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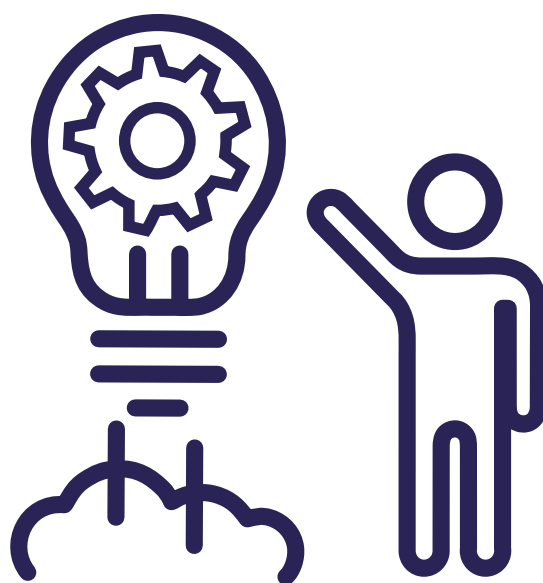
Volume 2: Guide for Practitioners

▶ **Innovations and strategies in apprenticeships**

ILO Toolkit for Quality Apprenticeships

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▶ **Innovations and strategies in apprenticeships**

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Acronyms and abbreviations

BIBB	German Federal Institute for Vocational Education and Training
CBC	competency-based curriculum
Cedefop	European Centre for the Development of Vocational Training
CVET	continuing vocational education and training
DC dVET	Donor Committee for Dual Vocational Education and Training
EAfA	European Alliance for Apprenticeships
ESS	employer/establishment skills survey
ETF	European Training Foundation
EU	European Union
GAN	Global Apprenticeship Network
GIZ	German Corporation for International Cooperation *(Deutsche Gesellschaft für Internationale Zusammenarbeit)*
GTOs	Group Training Organisations
ICT	information and communication technology
ILO	International Labour Organization
in-CT	in-company trainer
IOE	International Organisation of Employers
IVET	initial vocational education and training
KPI	key performance indicator
LMI	labour market information
MoU	memorandum of understanding
NCS	National Competency Standards
NIMI	National Instructional Media Institute
OECD	Organisation for Economic Co-operation and Development
off-JT	off-the-job training
OJT	on-the-job training
OS	occupational standard
RTOs	Registered Training Organizations
SDC	Swiss Agency for Development and Cooperation
SFIVET	Swiss Federal Institute for Vocational Education and Training
SMEs	small and medium-sized enterprises
TVET	technical and vocational education and training
VET	vocational education and training

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▶ Innovations and strategies in apprenticeships

The workers' organizations (Labour 20 – L20) and employers' organizations (Business 20 – B20) have called on the G20 Member States to endorse actions to promote apprenticeships. In cooperation with global workers' and employers' organizations, they have developed Key Elements of Quality Apprenticeships (ITUC, 2013).

This module presents a range of innovations and strategies to promote quality apprenticeships.

▶ 6.1 Innovations and emerging trends in apprenticeships

While apprenticeships have a history that goes back for millennia, they are continuously evolving and innovating in response to emerging demands in the labour market. New technologies, demographic change, globalization and new ways of organizing and managing human resources are changing employers' skills requirements in multiple ways. Nearly everyone now expects their careers to evolve over time, supported by continuous learning. A wide range of other learning opportunities, including higher education, actively compete with apprenticeship. New e-learning technologies are changing the ways in which skills can be acquired.

While country circumstances vary significantly, the ongoing transformation in the world of work is changing the face of apprenticeships everywhere. The stereotype of apprentices – a male teenager learning a manual trade with a private sector employer – is often now far from the truth, with many more female apprentices engaged in a wider range of occupations throughout the public and private sectors, and undertaking apprenticeships at higher and even at tertiary level.

Although some of the traditional features continue to characterize apprenticeships today, apprenticeships can and should be used much more widely. In fact, apprenticeships can be found throughout the public sector, in service industries as well as in manufacturing, in non-manual occupations, offered at both higher and tertiary level. In response to the rapid changes taking place in the labour market, apprenticeships are increasingly being used to train for occupations other than the traditional trades and crafts. In some countries, a large proportion of apprentices are female. For example, in England, men and women have

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roughly equal representation among starting apprentices (Powell, 2019). Some starting apprentices may be incumbent workers, so that the apprenticeship becomes a vehicle for upskilling and reskilling. While some apprentices may work side by side with just one self-employed mentor and guide, others work in organizations with hundreds of thousands of employees. In some cases, apprentices pursue their apprenticeship with several employers in rotation.

In addition to the multifaceted nature of apprenticeships, transformations in the world of work are creating unprecedented challenges, which are not readily addressed by the conventional forms of apprenticeship. For instance, traditional forms of apprenticeship may not be feasible for the growing economic sector of self-employed persons (OECD, 2018a). There are also cases in which apprenticeship programmes have evolved to such an extent that they are no longer recognizable as apprenticeships. For example, some apprenticeship programmes are shortened to a few months' duration. In many countries, there is therefore now an increasing tension between the demand for innovation and the need to sustain the fundamental features of traditional apprenticeships through establishing a precise definition.

This section provides an overview of the development of apprenticeships in new contexts – in non-traditional trades, at tertiary level and for adults as well as young school leavers. In particular, it offers three important perspectives:

▶ how new technologies are changing the ways in which skills can be acquired

▶ how apprenticeships can be used as a means of addressing the growing demand for digital skills

▶ other innovative arrangements, such as pre-apprenticeships, modularization and adaptations of apprenticeships to meet the needs of SMEs.

6.1.1   Technology-driven transformations in apprenticeships

Emerging trends

New technologies have been transforming the delivery of apprenticeship programmes, particularly in terms of methodologies and location. Advances in ICT tend to blur the conventional boundaries between workplace and classroom, where on- and off-the-job training has traditionally taken place. In recent years, teleworking has become increasingly common – some people work remotely, at home or at multiple sites. At the same time, e-learning platforms have also transformed off-the-job training, which traditionally involved face-to-face teaching. Today, the conventional day-release arrangement for apprentices may no longer be relevant, since online learning can take place in almost any location.

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Recognizing the ongoing process of digitalization of education and training systems, this Toolkit offers a range of digital technology tools that play an integral part in the design, delivery, monitoring and evaluation of apprenticeship programmes. Such tools not only enrich apprentices' learning process and encourage their greater engagement, but they are also used by employers to enhance the attractiveness of apprenticeships. Furthermore, technology tools also facilitate the acquisition of technical, transferable and digital skills, thereby improving apprentices' employability and adaptability to the changing world of work (see box 6.1).

The effective use of new technologies can improve apprenticeship programmes by supporting practitioners in the following ways:

▶ Promoting apprenticeships, through platforms that use different media to reach out, inform and attract people to apprenticeships and professions/trades (Tools 4.1.1, 4.1.2 and 4.1.7), as well as online vocational and career guidance (Tools 4.1.3, 4.1.4, 4.1.10 and 5.1.1.), including online match-making platforms that connect schools and colleges with volunteers from a range of sectors and professions (Tool 4.1.8) and conferencing software that brings together apprentices and employers from local and national enterprises (Tool 4.1.9).

▶ Recruiting apprentices through match-making platforms for apprenticeships that provide information about available apprenticeship vacancies and apprenticeship candidates in a given area and occupation (Tools 4.2.1 and 5.1.1), as well as online tests designed to support the selection of future apprentices, allowing an optimal match between training enterprises and apprentices (Tool 4.2.4).

▶ Enhancing the learning experience through digitalized instructional and learning media, and incorporating different learning methods that supplement more traditional ones, such as interactive e-books with embedded videos and 3D animated models, as well as video lectures and mobile apps (Tools 2.4.2, 2.4.3 and 4.4.6). Furthermore, providing better integrated vocational education through online learning platforms that create shared digital spaces to capture learners' workplace experiences and in which to compose formal learning journal entries, which foster peer-to-peer learning and support teachers in creating learning activities (Tool 2.4.1).

▶ Using artificial intelligence (AI) and data analytics to provide early warning about apprentices who are at risk of dropping out and to enhance the delivery of programmes and the learning experience. Predictive analytics (PA) identify the various profiles or combinations of factors which might indicate, for example, the likelihood that an apprentice will drop out. PA can look at patterns in the responsiveness of tutors, determining how quickly work is assessed and returned to apprentices. It has the potential to match tutors with individual learners.[1] MWS Technology Ltd have developed

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[1]   See https://www.aelp.org.uk/news/news/think-pieces/patron-think-piece-aptem-smart-machines-can-transform-apprenticeships/ for further details.

Aptem, a one-stop apprenticeship management app[2] with built-in machine learning functionality for the United Kingdom.

▶ Creating stronger relationships and promoting coordinated support between apprentices, enterprises and TVET providers, through portals that connect different learning venues, allowing all stakeholders to be informed of the vocational and academic progress of apprentices (Tool 2.4.1).

▶ Monitoring of training through mobile logbooks that allow apprentices to record and demonstrate their learning and training progress, including details such as hours worked, tasks performed and equipment used (Tool 4.5.6), as well as (self-)assessment platforms that assess and broaden apprentices' competencies and prepare them for the summative assessment or examination (Tool 4.5.2).

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| Box 6.1 | Transformations in the delivery of apprenticeships |

The following examples demonstrate the effective use of technology in creating personalized, flexible learning pathways.

Virtual apprenticeships

Virtual apprenticeships are conducted remotely, with learners interacting with their mentors and teams at the company entirely via digital communication tools. Typically, these types of arrangements lead to jobs which can be performed in a similar manner: programming, digital marketing, journalism, media-production, etc.

GenM is a company that offers virtual apprenticeships in marketing and has paired over 20,000 students with around 5,000 businesses. Under their programme, students first follow an online digital marketing curriculum and then interview various employers via a messenger app before signing a contract which pairs them with their chosen employer. For the next three months, the employers mentor the apprentices on a one-to-one basis by employing them on production tasks. After a three-month period, employers may hire the learner or gain access to another. The student may seek employment with the employer, look for employment elsewhere or list themselves as freelancers on a platform operated by GenM itself.

Plug-and-play learning in Malaysia

Selong Human Resource Development Centre (SHRDC) in Malaysia is working on digital apprenticeships by supporting the launch of a two-year master's level apprenticeships. Using technology as part of the process, it is developing a plug-and-play curriculum in which different skill units are bundled in various configurations for different stakeholders and specific purposes. The technology can be set up in one common location with students logging in from any location to learn. Resources and assessments are also shared and are available 24/7. SHRDC can also operate personalized apprenticeship programmes.

The plug-and-play approach, delivering small chunks of learning, may become the norm in future – bearing in mind the fact that the curriculum is digital but also combined with a hands-on learning component. Apprenticeships, on average, require about 20 per cent of the training to be classroom-based instruction. SHRDC brings together mentors from industry to collate all the technology learned into an application based on performance and user experience.

e-Learning in New Zealand

MITO, an industry training organization, has introduced apprenticeship and training programmes for the New Zealand automotive industry, in which the theory component is delivered online as e-Learning courses. This approach allows apprentices to access online learning resources, including videos, interactive simulations and theory assessments, at any time and from any device – mobile phone, tablet or computer. Real-time results and progress reports are available through MITO's online portal to both apprentice and supervisor. Furthermore, these programmes are supported by MITO's e-Learning support services – facilitators who help learners with any issues they have while working through the e-Learning courses.

Source: ILO and UNESCO, forthcoming; https://mito.org.nz/get-qualified/apprenticeships-and-training/.

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6.1.2 Addressing rising demand for digital skills to be delivered through apprenticeships

Emerging trends and challenges

The world of work is undergoing a substantial transformation due to new forces. In particular, technological advances, such as AI, automation and robotics, have produced numerous new opportunities, but also given rise to urgent challenges. While new jobs are constantly being created with the emergence of the digital economy, many jobs are at risk of becoming obsolete. Digital innovations will rapidly change the demand for skills, thereby creating a wider skills gap that has the potential to hold back economic growth. Skills for the digital economy may require apprenticeship programmes at higher education level.

Apprenticeships have the potential to reduce the skills gap by equipping individuals with the skills needed to adapt to the emerging digital economy, especially first-time jobseekers and those whose jobs may become obsolete during this transition. In fact, apprenticeship programmes are already no longer confined to traditional manual occupations, as their scope to provide an effective and efficient training model is also being increasingly recognized in the technological sector.

In an attempt to better equip students with the skills needed in the digital economy, some universities have started to incorporate apprenticeships into their degree programmes. Through a combination of work placement and part-time study, these new apprenticeship models offer students the chance to attain a bachelor's or master's degree qualification while completing an apprenticeship (see box 6.2). This collaboration between industries and higher education can attract top talents to participate in apprenticeships and respond to the actual needs of companies, especially in terms of digital skills. The curricula of digital apprenticeships typically cover a variety of digital skills, including cyber security, big data, software engineering, digital banking, IT skills for the automotive industry, etc. Several examples of these new apprenticeship models are described in detail below.

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Box 6.2 **Tech Industry Gold degree apprenticeships: Employers–universities partnership for digital careers**

Tech Partnership Degrees is a not-for-profit organization which unites employers and universities to improve the flow of talent into the digital workforce. As a UK Professional, Statutory and Regulatory Body (PSRB), it operates Tech Industry Gold, the industry accreditation for digital and technology higher education, creating high-quality degrees and degree apprenticeships that meet employer-defined standards for content, delivery and assessment.

Digital degree apprenticeships, designed by leading employers in the digital sector, equip apprentices for work in a wide range of graduate-level technology roles, including cyber security analyst, data analyst, business analyst, network engineer, software engineer and many more. In 2019, there were over 1,600 degree apprentices on Tech Industry Gold degree apprenticeships, employed by more than 80 companies.

Source: www.tpdegrees.com

Warwick Manufacturing Group[3]

As a part of the University of Warwick, Warwick Manufacturing Group (WMG) was founded in 1980 to improve the competitiveness of industries through innovation and the development of new technology and skills. Currently, WMG provides degree-level apprenticeship modules, including five undergraduate courses and three postgraduate courses in the field of digital technologies. The five undergraduate courses are Applied Engineering, Cyber Security Engineering, Digital Healthcare Science, Digital and Technology Solutions and Engineering, with a duration of three to four years. Apprentices are employed by companies such as Dyson and Jaguar Land Rover, where they are given the opportunity to learn skills on the job.

The three postgraduate courses are Engineering Business Management, Senior Leadership and Systems Engineering Technical Leadership, with a duration of two-and-a-half to three years. Similarly, apprentices complete some of their postgraduate modules through on-the-job training in companies like GE Aviation and Royal Mail Group.

Apprentices do not pay fees to the universities. Instead, they receive remuneration of between £16,000 and £25,000 per year. The details of two WMG undergraduate courses are provided below (for more examples, please follow the link in the footnote).

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[3] See https://warwick.ac.uk/fac/sci/wmg for further details.

▶ BEng Engineering with Dyson: a four-year programme that covers essential skills for the digital economy, including agile software development, cyber risk in organizations, data science and machine learning, and electronics manufacturing and assembly.

▶ BEng Applied Engineering with Jaguar Land Rover: a four-year programme that focuses on high-level digital skills, especially through courses such as computer-aided design (CAD), computer-aided manufacturing (CAM) and electrical and electronic systems.

University of Exeter and J.P. Morgan[4]

J.P. Morgan, a multinational investment bank and financial services company, partnered with the University of Exeter in October 2018 to offer the United Kingdom's first apprenticeship degree programme in Applied Finance (Level 6). The programme covers areas ranging from securities to IT in investment operations and prepares apprentices to become financial services professionals with the essential skills for using digital banking products. A large proportion of the programme takes place at the workplace through projects linked to academic content, while some modules can also be completed by distance learning.

Accenture

The multinational professional services company, Accenture, offers a BSc degree in Digital and Technology Solutions with a focus on one of the following specialisms: software engineering, data analysis or IT consulting. The four-year programme starts with the Level 4 Digital and Technology apprenticeship followed by Level 5 and 6 to complete the degree programme.

UBS[5]

The Swiss bank, UBS, offers a four-year apprenticeship in Information Technology, which aims to deepen apprentices' IT knowledge and allow them to acquire essential IT skills. As part of the training at UBS' Zurich offices, apprentices have a choice of comprehensive training in one of three disciplines:

▶ systems engineering: servers, operating systems, networks, hardware and software

▶ application development: software development

▶ mediamatics: digital media, design, maintenance and editing of websites, marketing, communication and administration.

On completion of the training, apprentices are awarded a Federal VET Diploma in Information Technology or Mediamatics.

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[4]   See http://www.exeter.ac.uk/undergraduate/courses/accounting/applied-finance/#Learning for further details.
[5]   Information collected and provided by GAN Global.

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AI Singapore Apprenticeship Programme[6]

The Artificial Intelligence Apprenticeship Programme (AIAP) is a national programme in Singapore, designed to address skills shortages in AI and machine learning through developing a strong pipeline of AI talent. The goal is to train 500 AI engineers over the next few years under the programme. Potential apprentices must have a keen interest in the area of machine learning and data science and either a polytechnic diploma or a university degree. The programme consists of two months of AI coursework (comprising hybrid classroom and self-directed learning) and seven months of on-the-job training on real-life issues in the AI industry, with apprentices mentored by professionals who work not just in AI, but also in big data and high performance computing. Successful completion of the AIAP equips apprentices with skills in the following areas: data modelling/tuning, data engineering, data product-related software engineering and cloud applications. A monthly stipend of SGD $3,500–$5,500 is paid during the nine months of training.

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6   See https://www.aisingapore.org/industryinnovation/aiap/ for further details.

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Box 6.3 provides an example of one of the IT companies that offers apprenticeships to address skills shortages by equipping apprentices with the required digital skills: Microsoft.

Box 6.3   Microsoft's apprenticeship programme

Microsoft launched its apprenticeship programme in 2010 with the following three main objectives:

(1) to help more people access digital careers

(2) to enable employers to widen their talent pool, and

(3) to address critical shortages of digital specialists.

Microsoft apprenticeships cover the ICT roles and skills requirements that are most in demand. Microsoft offers a range of training in both business and technical environments, including a Level 6 Degree Apprenticeship in Digital Solutions Technology – a four-and-a-half-year programme designed for those aiming to start their careers in technology. On successful completion of an apprenticeship with Microsoft, apprentices receive a nationally recognized apprenticeship qualification and support to help them continue their career at Microsoft. The apprentices are also part of a community in which they receive continuous support throughout their apprenticeships.

Microsoft ensures that the programme is attractive to both employers and apprentices, and that the content is of high quality and relevant, thereby guaranteeing the programme's credibility and recognition. Apart from apprentices and employers, the programme relies on the vital contribution of Microsoft learning partners, which include leading IT training providers in the United Kingdom, such as QA, Firebrand, Intequal and GK Apprenticeships. While Microsoft takes the lead in programme design and content creation, training is carried out by learning partners who maintain a direct relationship with apprentices and employers. Learning partners also assist employers in apprentice recruitment and engage prospective employers. At the same time, learning partners can benefit from such collaboration, as Microsoft's reputation helps to extend their local reach.

Source: Microsoft, 2018.

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6.1.3   Pre-apprenticeships

<div style="background:#FFC20E">Challenges</div>

Getting an apprenticeship can be a daunting task as employers naturally want to recruit the best possible candidate. Also, some countries stipulate eligibility conditions, including minimum educational qualifications, for gaining admission to an apprenticeship, thereby excluding many persons, particularly women and those belonging to underprivileged groups.

Apprenticeship programmes can be demanding, both intellectually challenging and requiring strong interpersonal skills. Apprentices may not be adequately prepared for the requirements of an apprenticeship programme or the working conditions in the industry, and some may decide to drop out, which represents a significant loss to both enterprise and apprentice.

To overcome the challenges, a few countries have initiated the development of different types of pre-apprenticeship programmes. These programmes aim to provide young people with the necessary preparation that will facilitate their access to a regular apprenticeship programme. Pre-apprenticeship programmes can benefit the potential apprentices in several ways, such as:

▶ meeting eligibility conditions by improving literacy, numeracy and soft skills

▶ allowing potential apprentices to experience an actual work environment for a particular industry and occupation in order to make an informed decision about whether to commit to a full apprenticeship

▶ some programmes provide basic on-the-job skills, which enhance the chances of being selected as an apprentice or being offered a job

▶ participants may receive credit for the period of study completed, which could shorten the time it takes to complete a full apprenticeship.[7]

Pre-apprenticeship programmes can take multiple forms, as shown in Table 6.1.

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[7]   See, for example, https://www.aapathways.com.au/about/pre-apprenticeships.

▶ **Table 6.1   Pre-apprenticeship programmes**

Country	Programme	Target group	Typical duration	Content
Australia	Pre-apprenticeship	Youth aged 16–24 years old	6–12 months	General employability skills, occupation-specific skills
England (United Kingdom)	Traineeship	Poorly qualified with little work experience and not in employment	6 weeks to 6 months	Work experience placement, work preparation training, literacy and mathematics, if needed
Germany	Introductory training	Youth aged 16–25 years old	6–12 months	Work-based learning, optional school-based component
	Preparatory VET year	Youth aged under 18 years old	12 months (with possible extension up to 18 months)	General subjects at vocational school; exploration of three occupational fields (including work placements)
	Basic vocational year		12 months	Vocational theory and practice in a selected field; work placement
Scotland	Certificate of Work Readiness	Youth aged 16–24 years old	10–12 weeks	Off-the-job training targeting employability skills; work experience
Switzerland	SEMO	Youth aged under 25 years old	6 months (with possible extension up to 9½ months)	1–2 days a week at a vocational school
	Bridging measures		12 months	Literacy, mathematics, motivation and career guidance
	Pre-apprenticeship for integration (currently being piloted)	Migrant youth (with refugee or provisory status) aged 16–35 years old	12 months	Preparation for formal apprenticeship programmes, 3 days in company, 2 days in vocational school, general subject and vocational theory, targeted support on language skills

Source: Based on OECD, 2018b, and Kis, 2016.

To reduce the risk of apprentices dropping out, employers should continuously monitor apprentices' progress during the delivery of the apprenticeship, to identify those facing the greatest difficulties and provide them with adequate support. While providing sufficient support in the course of apprenticeships can minimize apprentice drop-out, it is equally important to ensure that apprentices are adequately prepared prior to starting the programme.

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It is important to keep in mind that there is no one-size-fits-all approach to pre-apprenticeships and how they are organized. While developing countries with apprenticeship programmes will face different challenges, the issue of adequate preparation for apprenticeship is universal. The skills and knowledge gaps among potential entrants to apprenticeship programmes can be extremely diverse. For example, those coming from the informal economy may have strong practical skills but lack adequate literacy skills and the required educational qualifications. In contrast, young graduates may possess sufficient theoretical knowledge and literacies, but have limited work experience and employability skills. The interactive guide from the Learning and Work Institute, produced in collaboration with the J.P. Morgan Foundation (Tool 6.1.1), provides support to practitioners in the design and implementation of pre-apprenticeship programmes tailored to specific contexts.

Tool 6.1.1

Guide to the design and delivery of pre-apprenticeships, Learning and Work Institute

This step-by-step guide to pre-apprenticeship programme design and delivery has been created for pre-apprenticeship providers who want to develop and expand their programmes, and for providers who do not currently offer pre-apprenticeships but who plan to do so in the future.

This tool is accompanied by a set of case studies and films from across Europe, which demonstrate effective practice in specific aspects of the design and delivery of pre-apprenticeship programmes.

Source:
https://www.learningandwork.org.uk/wp-content/uploads/2019/04/Pre-Apprenticeship-Resource.pdf

6.1.4 Adult entrants to apprenticeships

Emerging trends and challenges

As both learning and career pathways are becoming more complicated, the prevailing perception of apprenticeships, which involves a young person acquiring the competencies needed for a particular lifelong career, is increasingly irrelevant and misleading. In view of the new patterns of learning and working, it is important to situate the apprenticeship model within the framework of lifelong learning, so that it can support the reskilling and upskilling of individuals from all walks of life.

The extension of apprenticeship opportunities to adults and older workers would require corresponding adjustments in apprenticeship systems and programmes. In particular, adult entrants to apprenticeships may already have considerable work experience and, therefore, possess some or even all of the skills and knowledge necessary to perform the job.

For adults who already have some of the required skills, many apprenticeship programmes offer the possibility of accelerated completion, or even direct access to the final qualifying examinations without undergoing apprenticeship training. The latter option is typically limited to adults who have acquired most of the required competencies through relevant work experience. Depending on individual needs, they may also pursue preparatory courses or additional training to strengthen their practical knowledge and skills prior to the examinations.

Some of the conditions in various countries that allow direct access to the final examination or assessment associated with an apprentice qualification, without having to pursue an apprenticeship, are listed below (OECD, 2014; Kis and Windisch, 2018):

▶ **Austria**: Adults with relevant work experience that amounts to at least half of the duration of a regular apprenticeship (direct applications accounted for 15 per cent of the awarded apprenticeship qualifications in 2012).

▶ **Canada**: Candidates with a sufficient number of working hours in the trade – typically one-and-a-half times the apprenticeship period.

▶ **Germany**: Adults who have been performing skilled tasks for at least one-and-a-half times the apprenticeship duration; school qualifications may also be taken into account (in 2009, 6 per cent of the successful final assessment candidates had followed this route).

▶ **Norway**: Candidates must have five years' work experience and must pass a theoretical exam (approximately one-third of certificates were awarded on the basis of experience-based certification in 2015).

▶ **Switzerland**: Adults with five years' relevant work experience, including three years in the target occupation.

▶ **United States**: Three kinds of apprenticeship are available:[8]

   » time-based – in which an apprentice's progress is measured by the number of hours spent in on-the-job training and related training instruction (RTI)

   » competency-based – in which the apprentice's progress is measured by his or her demonstrated ability to apply the necessary knowledge, skills, attitudes and critical thinking to accomplishing relevant job functions

   » hybrid – in which part of the apprentice's progress may be measured in hours and part through the demonstration of competency.

The options for accelerated completion of apprenticeship programmes and direct access to final assessment are particularly relevant to those working in the informal economy, who may have the relevant skills and working experience but who are denied access to apprenticeship qualifications. Similarly, migrants who possess foreign qualifications that are not recognized in the host country need RPL procedures in place so that their competencies and experience can be formally taken into account when entering apprenticeships.

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8   See https://innovativeapprenticeship.org/employers/ for further details.

While the mechanisms mentioned above are not apprenticeships as such, they have a role to play in enhancing the inclusiveness of apprenticeships and, therefore, should be considered as an important element of apprenticeship systems.

6.1.5   Modular and shorter apprenticeship programmes

> **Emerging trends and challenges**
>
> Recent years have seen intensive discussion, and some reforms, aiming to make apprenticeship programmes more modular by dividing curricula and assessments into smaller components (Pilz, 2012).
>
> However, the modularization of apprenticeships is controversial. Some argue that the fragmentation of curricula and competencies undermines the more holistic conception of professions, which is such a crucial feature of apprenticeships. The fundamental principle of apprenticeships is to enable apprentices to acquire the competencies needed to work in a given profession through comprehensive on- and off-the-job training, rather than simply acquiring a set of specific skills.

Apprenticeship programmes in shorter and more specific modules have become increasingly common. Some employers and apprentices are in favour of this emerging trend, as the modularization of apprenticeships can offer the following advantages:

▶ allow increased specialization, especially in the form of "additional" modularization, where, alongside a set of compulsory modules, apprentices can pursue some specialized elective modules

▶ facilitate the update of qualifications, by enabling the modification of individual modules in response to new developments, without having to revise the whole qualification

▶ enable certification of part-qualifications, which serves as a mechanism by which those who have dropped out or switched to a different programme, can transfer their credits to another apprenticeship programme (Pilz, 2012)

▶ allow apprentices to be exempted from completing selected modules through RPL, as they may already possess the required knowledge and skills to fulfil certain components of the qualification.

In Austria, apprenticeship programmes in some fields, including materials technology, installation and buildings technology, vehicle technology and timber technology, have been modularized since 2006, to allow for the possibility of specialization, in addition to acquiring the main apprenticeship qualification. Following the successful completion of the compulsory two-year core curriculum, apprentices pursue a modular specialization of their choice in the final year. After three years, apprentices can choose whether to take the final examination in their foundation and main modules or continue with their specialized modules for a further half- or full year. The specialized modules are assessed at the end of the programme and listed on the apprentice's transcript (Pilz, 2012).

6.1.6   Higher level or degree-level apprenticeships

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Emerging trends and challenges

After completing a university degree, many graduates face difficulties in finding a job and in meeting the skills requirements of the local, national, regional and global labour markets. In many countries, the skills gap is significant for several degree subjects, whereas apprenticeships are known to be one of the most efficient and effective ways of helping students to acquire skills that are relevant to labour market demands. Apprentices stand a better chance of finding employment than graduates from the conventional education system. They also earn while learning, thus avoiding the need to resort to student loans during their studies, unlike many of their peers studying in universities.

Although many apprenticeships are situated at around ISCED Level 3 (or upper-secondary level), apprenticeship models are also proven to be applicable to higher levels of qualification. However, it has been challenging for many countries to apply the apprenticeship model to higher education for the following key underlying reasons:

- Apprenticeships require education institutes to work in partnership with employers to design and organize training programmes for universities and industry. For many academics and university administrators, this could be a daunting, complex task.
- It is not easy to find enough placements in industry for the on-the-job training component for all students undergoing the vast range of courses available in universities.
- The traditional model of apprenticeships, where students typically spend 70 per cent or more of their total time at the workplace, may not be appropriate for many university degree courses.
- Apprenticeships require educational institutions to play a supporting role to industry in the position of off-the-job training providers, which universities may find irksome.

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Considering the benefits of the apprenticeship model over traditional classroom-based education, countries such as Australia, Germany, India, Switzerland, the United Kingdom and the United States have started to expand apprenticeships at the higher education level.

Higher or degree-level apprenticeships (equivalent to ISCED Level 6) are part of the dual system university programmes in Germany. They also exist in the form of "alternance" arrangements in some university programmes in France and are known as "degree apprenticeships" in England.

The Australian Industry Group (Ai Group) project, funded through the pilots initiative, is a collaboration between the Ai Group, Siemens Ltd and Swinburne University of Technology. Swinburne has developed two new higher education qualifications for the pilot scheme, a Diploma and an Associate Degree in Applied Technologies (ILO, 2020b).

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"Oxbridge" (the collective term for the universities of Oxford and Cambridge), widely known as the pinnacle of UK higher education, has also begun to offer opportunities to apprentices. In Cambridge University, the types of apprenticeship on offer vary by subject and complexity of programme, ranging from Level 3 (A level) to Level 7 (master's level).

Several examples of degree-level apprenticeships with a focus on digital skills are provided earlier in section 6.1.2. Box 6.4 illustrates an additional example from India.

Box 6.4   National Open College Network (India)

Although the degree-level apprenticeship model represents a huge leap in terms of both regulation and delivery in India, National Open College Network seeks to integrate apprenticeships into degree-level education, following the UK example. Its pilot programme is commissioned by the UK's Department for International Development and aims to impart the necessary skills for employment in areas such as aerospace and aviation, the automotive industry and the renewable energy sector.

Source: www.nocn.org.uk/international/india/

6.1.7   Adapting apprenticeships to the needs of SMEs

Emerging trends and challenges

SMEs often lack sufficient resources to provide apprentices with the full range of on- and off-the-job training and they may face specific barriers in recruiting apprentices. Furthermore, they may not be able to afford the fixed costs involved in fulfilling the formal requirements of the apprenticeship system, which weigh more heavily on smaller enterprises.

In light of the specific challenges facing SMEs, countries have developed various strategies to support SMEs and enhance their participation in apprenticeships. For instance, two main approaches can be found in Germany. In the first, a number of employers may take on apprentices between them, sharing the responsibility of training provision, so that the apprentices obtain the full range of on- and off-the-job training required. The second approach is to allow employers the option to arrange certain parts of the training at other enterprises which have the relevant facilities and expertise (Poulsen and Eberhardt, 2016).

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In some countries, enterprises can also seek support from intermediary organizations, which group smaller enterprises together in the delivery of apprenticeship training. A few examples of such intermediary organizations are illustrated below (Field et al., 2010):

▶ In **Australia**, Group Training Organisations (GTOs) are not-for-profit enterprises but are supported by the Government. GTOs employ apprentices and allocate them to host employers, who are required to pay a fee to the GTOs. In addition to recruiting apprentices, GTOs also support enterprises in administration, management of on- and off-the-job training, and rotation of apprentices among participating employers to ensure that apprentices acquire the full range of experience.

▶ In **Norway**, training offices (TO) (*opplæringskontor*) are owned by employers and are usually related to specific trades. They aim to facilitate apprenticeships by identifying potential training companies and supporting employers and the staff involved in apprenticeships. While many TOs organize the theoretical part of the apprentices' off-the-job training, some may also sign apprenticeship agreements on behalf of smaller enterprises.

▶ In **Switzerland**, host company networks (*Lehrbetriebsverbünde*) group together enterprises to share the responsibilities of apprenticeship training. This arrangement is especially aimed at maximizing the training potential of those companies that are too small and/or specialized to cover all the competencies specified in a defined VET curriculum as a singular entity, but may be able to offer the full spectrum by joining forces to train apprentices as a group. Usually, one enterprise or a separate organization takes the role of coordinator and organizes the coaching, training and rotation of apprentices between various companies during their apprenticeship.

▶ 6.2 Strategies for promoting quality apprenticeships

Germany's tried and tested dual system [apprenticeship] … was the best way forward at a time when almost six million under-25s in Europe are out of work …

One thing that experience taught us is that there is, of course, no need for any country to introduce the whole dual system straight away. Inter-company vocational training can be an alternative.

Angela Merkel (German Chancellor) in 2013

This section outlines the following strategies to overcome the main challenges faced by countries in implementing and scaling up quality apprenticeships (ILO, 2019c):

Promoting quality apprenticeships

▶ **Creating an enabling environment**

▶ **Making apprenticeships more attractive to enterprises**

▶ **Making apprenticeships more attractive to young people**

▶ **Promoting inclusiveness in apprenticeships**

▶ **Promoting quality apprenticeships in the informal economy**

In developing and implementing the strategies, policy-makers and practitioners should work collaboratively.

6.2.1 Creating an enabling environment for quality apprenticeships

In order to promote quality apprenticeships, it is necessary to create an enabling environment by taking the following steps:

▶ developing and implementing strategies, setting national goals and allocating adequate resources

▶ mainstreaming quality apprenticeships in national development strategies and in employment, education and lifelong learning policies

▶ developing a robust regulatory framework

▶ encouraging social partners – employers' and workers' organizations – to support quality apprenticeships by formally involving them in the entities responsible for the design and implementation of quality apprenticeships

▶ developing the capacity and providing support services to the social partners so that they are better placed to participate effectively in the regulatory and consultative bodies or within a broader social dialogue mechanism

▶ providing incentives,[9] both financial and non-financial, to enterprises, especially SMEs

▶ encouraging intermediaries, including through financial support, to participate in the provision, coordination and support of quality apprenticeship programmes

▶ undertaking awareness-raising activities and promotional campaigns at regular intervals to improve the image and attractiveness of quality apprenticeships

▶ establishing pre-apprenticeship programmes to enable young people to acquire the competencies required to become eligible for a quality apprenticeship programme

▶ facilitating access to further technical and higher education opportunities for apprentices

▶ using new technologies and innovative methods to improve effectiveness and efficiency in delivering and managing quality apprenticeships

▶ giving stakeholders at the sectoral level the flexibility to recommend training duration, wages, the proportion of on-the-job training based on the complexity and investment in training required for occupations belonging to the sector.

6.2.2 Making apprenticeships more attractive to enterprises and, in particular, to SMEs

As has been mentioned throughout this Toolkit, enterprises of all sizes are key stakeholders in apprenticeship systems and programmes. Public authorities may launch ambitious apprenticeship strategies, but these strategies cannot be achieved without the support of businesses or other organizations.

To address this issue, it is recommended that the following specific measures are implemented to encourage enterprises, and in particular SMEs, to become involved in apprenticeships:

▶ organizing campaigns and events to promote the benefits of quality apprenticeships for enterprises

▶ providing incentives, both financial and non-financial, to enterprises, especially SMEs

▶ setting up a national, sectoral, regional and/or local service to match enterprises with would-be apprentices

▶ encouraging the establishment or strengthening of sectoral or other bodies that can undertake skills anticipation exercises and/or aggregate SMEs' training needs

▶ encouraging the establishment or appointment of intermediaries, such as chambers of commerce or GTOs, that can advise and support SMEs and/or develop partnerships for them with local VET institutions

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[9]   For more details, please refer to section 8.3 of volume 1 of the Toolkit, as well as the DC dVET discussion paper *Companies engaging in dual VET: Do financial incentives matter?*, https://www.dcdualvet.org/wp-content/uploads/DC-dVET_Discussion-Note-Financial-Incentives.pdf

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▶ providing flexible training programmes for those responsible for mentoring apprentices in companies

▶ developing an information service for disseminating ideas and experiences of what works in making quality apprenticeships more attractive to enterprises and, in particular, to SMEs

▶ providing the flexibility to adapt a part of the national training standard to the specific requirement of an enterprise.

6.2.3 Making apprenticeships more attractive to young people

There are numerous reasons why young people might not be attracted to undertake apprenticeships. To address this issue, it is recommended that the following specific steps are taken to encourage young people into apprenticeships:

▶ running information days in schools, and campaigns in the wider community, with the assistance of apprenticeship ambassadors, to promote the benefits of quality apprenticeships for young people

▶ providing a comprehensive advice and guidance service – before and during the apprenticeship – to help young people make informed training and career choices

▶ ensuring that apprentices are adequately remunerated during the entirety of the apprenticeship and covered by social protection schemes according to national contexts

▶ setting up a national, sectoral, regional and/or local service to match apprentices with enterprises that are prepared to offer apprenticeships

▶ ensuring that apprenticeship qualifications are recognized nationally and that they provide access to further technical and higher education opportunities

▶ ensuring that the working conditions and the working environment in participating enterprises are safe

▶ developing an information service for disseminating ideas and experiences of what works in order to improve the image of apprenticeships

▶ encouraging workers' organizations to represent apprentices and to protect their rights in accordance with national law.

6.2.4 Promoting inclusiveness in apprenticeships

The following measures can promote inclusiveness in apprenticeships:

▶ organizing campaigns and information days in schools, and in the wider community, to promote the benefits of quality apprenticeships for all

▶ setting targets for increasing participation and reserving apprenticeship places for people from vulnerable groups and women

▶ providing in-depth diversity training to all staff with recruitment and mentoring responsibilities

▶ informing enterprises about the range of agencies that exist to support members of under-represented groups in relation to quality apprenticeships

▶ providing a specially targeted advice and guidance service, with the cooperation of organizations that represent or support vulnerable groups and women, both before and during quality apprenticeships

▶ providing some form of financial incentive – for example, in the form of a recruitment grant, a tax exemption or subsidies for social security payments – for enterprises that take on apprentices from under-represented groups

▶ improving reporting, accountability and transparency, by publishing the number of apprentices employed by enterprises, programme completion rates and transition-to-work rates, with the figures broken down by gender, ethnicity and disability

▶ ensuring that apprentices are adequately remunerated during the entirety of their apprenticeship and that they are covered by social protection schemes in accordance with the national requirements

▶ making quality apprenticeships more flexible to accommodate the different needs of women and persons with disabilities

▶ making physical adaptations to classrooms and workplaces to ensure that persons with disabilities can participate productively

▶ developing an information service for disseminating ideas and experiences of what works in achieving equality and diversity in quality apprenticeships

▶ encouraging workers' organizations to represent apprentices and protect their rights and to contribute to the development of a strategy for the inclusion of underprivileged groups in quality apprenticeships.

6.2.5 Promoting quality apprenticeships in the informal economy

Characteristics

In the informal economy, apprenticeships (usually referred to as informal apprenticeships) are the main means of learning skills and acquiring competencies for employment. Informal apprenticeship can be broadly defined as an informal system of skills transfer from a master craftsperson to a young apprentice who acquires skills by way of observation, imitation and repetition while working with the master craftsperson. The transfer of knowledge and skills is based on an agreement (written or verbal) between master craftsperson and apprentice in line with local community norms and practices, and the training is not regulated by the law of a country.

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Challenges

Informal apprenticeships have a number of shortcomings (Aggarwal, 2013):

▶ training is neither systematic nor structured and the quality of the training provided by the various skilled craftspersons varies significantly (Haan, 2006)

▶ there are generally no training standards or effective quality assurance mechanisms

▶ the lack of decent working conditions and occupational safety and health provision

▶ the underpinning knowledge is often not adequately provided

▶ the agreement between the skilled craftsperson and the apprentice is typically verbal and therefore difficult to enforce, which may lead to exploitation of the apprentice

▶ the duration of training could be excessive

▶ some master craftspersons charge fees for training apprentices

▶ the skills acquired are neither certified nor recognized nationally, making it difficult, though not impossible, for the apprentice to be mobile in the labour market (Hofmann and Okolo, 2013).

Recommendations

To address this issue, it is recommended that the following specific measures are implemented to promote quality apprenticeships in the informal economy (Aggarwal, 2013; Walther, 2008; ILO, 2011; ILO, 2012):

▶ customizing the nature of interventions by building on local practice and promoting group-regulating mechanisms through small business associations rather than through public authorities

▶ strengthening the micro and small economic units by providing training to master craftspersons in pedagogy and technical and business skills, ensuring access to business development services and microfinance and improving occupational safety and health at work

▶ improving the skills of apprentices by supplementing on-the-job training with off-the-job learning covering related theory, technical and business skills and core work skills and possibly by rotating the apprentices in various small businesses

▶ promoting the use of written apprenticeship agreements

▶ providing vocational and career counselling

▶ providing post-training support for wage and salaried employment and self-employment

▶ providing incentives for micro and small economic units to offer quality apprenticeships

▶ strengthening the capacity of small business associations to function as regulators of apprenticeships, register agreements, assess skills and award certificates

▶ facilitating the acquisition of national qualifications through RPL.

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There have been a number of positive examples of such strategies, such as a training programme that was introduced in Kenya to upgrade the skills of craftspersons, which resulted in increased sales and profits for the businesses concerned, as well as an increase in the number of apprentices they engaged (ILO, 2012, p. 48). Benin, Burkina Faso and Zimbabwe, among several other countries, also implemented strategies to promote quality apprenticeships in the informal economy. Recognition of skills acquired through informal training provides another way of connecting formal and informal systems, and Tanzania and Bangladesh are examples of countries that are seeking to establish or improve their certification processes, as they move to increase apprentice numbers in both the formal and the informal economies.

Tool for upgrading informal apprenticeships

The ILO has developed a resource guide to upgrading informal apprenticeships in Africa (ILO, 2012).

Tool 6.2.1	**Resource guide for upgrading informal apprenticeships in Africa, ILO**
	This resource guide serves two main purposes. First, it provides a set of proven tools for assessing informal apprenticeships. It offers practical "how to" information on the use of assessment tools to examine apprenticeship from the perspectives of industry clusters, communities, training institutions and apprentices. Second, the guide presents a framework of policy options that can be used to strengthen informal apprenticeship systems and address their weaknesses.
	Source: https://www.ilo.org/wcmsp5/groups/public/---africa/---ro-addis_ababa/documents/publication/wcms_171393.pdf

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Annex I:
Who should drive or lead apprenticeships?

Stakeholders often ask "Who should drive or lead apprenticeships?". This crucial issue is discussed in this section.

Every stakeholder has an important role[10] in developing and managing apprenticeship programmes. However, their roles are not the same in every country. Many factors, such as the political environment, social and economic policies, traditions and the capacity of individual stakeholders, influence the allocation of specific roles and responsibilities between different stakeholders, with consequent effects on the design of the institutional framework. Some examples are given below to demonstrate how the roles of key stakeholders vary, not only between different countries, but also within the same country.

Variation in the role of employers between Germany and Switzerland

In both Germany and Switzerland, two countries with highly successful apprenticeship systems, employers play a leading role, yet their roles are not exactly similar. In Germany, although apprenticeships are the responsibility of the state, their implementation is entrusted largely to employers. While all stakeholders contribute to the planning and preparation of training regulations, chambers take care of quality assurance as well as the assessment of competencies acquired during in-company training (BIBB, 2014; DCdVET, 2016). In contrast, in Switzerland, even though employers play a leading role in apprenticeships, canton (state) governments are responsible for quality assurance and examinations. However, they undertake this responsibility in association with professional organizations.

Various stakeholders operate apprenticeship programmes in the United States[11]

While apprenticeships in the United States are always employer-driven, every programme has a "sponsor" who is responsible for the overall operation of the programme. Sponsors can be a single business or a consortium of businesses, a range of workforce intermediaries, including an industry association or a joint labour–management organization, or community colleges and community-based organizations.

Union apprenticeships:[12] Labour unions have a long history of offering apprenticeships. The Joint Apprenticeship and Training Committees (JATCs), managed by representatives from unions, provide training to apprentices in specific occupations and geographic regions. In many cases, a national JATC works with employers, union representatives and

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[10] For the generic roles and responsibilities of different stakeholders, see chapter 7 of Toolkit 1.
[11] Source: https://www.dol.gov/apprenticeship/toolkit/toolkitfaq.htm#3a
[12] See https://innovativeapprenticeship.org/apprentices/#union_head for further details.

skilled workers to develop standards that guide training programmes across the country. JATCs often operate standalone training facilities, where apprentices gather as a group to gain the knowledge and skills required to succeed in their on-the-job training (OJT). The OJT takes place within companies and organizations that are signatories of the JATC agreement. Apprentices that complete union-sponsored apprenticeships are called "journey workers".

Employer-sponsored apprenticeships: Other apprenticeship programmes are sponsored by individual employers, groups of employers, trade associations or other professional groups. Small companies may offer their own programmes, or they may work through intermediary organizations, which help to connect employers with potential apprentices.

Intermediaries: There are a number of "apprenticeship intermediaries" in the United States. These entities work with both employers and apprentices to design, provide and recruit participants for apprenticeship programmes. A number of organizations across the country have been contracted by the Department of Labor to expand apprenticeship opportunities in the United States.

Two types of apprenticeship management in South Korea

In South Korea, apprenticeships are divided into two types: (a) company-led and (b) training centre-led, depending the party responsible for managing the programme. In company-led apprenticeships, participating companies develop their own dual programmes and provide both on- and off-the-job training independently. For training centre-led apprenticeships, companies organize off-the-job training in cooperation with large companies or training centres. The main characteristics of these two forms of management are compared in table I.1.

▶ Table I.1	Types of apprenticeship by management body, South Korea			
Types	**Feature**	**Management body**	**Off-the-job training (off-JT)**	**On-the-job training (OJT)**
Company-led	Company independently develops the programmes and provides both OJT off-JT	Company	Company or professional training centre	Company
Training centre-led	Training centre provides off-JT and company offers OJT	Training centre	Training centre	Company

As we have seen from the above examples, many factors influence the allocation of roles and responsibilities among various stakeholders. However, to ensure strong labour market relevance, apprenticeships should be led by enterprises. In other words, employers should be in the driving seat and collaborate with other stakeholders in designing and implementing apprenticeships.

Bibliography

Aggarwal, A. 2013. "Lessons learnt from informal apprenticeships in Southern and Eastern Africa", in A. Salim, P. Gonon, U. Hauschildt and C. Hofmann (eds): *Apprenticeship in a globalised world: Premises, promises and pitfalls* (Zurich, LIT Verlag).

Axmann, M. (ed.). 2018. *Aprendizaje de Calidad – Una Perspectiva Práctica para América Latina y el Caribe* (ILO/CINTERFOR). Available at: www.oitcinterfor.org/publicaciones/aprendizaje_calidad [16 Dec. 2019].

BIBB. n.d. *Didaktische Prinzipien der Ausbildung*. Available at: https://www.bibb.de/tools/berufesuche/index.php/practice_examples/sonstiges/ag_modul8-9_didakt-prinz.pdf   [16 Dec. 2019].

BIBB. 2014. *Training regulations and how they come about* (Bonn, Federal Institute for Vocational Education and Training). Available at: https://www.bibb.de/veroeffentlichungen/de/publication/download/7324 [16 Dec. 2019].

Canadian Apprenticeship Forum. 2006. *Apprenticeship: Building a skilled workforce for a strong bottom line*. Available at: http://en.copian.ca/library/learning/caf/study_15_trades/study_15_trades.pdf [16 Dec. 2019].

Centre for Economics and Business Research (Cebr). 2013. *Productivity matters: The impact of quality apprenticeships on the UK economy* (London). Available at: http://www.southampton.gov.uk/moderngov/documents/s17298/Appendix [16 Dec. 2019].

DCdVET. 2016. *Dual VET in Austria, Germany, Liechtenstein and Switzerland* (Zurich, Donor Committee for Dual Vocational Education and Training). Available at: https://www.dcdualvet.org/wp-content/uploads/DC-dVET_Dual_VET_in-AT_GE_FL_CH_Comparative_Study_ENGL_FINAL.pdf [16 Dec. 2019].

Education International. n.d. *Policy brief: Tools and materials for quality teaching and learning*. Available at: https://ei-ie.org/media_gallery/Policybrief_07_tools_eng.pdf [16 Dec. 2019].

European Alliance for Apprenticeship. 2016. *Linking learning venues in Luxembourg*. Available at: www.apprenticeship-toolbox.eu/training-teaching/linking-learning-venues/113-linking-learning-venues-in-luxembourg [16 Dec. 2019].

European Training Foundation. 2002. *Vocational education and training in Morocco and its relevance to the labour market*. Available at: www.etf.europa.eu/sites/default/files/m/C12578310056925BC125700D003F980D_MED_VET_Morocco_02_EN.pdf [16 Dec. 2019].

Field, S. 2018. *Taking training seriously: Lessons from an international comparison of off-the-job training for apprenticeships in England. A report to the Gatsby Foundation* (London, Gatsby Foundation). Available at: https://www.gatsby.org.uk/uploads/education/final-apprenticeships-and-off-the-job-training-may-2018.pdf [16 Dec. 2019].

—; Guez, A. 2018. *Pathways of progression: Between technical and vocational education and training and post-secondary education*. A UNESCO report (Paris, UNESCO). Available at: https://unesdoc.unesco.org/ark:/48223/pf0000265943 [16 Dec. 2019].

Field, S.; Hoeckel, K.; Kis, V.; Kuczera, M. 2010. *Learning for jobs* (Paris, OECD Publishing). Available at: http://dx.doi.org/10.1787/9789264087460-en [16 Dec. 2019].

G20. 2016. "Annex 3: G20 Initiative to Promote Quality Apprenticeship", in *Innovation and Inclusive Growth: Decent work, enhanced employability and adequate job opportunities*, G20 Labour and Employment Ministerial Meeting Declaration (Beijing, China).

Gambin, L.; Hasluck, C.; Hogarth, T. 2010. "Recouping the costs of apprenticeship training: employer case study evidence from England", in *Empirical Research in Vocational Education and Training*, Vol. 2, No. 2, pp. 127–146.

Government of the Netherlands. 2014. *Key figures 2009–2013* (The Hague, Ministry of Education, Culture and Science), p. 76.

Haan, H.C. 2006. *Training for work in the informal micro-enterprise sector: Fresh evidence from Sub-Sahara Africa* (Dordrecht, Netherlands, Springer).

Hofmann, C.; Okolo, W. 2013. "Transitions in informal apprenticeship: Results from ILO research in several African countries", in A. Salim, P. Gonon, U. Hauschildt and C. Hofmann (eds), A*pprenticeship in a globalised world: Premises, promises and pitfalls* (Zurich, LIT Verlag).

International Labour Organization (ILO). 2011. *Skills for employment policy brief: Upgrading informal apprenticeship systems* (Geneva).

—. 2012. *Upgrading informal apprenticeship: A resource guide for Africa* (Geneva).

—. 2014. *Using benefit cost calculations to assess returns from apprenticeship investment in India: Selected SME case studies* (Geneva).

—. 2015. *Anticipating and matching skills and jobs*, Guidance note (Geneva).

—. 2017. *ILO Toolkit for Quality Apprenticeships, Volume I: Guide for policy makers* (Geneva).

—. ILO. 2019a. *Quality Apprenticeships: Addressing skills mismatch and youth employment* (Geneva).

—. 2019b. Report IV(1): *A framework for quality apprenticeships* (Geneva).

—. 2020a. *ILO Evaluation Tool for Apprenticeship Policy and System*, (Geneva).

—. 2020b. "Discussion paper on apprenticeships for higher education level in digital economy", forthcoming (Geneva).

—; International Organisation of Employers (IOE). 2018. *Tools for Quality Apprenticeships: A guide for enterprises*. Available at: www.ilo.org/employment/Whatwedo/Publications/employment-reports/WCMS_684158/lang--en/index.htm [16 Dec. 2019].

—; UNESCO. Forthcoming. *Digitalisation of TVET and skills systems: A global review*, (Geneva and Paris).

ITUC (International Trade Union Confederation). 2013. *Key elements of quality apprenticeships – A joint understanding of the B20 and L20*. Available at: https://www.ituc-csi.org/key-elements-of-quality [16 Dec. 2019]

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Jablonka, P.; Ulmer, P. 2007. *More training companies – More training places – Less quality? The suspension of the Ordinance on Trainer Aptitude (AEVO) and its effects*, BIBB Report 3/2007 (Bonn, Bundesinstitut für Berufsbildung). Available at: www.bibb.de/veroeffentlichungen/ de/publication/show/2074 [16 Dec. 2019].

Kang, J.; Jeon, S.; Lee H. 2017. *Apprenticeship in Korea* (Seoul, Korea Research Institute for Vocational Education and Training).

Kehl, F.; Kohlheyer, G.; Seyfried, E.; Schlegel W. 2019. *Understanding and analysing VET: An introduction* (draft) (Bonn, Swiss Agency for Development and Cooperation (SDC)).

Kis, V. 2016. *Work-based learning for youth at risk: Getting employers on board*, OECD Education Working Papers, No. 150. Available at: http://dx.doi.org/10.1787/5e122a91-en [16 Dec. 2019].

—; Windisch, H. 2018. *Making skills transparent: Recognising vocational skills acquired through workbased learning*, OECD Education Working Papers, No. 180 (Paris, OECD Publishing). Available at: https://doi.org/10.1787/5830c400-en [16 Dec. 2019].

Looney, J. W. 2011. *Integrating formative and summative assessment: Progress toward a seamless system?*, OECD Education Working Papers, No. 58 (Paris, OECD Publishing). Available at: www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=edu/ wkp(2011)4&doclanguage=en [16 Dec. 2019].

Mane, F; Corbella, T. 2017. *Developing and running an establishment skills survey: Guide to anticipating and matching skills and jobs* (Geneva, International Labour Office).

Microsoft. 2018. *Microsoft Apprenticeship Programme Research.* White Paper. Available at: https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RWviKb.

Musset, P.; Mytna Kurekova L. 2018. *Working it out: Career guidance and employer engagement*, OECD Education Working Papers, No. 175 (Paris, OECD Publishing). Available at: https://doi. org/10.1787/51c9d18d-en [16 Dec. 2019].

National Audit Office. 2012. *Adult apprenticeships: Estimating economic benefits from apprenticeships*, technical paper (London, NAO Communications).

OPET. 2008. *Resultate Evaluation Lehrbetriebsverbünde* (Bern, Bundesamt für Berufsbildung und Technologie).

Organisation for Economic Co-operation and Development (OECD). 2014. *Country information on apprenticeships: Country responses*, G20-OECD-EC Conference on Quality Apprenticeship. Available at: www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf [16 Dec. 2019].

—. 2016. Getting *Skills Right: Assessing and anticipating changing skill needs* (Paris, OECD Publishing). Available at: https://doi.org/10.1787/9789264252073-en [16 Dec. 2019].

—. 2018a. "Managing self-employment, new forms of work and the platform economy", in *Good jobs for all in a changing world of work: The OECD Jobs Strategy* (Paris, OECD Publishing). Available at: https://doi.org/10.1787/9789264308817-en [16 Dec. 2019].

—. 2018b. *Seven questions about apprenticeships: Answers from international experience*, OECD Reviews of Vocational Education and Training (OECD Publishing, Paris). Available at: https://doi.org/10.1787/9789264306486-en [16 Dec. 2019].

Pilz, M. 2012. "Modularisation of vocational training in Germany, Austria and Switzerland: Parallels and disparities in a modernisation process", in *Journal of Vocational Education and Training*, Vol. 64, No. 2, pp. 169–183, DOI: 10.1080/13636820.2011.628757 [16 Dec. 2019].

Poulsen, S.; Eberhardt, C. 2016. *Approaching apprenticeship systems from a European perspective* (Bonn, BIBB). Available at: http://pmb.cereq.fr/index.php?lvl=notice_display&id=58001 [16 Dec. 2019].

Powell, A. 2019. *Apprenticeship statistics for England*, House of Commons Briefing Paper No. 06113. Available at: https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06113 [16 Dec. 2019].

Reed, D.; Liu, A.; Kleinmann, R.; Mastri, A.; Sattar, S.; Ziegler, J. 2012. *An effectiveness assessment and cost-benefit analysis of registered apprenticeship in 10 States*, in Mathematica Policy Research (Oakland, CA).

Richard, D. 2012. *The Richard Review of Apprenticeships*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/34708/richard-review-full.pdf [13 Feb. 2020].

State Secretariat for Education, Research and Innovation (SERI). 2019. *Vocational and professional education and training in Switzerland: Facts and figures 2019* (Bern). Available at: www.sbfi.admin.ch/sbfi/en/home/services/publications/data-base-publications/vocational-and-professional-education-and-training-in-switzerland.html [16 Dec. 2019].

Trade Union Council. n.d. *Apprenticeships Toolkit: A resource for union negotiators and reps*. Available at: www.tuc.org.uk/sites/default/files/TUC%20Apprenticeships%20pack%20sheets%202018%20Low_res%20TUC%20version.pdf [16 Dec. 2019].

United States Department of Labor. n.d. *Advancing apprenticeship as a workforce strategy: An assessment and planning tool for the public workforce system* (Apprenticeship USA). Available at: https://www.dol.gov/apprenticeship/docs/RA-Planning-Tool.pdf [16 Dec. 2019].

Walther, R. 2008. *Towards a renewal of apprenticeship in West Africa* (Paris, Agence Française de Développement (AFD)). Available at: https://www.eib.org/attachments/general/events/luxembourg_18112008_apprentissage_en.pdf [16 Dec. 2019].

Germany's tried and tested dual system [apprenticeship] ... was the best way forward at a time when almost six million under-25s in Europe are out of work ...

One thing that experience taught us is that there is, of course, no need for any country to introduce the whole dual system straight away. Inter-company vocational training can be an alternative.

Angela Merkel (German Chancellor) in 2013