problem is not confined to the UK. In Australia it is reported that 'A lack of job opportunities and not enough work experience are the main barriers to gaining full-time employment identified by young people in 2018.' (NCVER, 2019a). In January 2019, youth unemployment stood at 40.4% in Greece, 31.7% in Spain, 10.4% in the UK and 5.1% in Germany; many of these young people were university graduates (Statista, 2019). In the UK, The Office for National Statistics (2019) estimates that five years after graduation almost a half of graduates are still in non-graduate jobs. However, in Germany the apprenticeship route is strong, well established and highly regarded. It will be interesting to see how far the recent introduction in the UK of higher and degree level apprenticeships (level 6 and above) redresses the balance in terms of the understanding and status of apprenticeship and of the extent to which this impacts on the perception of apprenticeships at levels 3, 4 and 5.

The European Commission (2015) suggests that 'There is strong evidence that work-based learning helps to equip young people with the skills that can improve their employability and ease the transition from school to work' (ibid. p. 2). It has called upon Member States and their partners in education, training and employment to promote apprenticeships and other forms of work-based learning and has set out in its publication *High-performance apprenticeships and work-based learning: 20 guiding principles* case studies of good practice drawn from across Member States.

For this to become a reality in the current UK-England context, young people, their teachers, parents/carers need to be made aware of the

opportunities and benefits offered by apprenticeships, including employed status, on- and off-the-job training leading to a nationally recognised qualification, guaranteed minimum wage, and the potential for future employment and enhanced earnings (National Apprenticeship Service, NAS, 2019). The following describes a programme launched by the National Apprenticeship Service designed to raise such awareness.

17.2. Tackling the apprenticeship pathway information deficit

The economic and social case for an increase in the number and range of apprenticeships has been a policy concern for the past 20 years at least (Ainley and Rainbird, 1999). The UK government, in response to the concerns raised by employers of the need to develop 21st century skills, pledged to increase the quality and quantity of apprenticeships in England, with the ambitious target of three million starts by 2020. The government funded this challenging plan through a new levy on employers introduced in 2017, whereby those with an annual pay bill over GBP 3 million contribute 0.5% to apprenticeship training provision ([115]).

To increase youth participation in apprenticeships, the UK Government commissioned a project to address young people's lack of understanding about what apprenticeships have to offer and how they can be secured. It applied insights from social capital theory (OECD, 2001; Halpern, 2005; Field, 2008), enabling young people to interact directly with people in work who have first-hand experience of apprenticeship, and through a range of resources designed specifically to raise awareness and to challenge the status quo.

The Apprenticeship support and knowledge in schools project (ASK) began in 2016/17. It provides schools and colleges across England with access to free support to develop and transform students' knowledge and thinking about apprenticeships. The National Apprenticeship Service, part of the Skills Funding Agency, has commissioned this project to support the government's plans. The aim of the ASK project is to work with schools, teachers, parents and governors alongside other key partners, to support and ensure that schools effectively meet their statutory duties to provide information, advice and guidance (IAG) ([116]), specifically on the apprenticeship and traineeship offer.

ASK exists because it cannot be taken for granted that young people will respond to and embrace apprenticeships as an attractive alternative to general upper secondary education. Recent research literature has emphasised the growing challenges faced by young people as they navigate transitions through education into ultimate employment. Career aspirations are often narrow and unrealistic and distorted by gender, ethnicity and socioeconomic background (Archer et al., 2012; Chambers et al., 2018). In a recent paper, Musset and Kurekova (2018) explore the career aspirations of hundreds of thousands of teenagers internationally and highlight an important long-term trend working against young people's participation in apprenticeship provision. Analysis of OECD PISA data since 2000 shows that young people in many countries are increasingly inclined towards jobs that traditionally require a higher education degree. Interest in blue-collar careers, traditionally entered through VET, is declining. In the UK, while apprenticeship provision has increased, significantly since 1990s, growth has been greatest among adult apprenticeships. The number of teenage apprenticeship starts has flat-lined (OECD, 2018) and completion rates stalled (London Assembly, 2017).

The ASK model works on the premise that most young people lack access to people who can provide reliable, authentic, influential in-

([115]) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/482754/BIS-15-604-english-apprenticeships-our-2020-vision.pdf

([116]) The government's Careers strategy, published in December 2017, identifies the eight Gatsby benchmarks as the gold standard for careers provision in England. Schools are expected to use the benchmarks to develop their careers programme and fulfil their statutory duty to provide their pupils with independent careers guidance on the full range of education and training options, including the government's flagship apprenticeship and traineeship programmes. Schools must also publish information about their careers programme, including the name of their careers leader. https://amazingapprenticeships.com/app/uploads/2019/09/Whole-school-approach-SLT-guide.pdf

sights into apprenticeship. Drawing on social capital theory (notably, Granovetter's conceptualisation of the 'strength of weak ties'), studies have illustrated the long-term positive economic impact of young people engaging with employee volunteers through their schools (Kashefpakdel and Percy, 2016; Mann and Percy, 2014; Mann et al., 2018). Encounters with employers who recruit apprentices and with apprentice volunteers enhance access to authentic information which may translate into more informed decision-making, application and eventual recruitment.

The ASK programme has a range of elements, each targeting a key area of support required to deliver a high-quality service. Depending on the size, focus and requirement it can include: an apprenticeship awareness school assembly, practical workshops on how to apply for an apprenticeship, attendance at careers fairs, free resources for pupils and teachers, teacher professional development sessions and parents' evenings.

ASK is designed to make it easy for teachers to invite people with first-hand experience of apprenticeship (notably former apprentices and their managers) into schools and colleges to interact directly with learners. In 2018, more than 208 000 young people across more than 2 000 establishments engaged with the programme and received the support they needed. The ASK programme is also designed to deliver impartial information about traineeships and apprenticeships to students aged 15 to 18. It is essential that all young people are made aware of the range of education and training options available to them and have the support to make the right personal choices. The information and advice on offer should also be relevant to the labour market. Contacts with employers are particularly beneficial in helping young people to consider apprenticeships. The research suggests that students find interactions with employers invaluable for making decisions about their education and career pathways (Kashefpakdel and Rehill, 2017).

In their research, Kashefpakdel and Rehill (2017) also outlined that engaging with employers as part of wider career education tackles gender stereotyping. They emphasised that young people hold entrenched opinions on the suitability of different apprenticeships for different genders. Specifically, boys appeared to be more fearful and cautious of crossing typical gender boundaries: 63% of boys stated that they did not want to 'stand out from the crowd' by working in a characteristically female apprenticeship. Results found that 80% of girls would consider entering non-traditional jobs, but only 55% of boys. Meeting a range of role models from different backgrounds can challenge assumptions and change attitudes (Fuller and Unwin, 2014). Through a range of activities delivered by the ASK providers, young people meet employers directly and speak to them about the realities of working as an apprentice in a range of environments and workplaces.

Evidence shows that young people's aspirations and decisions are largely influenced by their parents (ACCA, 2017). This finding is also supported by research amongst Australian youth (NCVER, 2019b). In the English context, just under a third of parents (32%) think that an apprenticeship would be the best option for their son or daughter. Compared with this, just over a half of parents (52%) think that university would be the best option for them) ([117]). However, parental engagement can be challenging. Teachers often lack the confidence and knowledge to work with parents (Goodall and Vorhaus, 2010). As part of the ASK project, schools are provided with parental resources to raise awareness and challenge stereotyping. Schools arranged presentations by ASK providers during parents' evenings or parents' information sessions and shared information guides on apprenticeships, their benefits, a comparison with academic pathways, how to apply and which employers offer them.

17.3. Findings from London and the south of the UK

The Ask project commissioned delivery partners based in a number of locations across England to collect impact data through an agreed framework, including post-event surveys and qualita-

([117]) National Apprenticeship Service: http://www.complete-careers.com/wp-content/uploads/ASK-Project-Overview.pdf [accessed 9.10.2019].

tive case studies and feedback emails. Feedback was collected after each session via the ASK programme evaluation form, which was automatically sent out to the project schools. The headline findings from the analysis are outlined below.

The overall evaluation of the project was not accessible for this chapter. However, the authors worked closely with the London and South ([118]) delivery partner to gather data on the impact of the project for teachers, students and parents. The results are for the 2018/19 academic year. Quantitative and qualitative feedback collected from a variety of stakeholders demonstrates the project is successful in increasing understanding and raising awareness of apprenticeships as a credible career pathway for students, and changing the perceptions of students, parents/carers and teachers as to the types of careers and quality that apprenticeships support.

17.3.1. **Feedback from teachers**

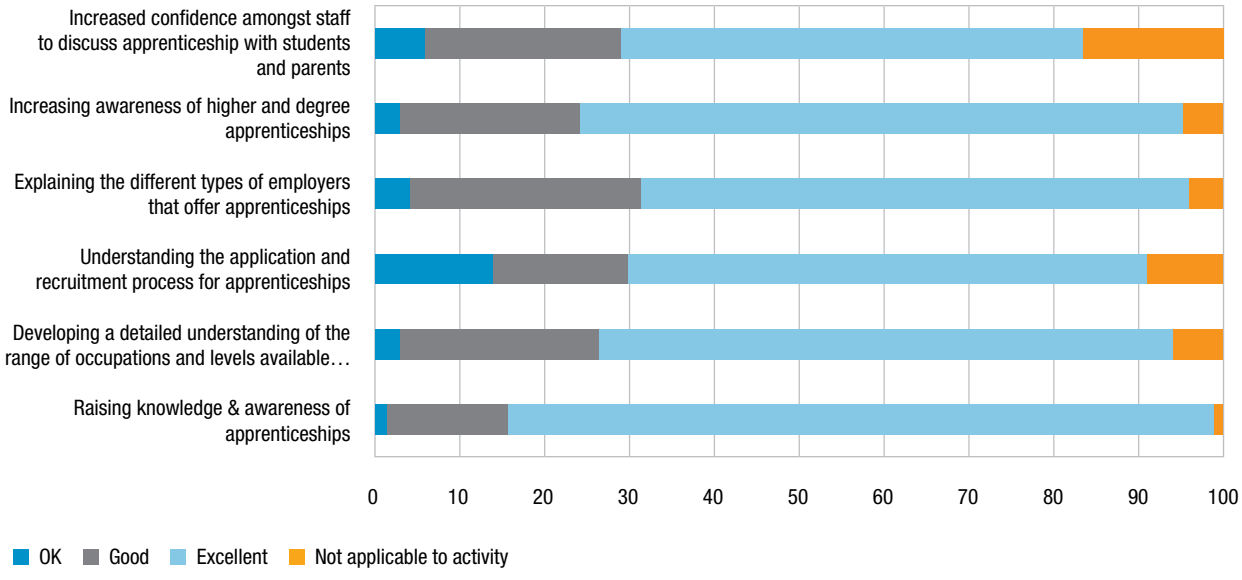
In total, 558 responses were received across a number of different activities. In this sample, 97% rated the event as 'good' or 'excellent' and agreed that the event helped raise knowledge and awareness of apprenticeships. Also, 91% would recommend this support to other schools/colleges.

Feedback generally showed that activities strongly supported increased awareness and understanding of apprenticeships for staff and students. Engagement with ASK activities has clearly increased teachers' awareness in terms of types of employers offering apprenticeships and of the recruitment process, as the majority rated this as excellent.

The ASK presentation was generally well received by schools, with teachers commenting on its informative content and good visuals. Schools fed back consistently about the impact

Figure 17.1. **Assessment of the impact of ASK activities**

How would you rate the impact of this activity on the following:



Source: ASK evaluation, Education and Employers charity.

([118]) Buckingham Thames Valley, Coast to Capital, Cornwall & the Isles of Scilly, Dorset, Enterprise M3, Greater Cambridge and Peterborough, Heart of the South West, Hertfordshire, New Anglia, Oxfordshire, Solent, South East, Swindon and Wiltshire, Thames Valley Berkshire and West of England.

of the ASK delivery team. Indicative comments from the feedback include:

'…Hugely detailed knowledge and insight from presenter. The gravitas and importance of the information made the option of apprenticeships seem exciting.'

'The facilitator had a good grasp of the type of information sixth form students would be looking for and the misconceptions they might have.'

'Excellent morning – not only perfect for post-16 but as an experienced post- 16 tutor I learned so much info. Left us with practical steps we can take.'

'Delivered really well and at a level that the pupils could understand.'

'Perfect for our careers day. C (programme deliverer/presenter) was very knowledgeable and engaged our students.'

In follow ups with schools after sessions and via evaluation forms, teachers often indicated that their apprenticeship activities would be increased following initial visits from the ASK programme. A number of schools requested further sessions following initial ASK engagements or have already rebooked ASK for the 2019/20 academic year, with sessions to deepen impact.

17.3.2. **Feedback from students**

In total, 1 280 student responses were received. Overall outcomes from quantitative questions included:

(a) 80% agreed, or strongly agreed, that they had improved their general knowledge of apprenticeships after the sessions;
(b) 86% agreed, or strongly agreed, that they understood apprenticeships better now than they had at the start of the session;
(c) 80% agreed, or strongly agreed, that the session was useful to them.

However, some also responded that convincing their parents that this was a good option remained a challenge:

'I would need to find out more information; I will talk to my parents about whether I could get an apprenticeship instead of college.'

Anecdotally, it was noted that students came into ASK sessions with a much clearer understanding of university than apprenticeships, often because they had heard about university from a much younger age. As a result, it is recommended that apprenticeship information and ASK sessions start from a younger age to ensure that this information does not come too late in the decision-making process.

Some indicative feedback comments include:

'I think that I am definitely more likely to consider an apprenticeship in the future.'

'I was fixed on uni but now I want to look into more options.'

'I am now more likely to consider an apprenticeship because before this I didn't think that the job I want to do can be included in an apprenticeship.'

'I feel more informed and now I've been introduced to the findanapprenticeship.gov website that's easier to find what I'm looking for.'

'It has definitely showed uni and apprenticeships can be seen on the same level.'

Teachers noted the impact of the ASK programme supporting students to make applications. While evidence of this has not been widely collected across project schools, anecdotal feedback from schools suggests that they attribute successful applications to ASK engagements.

'One of our students has secured an apprenticeship with South Eastern Rail following your activities.'

'One student got a place at KPMG to do their degree apprenticeship following on from the ASK session last year.'

17.3.3. **Feedback from parents**

Feedback from parents was collected after parent-specific sessions. Challenges were encountered in gathering parental feedback since talks were often held as part of a wider series of talks and many parents did not stay after ASK sessions to complete feedback.

In total, 621 responses were received. Of these, 98% 'agreed', or 'strongly agreed', that they understood apprenticeships better after the session and 91% 'agreed', or 'strongly agreed', that after attending, they could imagine their child applying for an apprenticeship in future, compared to 70% before the session. The majority of parents also 'agreed', or 'strongly agreed', that they would support their child if they were to

consider a higher level/degree level apprenticeship as an alternative to university (96%).

ASK sessions for parents were frequently requested and well received, contractual targets being greatly exceeded because of the high demand from schools. Anecdotal feedback from schools indicated that parental attitudes and understanding remained a challenge to the take-up of apprenticeships from students. Schools requested ASK talks at a large number of sessions to support them in tackling this barrier.

Generally, parents commented that the information provided had helped with the decision-making process. Indicative feedback comments include:

'Very motivating and passionate session with a lot of useful information for parents and students alike.'

'Seems like a great start on life, avoiding debt and gaining experience.'

'My daughter would be very well suited as she will thrive in a work environment with study rather than just study.'

Parents were often particularly interested in the higher and degree apprenticeships; comments cited a lack of previous understanding of how this compared with a university route.

17.4. Improving the image of apprenticeships through ASK

Apprenticeships still appear to lack the prestige of academic education and are often regarded as second-best. Sometimes they are presented as a solution for people who are disengaged from education or are unemployed, exacerbating the perceived negative image. Even countries that offer strong apprenticeship systems, like Denmark, Germany and Austria, encounter image problems and are confronted with decreasing numbers of young people interested in taking up apprenticeship-type schemes (Cedefop, 2014).

This argues for a coordinated approach to challenge the status quo. The ASK project is an example of such an endeavour to tackle the image problem and to highlight excellence through employer engagement, career-related activities and teacher training. Career guidance which is unbiased and of good quality can reduce the stereotypes and prejudices of apprenticeships among young people and their parents (Cedefop, 2015).

As a national (or even a sector-level) campaign involving all stakeholders (students, schools, teachers, companies, social partners and third sector) the outcomes evidenced in this research could enhance the visibility of apprenticeships and their potential.

17.5. Conclusion

There is substantial research evidence, both from policy and academic literature, to suggest that school-to-work transitions are becoming increasingly extended, fragmented and precarious (Matsumoto and Elder, 2010; ILO, 2018; OECD, 2018; Roberts, 2019); the situation pertains globally. This leads young people into a situation in which they may churn in and out of temporary, often informal, employment, or take jobs for which they are overqualified, or which they may feel do not allow them to fulfil their potential as graduates. Others are trapped in a 'precariat class' with little access to information, advice and guidance about what technical vocational options might be available to them. There are also those who may have made inappropriate career choices because they lacked sufficient information about alternative pathways and were persuaded of the view that higher education was the only path.

This has substantial and serious repercussions at an individual, societal and economic level. It represents a waste of potential human resource at a time when employers are seeking to recruit well-trained and qualified staff to fulfil professional and technical roles in key employment sectors. It also represents a waste of young people's talents and their right to fulfil their potential as citizens. At one level there is a mismatch between what employers appear to be looking for, although this is difficult to quantify or qualify (Huddleston and Ashton, 2019), and what the education and training system provides. It is

an oversimplification of a complex and multifaceted issue: the competing demands of many actors involved in young people's decisions about school-to-work transition: parents, arguably the most influential in young people's decision-making (ACCA, 2017; NCVER, 2019a; 2019b); head teachers with an eye to positive school outcomes and destinations data; teachers ill-informed about vocational and technical education and training provision outside of universities; and young people themselves.

The ASK project has attempted to address some of these longstanding issues by providing young people, their parents/carers, and teachers with access to reliable accounts from those intimately involved in apprenticeship. It is hoped this helps dispel the myth that vocational education and training is something for other people's children. At one level, this may be regarded as a promotional exercise by a department eager to drive up apprenticeship participation; at another level it is right in terms of equity that young people should be made aware of the variety of opportunities available to them in the labour market and of the routes to achieving them.

Building on Granovetter's (1973) notion of the 'strength of weak ties', the results of the evaluation suggest that all actors appreciated the opportunity to find out more about apprenticeships through engagement with trusted sources of information and authentic voices (apprentices and employers). While the real impact can only be assessed by identifying the number of young people who decided to apply for an apprenticeship, it is hoped that those who did were better informed about the choice they were making and were not opting for a second-tier destination.

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The next steps for apprenticeship

In a context of considerable interest in apprenticeship in recent years, Cedefop and the OECD decided to explore its future from the perspective of a number of megatrends, including sociodemographic changes, the accelerated adoption of emerging technologies and new forms of work organisation. They also considered how these trends have affected, and will continue to affect, the design and delivery of apprenticeship in European and OECD countries.

The combination of the emerging economic crisis as an aftermath of the Covid-19 pandemic, together with long-term structural trends affecting global economies, will entail a profound transformation of the world of work and require effective policy responses in the years to come.

This publication provides insights from 16 papers by researchers from Europe, Australia and the United States; nine were presented and discussed among policy-makers, practitioners and researchers during the joint Cedefop-OECD symposium on the future of apprenticeship held in October 2019 in Paris. Evidence and analysis in these papers will help inform political decisions shaping the future of apprenticeship.

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