

Quality Apprenticeship Support Programme



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Alliance of Centres of Excellence in
Vocational Training for Sustainable Habitat



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Alliance of Centres of Excellence in Vocational Training for Sustainable Habitat

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Quality Apprenticeship Support Programme

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Table of contents

1. Quality Apprenticeship - Overview	5
1.1 Introduction and Explanation	5
1.2 Key features of the programme	7
1.3 What are Quality Apprenticeships?	10
1.4 Advantages and disadvantages of Quality Apprenticeships	15
1.5 Making apprenticeship training more green	23
1.6 Making apprenticeship training more digital	29
1.7 Making apprenticeship training more inclusive	36
2. Developing a more green and digital Quality Apprenticeship programme	43
2.1 Regulatory framework	44
2.2 Framework for social dialogue	52
2.3 Identifying skills needs	54
2.4 Developing occupational profiles and curricula	63
2.5 Instructional and learning materials	70
2.6 Checklist	74
3. Preparing quality training places	76
3.1 Engaging & registering SMEs and TVET providers	77
3.2 Formulating Quality Apprenticeship agreements	81
3.3 Building partnerships	85
3.4 Ensuring capacity of SMEs and TVET providers	95
3.5 Preparing staff	98
3.6 Preparing location	106
3.7 Checklist	108

4. Organising Quality Apprenticeship training	110
4.1 Attracting candidates	111
4.2 Recruiting apprentices	124
4.3 Developing a training plan	128
4.4 Good relationship with apprentices	132
4.5 Effective training delivery methods	139
4.6 Monitoring, assessment & certification.....	169
4.7 Ensuring social inclusion	174
4.8 Checklist.....	179
5. Post-training transitions and evaluation	181
5.1 Transition to labour market	181
5.2 Quality assurance and graduate tracking, assessing effectiveness	185
5.3 Drawing conclusions from the results and initiate changes	192
5.4 Checklist.....	195
6. Appendix.....	197
6.1 Glossary	197
6.2 List of abbreviations.....	203
6.3 Table of figures.....	205
6.4 Sources	207

1. Quality Apprenticeship - Overview

1.1 Introduction and Explanation

Apprenticeships provide an excellent opportunity to integrate young people into the workforce and offer them the chance to gain work experience while still in school. This makes apprenticeships particularly effective, as they connect theoretical knowledge directly with the hands-on experience of the workplace. By working in a real-world environment, apprentices are trained not only in their specific trades but can also acquire other skills required for professional settings, such as teamwork, communication, and problem-solving.

What makes apprenticeships particularly attractive is the benefit they offer to young people. While gaining valuable job skills, they are able to earn money during their training. This gives apprentices financial independence and reduces the boundary between training and employment. In addition, apprentices gain an insight into the working culture, which helps them find a suitable job after completing their training.

For employers, the benefits are equally significant. Apprenticeships provide a unique opportunity to shape the future employees by training (young) individuals according to the specific needs of the company. Employers can influence the development of their apprentices' skills, ensuring that they are well-prepared for the roles within the company, and, in many cases, apprentices transition directly into full-time employment after completing their training. This results in a workforce that is not only well trained, but also thoroughly familiar with the company's practices.

This programme is designed to help companies (especially in the Habitat sector) establish Quality Apprenticeships, providing support at every step to ensure their success. It provides SMEs with comprehensive technical support, practical tools, and proven methodologies to strengthen and develop their apprenticeship offer.

It introduces a set of innovative approaches designed to align the Quality Apprenticeship programme with the Sustainable Development Goals (SDGs), helping SMEs navigate the challenges of digitalisation and the green transition while promoting sustainable business practices.

The programme also fosters collaboration between SMEs, VET trainers, tutors, and other relevant stakeholders, ensuring that knowledge, skills, and best practices are effectively shared.

Additionally, it puts the European Framework for Quality and Effective Apprenticeships (EFQEA) into practice, providing a concrete reference for high-quality training implementation.

The programme was developed as part of the HABITABLE project, initiated to address one of the most pressing challenges in the European housing sector: a shortage of workers equipped with the skills required for digitalisation and the green transition. Simultaneously, the project focuses on fostering inclusion and equity in education. Its overarching goal is to enhance the responsiveness and adaptability of Vocational Education and Training (VET) within a Habitat 'skills ecosystem'.

This is achieved through active collaboration among VET institutions, local partners, and an international network of Centres of Vocational Excellence (CoVE). HABITABLE provides a dedicated space for training students and reskilling professionals in the Habitat sector, while also serving as a hub for networking, knowledge exchange, and cooperation among VET stakeholders. The project is co-funded by the EU and brings together 17 partners from Spain, Portugal, Austria, Greece, Moldova, and Georgia.

The Quality Apprenticeship Support Programme is specifically designed for SMEs in the Habitat sector interested in implementing Quality Apprenticeship initiatives. The Habitat sector includes a wide group of professional occupations from the sectors of infrastructure construction, housing and installations, activities related to wood and furniture manufacturing, home textiles, electricity, and lighting installations, etc. SMEs in the Habitat sector are facing increasing pressure regarding sustainability and digitalisation. It is particularly difficult for smaller companies to find and retain suitable staff with the necessary skills in these areas.

The programme is structured to accompany companies throughout the entire Quality Apprenticeship process - from initial planning and preparation to implementation, monitoring, and post-training follow-up.

It offers practical guidance, step-by-step instructions, real-life examples, and ready-to-use tools to facilitate the adoption and adaptation of Quality Apprenticeship practices. By following the programme, companies are supported in building structured, high-quality training schemes that not only equip apprentices with relevant skills but also foster sustainable, inclusive, and forward-looking workforce development.



Figure 1 Logo of Habitable

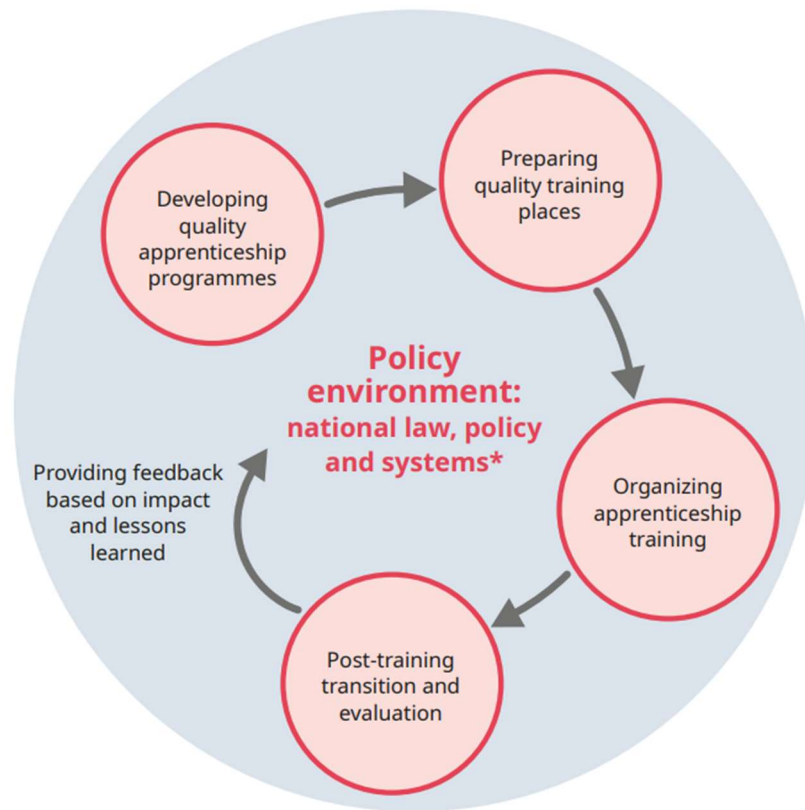
Depending on the size of the company, the industry it operates in, the country where it is based, and the resources available, some of the implementation strategies, best practices, and tools presented in this programme may not be immediately applicable. However, these insights can still offer valuable inspiration for developing tailored solutions that suit the specific needs of the company. Moreover, as both the company and technology continue to evolve, some of these methods may become more relevant or even essential in the future. Even if they are not directly applicable today, they can serve as a useful reference for future growth and innovation.

The following section provides a detailed overview of the programme's structure, content, and practical applications.

1.2 Key features of the programme

This section outlines what Quality Apprenticeship Programmes are and provides an overview of their key features, advantages, and potential challenges. It also explains how companies can make their apprenticeship programmes more environmentally friendly (greener), more digital and more inclusive by offering guidance on practical steps for implementing such transformations. Additionally, the introductory section highlights both the opportunities and obstacles that may arise when pursuing sustainable, technologically advanced, and inclusive approaches, providing a balanced perspective on the benefits and considerations involved.

The main structure of this programme is based on the four stages of the Quality Apprenticeship training life cycle according to the ILO (International Labour Organization, 2020), as illustrated in figure 2:



***The six building blocks of quality apprenticeship systems:**

Meaningful social dialogue	Robust regulatory framework	Clear roles and responsibilities	Equitable funding arrangements	Strong labour market relevance	Inclusiveness
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Figure 2 Visual representation of the Quality Apprenticeship training life cycle and the six building blocks of Quality Apprenticeship systems according to the ILO (International Labour Organization, 2020).

The four phases covered in this document are:

1. Developing a more green and digital Quality Apprenticeship programme

The first step in the apprenticeship life cycle is the development of a Quality Apprenticeship programme with the focus lying on designing a more sustainable and digitally driven model. The section provides guidance for companies on how to approach and navigate the legal landscape and understand existing frameworks for social dialogue. This part also outlines how to identify current and future skills needs and use these insights to create clear occupational profiles as well as curricula/micro-credentials. Finally, it offers recommendations on sourcing and developing high-quality learning materials to ensure that apprentices acquire the most relevant knowledge and competencies.

2. Preparing quality training places

This section focuses on preparing the training places for the Quality Apprenticeship. It provides guidance on selecting, engaging, and registering training providers, including both companies and Technical and Vocational Education institutions (TVET providers). Assistance is provided on formulating apprenticeship agreements, additionally, the roles of the different stakeholders involved in Quality Apprenticeships are described to establish a solid foundation for building partnerships. Ultimately, this section addresses how companies and TVET providers should prepare themselves to offer high-quality apprenticeship training. This includes preparing both the trainers and teachers as well as the locations themselves.

3. Organising Quality Apprenticeship training

Once the groundwork is in place, attention shifts to the delivery of training. The focus lies on the organisation and conducting of the apprenticeship training itself. It covers several ways of attracting and recruiting a diverse pool of apprentices, creating structured training plans, and fostering strong, supportive relationships between trainers and apprentices. Additionally, this part helps companies with delivering the training effectively, monitoring progress, conducting performance assessments, and promoting an inclusive learning environment to ensure that every apprentice can succeed and develop the skills needed for their future careers.

4. Post-training transitions and evaluation

The programme concludes with guidance on the period following the apprenticeship. Smooth transitions into working life, tracking of career paths, and the implementation of ongoing quality assurance measures are central aspects here. Continuous evaluation is emphasised to identify areas for improvement, maintain the programme's relevance, and enhance the effectiveness of future training initiatives.

For each topic, relevant best practices and tools are provided and described, offering guidance for implementation or practical examples that can serve as points of reference. The practical examples and best practices were selected to support the content of the sections and bridge the gap between theory and practice. To make identification easier, these examples and tools are illustrated as follows:

Good practice:

Short explanation of the good practice.

[Link](#) or source for more information

Additional documents have been created and made available to facilitate the implementation of the content. In many cases, carpentry is used as a practical example, as it represents a typical sector within the Habitat sector. However, these materials can also serve as a valuable resource for companies outside the timber sector.

1.3 What are Quality Apprenticeships?

It is important to define what is understood by Quality Apprenticeships. This section establishes a clear definition and highlights the building blocks, key aspects, and quality criteria.

The International Labour Organization (2017) defines Quality Apprenticeship as follows:

Quality Apprenticeships are a unique form of technical vocational education and training, combining on-the-job training and off-the-job learning, which enable learners from all walks of life to acquire the knowledge, skills and competencies required to carry out a specific occupation. They are regulated and financed by laws and collective agreements and policy decisions arising from social dialogue, and require a written contract that details the respective roles and responsibilities of the apprentice and the employer; they also provide the apprentice with remuneration and standard social protection coverage. Following a clearly defined and structured period of training and the successful completion of a formal assessment, apprentices obtain a recognized qualification.

As shown in figure 2, Quality Apprenticeship systems are based on six key building blocks according to the International Labour Organization (2017, 2020):

- Meaningful social dialogue

Communication (negotiation, consultation, exchange of information) between representatives of stakeholders like governments, employers, and workers for promoting consensus building and democratic involvement.

- A robust regulatory framework

Legal regulations for the design, implementation, monitoring, and evaluation of Quality Apprenticeships defining the rights and responsibilities of employers and apprentices, setting minimum standards for training content and working conditions, and providing a framework for oversight and certification.

- Clear roles and responsibilities

Defined roles and responsibilities of the involved stakeholders when working together to design and implement Quality Apprenticeships.

- Equitable funding arrangements

Establishment of a system for sharing the costs incurred in Quality Apprenticeship training among the various stakeholders.

- Strong labour market relevance

Alignment of knowledge and skills learned in Quality Apprenticeships with the skills needs of the labour market.

- Inclusiveness

Ensuring equal opportunities for women, persons with disabilities, and other vulnerable groups.

In order to ensure that Quality Apprenticeship Programmes are of high quality, there are a number of quality criteria that must be met.

The International Labour Organization (2017, 2020) has defined 10 quality criteria which are as follows:

- A tripartite system of governance

Apprenticeships are regulated and often rely on a tripartite basis.

- Remuneration

Apprentices get paid with the amount being collectively negotiated or set by law.

- A written agreement
Availability of a written contract setting out the main aspects of the apprenticeship training.
- Social security coverage
Apprentices are employed by the company and are therefore entitled to insurance.
- A legal framework
Availability of a legal framework that defines the rights and obligations of apprentices and the training company (+TVET provider).
- A programme of learning
The purpose of apprenticeships is to train the apprentice, not to have cheap labour.
- Duration
The apprenticeship usually lasts between 1 and 4 years.
- Both on-the-job and off-the-job learning components
Apprentices spend part of their apprenticeship within the company and part outside the company (at TVET provider).
- A formal assessment
There is a formal assessment at the end of the apprenticeship.
- A recognised qualification
Upon completion of the apprenticeship, graduates receive a qualification, which is usually EQF level 3-5.

In addition to the International Labour Organization, the European Union has also defined 14 quality criteria in the Council Recommendations of 15th March 2018 on a European Framework for Quality and Effective Apprenticeships (EFQEA) (Council of the European Union, 2018).

Criteria for learning and working conditions:

1. Written agreement
2. Learning outcomes
3. Pedagogical support
4. Workplace component
5. Pay and/or compensation
6. Social protection
7. Work, Health and safety conditions

Criteria for framework conditions:

8. Regulatory framework
9. Involvement of social partners
10. Support for companies
11. Flexible pathways and mobility
12. Career guidance and awareness raising
13. Transparency
14. Quality assurance and tracking of apprentices

For more information on how these 14 quality criteria are implemented in Austria, Germany, and Luxembourg, visit:

<https://www.bibb.de/en/174076.php>

Report on how the EU member states are putting into practice the EFQEA:

<https://ec.europa.eu/social/main.jsp?langId=en&catId=1147&furtherNews=yes&newsId=10070>

In summary, Quality Apprenticeship training can be defined as a programme that combines both a practical component (work and training within companies) and a theoretical component (training at TVET centres or other suitable institutions). The apprenticeship is regulated by law. Social partners participate in designing a regulatory framework, which ensures the (financial) support for companies. A formal written contract is signed, ensuring that the apprentice is paid and provided with insurance coverage/social protection. The company is responsible for ensuring good working, health, and safety conditions. The primary purpose of apprenticeship training is to teach the apprentice the knowledge and skills defined in the curriculum or training plan.

Apprenticeships are time-limited, and upon completion, the apprentices receive a formal qualification which is included in the nationally recognised qualifications frameworks (NQF).

In 2015, the United Nations (UN) adopted the Sustainable Development Goals (SDGs). The SDGs are 17 global goals aimed at making the world more environmentally friendly and socially inclusive. High-Quality Apprenticeships are seen as an effective way to better achieve these goals.

The 17 goals are:

1. No poverty
2. Zero hunger
3. Good health & well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships for the goals

More information on the SDGs, the sub targets, and progress can be found here:

<https://sdgs.un.org/goals>.

In order to be able to measure progress, between 5 and 19 sub targets have been defined for each SDG.

Whilst some of the SDGs and their sub targets have little to do with apprenticeship training, others are highly relevant, such as:

SDG 4 – Quality education is particularly relevant to apprenticeship training - especially target 4.4: ‘By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship’.

SDG 8 is also highly relevant to apprenticeship training, for example target 8.6: ‘By 2020, substantially reduce the proportion of youth not in employment, education or training’.

The SDGs are usually seen as the goal to be worked towards. However, they also offer an opportunity to future-proof apprenticeship training by integrating the SDGs into the training programme. As the SDGs represent the most important goals, they provide a kind of guideline featuring aspects that are considered important worldwide. In this way, apprenticeship training can be optimally aligned with the most important aspects of sustainability and inclusion.

1.4 Advantages and disadvantages of Quality Apprenticeships

The decision to take on apprentices is a significant strategic choice for many companies. While some businesses have long embraced Quality Apprenticeship programmes, others remain hesitant to commit. This reluctance can come from a variety of concerns: the considerable investment of time and resources, uncertainty about retaining trained workers in the long term, or doubts about the maturity and reliability of young apprentices. In an increasingly complex and competitive economic environment, companies carefully weigh up the pros and cons of investing in the development of their own future workforce. But how justified are these concerns - and what role can Quality Apprenticeships truly play in the success of a business?

To better understand the economic situation of Quality Apprenticeship training, it is important to take a closer look at the financial realities companies face. The following section outlines the cost and benefit structures of apprenticeship models in Austria, Switzerland, and Germany, based on available data.

Costs and benefits of Quality Apprenticeships for Companies

Typically, the financial situation is as follows:

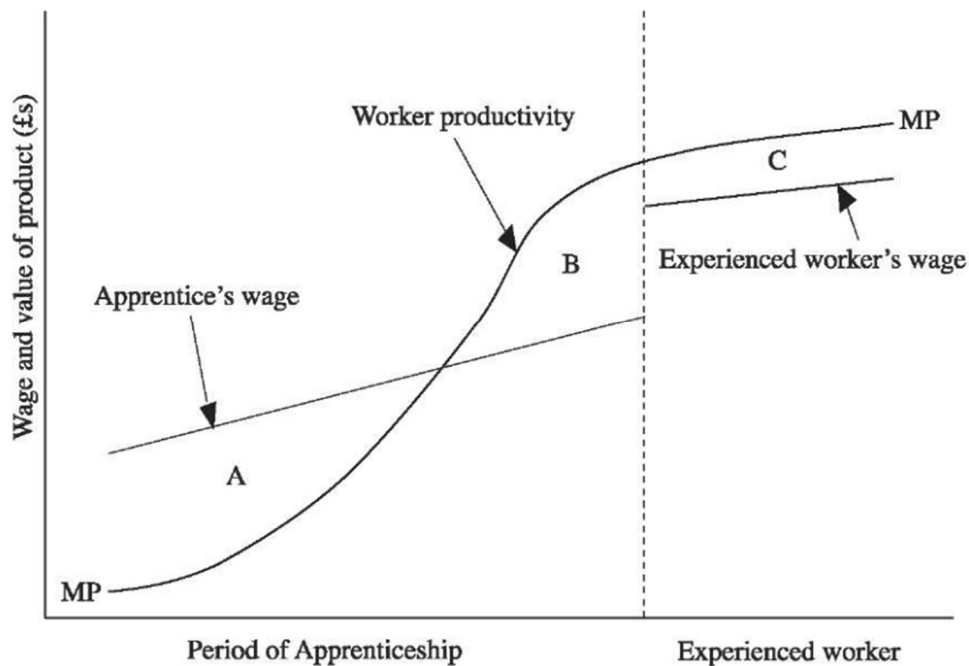


Figure 3 Stylised model of the costs and benefits of apprenticeships for enterprises (Gambin et al., 2010).

At the beginning, the apprentice is inexperienced and can mostly perform tasks that add little or no value to the company (marked by the MP-MP curve, which stands for marginal productivity), while the salary is comparatively high. This phase is marked as 'A' in figure 3.

As the apprenticeship progresses, the apprentice becomes more experienced and takes on more complex tasks, thus achieves higher productivity and greater benefit for the company. In contrast, salaries rise only slowly, which results in the apprentice's productivity exceeding their pay, marked as 'B' in figure 3.

At the end of the apprenticeship, the salary increases significantly but remains below the value that the employee generates for the company, marked as 'C'.

If the apprentice decides to go for a job in a different company after the apprenticeship ends, this phase is omitted. Smaller companies in particular face a greater risk of apprentices moving to another company after their apprenticeship, which is described in further detail below. To ensure

that the apprenticeship still pays off for the company, it is necessary to reach the break-even point during the apprenticeship (Gambin et al., 2010).

Practical example:

Austrian carpentry apprentices receive the following gross monthly income (based on collective agreements, valid from 1st May 2026):

- 1st year of apprenticeship: €1,046
- 2nd year of apprenticeship: €1,397
- 3rd year of apprenticeship: €1,976
- Expected entry-level salary: €3,080 to €3,190

<https://www.beruflexikon.at/berufe/232-Zimmerer~Zimmerin/>

German carpentry apprentices earn the following estimated gross monthly income:
(Depending on the federal state and collective agreement area)

- 1st year of apprenticeship: €919
- 2nd year of apprenticeship: €1,205
- 3rd year of apprenticeship: €1,466
- Expected entry-level salary: €2,922

<https://www.azubi.de/beruf/ausbildung-zimmerer/gehalt>

<https://www.ihk.de/blueprint/servlet/resource/blob/4129186/745465a560c5764e3cdf0544a838031c/tarife-ausbildungsverguetung-data.pdf>

In practice, the situation often differs from the stylised model. Below is data from a cost-benefit analysis which was conducted in the German-speaking region (Austria, Germany, Switzerland).

Practical example:

In Austria, the net costs for a three-year apprenticeship in 2017 were - on average - €6,532, in Germany the net costs were €11,352. In contrast, in Switzerland a net income of 8,712 CHF was generated during the apprenticeship.

With reference to Fig. 3, the data indicated that in Switzerland, phase B, in which costs are lower than productivity, is reached on average at the end of the first year of training. In Germany, costs rise less than productivity, but are consistently higher than the financial benefits, which means that phase B is never reached. In Austria, contrary to the stylised model, as time goes on, costs rise more than productivity due to the substantial increase in pay, resulting in higher net costs at the end of training (Schlögl & Mayerl, 2017).

Another study showed that companies in Austria invested/lost - on average - €4,200 per year and apprentice while Swiss firms generated a net benefit of €3,400 per year and apprentice. The two main reasons why companies in Switzerland, contrary to Austrian firms, can already realise a profit during the apprenticeship are as follows: In Switzerland, apprentices receive around half as much pay as in Austria in relation to the pay received by a skilled worker. Although Austrian apprentices spend more days a year in the company, they spend less time on skilled tasks and more time on unskilled tasks, which has a negative impact on the productivity of apprentices (Moretti et al., 2017).

Cost-benefit analyses have also been conducted outside German-speaking countries. Examples of this include the Philippines (Mapa et al., 2016), Chile (de Amesti et al., 2021) and Singapore (Renold et al., 2018). Additionally, simulations were performed in countries like Italy (Mühleman et al., 2018) and Spain (Wolter & Mühlemann, 2015).

A considerable proportion of apprentices stay with the companies after completing their apprenticeships. This saves the company time and money in searching for and training new employees.

Practical example:

The percentage of apprentices who are still employed by the training company one year after graduation depends, among other things, on the country and the size of the company. The larger the companies, the higher the percentage of those who remain with the company (Schlögl & Mayerl, 2017).

Austria: 56-76% (≤ 9 employees: 56%; 10-49: 59%; 50-249: 70%; >249 : 76%)

Germany: 49-82% (≤ 9 employees: 49%; 10-49: 65%; 50-499: 75%; >499 : 82%)

Switzerland: 25-47% (≤ 9 employees: 25%; 10-49: 32%; 50-99: 41%; >99 : 47%)

The data is presented visually in figure 4:

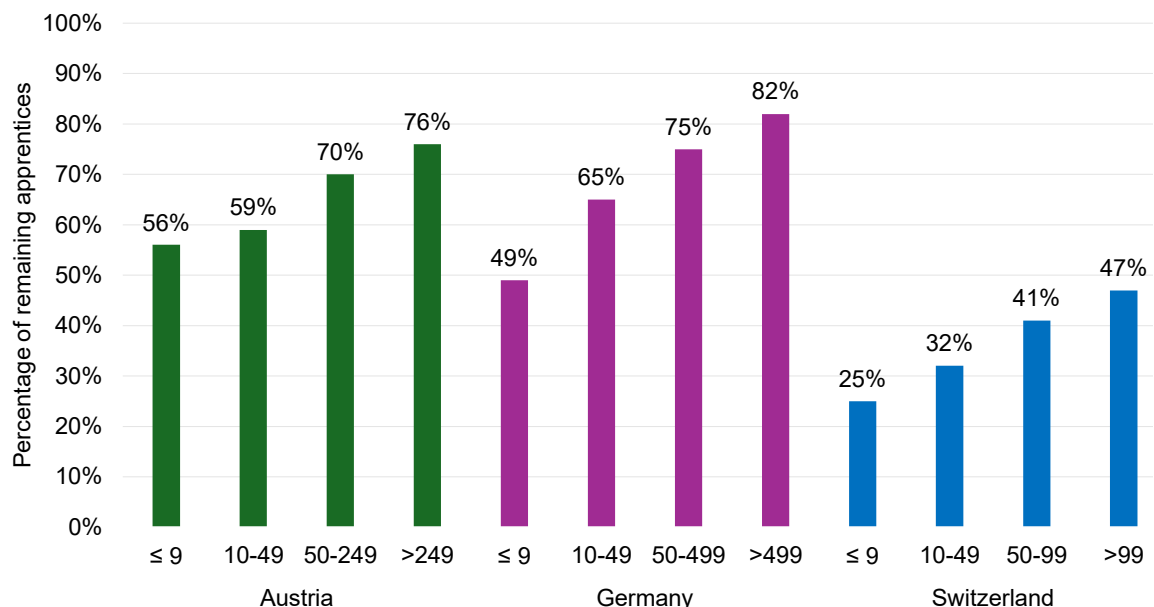


Figure 4 Representation of the proportion of apprentices who were still employed by the training company one year after completing their apprenticeship based on country (Austria, Germany, Switzerland) and company size (Austria: ≤ 9 employees; 10-49; 50-249; >249 , Germany: ≤ 9 ; 10-49; 50-499; >499 , Switzerland: ≤ 9 ; 10-49; 50-99; >99) (2015, based on data from: Schlögl & Mayerl, 2017).

When analysing the figure, it becomes clear that the proportion of apprentices who remain with the training company after completing their apprenticeship increases with the size of the company and is higher in Austria and Germany compared to Switzerland. This explains why many companies train apprentices in Austria and Germany despite the net costs and why it is very important for companies in Switzerland to make a profit before the apprenticeship ends.

In Austria, for example, an employer saves around two thirds of the monetary loss by not having to hire and train a new employee alone (Moretti et al., 2017).

Disadvantages of Quality Apprenticeships for companies

One of the main concerns for companies offering apprenticeships is the long time and high effort required to train apprentices. This process demands dedicated and experienced staff who can effectively guide and support the apprentices throughout their learning journey.

Many companies feel that they need new skilled workers immediately and that it would take too long to train apprentices. Since apprentices usually join the company without any experience, the initial period can be very slow, which requires a lot of patience.

The challenge is to strike a balance between hiring already trained specialists to cope with the current situation and apprentices to meet future demands.

Another factor that discourages companies from training apprentices is uncertainty. There is always the risk that apprentices will lose interest in the training or realise that they are not suited for the job and drop out as a result. It is also unclear whether apprentices will want to stay with the company after completing their apprenticeship. This unpredictability makes it difficult to plan for the future. When apprentices discontinue the training prematurely or directly after finishing the apprenticeship, companies potentially lose a lot of money that they have invested in training without getting any added value from the well-trained employees.

The usually long duration of apprenticeships is another hurdle for both companies and apprentices. Stricter legal provisions regarding protection against dismissal in many countries make it even more difficult to terminate apprenticeships promptly, even when it is obvious that the training will not work out.

Another challenge is that apprentices spend around 20% of their time not at the company, but at the TVET provider (or other locations). This means that apprentices are less productive, and it increases the planning effort involved in allocating working and training hours. The absence from the workplace can disrupt workflows and make it harder for companies to integrate apprentices into their regular operations, creating additional strain on both management and staff.

Benefits of Quality Apprenticeship Programmes for companies

Despite the challenges associated with apprenticeship programmes, the advantages for companies are undeniable. While the apprenticeship training can be challenging, especially at the beginning, the benefits outweigh the disadvantages in the long term. By focusing on the

bigger picture, companies can unlock opportunities that contribute to sustainable growth and a skilled, loyal workforce.

The following section outlines these key benefits, highlighting how apprenticeship programmes can ultimately strengthen a company's position in the market.

It can be particularly challenging for smaller companies to bear the additional financial burden of apprenticeships. That is why many countries offer financial assistance to companies that train apprentices:

Practical examples:

In Austria, among other things, training companies are reimbursed for the boarding school costs of apprentices, free coaching is offered as part of the 'Lehre statt Leere' ('Apprenticeship instead of emptiness') programme, the costs of remedial teaching are subsidised up to 100% and there are performance-related subsidies for companies in the event of good success (€200) and very good success (€250) for the company (Austrian Economic Chamber - WKÖ, 2024).

In the UK, 95 to 100% of training costs for apprentices at small companies are covered by the government. Large companies can use the levy to pay for apprenticeship training (UK Government, n.d.-a). In addition, companies receive £1,000 at the start of the apprenticeship training if certain requirements are met about the age of the apprentice (UK Government, n.d.-b).

In Ireland, companies receive €2,000 per year per apprentice employed in one of 50+ selected occupations (Generation Apprenticeship, 2026).

In Denmark there is a fixed annual amount of levy per employee that is distributed to employers on a 'first come first served' basis and is used by companies for apprentices' remuneration (Cedefop, n.d.-a).

Practical examples:

In Croatia, all companies and entrepreneurs working in craft occupations have reduced employers' income tax base or self-employment income tax by 5% if they have 1 to 3 students. When they train more than 3, it is increased by 1% per student up to a maximum of 15% (Cedefop, n.d.-b).

In Belgium, companies receive €600, if no other compensation is foreseen for the apprentice, or €1,000 when the employer provides additional compensation. Apprentices receive €500 per year if apprentices are in training for at least four months during the school year. The premiums are paid once per year and up to three times (Flemish government, n.d.)

In many countries, companies receive additional funding if they take on people with disabilities or disadvantaged people. For example, in Austria, for the employment of apprentices with disabilities, the employer will receive a bonus of €335 (As of 07/2025) per month from the Social Ministry Service from the Equalisation Tax Fund (Federal Ministry of Social Affairs, Health, Care, and Consumer Protection, 2020; Federal Social Welfare Office, 2025).

Companies that take on apprentices benefit in many ways, both immediately and in the long term. Probably the most important advantage of apprenticeships is that apprentices can be trained to meet the specific requirements of the company. This customised training approach leads to a higher quality of work and employees who are not only skilled but also deeply familiar with the company's operations and culture. As a result, these apprentices transition seamlessly into their roles, making them valuable assets from the very start.

Furthermore, companies that offer Quality Apprenticeships have access to a broader and more diverse pool of potential employees. By investing in young talent early, businesses gain a significant competitive edge in recruitment, positioning themselves as an attractive choice for up-and-coming professionals.

This is particularly important in some sectors, as for example, in the construction industry, which is expected to experience the largest employment demand growth in the shift to a green economy with an increase of 6.5 million jobs between 2012 and 2030 (International Labour Organization,

2018). For companies in this field, offering apprenticeships can help meet the growing demand for skilled workers while also positioning them as industry leaders in a rapidly evolving market.

The company's reputation can also improve significantly through the commitment to training apprentices. Offering Quality Apprenticeships demonstrates social responsibility and investment in the community, which enhances the firm's public image (Kuczera, 2017).

Another aspect is that apprentices bring a breath of fresh air to the company. Taking on young people can increase overall creativity and innovation. The presence of apprentices can lead to new perspectives and approaches, which benefits the company's overall development and ability to stay competitive in an ever-changing market.

Finally, the practice of training apprentices fosters employee loyalty and motivation. Those who have been trained within the company tend to feel a stronger connection to their employer, developing a sense of loyalty that can lead to long-term commitment. Furthermore, the infusion of young talent into the workforce can uplift overall morale, creating a more motivated and engaged team. This positive energy helps maintain a productive atmosphere and encourages employees to contribute to the company's success, which ultimately strengthens the organisation's foundation.

1.5 Making apprenticeship training more green

Sustainability is a key issue that is becoming increasingly important for businesses. Environmental threats such as rising temperatures, loss of biodiversity, pollution and water scarcity are making it ever more necessary to adapt existing processes. This includes not only more sustainable production methods and the use of renewable materials but also adapting apprenticeship training to promote long-term solutions. However, companies often hesitate when it comes to introducing sustainable methods.

The following section lists the hurdles to sustainability, followed by possible advantages and proposed solutions/best practices, which can also be found scattered throughout the programme in greater numbers.

Constraints

Greening apprenticeships presents several significant hurdles that need to be addressed in order to make sustainability a core component of vocational training.

One of the primary challenges is the costs involved. Updating training materials, acquiring environmentally friendly equipment, and upskilling instructors require financial resources that many companies - especially small and medium-sized enterprises - may find difficult to allocate.

In addition to the financial burden, there is also the investment of time. Incorporating green content into existing training plans demands considerable planning and adjustment, often stretching the already limited time available for apprenticeship programmes.

Another major barrier is the conceived lack of benefits. Many employers do not immediately recognise the added value of integrating sustainability into vocational training. Without a clear understanding of how green skills contribute to business success or long-term competitiveness, there is often little motivation to invest in these changes. This is compounded by a lack of knowledge regarding which specific green skills are needed in the different sectors, and how these can be effectively taught (Cedefop, 2024). The absence of clear guidelines or up-to-date information about skills needs and gaps can leave training providers and employers unsure of how to proceed.

Furthermore, there is the issue of acceptance. Change is often met with scepticism, and greening apprenticeships challenges established routines and mindsets. Employers, instructors, and even apprentices themselves may resist adopting sustainability measures, particularly if they perceive them as burdensome or irrelevant.

Last but not least, one major aspect of promoting green apprenticeships is the difficulty of measuring its impact. The benefits of sustainability-related training are often long-term and not easily quantifiable, making it hard to assess their effectiveness or justify the initial investment.

Advantages

While the introduction of sustainability in apprenticeship programmes may come with its challenges, it also offers significant positive opportunities.

As sustainability becomes an increasingly important factor in today's world, it holds particular significance for younger generations. Young people are prioritising sustainability more and more, not only in their personal lives but also when making career and education choices. This shift is influencing how they select training companies and employers, with sustainable practices now playing a critical role in their decisions.

Moreover, sustainability is no longer just a trend; it is gaining prominence in politics, business, and the media, shaping expectations across industries. Customers, too, are demanding more sustainable practices from the companies they engage with. Thus, integrating sustainability into apprenticeship programmes not only aligns with these evolving values but also strengthens a company's reputation and future viability.

This is not the only reason it is advisable to address this issue at an early stage. Sustainable development has many positive effects, especially in the long term.

Sustainable corporate management and training can promote future innovation. Sustainable practices encourage both employees and apprentices to think creatively, which can lead to novel and potentially groundbreaking ideas for the company.

Sustainable development does not stand in the way of future-proof, successful corporate development, but can significantly promote it (Feichtenbeiner et al, 2022).

Apprentices trained in green practices are better equipped to identify inefficiencies in production, suggest improvements in resource management, and implement environmentally friendly technologies. For example, they can learn how to minimise material waste through better planning and precision, or how to adjust machine settings to reduce unnecessary energy consumption.

Moreover, apprentices who understand the importance of sustainability are more likely to develop a mindset of continuous improvement. They can help foster a company culture that values resource efficiency and environmental responsibility, which in turn supports long-term cost reductions.

Quality Apprenticeship training is ideally suited to facilitating a green transition. The combination of on-the-job and off-the-job training and the cooperation between the two enables an exchange of ideas and innovation. Due to its proximity to the labour market, Quality Apprenticeships can be quickly adapted to changing situations. This has positive effects both in the short term, with the rapid availability of well-trained skilled workers, and in the long term, through future-oriented training (Cedefop, 2024).

Solutions & Best practices:

What can employers do to make training more sustainable, and how can the aforementioned hurdles be overcome? To make training more sustainable, employers need to implement short- and long-term strategies that tackle immediate and future workforce needs. Overcoming the challenges related to training requires weighing the situation carefully and making decisions based on the pros and cons. Companies must evaluate whether the additional costs and time invested are worth the benefits, such as enhanced reputation, improved chances of attracting apprentices, innovation, and potential future cost savings.

In many countries, companies can benefit from subsidies and funding schemes that specifically support projects aimed at sustainability. Such incentives not only encourage environmentally responsible initiatives but also help businesses significantly reduce their overall costs.

In addition, a wide range of pilot projects and best-practice examples from different countries are available and documented within the programme. These proven approaches serve as valuable guidance for new initiatives, enabling organisations to avoid common pitfalls, shorten implementation times, and further lower expenses.

It is a misconception to assume that companies are entirely dependent on government organisations and incapable of making progress on their own. Businesses possess the capacity to take meaningful action independently, driving innovation and sustainability through their own initiatives and strategies.

Good practice:

As a company, one can take the lead in sustainable change. In Denmark, there was a project called 'Apprentices for sustainability', in which apprentices demanded new knowledge and skills related to sustainable construction. The project, which was launched by the teachers/trainers, even made it into the national media. The initiative led to new sustainability topics such as the basics of sustainable building methods, the use of sustainable materials, and a holistic approach to building processes and organisational development being incorporated into the training programme (Cedefop, 2024).

<https://data.europa.eu/doi/10.2801/708025>

A lack of knowledge in the field of sustainability can be effectively addressed through targeted training opportunities, such as courses offered at VET centres or online courses like MOOCs.

Practical example:

As part of the Habitable project, an online training platform has been created, offering a wide range of MOOCs available free of charge. These MOOCs have been specifically designed for trainers, SMEs and learners. In this context, the course 'Sustainability and circular economy in the Habitat sector', which forms part of the MOOC 'MOOC on reskilling and upskilling in SMEs: preparing the workforce for the green and digital transition in the Habitat sector', might be interesting.

<https://en.platform.habitable-cove.eu/>

<https://en.platform.habitable-cove.eu/course/sustainability-and-circular-economy-in-the-habitat-sector/>

In addition to the option of integrating sustainability into vocational training through the education of trainers, there is also the valuable opportunity to initiate this process from the apprentice's perspective. By actively involving apprentices in the development and implementation of sustainability measures, they not only gain a deeper awareness of the importance of the topic but also strengthen their problem-solving abilities and creative thinking skills. This hands-on engagement helps to foster a sense of responsibility among young professionals, while at the same time encouraging innovative approaches.

Good practice:

The NAUZUBI project is a funded project in Germany in which sustainability audits were carried out with apprentices. Together with the apprentices and under scientific supervision, specific sustainability aspects were identified, evaluated, and focused on. Based on the results, solutions and measures were developed jointly.

<https://nauzubi.jimdoweb.com/%C3%BCber-das-projekt/>

If the head of a company is convinced of sustainability and exemplifies it, sooner or later, the employees will also abandon their resistance or doubts. The same principle applies to apprenticeships. If the trainer is convinced of sustainability, at some point, the apprentices will also become more open to such topics. A strong commitment at the leadership level creates a culture of trust and credibility that inspires the workforce to adopt more sustainable practices themselves.

One effective way to demonstrate this in practice is by using recycled materials as well as energy- and resource-efficient processes. In this way, apprentices can be introduced to sustainability in a clear, practical, and convincing manner. Learning through concrete examples allows them to directly experience how sustainable choices can be implemented in everyday business operations.

Introducing sustainability into the business and apprenticeship is not easy, nevertheless, such efforts can position a company on a future-oriented path and generate long-term benefits. There are many different ways to integrate sustainability into training - through practical application in the company, by embedding it in the training plan, by jointly developing process optimisations with apprentices, etc.

What is important is that efforts are made to improve training, including with regard to sustainability. How each company chooses to achieve this may differ, but what unites them is the shared responsibility to prepare the next generation for a more sustainable future.

Good practice:

The CirCLER project supports the European furniture industry in its transition to a circular economy by developing a new job profile for the 'Circular Economy Transition Manager' (CETM). To this end, innovative and practical curricula are being developed at EQF levels 4, 5, and 6, along with a multimedia training toolkit featuring customizable learning paths in seven EU languages.

<https://circler-furniture.eu/en/>

1.6 Making apprenticeship training more digital

The current era is defined by the rapid digitalisation and automation of machines and work processes. While technological advancements continue at a fast pace, developments in education and training are struggling to keep up. This widening gap poses a challenge to preparing a workforce capable of meeting the demands of a digitally transformed economy. To stay relevant and effective, Quality Apprenticeship systems must undergo continuous adaptation – to align more closely with technological developments and equip learners with the digital competencies and practical skills needed in modern workplaces.

Implementing such changes within training programmes is rarely straightforward. It often involves considerable effort, coordination, and investment. Nonetheless, transformation is essential to drive meaningful improvement.

The following section outlines the key obstacles that hinder companies from modernising their apprenticeship programmes, particularly with regard to digitalisation. These challenges are contrasted with the potential benefits of change, along with a brief overview of strategies to overcome them. In addition, a range of practical solutions and best practices are provided throughout the programme, which can be applied at various stages in the development of a future-ready Quality Apprenticeship system.

Constraints:

The biggest hurdle for companies looking to make training more digital is usually the lack of infrastructure and the associated acquisition costs. It can be particularly difficult for small and medium-sized enterprises to raise the money to purchase the necessary tools, machines, equipment, and software.

The financial burden is just one of many potential hurdles. Introducing more digital training involves a lot of work. The introduction and implementation of digital systems take a considerable amount of time. Recurring technical problems can arise, especially if systems are not continuously revised and maintained. Setup, maintenance, and fixing errors are particularly challenging for companies whose employees do not have sufficient digital skills.

Tradition-conscious employees prick up their ears at the word ‘digitalisation’. It is not uncommon for employees to oppose the introduction of machines and digital tools. There can be many reasons for this - fear of being replaced by machines and losing their jobs, feeling overwhelmed due to a lack of skills in dealing with technology, or a fundamental rejection of change based on the motto: ‘Never change a running system’.

One hurdle created by digitalisation is compliance with data protection regulations. When important information, both company and personal data, is stored digitally, there is a high risk that it could be misused or passed on to third parties without authorisation. Another issue related to data protection is cybercrime. Common methods include malware, identity theft, spam, and phishing, against which companies must protect themselves. This also includes training employees and apprentices to work safely with the technologies.

There are other potential problems that could arise from the use of smart technologies. One possible danger is that technology puts the poor at a disadvantage because they have no or less access to technology. This was particularly evident during the Covid-19 pandemic (Vincent-Lancrin, 2022).

Another possible problem is that technologies are usually tested on the general population, which can result in the technologies working less well for minorities (Ocumpaugh et al., 2014).

Educational tools have been shown to have unintentional differing performances for diverse groups. There is also an algorithmic bias, which can be discriminatory towards specific groups (Baker et al., 2023).

Other potential issues include widening the achievement gap between the best and worst students through personalised learning and using tools for a purpose for which the tool is not designed (e.g. using a tool designed to identify people in need for help as a performance assessment tool). If tools are used for purposes other than those for which they were intended, it can lead to serious errors that may have significant consequences.

Digitalisation is likely to increase screen time, which in turn can have negative effects on human health. Excessive screen time is linked - among other things - to poor sleep, risk of cardiovascular problems, impaired vision, and reduced bone density (Lissak, 2018). The blue light, which is emitted from the screen, can interfere with melatonin production, which is necessary for sleep regulation in the body and might also contribute to eye strain. When looking at a screen for too long, people tend to blink less often, which can lead to dry eyes and eye problems. Excessive screen time may also potentially lead to short-sightedness, possibly triggered by the eyes constantly adjusting to the short distance (George & Dhull, 2023).

In summary, it can be said that digitalisation comes with many potential disadvantages and risks, but oftentimes it still makes sense to push ahead with digitalisation. This is because digitalisation not only brings many advantages (which are described below), but also because many of the risks mentioned above can be greatly reduced by taking appropriate measures.

Advantages:

In recent years and decades, many work processes have changed significantly. Planning processes, production, and, in general, the entire structure of companies have undergone major changes in terms of technology and digitalisation. In order to adapt training to constantly changing processes and to train apprentices in such a way that they can continue to be valuable employees in the future, training must also be adapted accordingly.

Digitalisation brings new opportunities for teaching apprentices. It enables more tailored training, the rehearsal of situations that would not normally be possible (e.g., due to excessive danger or high costs), and increased student motivation. The various methods are listed and explained in more detail throughout the programme (especially in 4.5).

The individualisation of training is an important aspect; digitalisation makes it possible to focus more on the individual needs of each student. This not only increases student motivation but also

improves the chances that these students will successfully complete their training and grow into loyal employees in the future. Individualisation can be a key factor in advancing equity.

Digitalisation cannot only be used to improve the quality of apprenticeship training, but it also enables making training more efficient, for example, by reducing travel costs and time through self-study units or online teaching. This lowers the ongoing training costs for the company.

Situations that are difficult or impossible to practice in real life - for example, due to excessive risks or because the costs would be too high - can be practiced using digital technologies. VR technologies and simulations also allow situations to be repeated so that lessons can be learned from mistakes. In most cases, the training experience is not 100% comparable to reality; however, these technologies are particularly well-suited as preparation for practical training because the processes are already familiar.

Good practice:

Exelon, the largest electric utility in the US, built a VR platform to deliver training to workers in a safe environment. Their training platform prepares the workers to work with electrical equipment that, when touched, can give a powerful shock. They can immerse themselves in the actual environment and practice without any safety risks, helping the workers to build muscle memory and a better understanding of the dangers. This system not only works for electricians but can be applied to a wide range of applications. For carpentry, it can be used to practice the hazards associated with woodworking machinery in a safe environment, as well as proper procedures on the construction site.

<https://www.deloittedigital.com/us/en/work/exelon.html>

<https://3dtalo.fi/virtual-reality-training-for-dangerous-jobs-improving-safety-and-reducing-risks/>

Digital technologies (for example Open Educational Resources, OER) provide both trainers and students with wider access to educational resources, which in turn brings many potential benefits like improving the quality of training materials or advancing student equity (Orr et al., 2015; Lambert, 2019). A big advantage of OERs is that they are available all the time. This allows students to organise their learning as they wish.

Last but not least, digital technologies can be used to identify at an early stage when there is a high risk that students will drop out of school, so that timely intervention can be provided.

What should always be kept in mind is that digitalisation should not necessarily replace traditional teaching methods; it should be used in addition to existing ones. Technology should not be applied merely for the sake of being more digital, but only in areas and to an extent where it is meaningful and can actually improve education. When used correctly, it offers immense advantages for students and the company.

Solutions & Best practices

Many companies are reluctant to make their processes and training more digital, as the obstacles seem insurmountable to them. However, most of these obstacles can be mitigated or eliminated entirely through certain measures. The following section describes how the aforementioned obstacles could be mitigated.

In many countries, SMEs can apply for grants to drive digitalisation within their organisations. This helps to reduce the associated costs, which represent one of the biggest hurdles for most companies. In the EU, there are several funding programmes like Erasmus+, ERDF and ESF+, that can, among other things, help businesses to promote digitalisation in apprenticeship training.

Practical example:

Launched in March 2022, the Canada Digital Adoption Program (CDAP) offered grants, loans, and advisory services to support Canadian businesses in adopting digital technologies aimed at boosting productivity and competitiveness. Through the Grow Your Business Online (GYBO) and Boost Your Business Technology (BYBT) streams, the programme supported over 71,000 businesses across diverse sectors and regions. In total, CDAP distributed approximately \$1.2 billion in grants, loans, and wage subsidies.

<https://www.bdc.ca/en/canada-digital-adoption-program>

Practical example:

digi4Wirtschaft (digi4economy) offers funding for digital transformation for companies in Lower Austria. Projects with costs of at least €5,000 receive a grant of up to 50%, or €25,000 (digi Investition: data). In addition to financial support, two other services are offered as part of digi4Wirtschaft. digi Kickstart organises workshops where companies collaborate with experts to develop digitisation activities. digi Assistent provides companies with external experts for consulting and assistance with questions and covers part of the costs (up to €3,300). In 2025, the digitalisation support programme was expanded to become the state's first AI funding scheme, with the aim of making businesses more efficient and faster.

<https://www.wko.at/noe/n-news/neuaufgabe-digitalisierungsfoerderung-digi4wirtschaft>

[https://noe.gv.at/noe/Wirtschaft-Tourismus-](https://noe.gv.at/noe/Wirtschaft-Tourismus-Technologie/Programmdokument_digi4wirtschaft_v1.04_final.pdf)

[Technologie/Programmdokument_digi4wirtschaft_v1.04_final.pdf](https://noe.gv.at/noe/Wirtschaft-Tourismus-Technologie/Programmdokument_digi4wirtschaft_v1.04_final.pdf)

By promoting digital skills among trainers, for example through courses, the risk of data protection issues can be mitigated; at the same time, these skills can also be applied within the company beyond the training context. This knowledge (for example, regarding data protection) can also have a positive impact on the entire company, as it helps to mitigate a wide range of problems, including those that might arise outside the training context.

Practical example:

wise up is a learning platform offering more than 25,000 courses, which have been available free of charge to participating apprentices since the beginning of 2025. wise up is a service provided by the Austrian Federal Economic Chamber, where training companies can upload various learning content such as videos or documents, giving apprentices the opportunity to learn anytime and anywhere using their smartphones. In addition, the platform also offers curated learning content for selected apprenticeships, which is continuously being expanded.

[https://www.bmwet.gv.at/European-Year-of-Skills/Newsletter/1-Newsletter-Digital-](https://www.bmwet.gv.at/European-Year-of-Skills/Newsletter/1-Newsletter-Digital-Skills/Lehre-und-Beruf/wise-up.html)

[Skills/Lehre-und-Beruf/wise-up.html](https://www.bmwet.gv.at/European-Year-of-Skills/Newsletter/1-Newsletter-Digital-Skills/Lehre-und-Beruf/wise-up.html)

<https://wise-up.at/>

Digitalisation can put people from underprivileged backgrounds at a disadvantage, as they may have limited access to digital technologies. This can be prevented by the company providing the necessary equipment. There are various ways to achieve this, such as making a stock of devices available for loan, or providing a room where such devices are kept and can be used at any time.

The risk of certain health problems caused by increased screen time can be minimised through measures such as blue light filters, night mode, time limits, etc.

Other problems described can also be minimised or prevented through careful selection of digital technologies and good planning.

More best practices and methods for introducing digital training into apprenticeship programmes are scattered throughout the programme.

Practical example:

As part of the Habitable project, an online training platform has been created, offering a wide range of MOOCs available free of charge. These MOOCs have been specifically designed for trainers, SMEs and learners. In this context, the 'MOOC on digital skills for teaching VET', might be interesting.

<https://en.platform.habitable-cove.eu/>

<https://en.platform.habitable-cove.eu/mooc/training-programme-for-trainers/trainers-mooc-1-digital-skills-for-teaching-vet/>

1.7 Making apprenticeship training more inclusive

Inclusion is about ensuring that everyone has the same chances and can take part in all areas of life, regardless of their abilities, background, or individual needs. It covers a wide range of aspects, including gender equality, social and economic equality, as well as the integration of people with special needs or fewer opportunities (such as those with disabilities, migrant backgrounds, or disadvantaged socio-economic status). Inclusion also involves recognising and valuing cultural, linguistic, and religious diversity, promoting LGBTQ+ rights, and creating environments where everyone feels respected, safe, and empowered to contribute.

When young people with different abilities are given equal access to learning and development, they gain the skills and confidence needed to fully participate in the workforce and society. However, implementing inclusion in practice - particularly in apprenticeship training - often comes with significant challenges. The following section will explore the barriers to successfully introduce inclusive practices into Quality Apprenticeship programmes.

Constraints

The first hurdle is the enormous amount of time that inclusion can entail, especially the additional effort required to ensure that those who need help actually receive it. Inclusive apprenticeship programmes often require more time from trainers, mentors, and support staff, as lessons may need to be adapted to individual learning needs, which often requires additional preparation, explanation, and follow-up. This can slow down the training process and increase the workload for those involved.

Closely connected to this are the financial costs of inclusion. Implementing inclusive measures demands extra funding - for example, to provide assistive technologies, accessible infrastructure, or the support of professionals like interpreters or job coaches. These costs can be particularly burdensome for small or medium-sized businesses.

Social and cultural factors can also present major challenges. Differing values among apprentices, trainers, or other staff members may lead to friction when inclusive approaches are introduced. Traditional views on performance, productivity, or independence may conflict with the more flexible and supportive strategies required for an inclusive training environment. Even when inclusion is promoted at an organisational level, not all individuals involved may fully support or understand it.

In addition to the aspects mentioned above, companies often face further hurdles in inclusive apprenticeship training, such as a lack of expertise, a lack of accessible infrastructure, bureaucratic hurdles in terms of funding, concerns about loss of performance and a lack of role models and positive practical examples. These factors can make the implementation of inclusive education significantly more difficult.

Advantages

The multitude of disadvantages and problems associated with inclusion can be very daunting, but there are also numerous advantages that might transform inclusion into a valuable asset for the company.

Companies that are committed to diversity tend to be more financially successful (Hunt et al., 2015; Hunt et al., 2023).

The reasons why companies that promote diversity tend to perform better are, in themselves, already compelling advantages. The first reason is that companies with a focus on diversity have access to a larger talent pool, which allows them to select the best candidates for the job. By attracting individuals from a wide range of backgrounds, experiences, and perspectives, companies can choose from a broader selection of skilled professionals. This increased variety not only enhances the quality of hires but also ensures that businesses can find the most suitable talent for specific roles.

Another benefit is the improved employee satisfaction that comes from having a sufficiently high number of minority employees. When employees feel represented and valued, it fosters a more inclusive and supportive work environment. This, in turn, boosts morale and overall job satisfaction.

Diversity also enhances decision-making and encourages innovation. People from different backgrounds bring unique perspectives, which can be integrated into the decision-making process, leading to more well-rounded and effective solutions. A diverse team is more likely to approach problems creatively, which can drive innovation and improve business outcomes.

Furthermore, a diverse workforce enables companies to better understand and meet the needs of a diverse customer base. By drawing on a variety of experiences, companies can customise their

products and services to cater to different cultural, social, and demographic segments, ultimately expanding their reach and customer satisfaction.

Lastly, diversity demonstrates social commitment and responsibility, which can significantly strengthen a company's public image. Companies that prioritise diversity are often seen as more progressive, ethical, and forward-thinking, which enhances their credibility and can foster stronger customer loyalty. This commitment to inclusivity can become a powerful differentiator in a competitive marketplace.

Solutions & Best practices:

In some countries, there are various support mechanisms available, both financial and practical, which help companies minimise the financial burden and time commitment associated with apprenticeship programmes. These support options can make it easier for businesses to integrate apprentices into their workforce without facing overwhelming costs, allowing them to focus on long-term growth and development.

Practical example:

Jobcoaching from NEBA ("Netzwerk berufliche Assistenz" - Network for Professional Assistance) helps people with disabilities and young people with special educational needs in the workplace. The programme promotes communication, technical and social skills. By helping with training and specific tasks, it makes it easier for people in need of support to get started and reduces the time required by employees and trainers within the company. The duration of the training is agreed upon with the company and can last up to 6 months.

<https://www.neba.at/downloads/public/05->

[jobcoaching/JC02080_neba_jc_falzflyer_eng_v12_20200826.pdf](https://www.neba.at/downloads/public/05-jobcoaching/JC02080_neba_jc_falzflyer_eng_v12_20200826.pdf)

<https://www.neba.at/jobcoaching#fragen>

Practical example:

LADAPT, a French non-profit organisation founded in 1929, developed the Support Apprenticeship system in 1992 to facilitate the professional integration of people with disabilities into the mainstream labour market. The programme offers a person-centred approach, supporting not only the apprentice but also employers, training centres, and other stakeholders throughout the entire process - from recruitment to stable employment. Despite legal frameworks, people with disabilities continue to face higher unemployment rates, and this initiative addresses those barriers by providing coordinated support and reducing contract terminations. Backed by subsidies from the OPCO (Operator of competencies), the system has proven effective: a 2009 study showed that 80% of the 400 annual participants found employment after completing their apprenticeship. Due to its success, the French Ministry of Labour has tasked LADAPT with scaling the model nationwide, with plans to publish a comprehensive implementation guide.

<https://easpd.eu/news-detail/support-apprenticeship-system-by-ladap>

Good practice:

The 'FiT - Frauen in Technik und Handwerk (Women in crafts and technology)' project encourages women to enter professions where the female share is below 40%. It offers various support measures, including career orientation, internships, training, and advice, to help women gain skills in non-traditional fields. The programme specifically targets unemployed women, offering financial aid like unemployment benefits, training allowances, and childcare support. Initiated in 2006, the initiative promotes equality between men and women in skilled trades by providing resources for career development and work-life balance. Additionally, FiT supports companies by helping them train skilled workers and assisting with recruitment efforts to find qualified personnel for technical roles.

<https://www.ams.at/unternehmen/service-zur-personalsuche/frauen-in-handwerk-und-technik>

https://habitable-cove.eu/resource/res_10/

By ensuring that financial and practical barriers are minimised, companies can focus on creating a fair and supportive learning atmosphere.

Achieving a truly inclusive learning atmosphere requires a number of important steps. At the heart of this effort lies fair compensation: women (and other under-represented groups) should receive equal pay for equal work - both during training and in their professional careers thereafter. Equal remuneration is not just a matter of fairness but a foundation for long-term inclusion and equality in the workplace.

The recruitment and hiring processes for apprentices must be designed to be impartial and equitable. Gender-neutral job advertisements are a crucial element, as they help attract a diverse pool of applicants by eliminating unconscious biases from the very beginning. More detailed strategies on this can be found in sections 4.1 and 4.2.

Role models can play a key role in reaching and inspiring underrepresented groups in specific sectors. By showcasing individuals who have successfully navigated careers in fields where their demographic is typically underrepresented, role models help break down stereotypes, create identification, and encourage others to follow similar paths. Their visibility sends a powerful message: 'You belong here, too'.

Good practice:

Somos FP Dual is a Spanish initiative that promotes Dual Vocational Education and Training (FP Dual) through young ambassadors who share their own experiences. A strong focus is placed on inclusion by involving ambassadors from diverse socio-economic, cultural, and gender backgrounds, including rural youth, women in male-dominated fields, and students from low-income families. By acting as relatable role models, they help underrepresented groups see vocational training as an accessible and valuable pathway. Through talks, school visits, and digital outreach, the programme breaks down stigma, supports informed choices, and promotes equal access to work-based learning opportunities across Spain.

<https://somosfpdual.es/>

https://habitable-cove.eu/resource/res_24/

People with disabilities or those from disadvantaged backgrounds often face unique challenges, and companies need to proactively accommodate their specific needs. Examples include wheelchair-accessible facilities for individuals with mobility issues, or flexible work-life programmes for those who, due to personal circumstances, cannot work full time.

Good practice:

At Hilti Portugal's headquarters in Porto, visually impaired individuals were systematically integrated into administrative roles through a structured approach. The process started with an assessment of suitable positions, such as finance, customer service, and back office. Workplace adaptations were implemented, including screen readers, braille displays, magnification software, and barrier-free infrastructure. Human Resources staff received training in inclusive recruitment and onboarding processes to ensure equal access. Continuous mentorship and tailored support were provided to secure sustainable integration and professional development.

<https://repositorio-aberto.up.pt/handle/10216/123412>,

https://habitable-cove.eu/resource/res_20/

Pilot projects can serve as an effective way for companies to lead by example and demonstrate their commitment to inclusion. These initiatives can be conducted in collaboration with local organisations and institutions that support people with disabilities (or other disadvantaged groups), ensuring that efforts are both meaningful and sustainable.

Establishing support programmes for minorities and individuals in need is another vital step. These programmes provide a safety net by offering guidance and assistance in times of difficulty and give apprentices a sense of security and belonging within the learning environment.

Further steps and best practices to support inclusion are outlined in section 4.7, as well as interwoven throughout the entire programme.

As part of the Habitable project, a document was produced to help make apprenticeship training more inclusive. Among other things, the document describes the challenges and opportunities associated with inclusion in Austria, Spain, Portugal, Greece, Georgia, and Moldova, and sets out general recommendations for integrating inclusion into apprenticeship training. The document is available here:

<https://habitable-cove.eu/dual-online-centre/wbl-for-all-space/>

2. Developing a more green and digital Quality Apprenticeship programme

The first step for establishing Quality Apprenticeship training is the development of a (green and digital) Quality Apprenticeship programme. This phase begins with a thorough analysis of the current legal situation in each respective country. Knowing and understanding national regulations, labour laws and vocational training standards is essential to ensure legal compliance.

It is equally important for companies to familiarise themselves with existing frameworks for social dialogue. These frameworks are often coordinated by government bodies, chambers, or sectoral associations and facilitate collaboration between employers, trade unions, training institutions, and policymakers. By actively collaborating with these frameworks, companies can improve the design of apprenticeship programmes, for example, by adapting the training to national strategies or exchanging experiences and best practices.

A critical component of this process is identifying current and future skills needs. This can be done through labour market analysis, consultations with industry experts, and ongoing research. Identifying skills needs ensures that apprentices are trained in relevant, in-demand competencies that support both personal career development and economic growth.

Following the identification of skills requirements, the next step involves defining or refining occupational profiles that clearly outline the roles, responsibilities, and competencies associated with specific jobs. The occupational profile forms the basis for creating a curriculum tailored to the needs of the labour market, which defines the core training content, competencies, and learning objectives for the specific occupation.

Finally, the programme includes the collection and development of high-quality instructional and learning materials. These resources, like for example, textbooks, digital content, and assessment tools should be tailored to support both trainers and apprentices throughout the learning journey, ensuring consistency, accessibility, and effectiveness in skill acquisition.

2.1 Regulatory framework

Having a clear legal basis for Quality Apprenticeship training is highly important to ensure transparency, quality, and protection for all stakeholders involved.

The regulatory framework:

- Defines rights and responsibilities of employers and apprentices
- Sets minimum standards for training content and working conditions
- Provides a basis for certification

Without such a legal foundation, apprenticeship programmes risk being inconsistent, exploitative, or misaligned with labour market needs.

For developing a Quality Apprenticeship programme, it is important to identify and understand the regulatory framework of the country in which the company is located. Since legal requirements can vary significantly from country to country, it is crucial for each organisation to educate themselves with the relevant rules and obligations for apprenticeships in its region.

To understand the legal framework for Quality Apprenticeship training, companies should begin by accessing the official websites of relevant government bodies like ministries of education, labour, or economic affairs. They typically provide up-to-date laws, regulations, and guidelines.

Additionally, reaching out to sector-specific organisations such as chambers of commerce or industry associations can be useful, as they might provide practical guidance and access to sectoral requirements. Many of these institutions can offer support materials, templates, and advisory services for companies new to training.

Furthermore, businesses should review any applicable collective agreements or social partner arrangements that specify training conditions, apprentice wages or working hours.

Consulting national repositories, engaging in training workshops, or seeking legal advice can further support compliance and enhance the quality of the programme.

Last but not least, exchanging experiences with other training companies can offer valuable practical insights into implementing Quality Apprenticeship regulations effectively.

To give companies something to go by when researching the current legal situation, below are some questions that can be answered in the course of their research. Answering these questions will help to ensure that the existing framework is sufficient:

Availability of a legal basis

- Is there a stable legal basis for apprenticeships?
 - If yes, which laws or regulations apply to apprenticeship training?
- Is there an official definition of apprenticeships and apprentices?
 - If yes, what are they?
- Is the status of the learner defined?
 - If yes, what is his/her status?
- Is the social protection of apprentices regulated?
 - If yes, which laws apply here?
 - Are there laws for the protection of minors?
 - If yes, which are there?
 - Is the apprentice insured? What insurance coverage does the apprentice have?

Roles and responsibilities

- What is the role of chambers, employers, employees' representatives, and councils for shaping apprenticeship contents?
- What is the role of chambers, employers, employees' representatives, and councils for implementing an apprenticeship scheme?
- What is the role of the employer, TVET provider and apprentice in the apprenticeship?

Requirements for training apprentices

- What are the legal requirements for training companies in order to being allowed to train apprentices?
 - What are the requirements for trainers in the company?
 - What equipment is required for training?
 - Is it necessary for companies to develop a training plan?

- What are the legal requirements for TVET provider in order to being able to offer training to apprentices?
 - What are the requirements for teachers?
 - What equipment is required for training?

Financing

- Is the payment of the apprentice regulated by law?
 - Are there collective agreements?
 - How high is the apprentice's salary in 1st, 2nd, 3rd, 4th year?
- Are taxes regulated by law?
 - How are apprentices' wages taxed?
 - Are there differences to normal employees?
- Who covers the costs of wage and education?
 - What are the sources of financing for the off-the-job component?
 - What are the sources of financing for the on-the-job component?
 - Are there any financial incentives for companies?

Additional general regulations

- Is there a minimum and maximum age limits of apprentices?
 - If yes, what is it?
- How long does an apprenticeship (in the applicable sector) typically last?
 - What is the minimum and maximum duration?
 - When is it allowed to shorten or extend the duration?
- How many hours per day/week are apprentices allowed to work?
 - Are they allowed to work overtime, if yes, how much?
 - Are there any rest periods that must be observed?
 - How is holiday regulated by law?
- What work may/ may not be carried out by apprentices?
- Are there legally regulated differences between the on-the-job and off-the-job component?
 - What is the minimum and maximum duration/share of the on-the-job and off-the-job component?
 - Is it compulsory to alternate training between school and company?

- If yes, in what form must the alteration take place?
- Are there sanctions for companies that do not provide training at the workplace?
- How does the apprenticeship end?
 - Is there a legal basis for premature termination of the apprenticeship?
 - Are there legal provisions governing employment after completion of an apprenticeship?

Further education

- Is there a final exam?
 - If yes, how is it regulated and conducted?
- What type of qualification is obtained through the apprenticeship?
 - Is it classified in the NQF (National Qualifications Framework)?
- Does the apprenticeship provide direct access to higher education?
 - If no, what is needed in order to get access to higher education?

What if there is no (sufficient) framework?

If all these questions can be answered, the company has a sufficiently robust foundation to proceed with the next steps in developing its Quality Apprenticeship programme. However, if some questions remain unresolved or if there appears to be no clear legal provisions in place, it is advisable to seek guidance from the relevant authorities.

These may include national or regional ministries responsible for education, labour, or vocational training, as well as chambers of commerce, sector-specific associations, or national training agencies. In countries with less developed systems, international organisations such as the ILO, UNESCO, or donor-funded vocational training initiatives may also offer valuable support and orientation.

In the absence of comprehensive national regulations, the answers to these questions - based on an established system (like Austria's apprenticeship model) - can serve as practical guidance. They provide orientation and inspiration for developing or supporting training approaches in settings where formal guidance is limited.

The answers based on the Austrian system (+general recommendations) are available in document '2.1 Regulatory framework - Austrian system'.

General recommendations/guidelines

Legislation typically sets out the minimum requirements for providing apprenticeship training. It goes without saying that these requirements must be met; however, they are usually set too low to ensure a Quality Apprenticeship. For this reason, the following general recommendations are outlined to help ensure that the necessary standards are met.

The recommendations on a European Framework for Quality and Effective Apprenticeships were briefly touched upon in section 1.3. The EFQEA is a framework by the Council of the European Union (2018) that sets out the key criteria that should be met in Quality Apprenticeship training.

These recommendations are highly important for companies wishing to offer a Quality Apprenticeship programme, particularly for those that do not have a sufficient legal basis for apprenticeship training.

The recommendations on a European Framework for Quality and Effective Apprenticeships are:

1. A written agreement must be in place that defines the rights and obligations of both the apprentices and employers (+vocational education and training institution if applicable)
2. Employers and vocational education and training institutions (+trade unions if applicable) should agree on defined learning outcomes in accordance with national laws. This ensures a balance between job-specific skills, knowledge, and key competencies for life-long learning.
3. In-company trainers should work closely with vocational education and training institutions as well as teachers in order to ensure regular feedback and provide sufficient guidance for the apprentices. It is important to support teachers and trainers in SMEs with updating their skills, knowledge, and competencies.
4. Apprentices should spend 50% of the time or more at the workplace. If possible, there should be the opportunity to undertake a part of it abroad.
5. Apprentices should be paid or otherwise compensated according to national/sectoral requirements or collective agreements. Costs might be shared between the employers and public authorities.

6. Apprentices should have social protection, which includes insurance according to national laws.
7. Working conditions, especially health and safety conditions should be complied with relevant rules and laws.
8. There should be a clear and consistent regulatory framework for ensuring fair and equitable partnerships, which includes a structured and transparent dialogue. Additionally, it might include accreditation procedures and other quality assurance measures.
9. Social partners should be included in the design, governance, and implementation of apprenticeships.
10. Companies, especially SMEs, should be supported with financial and/or non-financial support. This might include cost-sharing arrangements.
11. Entry requirements of apprenticeships should consider not only formal, but also informal learning and/or preparatory programmes. The acquired qualification should be included in nationally recognised qualification frameworks (NQF) connected to the European Qualification Framework (EQF). Apprentices should have access to further education and training, including higher education, after the apprenticeship.
12. To reduce dropouts, apprentices should be provided with career guidance and mentoring programmes. Additionally, apprenticeships should be promoted through awareness-raising activities.
13. Apprenticeship offers should be accessible and transparent between the Member States (EU). Union tools like EURES (European Employment Services) might be used as support.
14. Quality assurance programmes should be in place for ensuring a valid and reliable assessment of the learning outcomes. Additionally, the employment and career progress of apprentices should be tracked.

Member states should:

- Promote the active involvement of the relevant social partners for the design, governance, and implementation of apprenticeships.
- Ensure equal access, promote gender equality, and tackle discrimination.
- Include the implementing measures in the National Reform Programmes.
- Consider the EFQEA when using European Union funds for supporting apprenticeships.

In addition to the EFQEA's recommendations, the following aspects should be considered when seeking to establish a Quality Apprenticeship programme:

Compliance with laws and agreements

- The company must comply with all relevant labour laws, including those concerning working hours, compensation, health and safety, as well as youth protection.

Apprenticeship, not exploitation

- The core purpose of the Quality Apprenticeship is to provide education within the professional environment. Quality Apprenticeships should not be misused to obtain cheap labour. This means apprentices must be given time for learning, only perform tasks appropriate to their age and knowledge level, and have their vacation, rest periods, and working hours respected.

Trainer/Instructor

- There should be at least one person in the company who possesses the necessary qualifications and experience to train apprentices. This person should not only guide the apprentices professionally but also offer support during the training period and address any challenges that may arise.

Personal and professional development

- Beyond practical training, there should be room for theoretical learning and the development of soft skills (e.g., communication, teamwork, problem-solving).
- The Quality Apprenticeship programme should offer opportunities for long-term employment and career advancement.

Evaluation and feedback

- The company should provide ongoing feedback to apprentices on what they are doing well and in which areas they need to improve. Additionally, apprentices should be given the opportunity to provide feedback on how the Quality Apprenticeship programme can be improved.

Good practice:

In Austria, it is possible to adapt apprenticeships to enable people with learning difficulties to participate. The Vocational Training Act stipulates that there are two options for this: extension of the apprenticeship period and partial qualification. For individuals who are expected to be able to complete their apprenticeship, the apprenticeship period can be extended by one year (in exceptional cases up to two years). With partial qualification, apprentices learn part of the regular apprenticeship within one to three years, which enables people who would otherwise not be able to do so to receive vocational training.

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10006276>

https://habitable-cove.eu/resource/res_11/

Good practice:

In Germany, it is a legal requirement that people with disabilities should be trained in recognised apprenticeship occupations. To make it easier for them to get started, it is possible to adapt the subject matter and timetable, exam times, and the use of aids. People with disabilities who are unable to complete vocational training can undertake specialist practitioner training (Fachpraktikerausbildung). Specialist practitioner training is characterised by the fact that it is based on recognised training occupations and involves less theory.

[https://www.gesetze-im-](https://www.gesetze-im-internet.de/bbigo_2005/BJNR093110005.html#BJNR093110005BJNG001902123)

[internet.de/bbigo_2005/BJNR093110005.html#BJNR093110005BJNG001902123](https://www.gesetze-im-internet.de/bbigo_2005/BJNR093110005.html#BJNR093110005BJNG001902123)

<https://www.publikationen-bundesregierung.de/pp-de/publikationssuche/ausbildung-beruf-2367314>

Good practice:

The Disability Employment Act in Austria is a measure designed to offer people with disabilities better opportunities to integrate into working life. The law stipulates that companies with at least 25 employees must hire at least one disabled person per 25 employees. If companies refuse to do so, they must pay a compensatory tax, depending on the size of the company, which is used to integrate people with disabilities into working life. There are also additional tax benefits for hiring people with disabilities.

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10008253>

https://habitable-cove.eu/resource/res_12/

2.2 Framework for social dialogue

The foundation of social dialogue is the exchange of information. However, social dialogue is much more than just the simple exchange of information. It encompasses discussions, consultations, negotiations, the signing of contracts, and collective bargaining.

According to the International Labour Organization (2017), the following conditions are necessary to enable social dialogue:

- Powerful and independent trade unions as well as employers' associations
- Political determination and commitment
- Appropriate institutional support
- Fundamental rights of freedom of association & collective bargaining

Social dialogue is the cornerstone for driving change. Without it, making progress or implementing reforms becomes nearly impossible.

This is particularly true for Quality Apprenticeship training, where social dialogue plays a pivotal role. The success of training programmes relies on the continuous interaction and collaboration between companies and TVET providers. Quality Apprenticeships bridge both theoretical knowledge and hands-on practical experience. Through social dialogue, these two components

are coordinated, ensuring that the training is relevant, effective, and up to date with industry standards. How cooperation between companies and TVET providers can be conducted successfully is described in 3.3.

Yet social dialogue is not only crucial at the local level between individual companies and TVET providers, but also vital at the sectoral and national levels.

At the sectoral level, social dialogue often takes place between trade unions and employers' associations, where sector-specific skills plans are developed based on the identified skill needs of the workforce. These plans play a key role in shaping sectoral strategies for training, education, and workforce development.

At the national level, discussions often centre on the development of laws, regulations, and policies. Here, future strategies for the workforce are formulated, curricula are developed and revised, and quality standards are set. Social dialogue at this level ensures that the training and education system remains aligned with national development goals, labour market demands, and global trends.

A well-functioning framework is important for facilitating the effective exchange of information and coordination between various stakeholders. To utilise this framework, it must first be identified and established. If no existing framework is found, it is beneficial to reach out to organisations responsible for creating such frameworks, such as public authorities or employers' and workers' organisations. In the absence of a formal framework, these entities can provide guidance and support in establishing a functional social dialogue structure.

Identifying existing stakeholders is an important first step in understanding the framework for social dialogue. By identifying the relevant stakeholders, companies can gain insight into the existing structures and entities involved. The key stakeholders for Quality Apprenticeship programmes are explained in section 3.3.

Practical example:

In Germany, fundamental issues relating to vocational training are voted on by the BIBB (Federal Institute for Vocational Education and Training) Board. The main committee is made up of employers (associations), employees (trade unions), the federal states, and the federal government (federal ministries), each with 25% of the votes. In addition, a representative of the Federal Employment Agency and the municipal umbrella organisations each act in an advisory capacity.

<https://www.bibb.de/en/463.php>

Practical example:

The European Alliance for Apprenticeship established a group on the social media platform LinkedIn administered by the European Commission Directorate-General for Employment, Social Affairs, and Inclusion. The group includes governmental representatives, TVET providers, apprenticeship providers, and other apprenticeships experts.

<https://www.linkedin.com/groups/5026659/>

2.3 Identifying skills needs

To ensure training is ready for the future, it is essential to understand the skills required by the workforce both now and in the years to come. By identifying these future skills, training programmes can be tailored accordingly, preparing apprentices to become valuable employees.

Often, education and training centres already have existing data or recommendations on skills needs. If no information is available, data can be collected - e.g. in cooperation with business associations. Nowadays, several methods can be used to collect skills needs data:

The tried and tested method for gathering valuable insights is through a well-structured questionnaire. This approach offers a systematic way to collect data, ensuring that important aspects are addressed while remaining efficient and easy to analyse.

Surveys using questionnaires are generally designed following a clear and systematic process, ensuring that the data collected is both relevant and reliable. The process typically unfolds in several distinct phases, each of which plays a critical role in shaping the effectiveness of the survey. Below is an overview of these phases, along with the key questions that need to be considered at each stage to ensure the survey captures the necessary insights into skills needs.

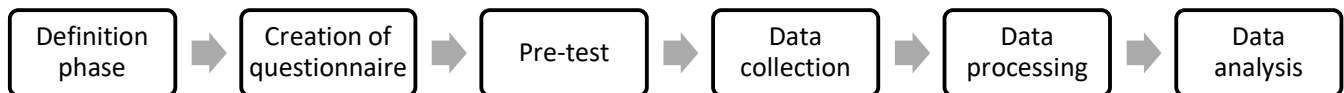


Figure 5 Possible approach for conducting surveys to collect data on skills needs.

1. Definition phase: The most important characteristics are defined:
 - What is the aim of the survey, what data should be collected?
 - Who should be surveyed? (Limitation by sector, location, etc.)
 - How are the respondents selected? (full survey, partial survey, number of respondents, selection procedure)
 - How should the survey be conducted? (Online, in writing, by telephone, etc.)
 - Who does what?
2. Creation of the questionnaire
 - Which programmes? (For creating and distributing the questionnaire, etc.)
 - Which forms of questions? (Open questions, closed questions, etc.)
 - How extensive? (Estimated time to answer the questionnaire)
3. Pre-test: Test to check the comprehensibility and appropriateness of the questions
 - Are the questions understandable?
 - Is the scope appropriate to the topic?
 - Are there any questions that could be misunderstood and make the respondent not want to answer the questionnaire? (e.g. missing anonymity, etc.)
 - Subsequently: Improvement of the questionnaire

4. Data collection

- Distributing the questionnaire to the respondents
- Collecting responses

5. Data processing

- Anonymising responses
- Compiling the data in a file for analysis

6. Data analysis & interpretation

- Analysing the data (Which analysis tool? Which methodology?)
- Interpreting the analysed data
- Distributing the results to the relevant stakeholders (tailored to their needs and interests)

Tool:

ETF, ILO, and Cedefop have created a series on skills anticipation and matching, consisting of six parts. Volume 5 covers the development and carrying out of establishment skills surveys for gathering data on employers' skills needs and human capital development strategies. When conducted regularly, these surveys help identify trends in skills requirements and potential bottlenecks, informing the development of training programmes, career guidance, policy evaluation, and business strategies for human resource management. It is available at:

<https://www.ilo.org/publications/developing-and-running-establishment-skills-survey-guide-anticipating-and>

Another possibility for identifying skills needs is big data analytics (Boselli et al. 2018; Mezzanzanica & Mercurio 2019). Big data analytics basically means analysing an extremely large and diverse collection of data.

There are several sources of big data that can be used. Online job advertisements help identify current skills demand, while future skills demand can be determined by analysing patents and scientific papers. While online CVs and social media profiles offer information on the current skills supply, education and training programmes (curricula) can be used to determine the future skills supply (International Labour Organization, 2022).

There are some challenges and limitations to big data analytics like ethical and legal concerns, the lack of structure, duplications, the need of cleaning and quality checking, data privacy, and limited reach due to poor connectivity in developing countries. Job vacancies are diverse and usually not standardised, which makes it difficult to evaluate them accurately. Many job vacancies are listed with multiple providers, making it necessary to identify and remove duplicates. Some job offers are not available online at all, especially in less developed countries or in more traditional professions, which are often filled with personal contacts, reducing representativeness. Big data also depends on context; in highly regulated professions, the diversity of skills will be lower than in more liberal systems. All these challenges and limitations must be considered when considering and analysing big data. Nonetheless the potential of big data analytics is enormous (International Labour Organization, 2021; Cedefop et al., 2021).

Online services make it possible for companies to access the results of such big data analytics without much effort or cost, as shown below:

Tool:

A platform that provides free access to current regional and global skills needs: Lightcast Open Skills is a large, open-source collection of over 33,000 skills. It has regularly updated data from millions of job postings, resumes, and online profiles to reflect current labour market trends. The framework helps connect education, training, and hiring with the skills that are actually in demand today.

<https://lightcast.io/open-skills>

Tool:

The Skills Online Vacancy Analysis Tool for Europe (Skills-OVATE) is a dynamic online tool developed by the European Centre for the Development of Vocational Training (CEDEFOP) to analyse and monitor job vacancies posted online across the 28 European countries. By collecting and processing data from millions of online job postings, it provides valuable insights into the skills and qualifications that are in demand in the European labour market and highlights the skills and job roles most sought after by employers.

<https://www.cedefop.europa.eu/en/tools/skills-online-vacancies>

When selecting the skills required, a distinction can be made between two types:

- General skills necessary for the profession
- Skills specifically tailored to the training company

General skills are those required by the vast majority of people working in a particular profession. Every joiner needs a basic understanding of wood, a furniture maker must know the basics of design, and a structural engineer must understand the basics of building plans. This shows that general skills are mainly about broad, fundamental know-how that is widely applicable.

General skills for a specific occupation are usually already defined, for example through curricula, or can be identified using the tools mentioned above. In addition, there are sometimes (inter)national documents and frameworks on skills, such as EQF-Timber:

Practical example:

Timber Construction Europe, an umbrella organisation for the carpentry and timber construction industry with members from Italy, Luxembourg, Germany, Switzerland and Austria, has defined skills for the timber construction sector as part of the project EQF-Timber in order to establish a Europe-wide standard and make training more comparable. The skills are assigned to the different EQF qualifications 3 to 7. The file is available here: <https://www.timber-construction.eu/berufsbildung/eqf-timber>

Training-company-specific skills are usually more detailed and focus on precisely those skills required for the specific job. They must be defined by the company itself – based on the tasks the apprentice is expected to perform during and after their training. This requires identifying the apprentice's daily tasks and assessing the skills required to perform them.

A compilation of carpentry skills for EQF Level 3/4 is available in document '2.3 Skills needs in carpentry (technology)'.

Green and digital skills/competences

In addition to technical skills, it is important to identify digital and green skills in order to align the training with future needs.

Digital competencies have become an essential component in Quality Apprenticeships, enabling apprentices to use technology effectively, access information and adapt to increasingly digitalised workplaces.

According to the digital competence framework (DigComp 2.2) and as explained by Vuorikari et al. (2022), there are five competence areas:

- Information and data literacy
 - Having the ability to articulate information needs
 - Locating and retrieving digital data
 - Judging the relevance of the source
 - Storing, managing, and organising digital data
- Communication and collaboration
 - Interacting, communicating, and collaborating through digital technologies
 - Participating in society through digital services
 - Managing a digital presence
- Digital content creation
 - Creating and editing digital content
 - Integrating existing information into a body of knowledge
 - Having knowledge of copyright and licenses
 - Giving understandable instructions for a computer system
- Safety
 - Protect devices and personal data
 - Protect physical and psychological health
 - Having knowledge of impact of digital technologies on the environment
- Problem solving
 - Identifying needs and problems
 - Solving problems in digital environments
 - Using digital technologies for innovative processes
 - Informing oneself about the digital evolution

Note: The latest version is DigComp 3.0; the five competence areas and competences have been slightly renamed, but the content has remained largely the same. The changes were made in response to digital developments; in DigComp 3.0, greater importance is being placed on AI literacy, cybersecurity, etc.

Alongside these digital competencies, apprenticeship programmes are also increasingly emphasising on skills that support environmental sustainability and responsible resource use. In this context, so-called green competencies are becoming an essential part of future-oriented training.

Key competences for sustainability according to Bianchi (2020) and Cedefop & OECD (2022) are:

- Systems-thinking competence: analysing complex systems across different domains
- Anticipatory or futures-thinking competence: analysing, evaluating, and crafting rich pictures of the future
- Normative or values-thinking competence: mapping, specifying, applying, and negotiating sustainability issues
- Strategic competence: recognising historical roots and embedded resilience of unsustainability and planning innovative experiments to assess strategies
- Interpersonal competence: applying concepts in ways that truly engage and motivate stakeholders
- Integrated problem-solving competence: combining and integrating steps of sustainability problem-solving processes
- Implementation competence: realising, monitoring, and evaluating a planned solution towards a sustainability-informed future
- Intra-personal competence: being aware of one's own emotions, behaviours and personality and continually improving oneself

When it comes to digital skills, DigComp serves as an important framework; in the context of sustainability, GreenComp provides the foundation. GreenComp by Bianchi et al. (2022) is a framework comprising four areas of competence, each with three specific skills (12 in total), which lays the groundwork for green skills.

In addition to general frameworks (such as DigComp and GreenComp), certain professional fields and sectors have their own identified and available competencies that are better tailored to the needs of those fields.

A competence framework including green and digital skills was developed for the energy intensive industry (Cedefop & OECD, 2022), which can also be applied (to some extent) to other industries.

It includes, among other things:

Digital skills:

- Digital set-up
 - Setting up and maintaining IT infrastructures
 - Having knowledge of as well as setting up & maintaining IoT technologies
 - Having knowledge of robotics and cyber security programmes
- Digital use
 - Having knowledge of functionalities of peripheral devices and support programmes
 - Using smart metering and Augmented Reality
 - Interacting with RPA bot
- Digital innovation
 - Having knowledge of programming and data science
 - Making decisions based on data analysis
 - Conducting process-engineering and optimisations

Green skills:

- Sustainable design
 - Having knowledge of material science and applied chemistry
 - Conducting life cycle assessment
 - Designing sustainable and customer-oriented materials
- Renewable energy
 - Having knowledge of energy technologies like electricity and hydrogen
 - Applying energy efficient techniques
 - Integrating renewable energy technologies

- Efficient and circular production
 - Having knowledge of innovative production technologies
 - Conducting lean manufacturing
 - Implementing safety procedures and recycling techniques
- Green business
 - Having knowledge of sustainability principles
 - Creating awareness for the green transition
 - Conducting social impact analyses

Good practice:

Siemens developed a sustainability framework called DEGREE (Decarbonisation, Ethics, Governance, Resource efficiency, Equity, Employability) with relevant KPIs in each of the six letters. It is used to measure and quantify their impact. Measurable targets were set for each aspect, and progress was analysed in the 2024 Sustainability Report and presented to the public.

<https://www.siemens.com/global/en/company/sustainability/degree.html>

<https://assets.new.siemens.com/siemens/assets/api/uuid:32a7154d-edba-47bc-8e9b-9761617ba774/sustainability-report.pdf>

Additionally, companies aiming to update Quality Apprenticeship or upskilling curricula for the green transition may want to learn from Siemens Professional Education's success factors described by Cedefop & OECD (2022):

- Dynamic trend scouting with an up-to-date innovation radar ensures skills remain relevant.
- An innovation initiative with business experts guarantees an unbiased, business-grounded assessment of learning topics.
- An education expert team identifies the right occupations, modules, and formats for effective training in VET curricula.
- Innovative training formats and 'quick win' projects with agile, interactive elements motivate apprentices and drive a mindset shift.

A collection of digital and green competencies can be found in the documents '2.3 Identifying skills needs – Digital competencies' and '2.3 Identifying skills needs – Green competencies'.

2.4 Developing occupational profiles and curricula

A key aspect of developing the Quality Apprenticeship programme is the creation of an occupational profile and curriculum.

The first step in this process is to create an occupational profile, which is essentially a detailed description of the job. It should describe the main characteristics of the role, including the skills and knowledge required, as well as the typical tasks performed by apprentices in this role. Defining these criteria ensures that training is aligned with the requirements of the position. In addition, the occupational profile allows comparisons with other (similar) jobs, providing insight into overlaps and opportunities for improvement.

Once the occupational profile is defined, the next step is to integrate the necessary skills, which were identified in section 2.3, into the curricula. This ensures that the apprentices receive the relevant knowledge and skills. The curriculum should be designed in such a way that the necessary skills can be learned gradually and effectively.

The following section explains how to define the occupational profile and how to effectively integrate the identified skills into the Quality Apprenticeship curricula.

Occupational profile

Defining an occupational profile is a crucial step in the training process, as it lays the foundation for outlining the framework of the training and specifying the professional requirements. Typically, there are already established occupational/job profiles that were created and defined by the relevant authorities. These can serve as a basis for the specific training profile within a company or may potentially define certain aspects of it.

Tool:

ESCO (European Skills, Competences, Qualifications and Occupations) is a multilingual classification of skills, competences, and occupations at European level. It is a project of the European Commission and can be used free of charge. Currently, there are descriptions of 3,039 occupations and 13,939 skills. Each occupation has a code number, a general description, a list of alternative names, skills, and competences.

https://esco.ec.europa.eu/en/classification/occupation_main

Several key factors should be considered when defining an occupational profile:

- General job description
 - What are the typical tasks in this profession?
 - What does a normal working day look like?
 - Which other professions have overlapping tasks and activities? (related occupations)
- Requirements profile
 - What physical and mental requirements are necessary for this profession?
 - What professional skills are required for this profession?
- Training process
 - What does the training process look like in terms of duration, tasks, and activities?
 - What criteria are used to measure performance during training?
- Qualification/learning outcomes
 - What skills will the apprentice learn during training?
 - How is the training completed and what qualifications are obtained as a result?
- Future Trends
 - What career opportunities does the apprentice have after training, and in which occupational fields can they work?
 - What further training opportunities are available after training?

Defining these elements forms the foundation for a structured training programme and provides valuable guidance for planning and implementing the next steps of the training.

The job profile of carpenters in Austria is described in the file ‘2.4 Developing occupational profiles and curricula – Occupational profile – carpentry in Austria’. This document can serve as a template for the preparation of an occupational profile and to obtain a better understanding of the contents.

Curriculum

In many countries, standardised curricula for apprenticeship training already exist. These official documents define the core training content, competencies, and learning objectives associated with a specific trade or occupation. If such a curriculum does not exist for a particular profession or region, it is advisable to contact the relevant authorities - this may include national or regional education ministries, chambers of commerce, industry associations, or technical and vocational education and training (TVET) governing bodies. These institutions can often provide guidance, resources, or even regulatory frameworks for curriculum development.

If no official curriculum is available, the following approach outlines a practical and structured method for developing a training curriculum. It can be beneficial to create two separate but harmonised curricula - one for training within the company and another for the TVET centre. Both curricula should be aligned in terms of learning outcomes and competency development.

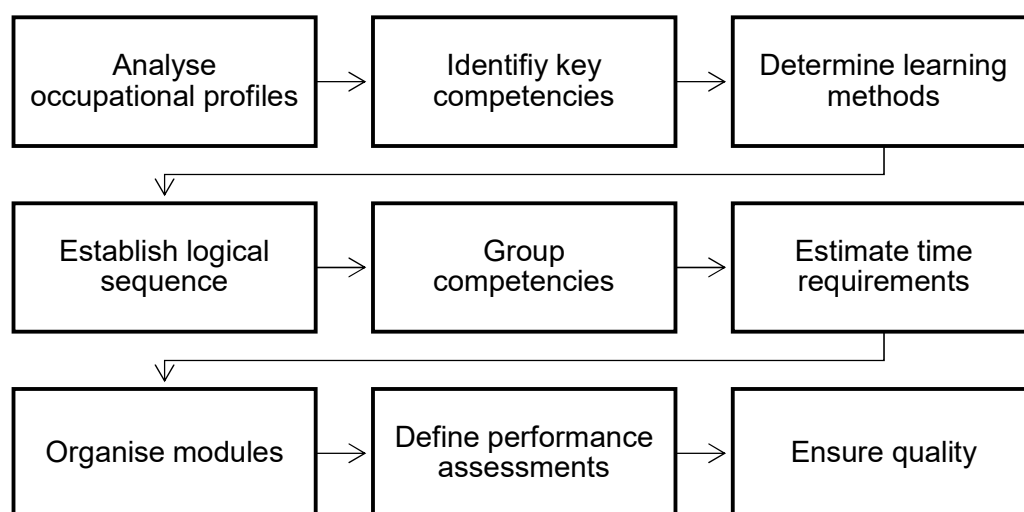


Figure 6 Possible approach to creating a curriculum based on the occupational profile.

Analyse occupational profile

- Examining the occupational profile to gain an overview of what is required of employees in the occupational field.
- Defining requirements that the training must meet in order for the apprentices to be able to carry out the relevant tasks (contained in the occupational profile).

Identify and define key competencies

- Listing the most important technical, digital, and green skills/competencies that should be integrated into the training.

Determine methods for competency acquisition

- Working out suitable methods by which the previously defined skills can be passed on to the apprentices.

Establish a logical sequence for learning

- Sorting and scheduling the individual skills and methods.
- Considering which skills are connected and build on each other.

Group competencies into modules

- Classifying and grouping the individual competencies into modules for a better overview and increased clarity.

Estimate time requirements for each module

- Evaluating how much time will be required to train/teach the individual parts of the modules and the modules as a whole.

Organise modules into semesters or micro-credentials

- Grouping or categorising the modules either by semester or by micro-credentials.
- Ensuring that the correct sequence is followed for progressive content and that the various semesters/micro-credentials require a similar amount of time.

Define performance assessments

- Determining how the performance of the apprentices will be assessed.

- Deciding whether the individual modules or micro-credentials will be completed or graded through exams, assignments, or other methods.

Ensure quality and alignment with occupational standards

- Establishing methods for maintaining the quality of the training.
- Comparing the curriculum with the job profile and checking to ensure that the necessary skills are covered by the curriculum.

When developing the curriculum, it is important to allow for a certain degree of flexibility. The curriculum should establish a broad framework and define the most important requirements but leave enough leeway for teachers and trainers to choose how they want to teach these skills. The curriculum should also be reviewed at regular intervals and adapted to changing requirements.

Integrating digital and green skills into the curriculum is an effective way to ensure that these skills are really taught in practice.

Practical example:

In Greece, a new module dealing with green skills is to be included in the curricula of the post-secondary year, an apprenticeship programme for adults. The module consists of two parts: a general part, which aims to strengthen apprentices' knowledge and understanding of the environment and sustainability, and an individual part, which provides apprentices with relevant knowledge depending on their profession (Kafetzopoulou, 2024).

<https://data.europa.eu/doi/10.2801/708025> (page 10)

Another important consideration when developing curricula is that inclusion is taken into account in the planning process. Learning objectives, teaching methods and assessment procedures must be designed in such a way that they are applicable to a diverse range of apprentices. Similarly, the integration of green and digital skills should be carried out in such a way that no one is disadvantaged as a result.

Micro-credentials offer an innovative way to structure education and training through smaller, modular learning units. Their short-term, learning-oriented nature provides an alternative to traditional, mostly long-term education systems. This method is especially valuable in vocational education and lifelong learning, as it allows individuals to gain specific knowledge and skills in a shorter period, in response to rapidly changing labour market demands.

Micro-credentials typically involve 100 to 150 hours of learning, which corresponds to approximately 4-6 ECTS credits. Their compact and flexible structure supports learners in acquiring competencies that are directly applicable to their careers, without the need to commit to full-length degree programmes.

Practical example:

Several providers of MOOCs (Massive Open Online Courses) have joined forces to establish the Common Microcredential Framework (CMF). This framework is designed to ensure the development of high-quality micro-credentials that are aligned with the European Qualifications Framework (EQF) and are standardised across Europe. Criteria have been established that must be met, such as a workload of 100 to 150 hours, EQF level of 5 to 8, provision of a transcript and a method of identification (Antonaci et al., 2021).

<https://emc.eadtu.eu/cmfc/common-microcredential-framework-cmf>

Micro-credentials have been created for the carpentry apprenticeship, which summarise the complete apprenticeship training and further training opportunities in timber construction based on the Austrian system and EQF-Timber. These are available at: '2.4 Developing occupational profiles and curricula – Microcredentials'.

In order to verify learning success, a state-recognised certificate is usually issued. Alternatively, if no such system is in place, learning success can be certified in other ways, such as through online badges. Online badges are digital awards that demonstrate a specific skill, achievement, or qualification. Online badges are competence-based and promote independent evaluation of existing competences, gamified learning, and motivation of apprentices (Brauer et al., 2018)

Especially in countries where there is no established apprenticeship system, it makes sense to introduce digital badges to validate the learning progress of apprentices. It is also an excellent way of recognising digital skills. Many large companies such as Google, LinkedIn and Microsoft offer digital badges.

If used correctly, digital badges can also be put to good use in Quality Apprenticeship training. Badges can be issued internally or via open-source programmes such as Moodle. Badges can be used to recognise skills acquired through Quality Apprenticeships as well as additional courses.

A major problem with badges is that they are difficult to compare with each other and there is a risk that people will gain access to the badges or forge them without ever having learned the skills. This could be solved by using blockchain. Blockchain is a decentralised, distributed database managed by a global computer network. The individual data records (blocks) are linked together, and each block is assigned a unique hash that functions like a digital fingerprint. Continuous data reconciliation and decentralisation make blockchain a secure technology. A well-known example of blockchain is the cryptocurrency Bitcoin.

Blockchain could be used to link badges of different institutions and make them more comparable, clearer, verifiable, and more understandable. There are several available providers that offer blockchain badges.

Practical Example:

ITCILO, the International Training Centre of the International Labour Organization changed their credentialing system in 2020. Before September 2020, certificates were printed, archived, and mailed to the participants. As part of their digital transformation, they changed it to digital credentials. The credentials (certifications and digital badges) are stored in personal web wallets and can be shared on social media or to mobile app wallets.

For more information:

<https://www.itcilo.org/stories/introducing-itcilos-new-digital-credentials>

<https://www.itcilo.org/digital-badges>

2.5 Instructional and learning materials

High-quality learning materials are the cornerstone of Quality Apprenticeship training. They form the basis for acquiring knowledge and skills. Choosing the right learning materials helps to convey new material to learners in a tangible way and makes it easier for them to learn new skills. If learning materials are tailored to the needs of both the industry and the individual persons, the apprentices' motivation to learn and thus the quality of the apprenticeship can be greatly increased.

Consequently, this section will explore the various types of learning materials that are most relevant to Quality Apprenticeships and provide guidance on how companies can acquire high-quality resources to ensure the best possible learning outcomes for their apprentices.

The in-company training is primarily conducted through hands-on practical work. Well-designed training materials can greatly facilitate the transition between theory and practice. To acquire such materials, companies can possibly seek support from vocational schoolteachers, industry associations, and specialised training/TVET providers. Additionally, professional networks and online forums dedicated to specific industries can offer valuable resources and advice.

Traditionally, training has relied on textbooks, industry journals, and printed manuals to convey knowledge and practical insights. These resources remain essential for apprenticeship training programmes. However, with the rise of digitalisation, a new wave of learning materials has emerged: freely available learning materials and online learning platforms. Below is a brief overview of potential sources of information and training platforms that companies can use to improve their training programmes.

OER

Open Educational Resources (OER) according to UNESCO (2019) are 'learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others'.

Basically, OER encompasses every type of medium. Course materials, textbooks, online courses, streaming videos, and more are considered OER as long as they are published under an open license. The free availability of these resources provides individuals facing financial hardships, as well as people in less affluent countries, with extensive access to education - provided they have internet access. This broadens educational opportunities, helping to bridge the gap for those who might otherwise struggle to afford traditional learning materials or opportunities.

OER were already being promoted before the COVID-19 pandemic because they offer many potential advantages, but during the pandemic they were in particularly high demand due to the short preparation time for the transition from face-to-face to online teaching (International Labour Organization, 2022).

Tool:

UNESCO-UNEVOC International Centre has created a list of platforms and services, which offer free OERs and other resources. The list describes the individual platforms and services, which can be sorted by language, content, and SDGs.

<https://unevoc.unesco.org/home/OER+for+TVET>

Open educational practices (OEP) are the collaborative use of OER. This involves the use, creation, and collaboration on freely available learning materials.

Through collaboration between teachers and learners and the collective development and editing of learning materials, the resources are improved for future students, while learners also improve their digital skills in using online resources (International Labour Organization, 2022).

Learning platforms

Learning platforms are digital environments that provide and organise learning content and processes for users. They offer a variety of functions such as providing courses, facilitating communication between teachers and learners, tracking learning progress, and enabling the evaluation of learning content.

Learning content management systems (LCMS) are platforms that specialise in the creation, management, and delivery of learning content. They are a further development of learning management systems (LMS), which are administration-oriented systems used to manage, document, and deliver learning content.

Based on the International Labour Organization (2022) as well as Cavus & Zabadi (2014), the functions of LMS can be divided into the following three categories:

- Learner tools
 - Communication and collaboration
 - Student involvement
 - Personalised learning path
- Support tools
 - Authentication
 - Registration
 - Communication
 - Promotion/marketing
- Teacher tools
 - Tracking students
 - Automated testing
 - Course templates

As technologies evolve, these platforms are taking on additional functions alongside those already mentioned, such as support for VR, MOOCs, or gamification. (International Labour Organization, 2022)

Tools:

There are a variety of LMS providers available, both paid and free of charge. Below is a selection of possible providers:

- <https://moodle.com/products/lms/>
- https://help.blackboard.com/Blackboard_Open_LMS
- <https://openlms.com/>

More information on learning platforms is provided in section 4.5.

MOOCs

Massive Open Online Courses (MOOCs) are free online courses that can be taken anytime, anywhere. There are no limits on the number of participants, and there are no specific requirements for taking the courses. MOOCs are predominantly, but not exclusively, used in higher education and adult education.

Nowadays, MOOCs are usually divided into xMOOCs and cMOOCs.

xMOOCs originated from regular university courses and typically consist of content such as videos and quizzes created and provided by universities or other educational institutions.

cMOOCs are collaborative MOOCs in which the provider often provides the initial impetus while the participants themselves develop most of the content. They create their own course materials, such as videos or written contributions, which can be commented on and expanded upon by other participants.

There is also a special case, P4P MOOCs, which are produced by learners for learners. Learners can use OER to create their own MOOCs, which can then be made available to other learners. Another variant, which also follows the principle of learners creating MOOCs for learners, is aiMOOC, which are created by an AI using learners' complex instructions and are subsequently reviewed by experts, after which they are made available.

Practical example:

As part of the Habitable project, a series of MOOCs has been developed. The courses are integrated into the Online Training Platform, which can be accessed via the Habitable website. Courses have been specifically designed for trainers, SMEs, and learners, and are available free of charge in five different languages. Among other things, the courses cover how training can be made greener and more inclusive, and how digital technologies such as XR can be utilised.

<https://habitable-cove.eu/skills-hub/online-training-platform/>

Tools:

There are several different providers of MOOCs, a selection of them is listed below:

- <https://www.mooc.org/>
- <https://imoox.at/mooc/?lang=en>
- <https://www.coursera.org/courses?query=mooc>

2.6 Checklist

Below is a checklist covering the contents of this chapter.

By answering the following control questions, it is possible to check whether the individual aspects of this chapter have been sufficiently well developed.

If all questions are answered with 'Yes', it is time to move on to the next chapter. If any questions are answered with 'No' or 'Partially', it is advisable to review these topics again.

Developing a more green and digital Quality Apprenticeship programme	Yes	No	Partially	Needed improvements
Is there a legal framework that regulates apprenticeships?				
Does the framework answer all the questions from 2.1?				
If not, were the missing questions answered using other existing systems?				
Is there a framework for social dialogue?				
Is there a detailed description of the skills that are needed for the specific occupation?				
Does the list include occupation-specific skills?				
Does the list include digital skills?				
Does the list include green skills?				
Is there a detailed occupational profile for the selected apprenticeship?				
Does the occupational profile answer all the questions from 2.4?				
Is there a curriculum or are there micro-credentials that define the learning content of the training?				
Does the curriculum/micro-credentials cover all subject-related, digital, and green skills which are included in the occupational profile?				
Are there existing learning materials available?				
Can all the content of the curriculum or micro-credentials be covered with existing learning materials?				

3. Preparing quality training places

The second phase in the apprenticeship life cycle after the development of a Quality Apprenticeship programme is to prepare the training places.

The first step in preparing the training places is to identify potential participating stakeholders. Suitable TVET providers and, depending on the situation, companies (for training consortia) must be identified and then persuaded to participate in the training programme. Once the participating organisations have been identified, they must be registered in accordance with the relevant legislation.

This is followed by the drafting of Quality Apprenticeship agreements. These are usually contracts between the company and the apprentice that set out the framework for the in-company training.

Apprenticeships thrive on cooperation between different stakeholders. Cooperation plays a crucial role in Quality Apprenticeship training, as the learning process benefits greatly from the combination of different learning environments. The collaboration of the different stakeholders enables the efficient transfer of knowledge and skills, thereby enriching the overall training experience.

The core topic of preparing training places is the actual 'preparation' of the training places - basically ensuring that both the company and the TVET provider are sufficiently prepared to deliver the best possible apprenticeship training. In most countries, there are legal requirements that must be met.

An important aspect of this is ensuring that the trainer is capable of training apprentices. The trainer in the company and the teachers at the TVET centre must not only be able to pass on specialist knowledge and skills to the apprentice, but they also need to be able to communicate well with the apprentices on a personal level.

The second important factor of preparing training places is the training facilities. The company and the TVET centre must have the resources and equipment necessary for trainers to teach the apprentices the knowledge defined in the curriculum in a safe environment.

3.1 Engaging & registering SMEs and TVET providers

Engaging SMEs and TVET providers

Quality Apprenticeship training thrives on collaboration between different training providers. Typically, there are two main parties involved: the company and the TVET provider. However, Quality Apprenticeship training can also take place within an apprenticeship network, where multiple companies cooperate together (in conjunction with a TVET provider).

Cooperation between different training locations is beneficial in order to cover the various aspects of training and to be able to view the subject from different perspectives. The main reason for forming apprenticeship networks is the lack of sufficient training capacity within a single company, with the missing resources being supplemented by another company. Another possible motivation is that companies want to offer a broader, more diverse Quality Apprenticeship experience and therefore collaborate with another company that also trains apprentices, possibly exchanging apprentices for a certain period.

When cooperation with other companies is deemed beneficial, these companies need to be approached and persuaded. By demonstrating the advantages, they would gain from participating in the Quality Apprenticeship programme (as described in section 1.4), companies can potentially be convinced, despite the additional effort it takes to organise and conduct training for apprentices.

Apprenticeship training also involves costs for the cooperating company (which are usually covered by the company where the apprentice is employed). In some countries, measures are in place to support companies that want to offer apprenticeships within a training network. This is intended to enable companies to offer apprenticeships that would otherwise be unable to do so due to the high costs involved.

Practical example:

In parts of Austria, companies in training networks are supported by subsidies. In Tyrol, for example, 100% of the mandatory training measures are subsidised.

<https://www.wko.at/tirol/bildung-lehre/ausbildungsverbund-kurse>.

In Vorarlberg, 75% of the costs, up to a maximum of €3,000, are subsidised.

<https://www.wko.at/pages/ausbildungsverbund-vorarlberg/start>

Practical Example:

In some parts of Germany, too, grants are awarded to training networks. In Saxony, training consortia receive funding of €150 per participant per week.

<https://www.foerderdatenbank.de/FDB/Content/DE/Foerderprogramm/Land/Sachsen/Verbu ndausbildung.html>

In most cases, the theoretical part of the training is not provided by the company but by TVET providers. Depending on the situation in each country, the process of engaging with TVET providers as potential partners may vary.

In countries with a well-established apprenticeship system, the existing TVET providers might already have the infrastructure and resources necessary to conduct the training, or they potentially only need to make small adjustments/investments to make it work.

The situation becomes more challenging when no established system is in place. In this case, companies must seek out TVET providers who are willing to integrate the Quality Apprenticeship into their system, which could involve considerable time and resource investment. To address this, it is helpful to contact relevant institutions (e.g., government agencies, chambers of commerce, educational associations) that offer assistance or cover costs through funding programmes. The necessary resources required by companies and TVET providers to successfully implement the training are outlined in section 3.4 to 3.6.

If the legal framework and situation allow, it may also be possible to organise the theoretical training within the company, should no TVET provider be found to take on this role. However, this removes the advantage of cooperation and knowledge exchange, and additional costs may arise for the company.

Registering SMEs

In many countries, companies have to be registered as a training company in order to be allowed to take on apprentices. In doing so, they must demonstrate that they have the necessary resources and skills to train apprentices. Usually, both the suitability of the trainer and the training facility is checked.

Practical example:

In order for companies in Austria to take on apprentices, they need an assessment notice.

(<https://www.wko.at/lehre/feststellungbescheid>)

This must be applied for if a company wants to take on apprentices for the first time or if 10 years have passed since the start of the last apprenticeship. The assessment notice must be applied for at the apprenticeship office ('Lehrlingsstellen', vocational training of the first instance, located in the economic chambers of the individual federal states) of the respective federal state. The application is free of charge.

If the requirements are met, the company will be issued with a certificate of approval and will be allowed to train apprentices in the profession.

If the requirements are not met, companies are clearly informed about what is still lacking and helped in meeting the remaining requirements.

The necessary requirements are described in more detail below in '3.4 - Ensuring the capacity of SMEs and TVET providers'.

Below is a selection of different countries and their registration processes for companies that want to offer apprenticeships.

Practical examples:

Registering in Switzerland:

<https://www.kmu.admin.ch/kmu/en/home/concrete-know-how/personnel/personnel-management/vocational-training/becoming-training-provider.html>

Accreditation in the Netherlands:

<https://www.s-bb.nl/en/companies/conditions-for-accreditation/>

Registering in Germany:

<https://www.ihk.de/ostwuerttemberg/produktmarken/aus-und-weiterbildung/ausbildung/service-fuer-ausbildungsbetriebe/ausbildungsbetrieb-und-ausbilder-werden/wann-darf-ich-ausbilden-3295402>

Practical example:

In the United States, there is an online platform that allows companies to register apprenticeship programmes. Through this platform, businesses can easily register as apprenticeship providers and introduce new training programmes in sectors where none currently exist. This feature is particularly valuable for industries looking to develop specific skills and create new pathways for apprenticeships. Additionally, the platform helps companies connect with potential partners and investors who may be interested in supporting apprenticeship training. By facilitating these connections, the platform aims to expand the reach of apprenticeships and encourage broader participation in vocational training.

<https://www.apprenticeship.gov/employers/registered-apprenticeship-program>

<https://www.apprenticeship.gov/partner-finder>

3.2 Formulating Quality Apprenticeship agreements

Quality Apprenticeship agreements are formal, legally binding documents typically established between an employer and an apprentice (+ the legal representative if the apprentice is not yet an adult), and, in some cases, may involve a third party, such as a training provider or vocational institution.

These agreements serve as a clear, structured outline of the responsibilities and obligations of both parties throughout the Quality Apprenticeship period.

In many countries, the regulatory framework governing apprenticeships sets precise guidelines regarding the format and content of these agreements. This ensures consistency, clarity, and legal protection for both the employer and the apprentice.

It is important for companies to inform themselves with the legal framework surrounding apprenticeship contracts in their country.

To better understand these requirements, businesses can try to reach out to relevant institutions such as chambers of commerce, vocational training offices, or industry associations. These organisations might provide valuable guidance and insights into the legal aspects of apprenticeship contracts, helping to ensure compliance with national laws and best practices.

In some countries, different forms of agreement may exist.

Practical example:

In South Africa, employer, and apprentice sign two agreements - a learnership agreement and an employment contract (International Labour Organization, 2017).

Practical example:

In Austria, an employment contract can be obtained from the relevant apprenticeship office of the Chamber of Commerce. Both the employer and the apprentice must sign the contract. If the apprentice is a minor, the contract must be signed by their legal representative. As displayed by the Austrian Economic Chambers – WKÖ (2025a), the apprenticeship contract must contain the following information:

- Personal details of the apprentice
- Details of the trainer and the training company
- Description of the apprenticeship (according to the list of apprenticeships)
- Duration of the apprenticeship
- Start and end dates of the apprenticeship
- Reference to the apprentice's vocational school obligations
- Proof of the apprentice's previous training periods
- Amount of the apprentice's monthly remuneration for each year of training
- Date of conclusion of the contract

Practical Example:

The German Vocational Training Act (Berufsbildungsgesetz, BBiG) sets forth the requirements that must be included in a vocational training contract. The requirements are similar to those in Austria, but additional provisions must be included, such as 'duration of vacation' and 'compensation for overtime'. The requirements can be viewed here:

https://www.gesetze-im-internet.de/bbig_2005/_11.html

In addition to the legally required content (in Austria and Germany), the following content is usually included in the employment contract:

- Purpose(s) of the agreement
- Applicable national laws and regulations
- Roles and responsibilities of the employer, the apprentice, and any other party
- Further training conditions, such as the on- and off-the-job training arrangements, assessment, and certification

- Working conditions, such as social security coverage, training and working hours, leave entitlement, compensation for work-related injuries and illnesses, occupational safety, and health
- Dispute settlement mechanisms and arrangements for the termination of the agreement
- Conditions of transfer to other enterprises
- Probation period
- Confidentiality and privacy matters
- Title and level of qualification that the apprenticeship leads to

It is important that the Quality Apprenticeship contract provides a framework for training so that appropriate action can be taken in unclear or conflict situations but still leaves some leeway for necessary changes and training flexibility.

The following outlines how to proceed when establishing a Quality Apprenticeship agreement:

1. Enterprises should use the model template for apprenticeship agreements, if there is any, prescribed by the regulatory body in their country. The template may be adapted to the particular circumstances if this is permitted by law.
 - If no model is available:
 - ◆ Partners (e.g. public authority, employers', and workers' organisations, TVET providers) can jointly develop a template for an apprenticeship agreement (templates from various countries are available below).
 - ◆ The Quality Apprenticeship agreement must comply with the country's legal requirements.
2. Employer and apprentice sign the contract (+ others if needed).
 - Every party gets a copy.
3. Employer sends copy of the agreement to a quality assurance body or TVET agency for registration.

If there are no templates for an apprenticeship contract, the templates created based on Austrian law can be used. These are forms that can be adapted to the laws of the respective country by using a PDF editing programme or, alternatively, to serve as inspiration for one's own creation.

The general contract template is available as '3.2 Formulating apprenticeship agreements – Apprenticeship contract template – general', the contract template specifically designed for

remuneration is available as '3.2 Formulating apprenticeship agreements – Apprenticeship contract template – remuneration'.

Alternatively, templates from other countries can also be used as reference. (like Switzerland or the UK)

Tool:

In Switzerland, apprenticeship contracts follow a standardised template and apply only to nationally recognised VET qualifications. These contracts are a specific type of employment agreement that include provisions for both training and education. They are uniform in structure and must cover key elements such as wages, qualifications, and insurance.

As there is no statutory minimum wage, apprenticeship pay is set at the discretion of employers, though sectoral guidelines often suggest wage ranges. The rights and obligations of both apprentices and employers are supported by national laws, including VET, contract, and labour legislation.

To ensure quality and prevent misuse, only companies authorised to train can enter into apprenticeship contracts. These contracts must be validated by cantonal authorities after signing, ensuring alignment with VET school enrolment and legal standards (Swiss Federal University for Vocational Education and Training, n.d.).

Apprenticeship contract template (Switzerland):

<https://www.vocationaleducation.ch/en/preparation/apprenticeship-contract>

Tool:

In the UK, apprenticeship agreements are required for all apprentices and must be signed by both the employer and the apprentice.

The agreement must specify:

- Skill, trade, or occupation for which the apprentice is being trained
- Name of the apprenticeship programme
- Start and end dates
- Amount of training to be provided by the employer.

Employers may draft their own agreement or use a standardised template provided by the government.

Apprenticeship agreement template (United Kingdom):

<https://www.gov.uk/government/publications/apprenticeship-agreement-template>

3.3 Building partnerships

Cooperation plays an important role in the success of Quality Apprenticeship programmes. By forming strategic partnerships, organisations can achieve far more than they would by working in isolation. Quality Apprenticeship training involves a complex network of stakeholders - each with unique responsibilities and contributions - that work together to create a comprehensive, well-rounded training experience. The cooperation between these stakeholders is key to ensuring that apprentices receive the most relevant and effective training.

The most important partnership for companies is with TVET providers. These providers usually teach apprentices technical and general knowledge to supplement the training they receive in the company. Good cooperation ensures that theoretical knowledge is aligned with practical skills in the workplace.

The following section outlines the specific roles of the stakeholders involved and provides insights on how companies can foster strong, effective partnerships with TVET centres to enhance the quality and impact of their Quality Apprenticeship training.

It is crucial to understand the roles and responsibilities of potential stakeholders in order to build successful partnerships within the framework of a Quality Apprenticeship programme. Each party involved - whether the company, the TVET provider, the trade union or the ministries and public administrations - has specific tasks, interests, and expectations that play a key role in the training process.

When the various roles of the stakeholders are clear, the company can strategically select the right partners and make the best possible use of their expertise and resources.

The following figure provides an overview of the key stakeholders involved in the Quality Apprenticeship process, which is followed by an explanation of their responsibilities.

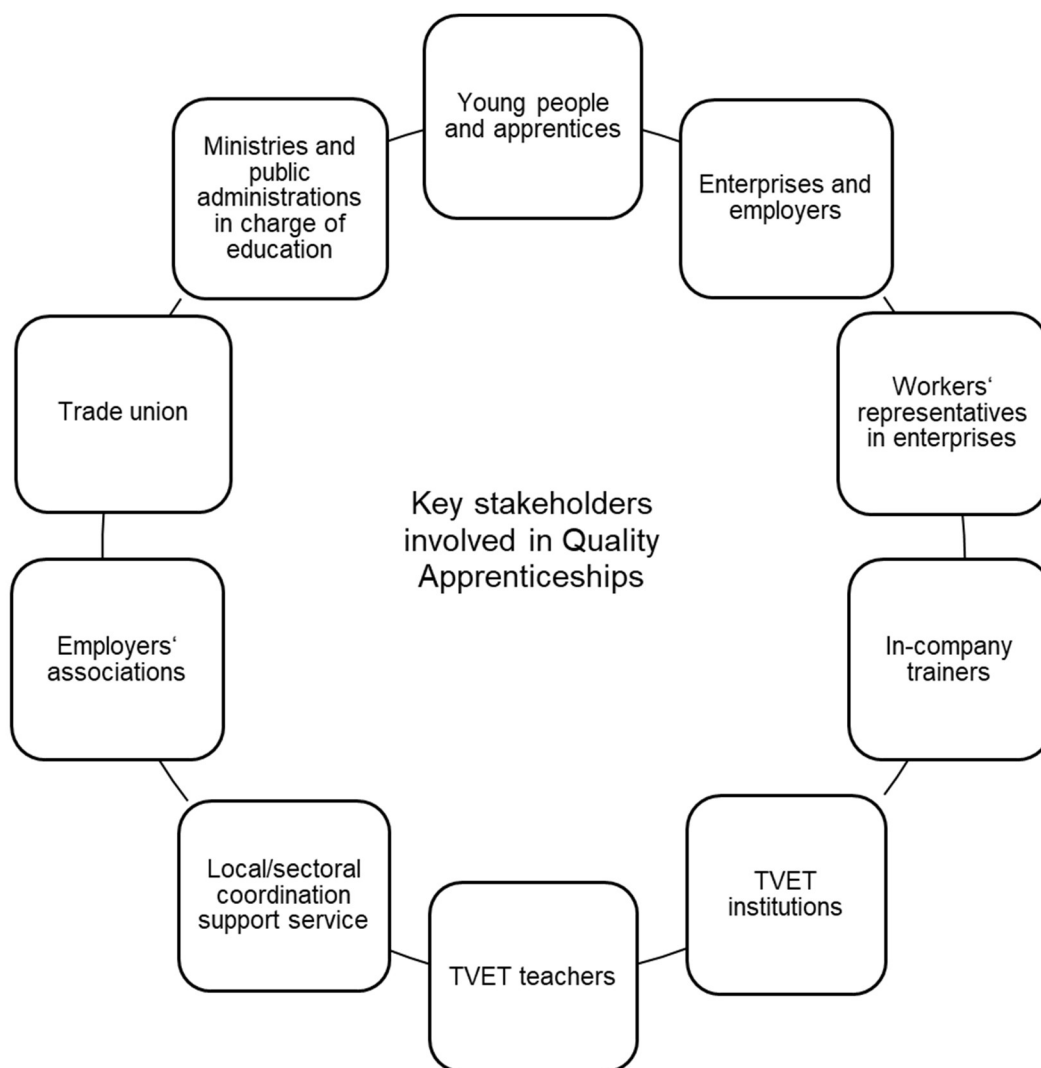


Figure 7 Key stakeholders involved in Quality Apprenticeships (based on International Labour Organization, 2017).

Based on the International Labour Organization (2017), the following is a list of the stakeholders involved in the apprenticeship programme, along with their responsibilities:

Young people and apprentices

Young people and apprentices must inform themselves about the opportunities available to them, both before and after their apprenticeship. They must identify the objectives, strengths, and weaknesses of these training opportunities and the tasks they have as students.

During their apprenticeship, apprentices must follow the established plan both at work and at vocational school. They must follow the instructions of the trainers and teachers at the TVET centre and try to acquire the necessary knowledge and skills. Additionally, they must strive to have a good relationship with the trainers and teachers.

Enterprises and employers

The role of companies is to take on apprentices and train them in such a way that they are optimally prepared for their entry into working life. The company must conclude an apprenticeship contract with the apprentice and pay them for their work. The company must also ensure that apprentices are covered by social security. For the training of apprentices, the company must appoint a suitable trainer who trains the apprentice according to the training plan. This also includes complying with applicable labour and youth laws and ensuring that the apprenticeship is safe. In addition, companies must adapt to the needs of people with learning difficulties, disabilities, or other limitations and provide them with suitable training.

Workers' representatives in enterprises

Workers' representatives are responsible for ensuring that the correct working conditions are maintained and that apprentices do not have to work in hazardous environments or exceed working hours. Essentially, they ensure that apprentices are not exploited. They represent the interests of apprentices within the company and support them, including by providing advice on their training.

In-company trainers

Trainers in the company ensure that the apprentice's training is conducted in accordance with the training plan. In-company trainers plan the training in the company and are responsible for ensuring that the plan is implemented in practice. They cooperate with teachers at the TVET centre and adapt the training accordingly. Trainers monitor the progress of apprentices and have

several roles in relation to them: they are supervisors, teachers, educators, colleagues, and partners. Trainers are also responsible for ensuring the safety of apprentices and act as mediators in conflicts.

TVET institutions offering off-the-job training

TVET centres are responsible for the school-based part of the training. They share the responsibility for assessing the suitability of teachers to ensure appropriate training. Like the companies, they select a person who is responsible for communication between the company and the TVET centre. They support the trainer in developing the training programme and in coordinating the teaching content between the company and the TVET centre. They must ensure that disadvantaged individuals receive appropriate training and that there is no discrimination.

TVET teachers

The teachers at the TVET centre plan the training (together with the trainer at the company), organise and carry out the training. They ensure that the apprentices are provided with the school-based knowledge required for the training. They must undergo continuous training to keep pace with the latest technology so that the training is also up to date. This can be done, for example, through regular practical experience in the partner company. TVET teachers are responsible for monitoring the progress of the apprentices and discussing it with the trainer in the company. They must also ensure that the training is suitable for disadvantaged people as well and must adapt their teaching style accordingly.

Good practice:

In Spain, there is an initiative that allows VET teachers to undertake short placements in companies to update their skills and strengthen connections with the labour market. This benefits not only the teachers but also students - particularly those from disadvantaged backgrounds - through more practical and inclusive training. By fostering closer cooperation between schools and businesses, the initiative also creates fairer access to internships and apprenticeships, making it easier for all learners to enter the labour market.

<https://www.educa.jcyl.es/fp/es/aula-empresa>

https://habitable-cove.eu/resource/res_2/

Local/sectoral coordination support services

The local coordination support services ensure that there is good cooperation between companies and TVET centres. They also facilitate good cooperation with other stakeholders. Another task is to provide general support to companies and TVET centres. For example, they help with all phases of apprenticeship training and are committed to improving apprenticeship training.

Trade unions

Trade unions share responsibility for the development of Quality Apprenticeship systems. They are involved in all phases of apprenticeship training. They participate in policymaking and bring together the various stakeholders. They may also be involved in salary negotiations in the context of collective agreements.

Employers' associations

Employers' associations are also involved in policymaking and in establishing connections between the various stakeholders. They assist both policymakers and companies. In supporting companies, they inform and convince them to offer apprenticeships within their organisations and also provide them with training. Employers' associations may also be involved in salary negotiations. In addition, they assist in the development of qualification standards and certifications.

Ministries and public administrations in charge of education

Ministries and public agencies play an important role in apprenticeships. By introducing national strategies, they promote apprenticeships and cooperation between the various stakeholders. They set the framework for apprenticeship training by introducing laws and guidelines. Ministries and public administrations are (jointly) responsible for promoting companies and financing TVET centres. They set the minimum standards that must be met in TVET centres and companies and are involved in evaluating the success of apprenticeship training.

Once the stakeholders and their roles are known, partnerships can be formed. Based on the International Labour Organization (2020), this can be done as follows:

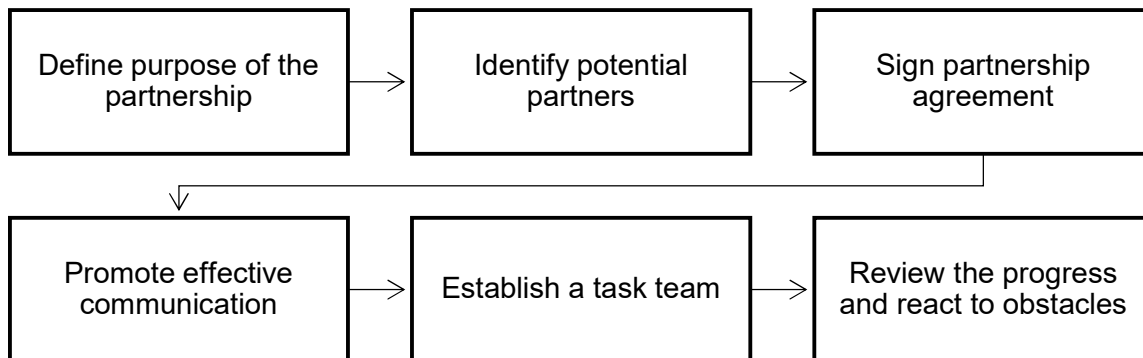


Figure 8 Possible approach to establish partnerships for Quality Apprenticeships

It is important to take a structured approach when establishing partnerships. The first step is to define the purpose of the partnership. Here, it is important to ensure that all participants share the same vision and goals. Once the purpose is clear, it is important to identify which partners complement each other in terms of their skills and can thus contribute to the success of the programme.

A formal partnership agreement should then be signed, which includes an action plan, clearly defined roles and responsibilities, as well as provisions for funding. The duration of the partnership, as well as the method for its renewal and withdrawal plan, should also be clearly outlined in the agreement.

Additionally, an empowered task team, composed of members from all the partners, should be established to oversee the implementation of the partnership agreement. Senior management plays a critical role in reviewing the progress of the partnership and addressing any obstacles that may arise during implementation.

The national regulatory body or the ministry responsible for apprenticeships can facilitate the formation of partnerships between stakeholders at both national and sectoral levels, in alignment with the guidelines provided by the country's regulatory framework.

At the local level, enterprises hold the primary responsibility for implementing Quality Apprenticeship training, while TVET providers complement this by offering off-the-job training. Other entities, such as intermediaries, also provide essential support services to enterprises. In cases where Quality Apprenticeship training is new to an enterprise, they may not have sufficient knowledge of the process yet. In such situations, a lead entity, intermediary, or project team responsible for introducing apprenticeship training can help facilitate the formation of partnerships, with TVET providers often taking the lead in this process.

Enterprises can follow a specific process to establish partnerships effectively. First, they must gain a clear understanding of the Quality Apprenticeship training lifecycle and their role, as well as the roles of other organisations involved in the training. It is necessary to evaluate the company's capacity to deliver Quality Apprenticeship training according to the standards and to assess the support services needed throughout the process. For off-the-job training, the enterprise should identify potential TVET providers and form a partnership with them. Similarly, for other support services, intermediary organisations or local chambers can be identified to provide necessary assistance.

Finally, in collaboration with local chambers or employer associations, enterprises should identify other businesses that can provide complementary training opportunities for apprentices, particularly for areas where the enterprise lacks the required facilities and establishes partnerships to cover these gaps.

Practical example:

The European Alliance for Apprenticeships unites governments and key stakeholders to strengthen the quality, supply, and overall image of apprenticeships in Europe. It was renewed in 2020, since then it is promoting national coalitions, supporting SMEs, and reinforcing the involvement of social partners, also with the target to make apprenticeship greener and more digital.

https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/working-together/european-alliance-apprenticeships_en

Practical example:

The Donor Committee for Dual Vocational Education and Training (DC dVET) is an organisation founded through the cooperation of Austria, Germany, Switzerland, and Liechtenstein to support the development of dual vocational education and training (VET) in the context of development cooperation. It serves as a central knowledge hub, offering expertise, experience, and insights into the latest trends in dual VET. The organisation provides its members, their projects, and partners with up-to-date, relevant, and high-quality resources, as well as demand-oriented services tailored to specific needs. By promoting exchange and collaboration, the DC dVET plays a key role in enhancing the effectiveness of VET projects and initiatives, contributing to their success and impact.

<https://www.dcdualvet.org/>

Improve collaboration and alignment of TVET providers and SMEs

The cooperation between TVET providers and companies plays a crucial role in the success of vocational training. However, despite its importance, many companies and TVET providers either have limited or no collaboration at all. Strengthening this partnership brings numerous benefits that enhance the quality and effectiveness of training:

- Exchange of content - coordination of learning objectives and content
 - Learning content can be delivered in a more logical sequence.
 - Repetition of or not covering learning content at all can be prevented.
 - Learning content that has already been covered is transparent, making it impossible for apprentices to lie about it.
- Better training design possible through cooperation
- Identification and solving of problems
 - Motivational problems can be identified.
 - Enables to identify a lack of adaptability of skills (apprentices not being able to transfer the theoretical knowledge into the practice).
- Gaining a better overall picture of performance of apprentices
 - Strengths and weaknesses of apprentices can be identified.
 - Enables to evaluate their competencies.

A good way to increase the chances of a successful collaboration is to draw up cooperation agreements or memorandums of understanding (MoU). Signing such documents increases the likelihood that the partners will place greater value on the collaboration and that a productive partnership will develop.

Establishing a more robust and strategic cooperation between the TVET provider and SME offers a range of benefits that can significantly enhance the quality and impact of vocational training. The following steps outline practical measures for creating and sustaining a successful partnership, enabling both parties to work together more effectively.

- Creating and maintaining a joint list with contact details
 - Necessary/useful contents to be added
 - Name and organisation of trainers/teachers
 - Position/Task of trainers/teachers
 - E-Mail-address of trainers/teachers
 - Phone number of trainers/teachers
 - Important: list has to be updated constantly in case of changes
- Creating a joint database for learning progress, etc.
 - Can be done by using a list with checkboxes for visual presentation and additional space for exchanging more detailed information
- Conducting regular meetings/phone calls
- Establishing a reporting mechanism
 - Provides a better way to identify and solve problems
- Checking and exchanging documents like exams, transcripts, etc.
 - This enables identifying strengths and weaknesses which can lead to potential improvements in training
- Establishing rules upfront
 - Contacting each other in case of poor grades, problems, etc.

It is important to have a contact list so that everyone can communicate with each other. This list must always be kept up to date. A shared database (note: data protection) showing the learning process of apprentices in the company and at the TVET centre can be a valuable tool for keeping track of learning progress. It is important to note that this database or document must be easy to edit, and that learning progress can be entered quickly, otherwise there is a high risk that it will no longer be used. One aspect of learning progress is performance assessment, which is why it is important to share exam/performance results with each other. Regular communication between

the two training locations allows problems and weaknesses to be identified early on and potentially resolved. It is helpful to establish certain rules, such as that the teacher at the TVET centre informs the trainer at the company if the apprentice has a negative mark in a test or subject or if there are conflicts with other students.

It also makes sense to establish certain rules before the start of training together with the apprentice. If the apprentice knows that the trainer in the company is also aware of their progress at vocational school, they may put more work into it. If the collaboration of the two learning places is not communicated well to the apprentice before the training begins, there is a risk that excessive monitoring will be seen as a breach of trust.

Practical example:

AppIntern is a programme co-funded by the EU, which aims to improve the efficiency of vocational and educational training. The AppIntern online platform targets to strengthen the links between VET providers and corporate social responsibility. There are three Career Hubs (Spanish, Italian, Greek) that try to bring VET students and graduates closer to labour market stakeholders and employers. One aspect is the introduction of 'Business Ambassadors', established professionals who are willing to inform and advise students and graduates on current labour market needs and more.

<https://www.appintern.eu/en/home-italy/appintern-for-businesses/>

Practical example:

In Switzerland, apprenticeship training takes place in three locations: the company, the vocational school, and additional inter-company courses. With three learning locations, cooperation is all the more important, which is why the Realto project was launched. It is a free digital platform available in three languages where the three learning locations can exchange information. The platform is accessible via both mobile phone and computer. Apprentices and trainers can post and comment on images, notes, and texts there. This enables better cooperation and coordination of learning content.

<https://www.realto.ch/#/>

3.4 Ensuring capacity of SMEs and TVET providers

In order to ensure high-quality training, there are certain requirements that training companies and TVET providers must meet in order to be allowed to train apprentices. These requirements relate to both personnel and equipment.

This section describes the legal requirements. More detailed information on the preparation of trainers can be found in 3.5, and on training facilities in 3.6.

To provide a good Quality Apprenticeship experience, a company should ideally embody the following key characteristics:

- A strong motivation and clear commitment to fostering the professional development of apprentices
- Active involvement in a business sector that aligns with the focus of the Quality Apprenticeship programme (This means, for example, that a carpentry workshop cannot train an apprentice in electronics)
- Having a diverse and comprehensive range of tasks that allow apprentices to gain experience across all relevant areas (alternatively, collaboration within a training network is possible)
- The necessary equipment (tools, machines, software, ...) to offer a sufficiently broad education
- Having sufficient organisational capacity to support apprentices effectively, including:
 - Dedicated time and personnel resources
 - Access to the necessary technical equipment and facilities (which can be used for training purposes)
- A qualified and authorised trainer who possesses:
 - Relevant professional expertise and practical experience
 - Appropriate certification or training in vocational instruction

Different regulations apply in each country. It is therefore important to find out which legal regulations apply in the respective country and to comply with them. How to determine the applicable legal situation in the relevant country has been described in section 2.1.

Practical example:

In Austria, it is a legal requirement that a company must have all the necessary resources described below to provide training. Specifically, based on the Federal Act on the Vocational Training of Apprentices (Berufsausbildungsgesetz – BAG, 1969), the requirements are as follows:

Legal eligibility

The company must be authorised to carry out activities in which the apprentice is to be trained in accordance with the trade regulations.

Company eligibility

The company must be set up and run in such a way that all the knowledge and skills contained in the occupational profile can be taught. If this is not possible, apprentices can be trained as part of a training network.

A company can conduct apprenticeship training in cooperation with another suitable company or with the help of courses. This is the case if the required skills and knowledge can be taught for the most part, but not to the full extent. Provided that the complete training of the apprentice is ensured by the supplementary training network measure.

Agreements made within the framework of the training network are set out in the apprenticeship contract or in a separate agreement. These documents must specify as precisely as possible the training content to be delivered outside the company, the training partnership partner (company or institution), and the duration of the partnership activities. The company/institution must have the necessary skilled staff and facilities to be authorised to provide the training.

The size of the company is not decisive; a one-person company can also train apprentices, as long as adequate apprenticeship training is guaranteed.

Trainer

At least one person suitable for training apprentices must be available. This can be either the person authorised to train apprentices themselves, or an employee selected by them. This selected person must of course have the necessary skills.

If authorised instructors do not take on the training of the apprentice themselves, a trainer is entrusted with this task.

No ban by the district administrative authority

Authorised instructors can also be prohibited from training apprentices by the district administrative authority (Bezirksverwaltungsbehörde). This can apply for a limited or unlimited period of time.

Reasons for this can be:

- Criminal convictions
- Gross breach of duty towards the apprentice
- Apprenticeship training is not ensured anymore (for example, because of a change to the establishment or a change of management)

If the requirements are met, the company will be issued with a certificate of approval and will be allowed to train apprentices in the profession.

Practical examples:

Similar regulations apply in both Germany and Switzerland, with minor differences.

Germany:

<https://www.arbeitsagentur.de/unternehmen/ausbilden/pflichten-ausbildungsbetrieb>

Switzerland:

<https://www.vocationaleducation.ch/en/requirements/becoming-apprenticeship-host-company>

3.5 Preparing staff

The most important factor in apprenticeships is the trainer within the company as well as the teachers of the TVET provider. It is important that they are sufficiently prepared to impart technical knowledge to the apprentices and to build a good personal relationship with them.

As before, the legal requirements applicable to the company must be identified when implementing the programme, as laws vary from country to country. Nevertheless, to provide a good insight into what these requirements might entail, the legal situation is described below using practical examples.

Requirements

In many countries, a course or examination must be taken before one is allowed to train apprentices. This ensures that every trainer has a minimum level of knowledge and prevents anyone without any prior experience or training from taking on the difficult challenge of supervising apprentices.

Practical example:

The following section outlines the content covered in the examination in Austria according to the trainer examination regulations:

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10007760>

- Setting training objectives based on the job description
 - Analysing the job description with regard to training planning
 - Creating individual training objectives based on this analysis
- Training planning in the company
 - Selection and design of suitable training measures
 - Temporal and organisational distribution of training activities in the company's operations to achieve the training objectives
- Preparation, implementation, and monitoring of training
 - Fundamentals of company training methodology with special consideration of activating methods
 - Deployment of other employees in the context of training
 - Use of training aids
 - Performance monitoring
- Behaviour of the trainer towards the apprentice
 - Tasks and responsibilities of the trainer
 - Personal development of the apprentice and training success
 - Leadership and motivation
 - Communication and conversation skills
- Questions concerning the Federal Act on the Vocational Training of Apprentices (1969), the Children and Young Persons Employment Act (1987), Occupational Health and Safety Act (1994), the Labor Constitution Act (1973) in connection with vocational training, and the position of the dual vocational training system in the Austrian education system; relevant questions arising from examples of training practice.

Alternatively, a course based on the same content may be taken. The course must comprise at least 40 hours of work and conclude with a technical discussion.

Practical examples:

Korea: The training that in-company trainers and teachers in Korea must undergo in order to be allowed to train apprentices is described here: Kang et al. (2017, pp. 64-70)

Germany: In Germany, an examination consisting of a written and practical part must be taken with the following content:

<https://www.bibb.de/dokumente/pdf/HA135.pdf>

Trainers at TVET centres must also meet certain requirements. These vary greatly from country to country. The following describes the requirements that must be met in Austria in order to become a vocational schoolteacher:

Practical example:

In order to qualify as a vocational schoolteacher in Austria, applicants must have completed relevant training as well as the Matura (A-levels). There are generally three different subject groups:

- General education and business subjects
- Theoretical subjects
- Practical subjects

Depending on the preferred subject group to teach, there are specific requirements that apply.

All teachers - with the exception of general education teachers - must have several years of relevant professional experience in business before entering the teaching profession.

Whilst teaching, vocational schoolteachers need to complete the bachelor's degree course in 'Dual Vocational Training and Technology and Trade'. This is a part-time course of study and covers topics in the fields of educational sciences, subject didactics, and practical pedagogical studies.

There is also a master's programme of 60 ECTS, which is optional for teachers at vocational schools, for teachers of subject-related practical teaching and for teachers of subject-related theoretical teaching with relevant tertiary education.

Practical examples:

Germany: In Germany, there are different ways to become a vocational school teacher, which are explained here:

<https://www.mystipendium.de/berufe/berufsschullehrer>

<https://de.indeed.com/karriere-guide/jobsuche/wie-wird-man-berufsschullehrer>

Switzerland: Requirements and necessary training to become a vocational school teacher:

<https://www.berufsberatung.ch/dyn/show/1900?id=3042>

Roles of trainers

Trainers in companies have a great deal of responsibility. Training is not just about imparting knowledge; trainers take on a number of different roles, which are described below.

- **Supervisor**

In the role of the supervisor, the trainer must set goals and performance standards and draw up a training plan. This also includes monitoring compliance with the goals. In addition, the trainer must set clear boundaries for the apprentice.

- **Teacher**

In the role of the teacher, it is the trainer's job to impart specialist knowledge to the apprentices. This includes explaining things to apprentices and practising with them.

- **Educator**

In the role of the educator, the focus is on the apprentice's educational development. The aim is to show the apprentice how to behave appropriately in certain situations, such as when talking to colleagues or customers, to accompany them as they grow up and to provide space for personal development.

- **Mentor**

In the role of the mentor, the trainer should provide the apprentice with the best possible support during their training. This includes the professional and personal integration of the apprentice into the company as well as advising them on further training opportunities.

- **Partner**

In the role of the partner, trainers serve as the first point of contact for apprentices during difficult times. In this regard, it is important to take an interest in the apprentice and their problems and to be there for them.

In addition to the responsibilities that the trainer takes on in the company, teachers at TVET centres also have certain tasks and roles that they must fulfil.

- Planning, organising, and delivering off-the-job training within the framework of the overall apprenticeship programme.
- Interacting with their counterparts in partner enterprises to ensure optimal coordination between the off-the-job and on-the-job elements of the training programme.
- Monitoring the learning progress and skills development of apprentices on a regular basis.
- Providing additional support for apprentices with learning difficulties, disabilities, and other challenges.
- During the introduction of apprenticeships, TVET teachers may support in-CTs in developing company training plans.

Practical example:

Leando, from the Federal Institute for Vocational Education and Training in Germany, is a guide for training professionals that provides trainers with information, guidelines and helpful documents on all topics related to training. Topics covered in the guide include preparation, teaching and learning, digitalisation, motivation, conflict management, and communication. The guide is available free of charge.

https://leando.de/landing_page/leitfaden-ausbildende-fachkraefte

Digital and green competencies

Nowadays, it is becoming increasingly important to have sufficient digital and green skills. In order to make the best possible use of the many opportunities created by modernisation in education, trainers at least need basic technical knowledge. To find out whether trainers have this knowledge, assessment tools can be used to evaluate their digital skills.

Tool:

digi.check is an initiative of the Austrian Ministry of Education designed to test the digital skills of schoolchildren. First, a self-image is created through reflective questions, which is then verified by a skills assessment. There are different models for the respective school levels, but it can also be used by educators to gain an understanding of their own skills. When the programme is used to test pupils, their results can be collected and retrieved by generating TAN codes.

<https://digikomp.at/die-initiative/digicheck-wissen-koennen-zeigen>

<https://www.bmb.gv.at/Themen/schule/zrp/dibi/dgb/digicheck.html>

Tool:

SELFIEforTEACHERS, a self-reflection tool for teachers developed by the European Commission's Joint Research Centre, aims to support teachers in developing their digital skills. The tool enables teachers to identify their strengths and weaknesses in relation to digital technologies so that they know where they have potential for improvement. The tool is available in all official EU languages and has already been used by 285,000 users. The tool is free, takes about 25 minutes to complete and provides automatic feedback after finishing the questionnaire. It is also possible to use the tool as a group, which means that it can additionally be used for evaluating the digital skills of the apprentices.

https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-self-reflection-tools_en

As soon as a trainer knows where there is room for improvement, they can focus their professional development on those areas. Online courses and webinars are one possible form of digital professional development. These can be either free, or fee based.

Tool:

The Enhance Digital Teaching Platform is a platform that offers free, bite-sized, and certified online training modules. It was implemented by the Education and Training Foundation (ETF) in the United Kingdom. The platform is designed to help trainers use technology in their teaching. In addition to the 30- to 60-minute courses, there is also the option of watching numerous webinar recordings on the topics of remote working, digital accessibility and skills.

https://unevoc.unesco.org/pub/promising_practice_education_and_training_foundation.pdf

<https://www.et-foundation.co.uk/professional-development/edtech-support/>

Tool:

DigiGo is a project, co-funded by the European Union, which serves to enhance digital competencies of company trainers and mentors as well as apprentices, support apprenticeship programmes to enhance digital competencies and spread awareness. An e-learning programme was created, where trainers can enhance their digital competencies through seven modules. The programme is based on DigComp 2.2 and the DigCompEdu framework.

<https://digi-go.eu/>

However, trainers must not only possess digital skills; they should also have expertise in sustainability and climate protection in order to be able to design training programmes in a sustainable manner. As with digital skills, there are several ways to acquire green skills, for example, through online courses.

Tool:

Climademy is a project, funded by the EU, which was created to establish a European network to offer a programme where teachers can learn efficient methodology on how to educate the students. As part of the project, a large number of courses were created and made available to provide trainers with better information about climate change, its effects, and measures for sustainability. The programme also includes a selection of articles, games and tools that enable teachers and students to learn about various aspects of climate change in a playful way.

<https://climademy.eu/>

<https://claudi.chemistry.uoc.gr/course/index.php?categoryid=93>

Section 2.3 outlines the skills needs for apprenticeship training, including green and digital skills. In order to teach these skills to apprentices effectively, trainers should also possess these skills. By combining the self-assessment tools with the green and digital skills outlined in 2.3, it is possible to effectively analyse whether a trainer has sufficient skills and in which areas there is still room for improvement.

Practical example:

As part of the Habitable project, an online training platform has been created, offering a wide range of MOOCs available free of charge. These MOOCs have been specifically designed for trainers, SMEs and learners. In this context, the 'MOOC on design and management of green, digital and inclusive apprenticeship', is highly relevant.

<https://en.platform.habitable-cove.eu/>

<https://en.platform.habitable-cove.eu/mooc/training-programme-for-trainers/design-and-management-of-green-digital-and-inclusive-apprenticeship-mooc-for-sme/>

3.6 Preparing location

Before a company can begin training apprentices, it must ensure that the necessary internal structures and equipment are in place.

One of the most important steps is to provide sufficient technical equipment. If legal standards define minimum equipment requirements for training facilities, these must be met. Otherwise, the company should refer to the training curriculum to determine which tools, machines, and systems are needed to cover all relevant skills and learning outcomes.

The equipment recommended for carpentry (technology) based on company size is available in document '3.6 Preparing location – Checklist equipment for carpentry apprenticeship'.

Once the required equipment is available, a dedicated training space should be established. This space should be located away from the regular production or working areas so that apprentices can learn in a calm environment without interfering with day-to-day operations. A focused, quiet atmosphere supports both concentration and safety during hands-on training.

Occupational safety is another critical aspect - especially when working with young or underage apprentices. Because of their limited experience, they may misjudge risks or require more physical protection. Many countries have specific regulations regarding youth employment, which must be strictly followed. When working with potentially hazardous materials - such as chemicals, flammable substances, or dangerous machinery - companies should take extra precautions. Ideally, apprentices should be physically separated from areas, where those dangers are present, until they are properly trained. When assigning tools or machines, only those that meet the highest safety standards should be used.

In addition to the workspace, apprentices should have access to a private area where they can store personal items, complete tasks independently, and take breaks. Especially in the initial stages of training, a familiar and quiet space can reduce stress and help them feel more comfortable in the new working environment.

Preparing for Quality Apprenticeship training is also a valuable opportunity to modernise the company. Investing in new equipment, such as computers, machines, or digital tools, helps create a future-ready workplace. At the same time, this can be a chance to improve environmental sustainability by upgrading to more energy-efficient systems and introducing

paperless or resource-saving workflows. Workstations can be redesigned to be more resource-efficient and ergonomic or even accessible for individuals with disabilities.

Smaller companies may have fewer resources to implement all of these measures. However, with good planning and the option to join training partnerships or Quality Apprenticeship networks, small businesses can also provide apprenticeships of high quality.

Good practice:

Gottwald, an electrical engineering service provider, has been training apprentices since 1981. In 2023, plans were made to build a training workshop where theoretical and practical knowledge would be taught. Covering an area of 500 m², the workshop would feature state-of-the-art equipment and eight workstations, as well as an adjoining training room and lounge for the apprentices. Following completion in 2024, apprentices can now be trained in up to 16 workstations equipped with state-of-the-art equipment.

<https://www.gottwald.at/post/ausbildungsst%C3%A4tte-bei-gottwald>

<https://www.gottwald.at/lehrwerkstatt>

Companies looking to prepare their location for the integration of apprentices can use the following checklist for preparing the location as a guide:

- Which machines, tools, and equipment are needed based on the curriculum/training plan?
 - Is the necessary equipment available in sufficient quantity and good working condition?
 - Is the technical infrastructure (e.g., computers, software, digital tools) up to date?
 - Which pieces of equipment are missing/inappropriate for Quality Apprenticeship?
 - If missing/inappropriate, is it necessary to buy/rent the equipment or is it possible to work with external partners to cover this aspect of training?
- What are the sources of danger in the company?
 - Is it possible to ensure that these sources of danger do not have a negative impact on the health and safety of the apprentices?
 - Is appropriate personal protective equipment (PPE) available?

- Is there a dedicated training area separate from regular operations?
 - Is the training area located in a quiet space that allows focused learning?
 - Is the training area free of dangers/hazards?
- Are workspaces ergonomically designed and, if necessary, accessible to people with disabilities?
- Is there a place where apprentices can securely store their personal belongings?
- Is there a space available for breaks and independent work?

3.7 Checklist

Below is a checklist covering the contents of this chapter.

By answering the following control questions, it is possible for the reader to check whether the individual aspects of this chapter have been sufficiently well developed.

If all questions are answered with 'Yes', it is time to move on to the next chapter. If any questions are answered with 'No' or 'Partially', it is advisable to review these topics again.

Preparing quality training places	Yes	No	Partially	Needed improvements
Do you know the advantages and disadvantages of apprenticeship training?				
Is there a system to register participating companies as training companies in your country?				
If yes, has the company been registered?				
If not, are there other requirements that must be met in order to train apprentices, and are these requirements met?				
Is there a template for a training contract, or has an apprenticeship contract been drafted?				

Does the training contract contain all the necessary criteria?				
Do you know the potential stakeholders that may be involved in apprenticeship training?				
Do you know the specific roles and tasks of the potential stakeholders?				
Are there any existing partnerships with the relevant stakeholders?				
Is there an active cooperation between the company and the TVET centre?				
Are there requirements that must be met in order to be allowed to train apprentices?				
Are these requirements met?				
Is the company legally allowed to train apprentices?				
Are the trainers in the company sufficiently well trained?				
Are the trainers at the TVET centre sufficiently well trained?				
Is the equipment provided by the company and TVET provider sufficient to teach all the skills listed in the curriculum?				
If not, are there partner companies or other institutions that can provide the missing skills?				
Can safe training be guaranteed?				

4. Organising Quality Apprenticeship training

Once everything and everyone in the company is prepared to take on apprentices, the next step is to organise the apprenticeship training.

In order to train apprentices, it needs (young) people who want to undertake this training, with the first step being finding and convincing them. There are several ways, both traditional and more modern, to get suitable apprentices interested in the company.

Once potential apprentices have applied, the next step is to identify the most suitable candidates. There are a variety of ways to select the best candidates for the company. After the selection has been made, the next step is to have the apprentices sign the training contract and register them.

Based on the curriculum, the trainer should then draw up a training plan that specifies what will be taught, how, when, and by whom. A well-structured training plan is essential to ensure that knowledge is imparted to the apprentice in a logical and progressive order, while also avoiding unnecessary repetition.

Efforts should be made to establish a good relationship between the trainer and the apprentice. A good relationship with the trainer increases the apprentices' willingness to learn, their general motivation, and their sense of belonging to the company.

The most important part of the apprenticeship is the training itself. To ensure that the training is as effective as possible, a wide range of methods and tools are made available. These include both general teaching methods and ways to make the training more sustainable, digital, and inclusive.

Monitoring progress and recording the apprentice's performance is important to ensure that the required skills have been clearly communicated. One aspect of performance assessment in apprenticeships is certification. This ensures that the apprentice has successfully completed their apprenticeship and has the skills defined in the curriculum.

Last but not least, emphasis is placed on ensuring that apprenticeship training is also suitable for those with special needs. Ensuring inclusion means creating an environment where apprentices, regardless of their background, feel welcomed and valued. This not only fosters better performance but also motivates apprentices to give their best and thrive in the company.

4.1 Attracting candidates

Attracting suitable candidates is an important first step in organising Quality Apprenticeship training. In many countries, apprenticeships face an image problem and are often seen as a second-choice option compared to academic education. This perception can discourage young people and their families from considering vocational training, even when in reality it offers strong career prospects.

To counteract this and secure motivated and capable apprentices, companies must actively engage with potential candidates, communicate the real value of Quality Apprenticeships, and present themselves as attractive training providers. This involves not only raising awareness, but also building trust and offering clear, long-term career perspectives.

The following section provides practical strategies that companies can use to attract and convince young people to choose a Quality Apprenticeship path.

But before describing the various options that can be used to attract apprentices to the company, it is important to understand the benefits of apprenticeships for apprentices. By communicating these benefits, apprenticeships can become an attractive option for potential applicants.

Benefits of Quality Apprenticeship Programmes for apprentices

Quality Apprenticeships offer several advantages for apprentices. They provide a quick and secure entry into working life, offering young people the opportunity to gain practical experience right from the start. One key advantage of Quality Apprenticeships is that, unlike traditional educational paths, they allow young people to begin earning an income while still in training, providing both financial independence and valuable hands-on expertise. Unlike their peers in full-time academic or school-based programmes, apprentices receive regular compensation from their employer - often starting as early as age 15 or 16. This early exposure to earning money not only fosters a sense of responsibility and motivation but also teaches apprentices how to manage their finances, which is a crucial skill as they transition into adult life. Early earnings can ease this transition, making vocational training a more attractive and accessible option for many young people.

Graduates are not only in a good financial position during their training, but they are also well off after completing their apprenticeship. People with completed vocational training are in demand,

as a result of which apprentices earn a good income after their apprenticeship compared to other school-leavers or, in the case of adult education, compared to before they started their training.

Practical Example:

After completing their apprenticeship, apprentices in Austria find work more quickly than people who have completed other types of training. This is mainly because most apprentices can usually continue working at the company after completing their apprenticeship. In addition, apprentices earn more after 18 months than graduates of other training programmes.

The following data from Statistik Austria (2025) compares different Austrian education systems and the median time it takes graduates to enter the labour market as well as the median income of graduates.

- Median time to first employment after graduation
 - Compulsory school (CS): 6.8 months
 - Apprenticeship (AS): 0.5 months
 - School for Intermediate Vocational Education (BMS): 2.5 months
 - School for Higher Vocational Education (BHS): 4.0 months
 - Academic Secondary School (AHS, Upper Cycle): 7.4 months
- Median income after 18 months
 - Compulsory school (CS): €1,000
 - Apprenticeship (AS): €2,700
 - School for Intermediate Vocational Education (BMS): €2,500
 - School for Higher Vocational Education (BHS): €2,600
 - Academic Secondary School (AHS, Upper Cycle): €2,000

Explanation: Compulsory school ends after the 9th grade. After completing compulsory schooling, students can choose from several different paths. The apprenticeship (3-4 years) and the BMS (4 years) are vocational training programmes, whereby the BMS is a school-based training programme with a high degree of practical relevance. The BHS (5 years) and the AHS (4 years) end with the Matura (A-levels), which entitles graduates to attend a university. Compared to the AHS, the BHS has a practical focus, which is why it lasts one year longer. Since 2009, apprentices have been able to do an apprenticeship with a school-leaving certificate (Lehre mit Matura), which allows them to go to university after their apprenticeship.

The data is visually presented in figure 9:

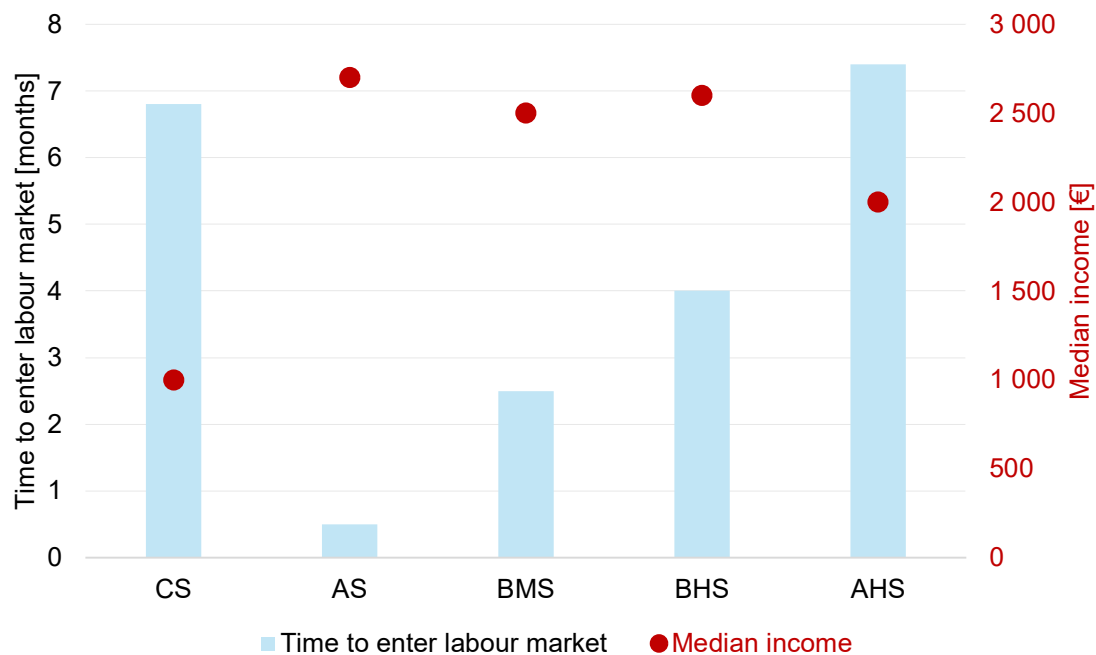


Figure 9 Comparison of the median time to entry into working life and the median income after 18 months between graduates (schoolyear 2020/2021) of the compulsory school (CS), apprenticeship (AS), School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), and Academic Secondary School (AHS) (based on data from Statistik Austria, 2025).

The data shows that apprenticeship graduates not only find a job more quickly but also earn comparatively more than graduates from other school systems. Due to the lack of comparability, graduates from universities are not listed; as would be expected, their starting salary is higher.

Another argument in favour of apprenticeships is their relatively short duration. Apprenticeships usually last around three years (1–4 years), which is oftentimes shorter than other common training programmes, meaning that apprentices can enter the world of work more quickly.

As a result of the high demand for trained specialists, people who have completed an apprenticeship usually have an easier time obtaining employment, whether at the company where they were trained or in another location. The consequence is that the unemployment rate among individuals who have completed an apprenticeship is typically relatively low.

Practical example:

In addition to starting work more quickly and earning a higher starting salary, apprenticeship graduates in Austria also have a comparatively low unemployment rate (Dornmayr, 2023).

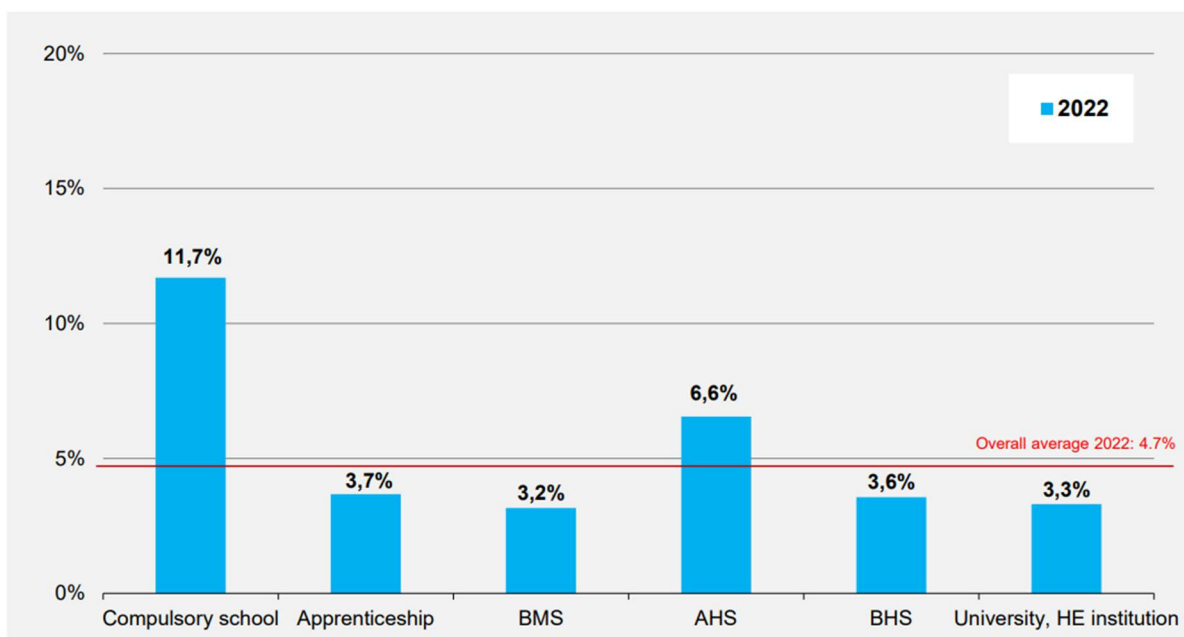


Figure 10 Unemployment rate based on highest education (Compulsory school, Apprenticeship, School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), Academic Secondary School (AHS) and University) according to the Labour Force Concept (ILO) by highest educational attainment (2022, Austria), Source: Statistics Austria (microsensus labour force survey) + ibw calculations (Dornmayr, 2023).

The AMS (Public Employment Service in Austria) uses a different calculation model to calculate unemployment. The following figure (figure 11) shows unemployment based on data from the AMS.

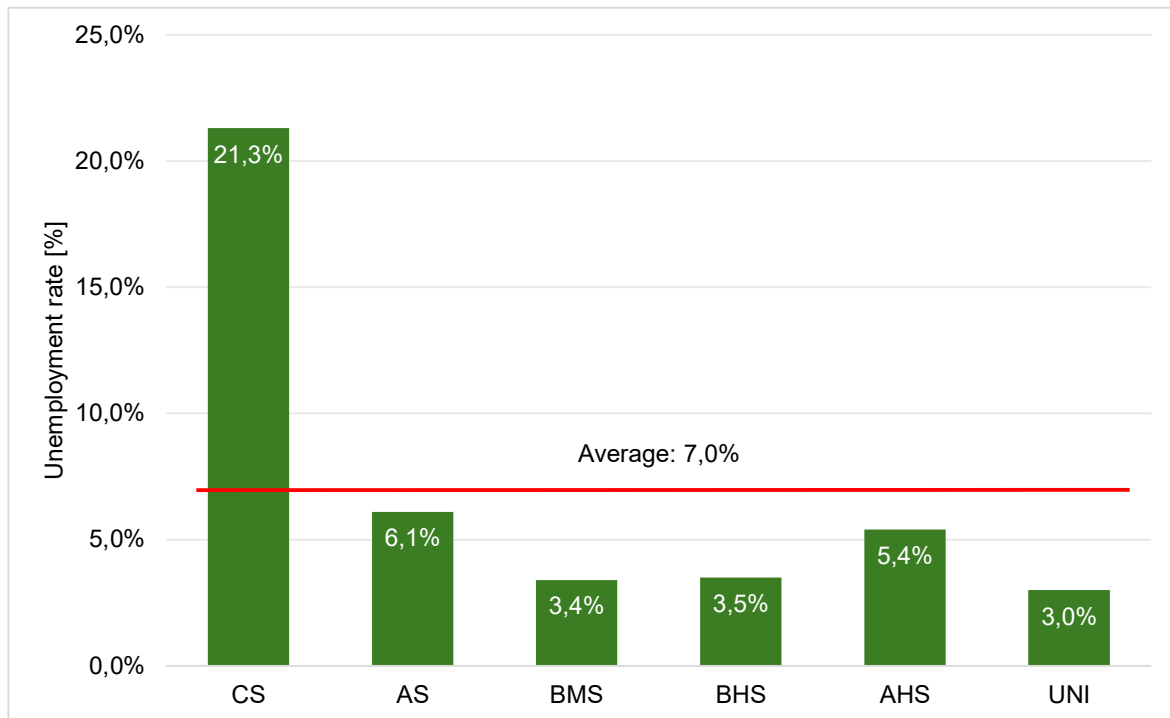


Figure 11 Employment rate based on highest education (Compulsory school (CS), Apprenticeship (AS), School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), and Academic Secondary School (AHS), University (UNI)) according to AMS (2024), Source:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiD4uHS38eTAxUM9glHHcu6F9sQFnoECBkQAQ&url=https%3A%2F%2Fwww.ams.at%2Fcontent%2Fdam%2Fdownload%2Farbeitsmarktdaten%2F%25C3%25B6sterreich%2Fberichte-auswertungen%2F001_spezialthema_0525_V1.pdf&usq=AOvVaw1oXRIZIFxeUAJYm0lcG0-j&opi=89978449

The unemployment rate among people whose highest level of education is an apprenticeship is comparatively higher in the calculations of the AMS, as is the general unemployment rate.

Practical Examples:

Germany:

<https://www.iwkoeln.de/studien/alexander-burstedde-dirk-werner-eine-berufsausbildung-bietet-den-groessten-schutz-vor-arbeitslosigkeit.html>

<https://www.bpb.de/kurz-knapp/zahlen-und-fakten/soziale-situation-in-deutschland/61724/arbeitslosenquoten-nach-bildung-und-alter/>

Switzerland:

<https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/bildungsindikatoren/indicators/arbeitsmarktstatus.assetdetail.33907302.html>

Europe:

https://ec.europa.eu/eurostat/databrowser/view/lfsa_urgaed/default/table?lang=en

Having outlined the key benefits that Quality Apprenticeships offer to young people, the next section focuses on how companies can actively reach and attract potential candidates. A selection of practical methods and proven best practices will illustrate how businesses can position themselves as appealing training providers and connect effectively with future apprentices.

Different ways of attracting candidates

In times of skilled labour shortages and a changing job market, it is more important than ever for companies to attract future apprentices with targeted and creative approaches. Traditional methods such as job advertisements can still be effective - but they are often no longer enough to stand out in the competition for young talent.

Especially Generation Z, which has grown up with digital media, is looking for purpose, innovation, and authentic communication. To reach this audience, companies need to go beyond conventional strategies and implement innovative methods.

In the following section, these proven, traditional methods will be outlined, which will then be followed by an overview of innovative and creative strategies that can help generate additional visibility and position the company as an attractive option for young talent.

However, before actively searching for and recruiting apprentices, the requirements profile should first be created. Here, the company must define what applicants should already be able to do, what interests the apprentice should have and what skills applicants should already possess. In addition, it must be defined how the application process should proceed, in what form and what documents are necessary to apply. Once this has been clarified, the company can actively search for apprentices. Potential methods to attract apprentices are described below:

Traditional methods:

One of the most effective ways to reach a broad audience remains the use of job advertisements. However, this method has also been transformed by digitalisation. While job advertisements were traditionally placed in newspapers and magazines, social media has now taken the lead, especially when it comes to engaging younger generations. Platforms like Instagram, Facebook, and TikTok are increasingly being used to promote Quality Apprenticeship opportunities in a format that appeals more to the younger generations.

As part of this more modern approach, it is becoming increasingly important to write job postings in an inclusive and accessible way. This includes using gender-neutral language, avoiding unnecessary jargon, and addressing a diverse range of backgrounds. For example, instead of saying 'we're looking for a strong young man to join our team', a more inclusive version would be 'we're looking for motivated individuals who enjoy hands-on work'. Such language ensures that more people - regardless of gender, background, or physical ability - feel addressed and welcomed.

Writing inclusive job postings helps reach and address more people, which massively increases the pool of potential applicants. It also sends a message to the outside world that equality and openness are important to the company, which means a lot to young people in particular.

Closely linked to this are online job portals, which continue to play a vital role in the search for apprentices. Job platforms allow companies to reach a large number of job seekers efficiently and filter applications based on qualifications and interests. Many of these portals now offer apprenticeship-specific sections, which help students and school leavers quickly find suitable training positions. For companies, they offer a structured way to present open positions and company profiles in a professional and searchable format.

Tool:

Whatchado is a job platform where companies can create short videos (reels) that briefly introduce their company or provide an insight into the everyday life of an apprentice. In addition, a few facts about the company are presented, the profile and tasks of potential applicants are described, and a link to the application form is provided, giving the applicants a good opportunity to compare their possible options.

<https://www.whatchado.com/en>

Career fairs continue to serve as important meeting points for young people interested in Quality Apprenticeships. A well-designed and engaging company presence at such events can spark genuine enthusiasm and help attract future apprentices. These fairs offer a unique opportunity for direct interaction and for companies to present themselves as modern, supportive training providers. What makes career fairs so special is that most schools take students who are about to finish school to these events to show them the training opportunities available. This means that a large proportion of those students are potentially eligible for apprenticeships and could begin the training programme in the near future.

A third and equally valuable avenue for generating interest is through collaboration with schools. By building partnerships with local schools, companies can give students firsthand insight into the business. This can be done through company tours (field trips) or school visits, during which employees present the company and share their personal experiences.

In addition to structured outreach activities, personal connections still play a key role. Whether through family, friends, current employees, or community networks, word-of-mouth recommendations and authentic conversations often carry more weight than advertisements. A positive impression shared by someone the young person trusts can be the deciding factor in choosing a company for their Quality Apprenticeship.

Once interest has been sparked, it has proven highly effective to offer trial days or job shadowing opportunities. These allow students to gain a real-world impression of the company and see what Quality Apprenticeship training looks like in practice. It also gives the company the chance to get to know potential apprentices early on and to identify particularly motivated and suitable candidates.

Practical example:

Zurich Airport offers trial apprenticeships from February to June. The potential apprentices actively work at the airport and get a feeling on how the apprenticeship will be.

<https://www.flughafen-zuerich.ch/en/company/jobs/career-entry/trial-days-applying/discover-jobs>

Practical example:

At Miba's open days, potential applicants can experience one to three days in the profession of their choice. During the open days, potential apprentices can find the right profession for them by learning about the apprenticeship and everyday working life at the company.

<https://www.miba.com/en/apprenticeship-1/trial-days>

Modern approaches

Standing out from the competition is never easy, but in times marked by labour shortages, it can become essential. One of the most obvious and currently popular methods is maintaining a strong social media presence that puts apprentices and the Quality Apprenticeship programme at the centre. Videos on social media that highlight the company in an entertaining way, the daily activities of apprentices, and other behind-the-scenes moments have the potential to reach a large audience.

Possible challenges of this approach include the high effort required, potential lack of motivation among employees to actively participate in the videos, and the risk that the content may not reach - or may even miss entirely - the intended target group. Nonetheless, social media can be a powerful tool to generate attention for the company and its Quality Apprenticeship programme.

Good practice:

‘Apprentices as corporate influencers on TikTok’: Due to the image of joinery as old-fashioned, an attempt was made to improve the image of apprenticeship training through videos of apprentices on TikTok and to inspire young people to train at the company. Within a short space of time, over 300,000 views were generated, and the vacant apprenticeship positions were filled. The company also received a great deal of encouragement from the young target group.

https://ausbilder.at/fileadmin/storage/01-good-practice/fff_2024/manigatterer/projektdokumentation_manigatterer_spectory.pdf

Good practice:

‘Your First Day’ produces 360-degree films displaying a variety of professions and provides these films free of charge, along with all the required technology, to interested schools across Germany. This initiative gives companies the chance to digitally open the doors of their production sites, offices, or business locations, allowing them to present themselves directly to future professionals. The first step is an initial meeting and a tour of the filming locations. After the script is created, the 360° videos are recorded. Following editing and recording of voice-overs, the finished 3-5-minute film will be available to schools within a maximum of three months.

<https://www.deinerstertag.de/ueber-uns/>

Hosting events has become a modern and highly effective way to present a company to a broad audience in a positive, welcoming atmosphere. By organising competitions, festivals, or other engaging activities, businesses can not only capture the interest of many potential apprentices and community members but also enhance their overall brand image and reputation. Such events create memorable experiences that build goodwill, foster connections, and showcase the company’s values and culture in an authentic way.

Presented below are two examples of company-hosted events that can serve as valuable inspiration for others looking to make a strong, lasting impression.

Good practice:

The 'BAUBATTLE-Show your talent' event is a regional school competition for students in grades 7 to 9, launched in 2019 by RIEDER GmbH & Co KG in Austria to inspire young people to pursue skilled trades apprenticeships. During the live event, 52 teams comprising 558 students competed across 13 different challenge stations. A team of 54 employees supervised the event. Amid the pandemic, BAUBATTLE was adapted into an interactive virtual format featuring a 10-room escape challenge for 566 students, maintaining the spirit of teamwork and team building. The event was organised and communicated centrally by the RIEDER project management, with class teachers facilitating communication via SMS.
<https://www.qualitaet-lehre.at/good-practice-beispiel/baubattle-zeige-dein-talent/>

Good practice:

The emco talent festival, organised by the emco Group in Germany, is designed to give students from grade 8 and up the opportunity to get to know the company in a relaxed and welcoming atmosphere - completely free of charge. Participants were taken on a guided tour through the company's facilities, while various attractions such as a chillout area with a live DJ, a cinema, and other entertainment options helped create a lively and positive mood. The event lasted about three hours and included complimentary food and drinks for all attendees. With its informal setting and engaging activities, the festival provided a unique and memorable way for students to explore career opportunities and experience the company culture firsthand.
<https://www.emco-group.com/de/talentfestival/>

It is also worth noting that businesses do not always have to organise these events themselves. Sponsoring existing events can also have a massive impact. By supporting events that align with the values of the company, businesses can achieve a positive effect, raise their visibility, and strengthen their connection with the community. Sponsorship can often provide an opportunity to be part of large-scale events and reach a broader audience without the need to manage the logistics of organising them. Participants and spectators at these events will subsequently develop a greater connection with the company. Sponsoring clubs is also an effective way to attract attention and be perceived in a positive light.

Gender equality and inclusion

In numerous professions, women remain underrepresented, as traditional gender roles and societal expectations often limit their career choices and access to certain fields. Yet, they are equally capable of excelling in these roles and could represent a valuable and much-needed workforce resource. To encourage women to consider a Quality Apprenticeship within the company, several steps can be taken. While writing job postings in a gender-neutral way has already been mentioned, there are additional strategies that can be helpful. Job postings can not only be written in a gender-neutral manner, but the wording in the job posting can also be adapted accordingly to appeal to people with disabilities or other disadvantaged individuals.

Another option is to offer part-time and/or flexible working hours (if allowed). This enables women in particular (e.g. due to childcare responsibilities), but also other people who would otherwise be unable to complete an apprenticeship due to a lack of time to take up an apprenticeship. However, offering part-time apprenticeships also brings with it potential problems such as increased planning effort or longer apprenticeship durations, which should not be overlooked.

Practical example:

In Germany, according to the Vocational Training Act (Berufsausbildungsgesetz), it is possible to reduce vocational training by up to 50% of the daily/weekly training time. To do so, an application must be submitted and there must be a legitimate interest, for example, if apprentices have a child of their own or a close relative in need of care whom they must look after.

https://www.gesetze-im-internet.de/bbig_2005/_7a.html

In addition, it can be useful to organise events specifically for women or disadvantaged people. This could be a women's day, for example, where women are specifically invited to visit the company, which gives them the feeling that they are being addressed and that this job is also suitable for women. This increases the likelihood that women, or disadvantaged people (depending on who is being addressed), will be more likely to attend the event than if they had not been specifically invited.

Female employees or apprentices can be showcased as role models on the company website or on social media platforms. This helps convey to other women that apprenticeships, despite being

male dominated, are also a viable and valuable path for them. It is important to ensure that women are well-represented on the company's online presence overall. The same applies, of course, to female-dominated professions in which men are to be specifically targeted.

Moreover, collaborating with organisations that specialise in supporting women or people with disabilities can significantly increase the reach and impact of recruitment efforts. By partnering with, for example, women's networks or disability advocacy groups, companies can ensure that Quality Apprenticeship opportunities are effectively communicated to these underrepresented groups. These organisations often have direct access to individuals who may not otherwise be aware of such opportunities or who may face unique barriers to entry.

Setting goals, such as a certain percentage of female/disadvantaged apprentices, and reserving specific positions for women/disadvantaged people can also lead to an increased interest from women/disadvantaged people in Quality Apprenticeship opportunities over time. However, these methods require a delicate balance, as the primary goal must remain ensuring that apprentices successfully complete their training. Reserving places or meeting gender quotas poses the risk of giving priority to less qualified or motivated apprentices, potentially leading to dropouts if the level of interest is insufficient.

Good practice:

'Wir zusammen' (We together) was launched in early 2016 with 36 companies to demonstrate the German economy's commitment to refugees and inspire others to take similar actions. Since then, over 230 companies joined, integrating more than 33,000 refugees into the labour market with the help of over 24,000 employees. The network has developed extensive expertise in refugee integration, creating tailored solutions. After achieving its goals, many companies have now incorporated these initiatives into their standard processes, reducing the need for support.

<https://www.wir-zusammen.de/>

4.2 Recruiting apprentices

After attracting potential apprentices, the next step is the recruitment phase. In this stage, the applicants are carefully screened, and the ones best suited for the position are selected.

However, before initiating the application process, companies should carefully consider the following aspects:

- Number of apprentices: How many apprentices can/will the company take on, considering factors such as company size, training capacity, employee needs, etc.?
Practical example: It is important to know how many apprentices per trainer are allowed in the company. In Austria, for example, a company may train a maximum of 15 apprentices per trainer if he is exclusively responsible for supervising the apprentices, and a maximum of 5 if supervising the apprentices is only part of his job.
- Application process: Which medium will be used for applications and what documents are required? What dates and deadlines are relevant for the application?
- Selection process: How will candidates' suitability be assessed? Are there preliminary tests? Will there be personal interviews, and when/how will the tests/interviews take place?
- Criteria for selection: What criteria will be used to choose the candidates?
- Feedback after application: When and how will candidates be informed if the company has selected them?

It is important to define a structured procedure and comprehensible assessment criteria in order to make the application process as smooth as possible.

When establishing admission criteria, it is important, in the interests of inclusion, not to rely too rigidly on conventional criteria. Criteria such as grades, language skills, prior knowledge, etc. can result in candidates who would in principle be suitable for the role but do not meet these criteria being excluded. Alternatively, standardised, competence-based admission procedures, in which motivation and potential are assessed, can be used as criteria. This does not mean that standard criteria such as grades should not be taken into account, but rather that they should not act as knockout criteria.

Choosing the right apprentice

To choose the right apprentices, various methods can be employed. The selection techniques will naturally vary depending on the company's context. Smaller companies with fewer applicants may use different approaches than large organisations receiving a high volume of applications. Small companies with fewer applicants can gain a good insight into who fits the position through personal interviews. In such cases, preliminary tests are typically unnecessary, as the number of interviews can be kept manageable.

For larger volumes of applicants, it is advisable to pre-screen candidates using selection tests. These tests can, however, also be beneficial for smaller companies, providing an initial understanding of applicants' interests and skills before the personal interview.

When creating selection tests, numerous providers and tools are available that can simplify the process.

Practical example:

The 'INDIVIDUAL Selection Aid' is a modular test system for apprentice selection. There are 15 test modules available with which companies can independently compile the test that suits them best. The test can be taken by applicants both at the company and from home on their phone. The platform can also be used to create an interest check, which asks about the applicant's interests, and a company check, which asks about the applicant's knowledge of the company.

<https://auswahlhilfe.at/>

A modern and digital approach to creating a selection test is the implementation of gamification, rather than using a traditional test with standard questions. Through interactive tasks, where every click and every action is analysed, employers can uncover candidate traits that would be difficult to identify through simple question-and-answer tests.

Depending on the game design, for example, traits such as resilience, adaptability, and decision-making can be inferred (Georgiou et al., 2019).

Creating custom games or gamified admission tests for the application process involves a great deal of effort and potentially a lot of money, but in return, the game/admission test can be tailored precisely to the company's needs.

In addition to revealing these extra traits, such a test might also attract attention to the company, potentially increasing the number of applicants.

Practical example:

The Wasabi Waiter game, developed by Knack, is a gamified recruitment tool to evaluate attributes like creativity, caution, and multitasking by simulating the role of a sushi server. The player tracks the moods of the customers and delivers dishes that correspond to their emotions. While playing, the game tracks every movement and analyses behaviours, that correlate with job performance.

<https://de.slideshare.net/slideshow/wasabi-waiter-game-gamification-in-recruitment-manu-melwin-joy/72590329>

Chatbots can be used in the recruitment phase in a variety of ways. They can assist in answering applicants' questions about the Quality Apprenticeship programmes and can also support the company in the pre-selection process.

Chatbots are particularly effective for handling recurring questions, as they can provide answers all the time, and in real-time, significantly reducing the workload of the recruiting team. More personalised questions can also be answered using AI, or if the chatbot lacks the information, it can direct the applicant to the appropriate contact person.

For pre-selection, the chatbot can guide candidates through the initial application phase, collecting data about applicants or automatically analysing resumes. Furthermore, chatbots can be employed to keep applicants informed after the personal interview, providing them with updates and feedback on their application status.

Good practice:

Ikea Switzerland offers the opportunity to apply via WhatsApp. This involves scanning a QR code on their website, which leads to the WhatsApp chat with the chatbot. The chatbot enables applicants to find out more about working at Ikea and to apply directly on the app.

<https://www.ikea.com/ch/en/this-is-ikea/work-with-us/apply-for-your-dream-job-at-ikea-now-through-whatsapp-pub8c32e5c0/>

Once the applications have been received and the application process has been completed, the right candidates must be selected based on the criteria defined in advance. Candidates should be informed of when they can expect a response, and this deadline should be adhered to in order to give them a degree of planning security.

Finally, applicants must be informed whether or not they have been accepted as apprentices. If the applicant is accepted, they should be informed of the next steps and dates. In the case of rejections, it is a good idea to explain why they were rejected and, if applicable, that they are welcome to apply to the company again in the future, for example, as an apprentice or in another position.

Registering apprentices

Once the apprentices have successfully applied and been recruited, they must be registered. Registering apprentices is an important process that fulfils a variety of different functions. In many countries, registration is linked to services such as insurance, subsidies, or vocational school. Registration makes it possible to conduct (nationwide) evaluations of unemployment and employment. Registration also minimises the risk of legal problems for both the company and the apprentice. In most countries, registration can now be completed online with minimal effort.

Typically, an apprenticeship contract is required for registration. This contract must be signed by both the company and the apprentice (and, possibly, their legal representative) and submitted to the relevant office or governing body. More information on the Quality Apprenticeship contract can be found in 3.2.

Practical example: In Austria, three deadlines must be met when registering apprentices (Austrian Economic Chamber - WKO, 2025b)

- The apprentice must be registered with the Austrian Health Insurance Fund (Österreichische Gesundheitskasse) before the start of the apprenticeship. Registration is carried out by the company.
- The apprentice must be registered with the relevant vocational school no later than 14 days after the start of the apprenticeship.
- The apprenticeship contract must be registered with the apprenticeship office (Lehrlingsstelle) no later than three weeks after the start of the apprenticeship and the apprentice must be informed of this.

4.3 Developing a training plan

A training plan is essential for bridging the gap between the content of the curriculum and practical application. The training plan forms the basis for in-company training and ensures that the skills defined in the curriculum are taught in real life. The most important steps for creating a training plan are listed and described below.

The training plan should include:

- The time allocation for on-the-job and off-the-job components. In Austria, as illustrated by the Federal Ministry of Economy, Energy and Tourism (2026), there are three types:
 - Year-round: off-the-job at least once a week on a fixed day
 - Course-based: at least 10 consecutive weeks of off-the-job training
 - Seasonal: off-the-job during a specific time of the year (e.g. winter)
- Skills to be covered in the company training programme
 - Description of the skills
 - Both skills according to the curriculum and company-specific
- Time schedule for the skills
 - Period and duration
 - Responsible trainer
 - Training methods
 - Training location
 - Necessary equipment (materials, tools, machines)

To create such a training plan, it is essential to follow a structured process that ensures all key aspects are addressed. The following section outlines the steps involved in developing a training plan, ensuring that all requirements are systematically integrated and a smooth training flow is achieved.

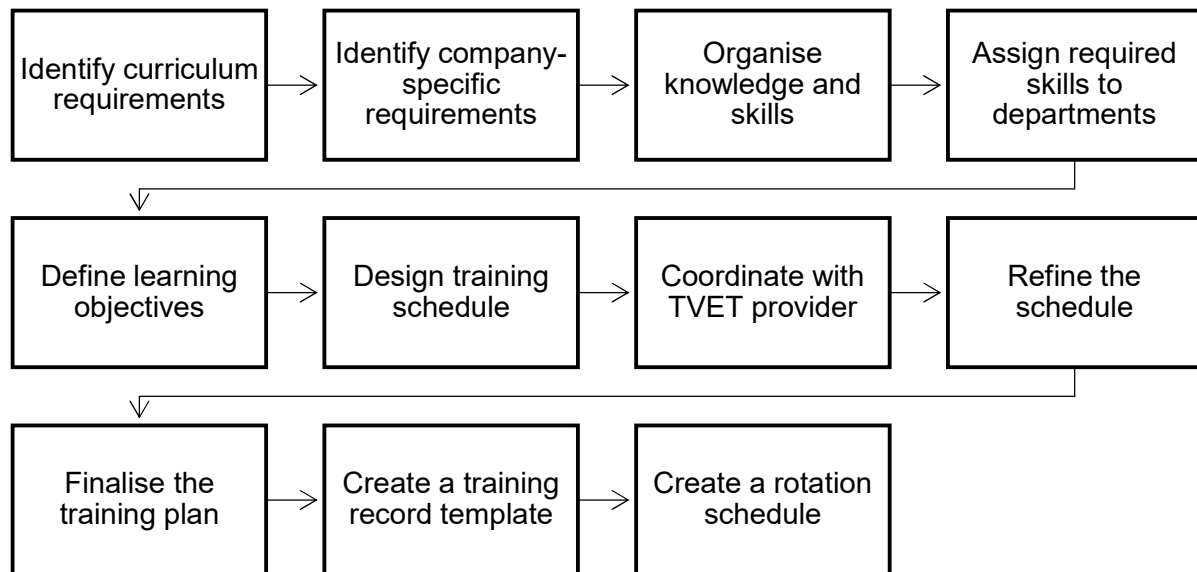


Figure 12 Possible approach to creating a training plan.

Identifying curriculum requirements

The first step is to identify the topics prescribed in the curriculum that need to be taught during the training. This involves pinpointing the essential competencies and subject areas that the company must impart to the apprentice according to the educational programme's guidelines.

Identifying company-specific requirements

In addition to the curriculum topics, there are typically company-specific skills that the apprentice must acquire. These should be identified to ensure they are integrated into the training plan.

Organising and categorising knowledge and skills

Once all the required competencies have been determined, they should be organised and grouped by topic. This helps in planning how these skills will be taught within the company's framework.

Assigning required skills to departments and defining activities

At this stage, the identified competencies must be allocated to the relevant departments within the company. It is important to determine where and through which activities each skill will be trained. In addition, the necessary machines and tools must be defined.

Defining learning objectives

Next, clear learning objectives should be established. These objectives outline what needs to be achieved for each requirement to be considered successfully met by the apprentice.

Designing the training schedule

With the requirements allocated to specific departments and having defined learning objectives, the schedule of the training must be created. This includes defining when, where, and with whom the training will take place, as well as outlining the methods and timing for assessing the apprentice's progress.

Coordination with TVET provider

With the initial training timeline established, coordination with the TVET provider is necessary to ensure seamless integration between the off-the-job and on-the-job components of the training. This phase involves reviewing the alignment of teaching schedules and identifying any potential issues in the planning process (e.g., advanced topics being taught in the company before the foundational knowledge is covered by the TVET provider or same topic covered twice and others not at all).

Refining the schedule

Following the identification of any issues or improvement opportunities, the training schedule should be revised to address those concerns. In addition, the days on which the apprentice is at the TVET provider should be integrated and scheduled.

Finalising the training plan

The training plan is then finalised, offering a comprehensive overview of the required competencies - both from the curriculum and specific to the company. The plan should detail when, where, and with whom these skills will be acquired and specify the methods and timing for evaluating whether the apprentice has met the requirements.

An example of how a training plan can be structured is shown in the file '4.3 Example training plan'.

Creating a training record template

The ultimate step is to develop a template for documenting the apprentice's progress throughout the training. This template will track which competencies have been acquired during the programme.

Practical examples:

Templates from Austria

Carpentry:

<https://www.wko.at/oe/lehre/dokumentation-zimmerei.pdf>

Carpentry technology:

https://www.qualitaet-lehre.at/wp-content/uploads/Ausbildungsdokumentation_Zimmerei.pdf

Practical example:

Training plan templates from Australia:

<https://www.publications.qld.gov.au/dataset/srto-training-plan-example/resource/f14a33d5-33bc-4615-8eef-598d4020b0bd>

<https://www.nsw.gov.au/education-and-training/resources/training-plan-forms-pdf-and-word>

Creating a rotation schedule

If the training plan stipulates that apprentices are to be assigned to several departments within the company, it is advisable to draw up a rotation schedule (including TVET provider) that specifies on which days the apprentice will be trained in which department.

Things to consider:

If difficulties arise while planning the training plan, it is advisable to seek assistance from the TVET providers. They can offer valuable guidance and support to ensure the training plan is comprehensive and well designed.

Additionally, the training plan can and should be adjusted as needed during the Quality Apprenticeship if it becomes clear that some topics are more or less important than initially thought, take more or less time, or that certain methods work better or worse than expected. These changes are particularly important in order to improve training for future apprentices.

Moreover, competencies that are not included in the curriculum but are important - or will be in the future - either for the company or for the apprentice can be incorporated into the training plan to ensure a more well-rounded and adaptable learning experience.

Practical example:

The Apprentice Track project focuses on improving the organisation of work placements, increasing transparency in apprenticeship data, and incorporating the latest quality guidelines into vocational training. The Apprentice Track App is a platform for managing apprenticeship programmes, centralising all relevant documents and streamlining administrative processes. It allows all stakeholders - apprentices, mentors, and training organisers - to access and update documents while tracking progress. The app can be integrated with existing school information systems or used as a standalone solution. Funded by the European Commission, it was tested in Croatia, Slovenia, and the Czech Republic.

<https://apprenticetrack.eu/>

4.4 Good relationship with apprentices

A strong bond between the trainer and the apprentice is particularly important for the success of the Quality Apprenticeship. A positive relationship allows potential problems to be identified early, keeps the apprentice motivated, and fosters a sense of belonging within the company. When apprentices have a good relationship with their trainer, they are more likely to complete their training and stay with the company. Other positive effects include increased productivity, less learning effort, and a greater willingness to learn.

If apprentices have no one they can turn to, feel comfortable with, and talk to about problems, serious issues can arise in a short period of time.

To build and maintain a good relationship with apprentices, several steps and methods can be implemented. These approaches, outlined below, can help ensure that the apprentices feel supported, valued, and engaged throughout their training journey.

To build a good relationship with the apprentices, it can help to understand their generation. Today's apprentices are mainly from Generation Z, i.e. those born between 1995 and 2009, and Generation Alpha, born between 2010 and 2024. It should be noted that not all people of a generation are the same and pursue the same ideals and goals, but it can still help to be aware of the tendencies of the different generations in order to be able to assess them better.

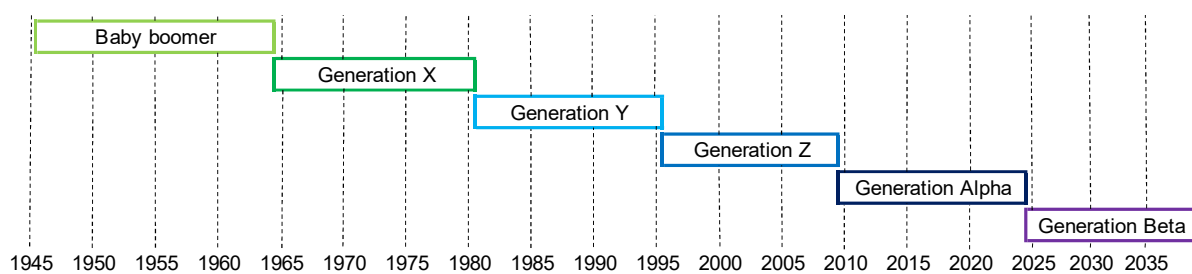


Figure 13 Visual representation of the different generations, starting with the Baby boomers (1946–1964) and ending with Generation Beta (beginning in 2025).

Generation Z is the first generation to grow up with fast-paced modern technology such as smartphones and the internet. They are usually more self-determined, want to be treated with respect and are oftentimes under a lot of pressure to perform. Generation Z's priorities are different, with more focus on happiness and health and less on money (compared to previous generations). They are said to be lazy, soft, and lacking in drive. Apprentices should therefore be approached with flexibility, patience, and interest. It is important to show appreciation and treat apprentices as equals.

Generation Alpha grows up with technology from an early age and spends a considerable amount of time on the internet. This can lead to problems in real life that previous generations did not experience to the same extent. They are said to be less independent and less productive. On the other hand, they have improved media literacy and are more adept at using technology. One development that is likely to increase in the future is working from home, as Generation Alpha increasingly sees/have seen their parents working from home, especially during Covid-19.

In the introduction phase, it is essential to create a welcoming environment for the apprentice. Methods such as orientation (welcome) days and introductory events can be used to familiarise them with the company culture.

It is especially important to structure the first day correctly and to leave a positive impression, as it lays the foundation for further training.

On the first day, the trainer should familiarise the apprentice with the company. At the beginning, the apprentice should be given an overview of the most important topics. They receive the most important documents, sign the necessary contracts, etc. Afterwards, it makes sense to show the apprentice all the premises and their connection to the company. It is important to introduce the apprentice to all colleagues (and the colleagues to the apprentice), explain their roles in the company, what their functions are, and how the apprentice will collaborate with them. It is also important to tell the apprentice what is expected of them, both in their dealings with the trainer, colleagues, and customers, and what expectations the company/trainer has of the apprentice with regard to their work. In addition to the expectations, the apprentice should also be informed about what their tasks will be, both the initial tasks at the beginning and the tasks they will have to perform in the long term.

Practical Example:

At Coroplast in Germany, the first three days of the apprenticeship are used as orientation days. Even before the apprenticeship begins, the future apprentices meet with the trainers and complete challenges together. The orientation days at the beginning of the apprenticeship are about finding out what expectations the apprentices have and what expectations are placed on them, introducing the company and developing a sense of community.

<https://www.coroplast-group.com/en/newsroom/article/welcome-aboard-apprentice-onboarding-2025/>

Effective communication plays a crucial role throughout the Quality Apprenticeship. Regular and clear communication helps ensure that both apprentices and mentors are aligned. It is important to meet at eye level and engage in active listening, asking open questions to encourage dialogue.

Understanding that young people communicate differently is key; being open to learning novel words and adapting to their style of communication fosters better relationships. Using modern communication tools, such as WhatsApp, Microsoft Teams, and even social media like Instagram or LinkedIn (in moderation), can help bridge the generation gap and improve connectivity.

Through thoughtful questions based on the GROW (Goal - Reality - Options - Will) model, the apprentice is guided to come to their own answers rather than being given direct solutions. First, goals are defined to clarify what the apprentice wants to achieve. Then, the reality is explored, allowing the apprentice to reflect on their current skills and identify areas for improvement. Next, the apprentice is encouraged to consider different options for reaching their goals. Finally, will focuses on their commitment and motivation to act and follow through on their plan. This process encourages self-reflection and problem-solving, helping the apprentice take ownership of their learning journey.

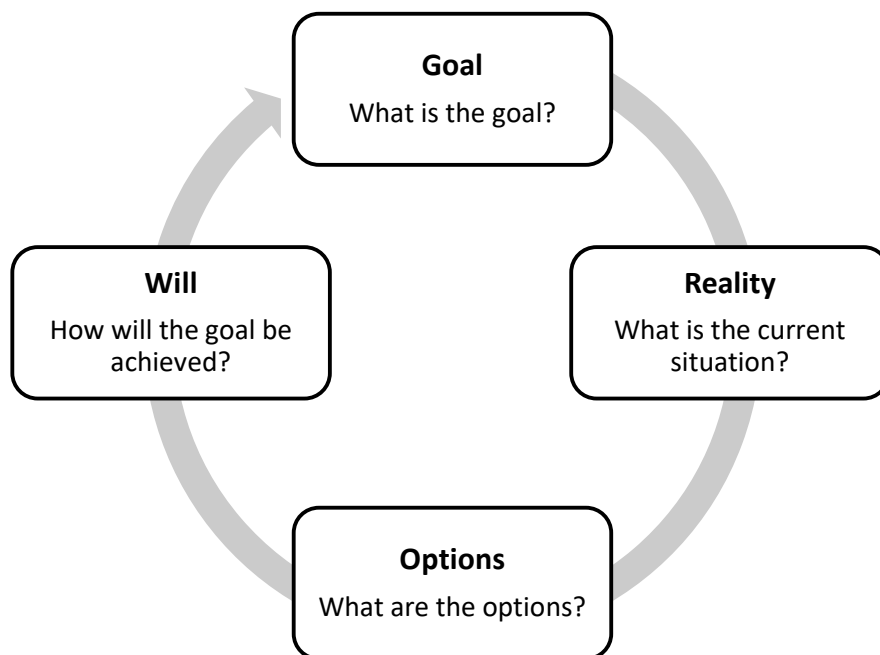


Figure 14 Overview of the GROW model.

Regular feedback - both positive and constructive - is crucial, with a special emphasis on giving positive feedback to keep motivation high.

If it is important for the apprentice to modify their behaviour, communicating using 'I' messages is recommended. This involves three steps:

Perception: Describing what has been observed – 'I have observed; I have seen that...'

Effect: What effect does what I have observed have on me? – 'That makes me sad; ...'

Importance: Why is it important to change this, what effect does it have? – 'It is important for the company; it is important to me; ...'

As a mentor, it is essential to be a good role model. A cheerful outlook, willingness to help, and effective communication skills set the tone for a productive and supportive apprenticeship experience. Being reliable, consistent, and present for the apprentice creates an environment of trust, where they feel comfortable seeking guidance and support.

In order to structure the learning process effectively, it's important to establish SMART goals

Specific: The goal must be precisely defined so that there are no misunderstandings.

Measurable: The goal must be measurable so that progress can be recognised.

Achievable: The goal must be achievable; it must not be impossible for the apprentice.

Relevant: The goal must be worth working towards.

Time-bound: It must be clearly defined by when the goal is to be achieved.

These goals provide clear direction and enable both the apprentice and the mentor to track progress over time.

Offering opportunities for growth is vital for the development of the apprentice. Encouraging them to work independently not only builds confidence but also helps them develop problem-solving skills and a sense of ownership over their work. Utilising digital tools and mentoring programmes can further enhance their learning experience and keep them engaged.

Finally, implementing a buddy system can be incredibly effective. Assigning an experienced apprentice or employee to guide the new apprentice fosters a sense of belonging and provides a reliable point of contact for questions and support. This mentorship relationship helps integrate the apprentice into the company and strengthens their connection with the team.

While fostering strong relationships with apprentices is beneficial, there are limits that must be respected. It is important to remember that apprentices are in the company primarily to learn and develop their professional skills. While building rapport is valuable, it should never come at the expense of the primary goal of education.

Additionally, it is essential not to force a close relationship if the apprentices are not open to it. Every individual is different: some thrive with frequent interaction and guidance, while others perform best with more independence and less oversight. It is crucial to give them enough space to develop at their own pace.

Respecting personal boundaries is especially important outside the workplace. Apprentices should have the freedom to manage their personal lives without feeling pressured or overburdened by excessive contact.

Spending time with apprentices to get to know them better, to understand their strengths and weaknesses, is valuable. However, this should be done in moderation. The more time spent on personal rapport, the less time both the trainer and the apprentice have for other important tasks, such as skill development or focusing on their core responsibilities. Striking the right balance is key to creating a productive and positive training environment.

When two people communicate with each other, conflicts can always arise. There can be several reasons for this, a small selection of which is described below:

Differences in values: different things are important to different people

Differences in performance: people learn at different speeds

Lack of information: missing information can lead to misinterpretation of the situation

Intolerance: some people are not always tolerant of others

Leadership mistakes: a lack of leadership or poor leadership can lead to dissatisfaction and problems

Ranking: there is usually a clear hierarchy, and when it is broken, problems can arise.

Resolving conflicts is not easy, especially if they have been going on for a long time, as it is then often no longer about the conflict, but more about defending one's own position. In order to resolve conflicts, it is important to find out what is causing the conflict and what the parties involved actually want. Only once the cause of the conflict has been clarified can work begin on resolving it. Conflicts are usually driven by needs that must be identified and then satisfied. By

working out the needs together, it is possible to fulfil them, and only when this is resolved is the conflict finally settled. It is problematic if only positions and interests are discussed, but the core of the discussion is never resolved, because then this conflict will arise again and again.

Conflict management can be handled in the following eight steps:

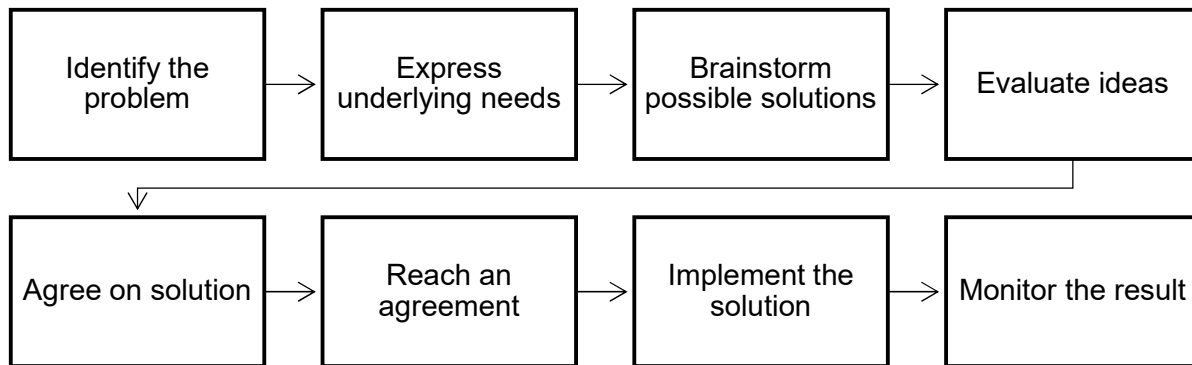


Figure 15 Possible approach to resolving conflicts.

- Identify the problem
Description of the conflict using 'I' messages
- Express underlying needs and reframe problems as desires
The objective is formulated; it should be clear that a joint solution is being sought
- Brainstorm possible solutions
Collection of proposed solutions, without evaluating or critiquing each other's solutions
- Evaluate ideas
Solutions are critically examined for feasibility and reasonableness
- Agree on a solution
All participants agree on a solution
- Reach an agreement
Determine how the solution should be implemented, put everything in writing, define what happens if someone does not comply with the agreement
- Implement the solution
The measure is implemented, and it is determined who has which responsibilities
- Monitor the result
Verification of the result after a specified period of time (may need to be carried out by a neutral third party)

4.5 Effective training delivery methods

At the core of apprenticeship training lies the effective transfer of knowledge and skills. To ensure that apprentices learn efficiently and successfully, choosing the right training methods is crucial. This section outlines a variety of approaches that trainers can use to teach the necessary knowledge and practical abilities to their apprentices.

It covers general methods, such as didactic techniques, as well as innovative approaches, including digital tools that enhance learning.

Particular attention is given to teaching methods related to green practices and sustainability, helping apprentices acquire skills that are increasingly relevant in today's sustainability conscious work environments.

Additionally, the section highlights specialised methods and tools designed to support disadvantaged people, including individuals with disabilities, minority groups, and other learners who may require additional guidance, ensuring that all apprentices have equal opportunities to succeed.

General methods (Didactics)

New trainers are often faced with the responsibility of supporting young people in their development while also passing on knowledge and skills. This can be challenging, especially when there is little prior experience to draw on. To make the start easier, it is useful to build on some basic didactic principles and practical techniques. These offer orientation and confidence in the training process. In this chapter, key approaches will be introduced that help trainers convey information clearly, involve apprentices actively, and foster lasting competence. By combining pedagogical basics with practical methods, trainers gain tools to guide apprentices step by step and create a motivating learning environment.

In order to convey the learning material to the apprentices as clearly as possible, it is advisable to follow these principles:

First easy, then difficult.

First general, then specific.

First concrete, then abstract.

This makes it easier for apprentices to gain a good overview of new topics without feeling overwhelmed.

Time management

An important aspect of successful training is effective time management. It helps ensure that the available time is organised sensibly and used in a way that supports both learning and productive work. Striking the right balance between teaching and practical tasks is often a challenge, yet it is crucial for sustainable learning progress. Good time management not only creates structure but also reduces stress for both trainers and apprentices. There are several time management methods that can be applied to apprenticeships, which are described below.

Pareto principle

One useful method is the Pareto principle, also known as the 80:20 rule. It suggests that around 80% of results can be achieved in only 20% of the time invested. In the context of training, this means that a large part of the knowledge and skills is usually acquired relatively quickly, while mastering the remaining details and subtleties takes much longer - often 80% of the total time. This highlights why apprentices may gain a broad overview early on but then need considerable patience and support to internalise the finer points. Recognising this pattern helps trainers set realistic expectations and accompany the learning process more calmly and effectively.

ALPEN method

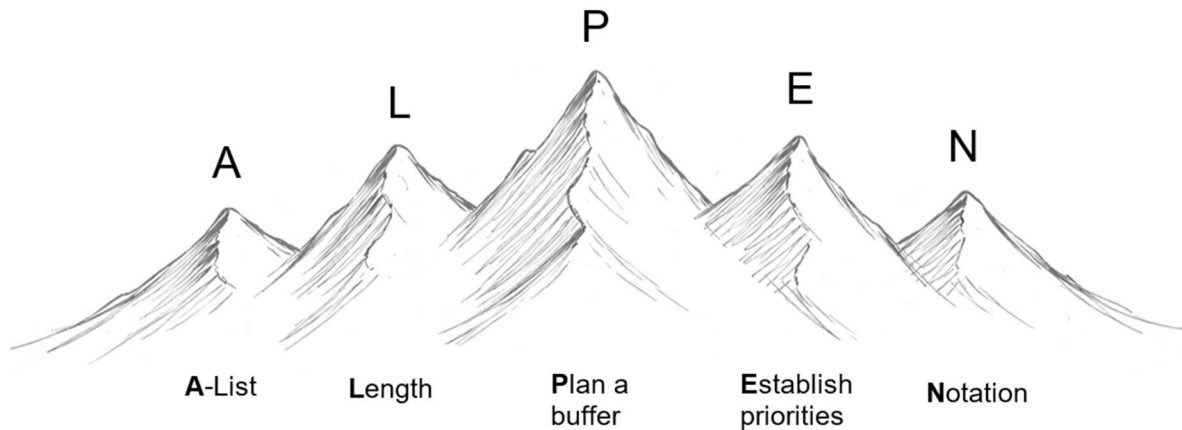


Figure 16 Visual representation of the ALPEN method.

The ALPEN method provides a practical approach to improving time management by structuring the day with clear priorities and realistic time allocation. The German acronym ALPEN (German word for Alps) stands for five steps that can be applied easily in everyday training situations:

A - Aufgaben (Tasks or A-List)

The first step is to list all tasks that need to be completed. This includes not only work and learning tasks, but also foreseeable time factors such as breaks, meetings, or likely interruptions. Writing everything down creates an overview and prevents important items from being overlooked.

L - Länge (Length)

Next, the required time for each task is estimated. These estimates do not have to be precise at the beginning, as accuracy improves with practice. Even rough estimates are valuable because they make the workload more transparent and allow for better planning.

P - Puffer (Buffer or Plan a buffer)

An important aspect of this method is to build in buffer times. 40% of the time should be kept free to deal with longer lasting and unexpected tasks such as phone calls or distractions. 40% sounds very high at first, but it is often necessary because people tend to massively underestimate the amount of work involved.

E - Entscheidungen (Decisions or Establish priorities)

After structuring tasks and estimating time, it is necessary to set priorities. Not all tasks are equally important or urgent. Tools such as the ABC analysis or the Eisenhower principle (explained later in this section) can support trainers in making clear and consistent decisions about what to tackle first.

N - Nachkontrolle (Follow-up check or Notation)

Finally, it is important to evaluate the plan afterwards: Which tasks were completed as intended? Where did delays occur? What worked well and what should be adjusted next time? This follow-up step closes the loop and gradually improves planning skills, leading to more effective and realistic time management.

ABC analysis

The ABC analysis is a practical tool for sorting tasks according to their priority. It is closely related to the Pareto principle and builds on the idea that a small number of tasks often account for a large share of the results. By dividing tasks into three categories, trainers and apprentices can focus their energy where it has the greatest impact.

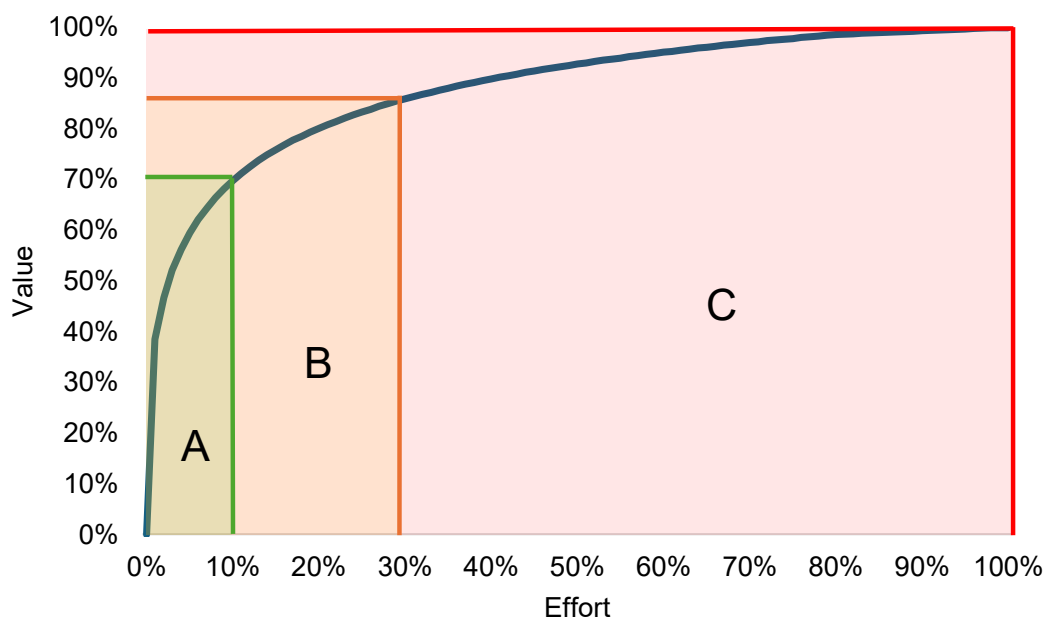


Figure 17 Representation of the three classes A, B, and C of the ABC analysis, based on value and effort.

Class A - High-priority tasks

Class A contains the most important tasks. Although they usually make up only about 5-15% of all tasks, their value share is disproportionately high, often between 60-80%. These tasks are both urgent and important and should therefore be tackled immediately or at least within the same day.

Class B - Medium-priority tasks

Class B tasks are of medium importance. They represent around 20-30% of all tasks and contribute about 10-25% of the total value. These tasks should be scheduled for the coming days and need to be completed before they become urgent enough to shift into Class A.

Class C - Low-priority tasks

Class C tasks make up the largest portion in terms of number - about 55-75% - but they only add about 10-15% of the value. These tasks should only be dealt with after Classes A and B are completed. In some cases, it is even advisable to delegate or eliminate them altogether, as they can otherwise consume valuable time without delivering meaningful results.

It is important to note that tasks are not fixed in one category. If left unfinished, they can move up in urgency and priority, shifting from Class C or B into Class A. Regularly reviewing and adjusting task categories ensures that priorities remain aligned with current needs.

Eisenhower Principle

The Eisenhower principle, named after the former U.S. president Dwight D. Eisenhower, is a method of prioritisation that helps to distinguish between urgency and importance. Similar to the ABC analysis, it provides a structured way of deciding how tasks should be handled, but it does so by dividing them into four quadrants:

- Do (urgent and important): Tasks in this quadrant are both urgent and of high importance. They should be given immediate attention and completed first, as postponing them can lead to serious consequences.

- **Decide / Schedule (important but not urgent):**
These tasks are of high importance but do not require immediate action. They should be planned and scheduled carefully, as this is where long-term goals and development usually take place.
- **Delegate (urgent but not important):** Tasks in this quadrant demand quick action but add little real value. Whenever possible, they should be delegated to others or postponed until the most critical tasks are complete.
- **Delete (neither important nor urgent):** These tasks consume time without offering significant benefits. They should be reduced as much as possible or eliminated altogether.

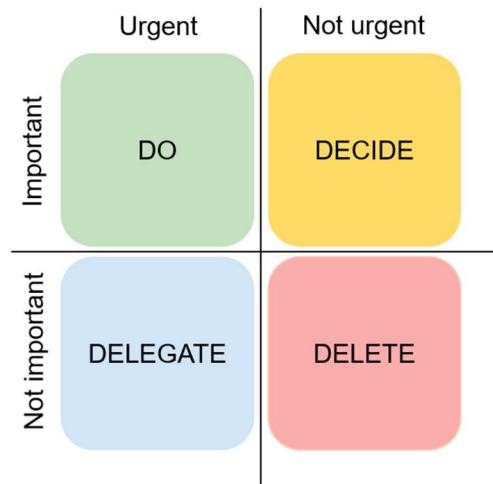


Figure 18 Eisenhower principle as a method of prioritisation.

By consistently applying this principle, trainers and apprentices can focus their energy on what truly matters, avoid being overwhelmed by minor distractions, and make conscious choices about how their time is spent.

Fundamentals of learning

Learning is often associated with boredom, effort, or frustration. A trainer's task is therefore not only to provide knowledge, but also to structure the learning material in a meaningful and engaging way, making it accessible and easier to understand. A helpful framework for understanding the learning process is Albert Bandura's model of the four stages of competence:

- **Unconscious incompetence:** At this stage, the learner is unaware of their lack of knowledge. They do not know what they do not know.
- **Conscious incompetence:** The learner has begun to acquire some superficial knowledge and realises how much they still need to learn. This phase can sometimes be discouraging, but it is also an essential step toward growth.
- **Conscious competence:** Here, the learner has acquired knowledge or skills and can apply them deliberately. Mistakes may still occur, but progress is clearly visible.
- **Unconscious competence:** In the final stage, knowledge and skills are so well integrated that they can be applied automatically, without active thought.

In practice, learners often move back and forth between the second and third stages when exploring new areas or when diving deeper into a familiar topic. Recognising this natural fluctuation can help trainers encourage persistence and reassure apprentices that setbacks are part of the learning journey.

Method for training new skills

When apprentices are introduced to tasks they have never performed before, the following approach can be used to make the initial learning process as simple and understandable as possible.

1. Explaining the task

In this step, the task is explained and prepared. Start by gathering all the necessary materials together with the apprentice. Then explain all the important safety instructions and steps that are necessary. An important aspect that should not be forgotten is to explain why the task is important and what benefits it brings. Before moving on to the next step, give the apprentice the opportunity to ask questions and ask them to repeat the task in their own words.

2. Demonstrate

Once everything has been prepared and explained, the entire process should be demonstrated by the trainer as a role model. It is important that the apprentice sees how the process works. To do this, the trainer should go through the entire process once, then show each step again in more detail with detailed explanations. Afterwards, the trainer can repeat the entire process once again before giving the apprentice another opportunity to ask questions.

3. Imitation by the apprentice

In most cases, it is not enough to simply demonstrate something; usually, people have to try something themselves in order to learn it. Therefore, the next step is for the apprentice to try the process themselves. The trainer can start by asking the apprentice to explain the process and asking them questions about it. Then the apprentice is supposed to try it themselves; the trainer should only intervene if absolutely necessary. Once the apprentice has completed the task, they should receive feedback from the trainer on what went well and what could be improved. Depending on how well the first attempt went (and how difficult the task is), the apprentice should repeat the task until it is performed satisfactorily.

4. Independent practice

The last step is for the apprentice to practise independently. In this step, the apprentice is given the opportunity to practise the task on their own and without supervision until they have mastered it. The trainer no longer needs to supervise the process but should remain within reach so that the apprentice can ask for help if necessary.

Assigning work tasks/assignments

Communication is the most essential skill when working with apprentices. Effective instruction requires attention to several key points, which help ensure that tasks are understood, accepted, and successfully completed. The following guidelines provide a structured approach for assigning work tasks, and with minor adjustments, it can also be applied to the transfer of knowledge.

Step 1 - Why:

The first step focuses on explaining the purpose behind the task. Clarifying why the task is important helps apprentices understand its relevance and motivates engagement. Without a clear sense of purpose, resistance or lack of commitment can occur.

Step 2 - What:

Once the purpose is clear, the specifics of the task should be defined. Here the goal is specified and all the necessary resources (data, charts, analyses) needed to reach the goal are presented. A clear definition of the 'what' ensures that expectations are understood.

Step 3 - How:

In the next step, the apprentice is shown how to reach the goal. This includes instructions on how to start, the sequence of steps required, and the tools or resources needed to complete the task successfully. Clear guidance at this stage supports independent and confident execution.

Step 4 - What if:

Lastly, potential complications and alternative approaches are considered. This step prepares apprentices to handle unexpected situations or obstacles, helping them adapt while still achieving the desired outcome.

Learning styles

All individuals are unique and different, which is also reflected in their preferred ways of learning. Depending on the learning style, people grasp new information more effectively when they see it, hear it, or experience it directly. The following provides an overview of common learning styles and their characteristics:

Visual: Individuals with a visual learning style remember information more easily when it is presented in a visual form. They often learn by reading and highlighting text, examining pictures, diagrams, or charts, and taking notes. Visual aids help them to imagine and retain concepts more effectively. In some cases, the ‘reading/writing’ learning type is considered separately, in which learners benefit most from reading and writing tasks.

Auditory: Auditory learners acquire knowledge best through listening. They pay close attention when someone explains a topic, learn from recordings or podcasts, or read material aloud to themselves. Listening actively enhances understanding and memory for this type of learner.

Kinesthetic: Kinesthetic learners prefer to learn through hands-on experience and physical engagement. They benefit from touching objects, performing tasks, or moving while learning. Practical exercises and direct involvement are key for reinforcing concepts.

Other learning types include logical/analytical, social/linguistic, solitary, nature-based, and more, reflecting the diversity of approaches to learning.

This variety demonstrates the challenge trainers face in selecting methods that best support each apprentice. Online assessments are widely available to help identify an individual’s predominant learning style, usually focusing on visual, auditory, and kinesthetic tendencies. Knowing an apprentice’s preferred learning style allows training to be tailored effectively: tasks, instructions, and learning materials can be adapted to match the way the apprentice absorbs and processes information, thereby enhancing engagement and skill acquisition.

Learning methods

As already described, individuals differ greatly in how they learn. Various methods can be employed to teach apprentices new content or enable independent learning. The choice and combination of methods depend on the subject matter and the apprentice's preferred learning style.

Individual Work

In individual work, apprentices receive a task to complete independently. This approach allows them to progress at their own pace and provides an opportunity for close observation of their working methods and problem-solving strategies. Trainers can identify strengths, areas for improvement, and patterns in the apprentice's approach to tasks.

Group Work

Group work focuses on collaboration rather than individual performance. It allows apprentices to learn how to interact with others and develop team skills, which are essential in most professions. Careful planning of tasks and group composition ensures that everyone can participate effectively, especially young and less experienced apprentices. Clear goals and defined time limits are essential to guide the group and achieve successful outcomes.

Problem Solving

Problem-solving exercises present apprentices with a challenge for which the goal is defined, but the path to achievement must be discovered independently. These exercises can be undertaken individually or in groups, fostering creativity, analytical thinking, and initiative.

Role Play

Role play enables apprentices to assume a specific role - such as customer, salesperson, or colleague - and practice managing realistic situations without fear of failure. This method can be adapted in several ways: colleagues can take on the various roles and practice with the apprentice. Alternatively, the apprentice can take on the role themselves in order to view the situation from an unfamiliar perspective. Scenarios like sales conversations or conflict resolution are particularly effective in this format.

Discussion

Discussions in a learning context are conversations between two people or in groups with a clear goal that the participants should work towards. The discussion can be conducted purely by apprentices or with colleagues or trainers. It provides apprentices with the opportunity to express

opinions, consider alternative viewpoints, and practice communication skills. Discussions require a clear framework and active supervision to prevent deviation from the topic. Objectives should be defined beforehand. When guided appropriately, discussions support both teamwork and the development of critical thinking.

Instructions

Following instructions is a fundamental skill in many professions. One method to practice this involves providing apprentices with a task list with detailed explanations. The apprentice is expected to achieve the goal based on the instructions alone, fostering independence and self-reliance. Even when the aim is for the apprentice to follow instructions independently and without further assistance, the trainer or other suitable personnel should be available at all times to intervene if necessary.

Good practice:

CIFP Pico Frontes (Integrated Vocational Training Centre) has introduced an initiative designed to facilitate learning for people with learning difficulties and thus reduce the dropout rate. To this end, several methods have been integrated into vocational training, such as challenge-based learning, diverse learning teams, dialogue circles, personalised assessment tools, and training for trainers. Since the introduction of these methods, progress has already been noted, such as a 17.4% reduction in the dropout rate and a 21.3% increase in overall performance.

https://habitable-cove.eu/resource/res_18/

Digital methods

Digitalisation is an essential component in modernising apprenticeship training in order to prepare apprentices for the future in the best possible way. In recent years and decades, the world of work has changed dramatically as a result of digitalisation. In Germany, it is estimated that two-thirds of students currently in primary school will have jobs in the future that do not yet exist in their current form (Mahrin & Krümmel, 2022). This prediction shows why it is important to continuously adapt training to the new requirements arising from technological developments.

The following outlines various methods, best practices, and tools that can be adopted to optimise vocational training. These digital solutions should not be viewed as replacements for traditional teaching but rather as valuable supplements - tools that can enhance the learning experience, deepen skill development, and spark greater motivation among apprentices.

Digital training folder:

A fundamental aspect of vocational training is ensuring that apprentices have easy access to their training materials. Traditionally, this has been achieved through physical training folders, where all relevant documents are neatly organised. Using training folders not only helps apprentices learn to work in a structured and efficient way but also serves as a useful tool for assessing their engagement and progress. Alongside the traditional paper-based folder, there is the opportunity to implement a digital version. The digital training folder provides a central, shared database to which both trainers and apprentices have access.

Even though shifting from analogue to digital training materials can present challenges, such as technical hurdles and the need for new training methodologies, the benefits far outweigh the initial difficulties. Once the transition is made, apprentices gain the ability to access their materials at any time and from any location, ensuring greater flexibility in their learning process. In addition, digital training materials can be easily updated and modified, ensuring that content remains current and relevant. Perhaps more importantly, the digital format also opens up new possibilities for apprentices to become directly involved in the creation and revision of training materials, contributing to the development of a collaborative, dynamic learning environment (see practical example from Nenzing).

Good practice:

Hydro Extrusion Nenzing has successfully implemented a digital training folder within their organisation. After a comprehensive testing phase with a knowledge management software, the company integrated the digital folder into its training programme. What sets this approach apart is that apprentices themselves are responsible for developing and updating the documents. In essence, the apprentices ‘teach’ each other by organising and preparing the knowledge for their peers. This process not only enhances their learning experience but also fosters important digital skills and encourages a more organised approach to work. Additionally, by actively engaging in the creation and continuous revision of training materials, apprentices ensure that the content stays fresh, relevant, and aligned with current trends and industry needs.

<https://ausbilder.at/good-practice/hydro-extrusion-nenzing-gmbh>

Learning platforms

As described in 2.5, learning platforms are digital environments that provide and organise learning content and processes for users. They offer a variety of functions such as providing courses, facilitating communication between teachers and learners, tracking learning progress, and enabling the evaluation of learning content.

Learning platforms provide trainers and apprentices with the opportunity to access and utilise existing learning materials. These resources can complement traditional teaching methods, helping to clarify complex topics or assist with exam preparation.

Tool:

Edutheek is a service provided by the Austrian Federal Ministry of Education, offering online learning materials across a wide range of topics. These resources are freely available and are continuously updated and expanded. By providing access to high-quality educational content, Edutheek serves as a valuable tool for both apprentices and instructors alike.

<https://www.bildung.gv.at/filter/eduthek/>

Tool:

Azubinet is a specialised learning platform designed to support apprentices in preparing for exams, particularly final assessments. The platform offers a wide range of resources, including explanatory videos, mock exams, and flashcards. With over 10,000 apprentices already using Azubinet, it has proven to be a valuable asset for exam preparation and academic success.

<https://www.azubinet.de/>

In addition to using these pre-existing learning contents, it is also possible to create custom courses and learning materials. While creating courses can be time-consuming and requires considerable effort, the potential benefits make it worthwhile. One of the key challenges in designing online courses is ensuring that participants remain engaged until the end. Many online courses suffer from a high dropout rate, which means the course design must be carefully crafted to prevent this.

Once a course is developed, it can be updated and improved with minimal effort. Learning materials are available 24/7, allowing apprentices to access them anytime and from anywhere. This flexibility is especially beneficial for apprentices who need more time to review learning materials, and it can significantly support learners who face additional challenges. For instance, those with learning difficulties or disadvantaged backgrounds can particularly benefit from the ability to adjust the pace of their learning.

The learning progress can also be tracked through quizzes or surveys, which motivate apprentices to stay focused and engaged. For trainer, this provides a good overview of each apprentice's current standing, both in terms of practical knowledge and overall understanding. This data can be invaluable in identifying areas where additional support may be needed.

Artificial Intelligence (AI)

A current development with immense potential for vocational training is the use of Artificial Intelligence (AI). AI opens the door to countless possibilities, but it also comes with its own set of risks and challenges.

AI offers a wide range of applications in the educational context. These include creating learning materials as well as personalised learning experiences, identifying the strengths and weaknesses of apprentices, measuring attention and emotional states, and much more.

One of the key areas where AI can be utilised is in the enhancement of learning materials. AI can be used to generate images that visually explain complex processes, improve the design and clarity of training materials, and even provide a rough structure for creating content - saving significant amounts of time. AI can also be used to spot errors in learning content. However, it is important to remember that the material generated by AI needs to be carefully reviewed for quality and correctness. It must always be assumed that AI-generated material is or may be inaccurate. Despite this, when coupled with thorough checking and editing, AI can significantly boost efficiency and improve the overall quality of educational resources.

Another innovative feature AI offers is adaptive learning. Adaptive learning software tailors the learning process to the individual learner's needs, adjusting its approach based on the actions and responses of the apprentice. This can be particularly helpful for disadvantaged learners, as the system can adapt to their pace and provide them with support where needed. On the other hand, the system can also adjust for faster learners, providing them with challenges that match

their speed and abilities without overwhelming them. These adaptive learning systems also offer trainers real-time dashboards that present the apprentices' performance, providing valuable insights into where each individual stands in terms of both understanding and progress.

Tool:

MATHia is a software designed for teaching mathematics. It provides a 1-to-1 coaching experience that adapts to the student's abilities while simultaneously giving instructors real-time feedback on student performance. The platform delivers students just-in-time feedback tailored to the learner's skill level, ensuring that they are always challenged but never overwhelmed.

<https://www.carnegielearning.com/solutions/math/mathia/>

Tool:

MathSpring is an online math tutoring programme that adapts its resources to meet the learner's capabilities and objectives. Instructors also benefit from a dashboard that offers real-time performance analytics, including emotional assessments of the learners. This allows instructors to respond effectively and adjust their approach as needed. Additionally, students can access the programme from home, making it a flexible tool for continuous learning.

<https://ckc.mathspring.org/welcome.jsp?#home>

However, the use of AI also comes with several potential drawbacks. One of the major concerns is that some AI programmes can be quite costly, requiring significant investments of money and time that may pose a barrier for certain institutions or businesses. Additionally, a growing issue, particularly as digitalisation and AI become more widespread, is data privacy. The collection and storage of data must be done securely to ensure the privacy of apprentices is fully protected. It is crucial that sensitive information is not entered into programmes unless there is absolute certainty that these platforms offer a secure environment.

As mentioned above, AI-generated analyses and learning content can sometimes be inaccurate or flawed. This underscores the importance of rigorous verification - it is essential to cross-check everything and not rely solely on AI's conclusions, especially when it comes to analysing student performance. At the same time, it is important to recognise that if AI is used without adequate

preparation and oversight, there is a risk that it may actually hinder students' learning progress instead of supporting it (Bastani et al., 2024).

In essence, while AI offers tremendous potential, its application in education must be approached with caution, always ensuring it is used in conjunction with human oversight to avoid any detrimental effects on the learning process.

Chatbots & social robots

Chatbots are virtual assistants powered by artificial intelligence that interact with users and simulate human-like conversations.

Thanks to advancements in AI, certain chatbots can recognise user emotions, convert spoken language into written text through speech recognition, and respond using complex dialogue models tailored to the user's input (Bartneck et al., 2020).

These virtual assistants are incredibly versatile and, as previously mentioned in section 4.2, can be used in a variety of educational and organisational contexts. In particular, chatbots are well suited for knowledge transfer. They are available 24/7, never tire, and can deliver personalised, context-aware responses based on individual users' needs and progress. This makes them especially valuable in learning environments where consistent support and immediate feedback are necessary.

One particularly important advantage of chatbots in education is their non-judgmental nature (Bhakta et al., 2014). Learners often feel more comfortable addressing their uncertainties or asking 'simple' questions to a chatbot rather than to a human instructor. This creates a low-pressure environment that encourages participation and curiosity - especially for students who may otherwise hesitate to speak up due to fear of embarrassment or negative evaluation.

Despite their benefits, introducing chatbots into training programmes comes with certain challenges. The initial setup and integration can require substantial effort and cost. Moreover, while chatbots can mimic human dialogue convincingly, they may lack the emotional sensitivity and nuance needed to appropriately address sensitive or complex topics. This can limit their usefulness in situations that require empathy or deeper emotional intelligence.

However, when implemented thoughtfully, chatbots can become powerful tools for reinforcing and expanding students' knowledge. Interacting with a chatbot can help learners clarify their understanding, as the bot can prompt follow-up questions that encourage critical thinking and deeper engagement with the subject matter. Some systems even go a step further by incorporating emotive feedback: the chatbot might smile when giving positive reinforcement or show a disappointed expression when the learner struggles - helping to create a more engaging and human-like interaction (D'Mello & Graesser, 2012). These subtle cues can have a surprising impact on student motivation and emotional connection to the learning process.

Social Robots represent a further evolution in AI-supported education. Unlike chatbots, which are software-based, social robots are autonomous physical robots designed to communicate and interact with humans while displaying social behaviours that align with their assigned roles. These robots can follow social norms, express emotions, and respond to both verbal and non-verbal cues - making them particularly engaging and effective in educational settings.

Just like chatbots, social robots can be highly effective in language learning. They offer a unique opportunity for students to practice speaking, listening, and even grammar in an interactive and engaging way. When it comes to language acquisition, social robots have shown particularly promising results in improving reading comprehension and grammar skills. Beyond their impact on learning, these robots also significantly boost student motivation. Their physical presence, responsive expressions, and playful character often lead to increased enthusiasm and willingness to engage with the material (Alemi et al., 2014; van den Berghe et al., 2018).

One particularly notable application is the ability for teachers to remotely interact with students via a social robot. For example, a trainer working from home or traveling can control the robot in the classroom, speaking to students, guiding activities, and maintaining a presence without physically being there.

Social robots also offer significant value for learners who are unable to attend school in person - for instance, due to long-term illness. With the help of a robot, these students can continue to participate actively in lessons and remain socially connected with their classmates.

Another innovative use case is the inclusion of external experts or native speakers in lessons: professionals located far away can 'join' the classroom via the robot, creating a live, interactive experience for the learners without the need for travel (OECD, 2021).

An additional engaging approach is to design learning activities in such a way that students feel as though they are teaching the robot. This reversal of roles can increase time spent on task, as

learners become more invested in the process, striving to ‘train’ their robotic companion correctly. This method taps into a psychological effect where teaching others reinforces one’s own understanding and retention (Chase et al., 2009).

Gamification

Keeping apprentices motivated over time is one of the biggest challenges of training. One strategy to increase and sustain motivation is through gamification, which is the integration of game-like elements into traditional learning environments. Examples of these elements include points, badges, challenges, levels, or leaderboards. Gamification transforms learning into a more engaging and rewarding experience by giving students clear goals to work toward and immediate feedback for their achievements. It taps into learners' natural drive for competition and thus makes routine tasks feel more meaningful and enjoyable.

Practical example:

Classcraft is an engagement management system available online and as an app. It was developed to use gaming principles for addressing student motivation. The goal is to increase student motivation by connecting the real world with virtual learning. There are various roles that students can choose from, such as mages, warriors, and healers.

Depending on the behaviour in class, their virtual character gains Experience Points (XP) or loses Health Points (HP). Earning XP allows students to level up their characters and learn new skills. By dividing students into teams, they are further motivated to work hard for their team and support one another. (Sanchez et al., 2016)

<https://gamifylist.com/app/classcraft>

Another approach to gamification is designing educational games built with the primary purpose of teaching specific knowledge or skills. When well-executed, these games can significantly boost understanding and retention by embedding learning objectives within compelling gameplay. However, striking the right balance between an engaging game experience and effective content delivery can be challenging. If the gameplay is weak, students may lose interest quickly. On the other hand, if the learning component is too heavy-handed or disconnected from the gameplay, the educational goals may not be met.

Designing either gamified systems or educational games - especially when custom-built - involves a considerable time and resource investment. Moreover, poorly planned, or repetitive game mechanics can result in motivation fading after an initial spike of interest. For gamification and educational games to be effective long-term, the experience must be well-structured, consistently updated, and meaningfully connected to the learning process.

That said, when implemented thoughtfully, gamified learning has the potential to develop a wide range of valuable skills, including visual-spatial abilities, attention control, creativity, persistence, and problem-solving (OECD, 2021).

Extended Reality

XR (Extended Reality) is an umbrella term that covers all immersive technologies, including Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). In short, XR refers to any technology that blends the physical and digital worlds to create interactive, computer-generated experiences.

Virtual Reality (VR) is a fully immersive digital environment that replaces the real world, allowing users to experience and interact with a computer-generated setting using special headsets and controllers.

In contrast, Augmented Reality (AR) enhances the real world by overlaying digital elements - such as images, information, or animations - onto the user's physical surroundings, typically through smartphones, tablets, or AR glasses.

Mixed Reality (MR) is a form of Extended Reality where digital and physical elements not only appear together but can also interact with each other in real time. Unlike Augmented Reality, which merely overlays digital content onto the physical world, MR enables virtual objects (such as a 3D model) to be anchored in physical space, allowing users to move around them, manipulate them, and observe dynamic interactions as if the objects were truly present.

VR and AR are already well established in the entertainment sector and have also found their way into certain areas of industry, such as product design, production, and maintenance. However, their use in the field of education is still relatively limited. Despite this, both VR and AR offer tremendous potential for transforming learning experiences. By creating immersive, interactive, and highly engaging environments, these technologies can bring abstract concepts to

life, support hands-on learning, and make complex topics more accessible and memorable for students.

One of the key advantages of Virtual Reality (VR) in vocational training is its ability to immerse learners in realistic scenarios that would otherwise be inaccessible due to safety concerns or high operational costs. Apprentices can experience high-risk situations - such as major emergencies or rare events - in a fully controlled environment, allowing them to practice procedures, make decisions, and learn from mistakes without endangering real lives. This safe space for experimentation is particularly valuable in emergency services training, where hands-on experience is crucial but often difficult to provide in real-world settings. VR also enables repetition: critical skills can be rehearsed as often as needed until they become second nature. Situations that may only rarely occur in practice - yet demand a rapid and competent response - can be trained extensively, helping learners build both confidence and competence.

Good practice:

Mimbus, a French company specializing in improving the quality and safety of vocational training, has developed a machine for training on equipment used in the woodworking and furniture industries. On this machine, users can safely practice working on four woodworking machines: table saw, band saw, jointer, and router. The company also offers solutions for other sectors, such as the automotive and food industries.

<https://mimbus.com/en/produit/wood-ed-table-eng/>

Good practice:

EPICSAVE is a project focused on developing a virtual environment where apprentice paramedics can experience and practice emergency scenarios. Using VR headsets, students immerse themselves in realistic situations, gaining hands-on experience in managing emergencies without putting real lives at risk. A key element of the training is teamwork, as multiple apprentices collaborate simultaneously within the virtual setting.

https://www.esf.de/SharedDocs/Meldungen_NL/Newsletter/2019/nl_epicsave.html

Augmented Reality (AR), in contrast, integrates digital information into the physical world, allowing learners to interact with real tools and environments while simultaneously receiving

support from technology. This blend of physical and virtual learning creates powerful opportunities for hands-on, contextualised training.

Research has shown that XR-based training is as effective as traditional instruction in non-simulated, controlled environments (Kaplan et al., 2021). However, XR technologies often go one step further: they can significantly boost learner motivation and engagement through their interactive and immersive nature. Especially with VR, the pace of learning can be adapted to each individual's abilities, offering personalised and scalable training solutions.

Moreover, XR opens up access to processes that would otherwise remain hidden - for instance, technical operations conducted behind protective coverings or in restricted-access areas. Through VR or AR, learners can explore these processes in detail, deepening their understanding in ways that traditional instruction cannot replicate.

Good practice:

As part of the Social Virtual Learning 2020 (SVL 2020) project, an app was developed that allows users to create their own modules, which can then be used with AR/VR technologies. For example, the operation of a printing press was presented in such a way that students could experience the various components and processes using VR glasses, which would not normally be possible due to the protective cover.

<https://www.social-augmented-learning.de/projektinformationen/#SVL2020>

<https://www.social-augmented-learning.de/demo-version-2021-von-svl-veroeffentlicht/>

However, these technologies come with certain challenges, such as high initial investment costs for equipment and software. These costs may be offset by the reduction of long-term training expenses - for example, those related to travel or the purchase of physical equipment. Over time, the investment can even be more cost-effective if it repeatedly saves on said costs. Moreover, the use of VR/AR tools can reduce instructors' workload and increase learning efficiency, ultimately lowering costs associated with time and personnel (Cedefop & OECD, 2024).

Another potential drawback is the time required to configure or programme learning scenarios, especially when pre-existing solutions are unavailable or insufficient. However, the effort may pay off over time, as processes can be repeated over and over again and the system can be scaled further.

Additional hurdles may include a lack of digital skills among instructors, as well as current technical limitations - though these are expected to diminish as technology evolves. Furthermore, some apprentices might initially struggle with adapting to virtual environments, experiencing motion sickness or, in cases of prolonged or repeated use, eye strain.

Practical example:

The TimberPlan xR app from woodtec Frankhauser allows digital production plans to be integrated into the environment in true size. Carpenters can use the Hololens 2 (AR glasses) to scan components, display their desired position, view parts located under panels, and display a 3D model for better understanding. This saves time, ensures quality by minimising sources of error, and simplifies the manufacturing process.

<https://www.woodtec.ch/holzrahmenbau/ar/>

Simulations

Computer simulations are digital models that replicate real-world systems, processes, or environments which allow users to explore and interact with them virtually.

Unlike traditional theoretical instruction, simulations offer an interactive, hands-on experience, allowing students to apply knowledge, make decisions, and immediately see the consequences of their actions. This promotes a deeper understanding of complex procedures and strengthens analytical, problem-solving, and decision-making skills.

Simulations are especially valuable with training tasks that would otherwise be difficult to practice - often because they would be too dangerous, too expensive, or too complex in real-life scenarios. One key application is helping learners understand how multiple factors interact within complex systems. Simulations allow for risk-free experimentation, enabling users to explore various outcomes without interfering with actual production or operations.

As with many other digital learning tools mentioned earlier, the initial setup of a simulation can be resource-intensive, requiring time and planning. However, once the system is in place, it becomes easily adaptable and scalable, and depending on its quality and design can have a highly positive impact on learning outcomes. Moreover, simulations allow multiple learners to perform the same procedures simultaneously, making them both time- and resource-efficient for group training or classroom settings. In addition, simulations can enhance student motivation by

incorporating elements of competition. Turning tasks within a simulation into a competitive challenge encourages students to strive for improvements by setting goals and monitoring their performance. The sense of achievement from progress or outperforming peers provides immediate feedback, reinforcing engagement and persistence.

Simulations are not only useful for apprenticeship training; if they are well designed, they can also be used to improve existing production processes. Consequently, the increased effort involved in creating such simulations is insignificant when compared to the potential benefits.

Tool:

LUCA Office Simulation is a free, web-based learning platform that allows learners to practice realistic business tasks in a digital office environment. Students complete authentic assignments like emails, spreadsheets, or ERP processes. Teachers can create their own scenarios, track progress in real time, and offer targeted support. Automated feedback and assessment tools make it easy to manage learning, even in self-study settings. LUCA supports both classroom and remote learning, promoting practical, competency-based education. (Cedefop & OECD, 2024)

<https://luca-office.de/>

Video annotation & Hypervideo

Video annotation in education refers to the practice of adding comments, explanations, or tags to specific moments within a video to enhance understanding and engagement of the students. This interactive method allows learners to pause, reflect, and respond directly within the video content, which encourages deeper comprehension of key concepts.

Apprentices can engage with annotated videos individually - making personal notes and observations - or collaboratively, by working together on shared videos and leaving annotations for their colleagues to discuss. Some platforms even allow the export of these annotations as PDF documents, which can be used for later review or documentation purposes.

Video annotation tools can also serve as a powerful feedback mechanism. For example, learners can make comments on one side of the video timeline, while instructors provide guidance, corrections, or suggestions on the other - creating a dialogic learning environment directly within the media itself.

In addition, integrated features like multiple-choice questions or interactive prompts can be used to assess learners' understanding of the video content, turning passive watching into an active and measurable learning experience.

Hypervideos are interactive, non-linear videos that allow learners to engage with multimedia content in a dynamic and personalised way. Unlike traditional videos, hypervideos integrate clickable elements - such as markers or embedded links - that provide direct access to supplementary resources like documents, images, audio files, quizzes, or external websites. They often include enhanced navigation tools such as a table of contents or index, making it easier for users to jump to specific sections and explore content at their own pace.

In vocational education and training, hypervideos offer valuable opportunities to support hands-on learning and bridge the gap between theory and practice. Apprentices, for example, can watch a video of a practical procedure - such as operating machinery, performing a medical task, or assembling a product - while simultaneously accessing technical manuals, safety guidelines, or step-by-step instructions through embedded links. This allows for a deeper understanding of complex processes and supports different learning styles.

Tool:

iVideo.education enables teachers and trainers - regardless of their technical expertise - to easily customise and structure educational content using existing video material. They can enrich videos by linking them to a wide range of additional resources, such as text documents, images, or audio files. The platform also allows individual learners or groups to add notes and annotations directly within the video, fostering interactive and collaborative learning.

<https://ivideo.education/ivideo/login.jsp>

Other possibilities

The internet offers a wide range of opportunities for modern learning. One valuable option is the ability to book tutors who are experts in their field and provide online instruction, either one-on-one or in group settings. This is especially useful for language learning, as it allows apprentices to improve their language skills through direct interaction with native speakers, leading to a more authentic understanding of the language and its usage.

Tool:

Guru is an online platform that enables to find and hire freelancers in numerous areas, including education. These tutors can be booked to deliver subject-specific lessons and support tailored to the learners' needs. The platform is free to use, making it an accessible resource for enhancing educational experiences across various fields.

<https://www.guru.com/m/hire/freelancers/tutors/>

Parents play an important role in the education of minors. To ensure that they can provide the best possible support to their children, they should always be kept informed about their child's progress and how they are doing in their apprenticeship. Digital technologies make it possible for parents to be kept informed on an ongoing basis with minimal effort. Automatically generated text messages regarding absences, uncompleted assignments, or grades can reduce absences and increase the success rate of education (Bergman & Chan, 2017).

In addition, an intelligent tutoring system can be used to show parents what their children are currently learning, giving them a better understanding of what the training involves and bringing them closer to the complete process (Broderick et al., 2011).

Green methods

Making training greener can be challenging. It is often unclear what is meant by making teaching more sustainable. To make training more sustainable, it is helpful to consider the green competencies already outlined in section 2.3. Based on this, three aspects can be identified: the transfer of technical knowledge, technical skills, and soft skills.

In order to pass on sustainability-related expertise to apprentices, trainers themselves must be sufficiently qualified. If trainers lack knowledge in this field, they can be upskilled through targeted workshops, training programmes, and continuous education. This not only improves the quality of apprenticeship training but also enables trainers to apply the acquired knowledge in their own daily work.

Practical example:

The National Network of Nearly Zero Energy Building and Retrofit Centres of Excellence in Ireland has a coordinated approach to support climate actions by offering certified courses to workers, apprentices, and unemployed people. The courses are short, flexible, and fully funded, they consist of a mixture of online and in-person learning. The training includes building specific topics like bricklaying, carpentry and electrical. In these courses, workers learn about the latest green technologies in sustainable building.

<https://www.thisisfet.ie/nzeb/>

<https://www.fetchcourses.ie/course/finder?sfcw-courseId=483644>

Technical knowledge is the cornerstone; without a certain level of basic knowledge, it is usually much more difficult to learn and carry out work processes correctly.

Technical skills enable apprentices to put the knowledge they have learnt into practice. Particularly in practice-oriented professions, it is essential that apprentices not only have the basic knowledge, but also know how to apply it.

Alongside technical expertise, it is essential to equip apprentices with competencies that enable them to make better use of this knowledge and skills (soft skills). A possible list of such competencies includes:

- Environmental awareness
- Openness to the world & empathy
- Communication skills
- Foresight and anticipatory action
 - Systems and networks thinking
 - Ability to recognise risks and uncertainties
- Critical thinking

- Strategic thinking and problem-solving
 - Competence in system and risk analysis
- Collaborative planning and action
 - Teamwork
- Independent planning and action
 - Decision-making skills
- Adaptability
- Motivating oneself and others
- Capacity for reflection

A more detailed list of green skills is available in document '2.3 Identifying skills needs – Green competencies'.

To help apprentices acquire these competencies, several training methods can be applied:

Problem-based learning (PBL)

Apprentices are presented with authentic sustainability challenges (e.g., reducing energy use in the workshop, designing waste reduction strategies) and work on solutions independently or in teams.

Project work

Longer-term projects allow apprentices to develop solutions that combine technical knowledge with technical and soft skills. For example: creating a sustainability concept for a product, a 'green office' plan, or an energy-saving campaign.

Role-play & perspective-taking

By stepping into different roles (e.g., company management, customers, environmental activists), apprentices practice empathy, negotiation, and communication.

Reflection routines

Structured reflection sessions (learning journals, group discussions, guided self-reflection) help apprentices connect experiences with personal learning and future behaviour.

Inclusive methods

According to the OECD in 2000, between 15 and 20% of students will have special needs at some point during their school career (OECD, 2000). While the numbers for physical disabilities declined slightly since then, the number of developmental disorders increased in the US (Houtrow et al., 2014; Zabłowski et al., 2019). This suggests that the proportion today is likely even higher than it was in 2000.

To ensure that disadvantaged individuals are offered equal learning opportunities, it is essential to develop tailored strategies and make use of supportive technologies. This requires approaches that consider their specific needs and remove barriers to participation. The following section outlines a selection of potential tools and methods that can be applied to make learning more accessible, inclusive, and effective for these individuals. These tools are not always designed for apprenticeships, but they can either be used for this purpose or serve as inspiration for applying similar methods.

The most important factor in training disadvantaged apprentices successfully is that the trainer is well prepared for the task. Depending on the type of disability, social background, or other challenges, different methods may be more appropriate, and specific obstacles may arise that need to be addressed. For this reason, it is particularly important that trainers receive proper preparation and, where necessary, pursue further training to acquire the knowledge and skills required for inclusive education.

To ensure inclusion, the trainer must be able to adapt to the needs of each apprentice. While this principle applies to all apprentices, it is particularly important when working with those who are disadvantaged. One aspect of this is the ability to adjust teaching styles to match individual learning preferences. Some apprentices may learn best through hands-on activities, while others might require more visual or auditory input. In addition, adapting the pace of instruction is key: certain learners may need more time to fully grasp complex concepts, while others may benefit from moving more quickly to stay engaged.

Providing additional tutoring or organising remedial lessons can be an effective support mechanism, ensuring that apprentices who are struggling do not fall behind. In many cases, simplifying explanations or breaking down complex processes into smaller, more manageable steps helps to reduce cognitive barriers. At the same time, offering differentiated levels of

difficulty by assigning either simpler or more advanced tasks can motivate apprentices at varying ability levels and prevent frustration.

Variety in learning methods also plays a significant role. The training becomes more engaging and inclusive by combining different approaches such as group discussions, individual exercises, digital tools, and practical applications. For some apprentices, an emphasis on practical, hands-on tasks will be most effective, while others benefit more from theoretical exercises and reflective work. Complex projects can often be made more accessible by dividing them into smaller sub-tasks, which makes the workload easier to manage and allows apprentices to experience small, motivating successes along the way.

For apprentices who face language barriers, it is highly recommended to organise language courses. These not only facilitate integration into the company but also strengthen communication and cooperation between the trainer, the apprentice, and the rest of the team. Stronger language skills improve both professional development and social inclusion, thereby creating a more supportive and productive learning environment.

Having established the importance of trainer preparation and flexible teaching, the next step is to explore an excerpt of specific tools and technologies that can help make learning more accessible and effective.

Many technologies already mentioned in the context of digitalisation can also be used to promote inclusion. For example, AR can be a suitable tool for teaching skills to people with disabilities (such as intellectual disability, autism spectrum disorder, attention deficit hyperactivity disorder, Down syndrome, hearing, and visual disability). Concentration, motivation, and cooperation with others can also be promoted through technology (Baragash et al., 2020). Other examples of applications include chatbots for practising languages or interacting with other people (improved social skills to help individuals integrate better into the community) as well as simulations and gamification for learning new skills in a playful way for people with learning difficulties. In addition, there are other technologies that can be put to good use:

Speech-to-Text (STT)

Speech-to-Text technologies convert spoken language into written text in real time. This tool is especially valuable for individuals with hearing impairments, as it enables them to follow along with spoken content - such as lectures, training sessions, or meetings - by reading the

transcribed text. In this way, learners gain direct access to information that might otherwise be inaccessible. Additionally, transcripts can be stored, reviewed, and studied later, which makes it a potential tool not only for people with disabilities, but all apprentices.

Text-to-Speech (TTS)

Text-to-Speech tools transform written text into natural-sounding spoken language. They are particularly useful for individuals with visual impairments, as they allow learners to access written materials - such as textbooks, instructions, or digital content - through audio. This not only ensures independence in learning but also makes it possible to consume information in flexible settings, for example, while working on repetitive tasks. TTS is also highly beneficial for individuals who cannot speak, as it allows them to enter text via a keyboard, touchscreen, or assistive device and have it spoken aloud by the system. In this way, TTS becomes a voice substitute, enabling participation in discussions, classroom activities, and social interactions.

Tool:

ChillFish is a game for people with ADHD in which a fish is controlled by breathing. Exhaling into the fish - made of Lego bricks - makes it rise on the screen, while inhaling makes it sink. The goal is to collect all the stars, which are positioned in such a way that the user adopts a relaxed breathing pattern. The calm breathing has a soothing effect; essentially, this is a breathing exercise packaged as a game. (Sonne & Jensen, 2016a, 2016b).

Tool:

Help me read is a Chrome extension, which helps people with dyslexia and vision deficiencies. The extension allows the user to vary font sizes, spacing, colours, and more to make reading easier. Easy reading mode highlights one word at a time by enlarging it, making it easier for the user to process the word. The extension is free of charge (Berton et al., 2020).

4.6 Monitoring, assessment & certification

In addition to apprentices acquiring knowledge and skills, it is equally important to evaluate their progress. A good understanding of the apprentice's current level of knowledge is important in order to be able to adapt the training accordingly. By regularly checking learning progress, trainers can vary the learning style and speed to suit the apprentice.

One of the first adjustments that can be made, based on the skill assessment, is the pace at which the training content is delivered. By identifying the specific strengths and weaknesses of each apprentice in relation to different topics, it becomes possible to either accelerate the training on areas they are good at or dedicate additional time and attention to areas where they need further support.

For apprentices who learn quickly, more complex tasks can be introduced to challenge and stimulate their growth, while those who require more time can be provided with additional guidance, resources, and support to help them catch up. This individualisation of the learning process ensures that all apprentices are working at a pace that suits their abilities, promoting both their development and confidence.

Furthermore, understanding the apprentice's level of knowledge makes it possible to modify the programme itself. By evaluating which topics are particularly challenging for the apprentice, these areas can be revised. Whether through additional practice time, more detailed explanations, or the use of innovative teaching methods, these topics can be made more tangible and easier to understand for future apprentices. This continuous reflection on the teaching content in combination with the difficulties faced by the apprentices is necessary to make the training future-proof and more effective.

In addition, evaluating the apprentice's knowledge and skills allows to check how well the transfer of knowledge between the theory taught by the TVET provider and the practice in the training company is working. This feedback loop makes it possible to resolve any inconsistencies and minimise the gap between theory and practice as much as possible.

An important part of apprenticeships is training apprentices according to the needs of the industry but also of the individual company, as a considerable proportion of apprentices usually remain with the training company after completion of the apprenticeship. By gaining a good understanding of the apprentices' skills, the company can make well-informed decisions about which apprentices would be suitable for which permanent roles within the company.

There are several methods available for evaluating the skills and competencies of apprentices. One of the most direct ways is through active observation of the tasks assigned to the apprentices. By carefully watching how they approach and complete their work, instructors can gain valuable insights into their abilities. If learning objectives have been defined according to the SMART model (see 4.4), it should be no problem to measure the apprentice's learning progress. The following approach can be taken when reviewing learning objectives:

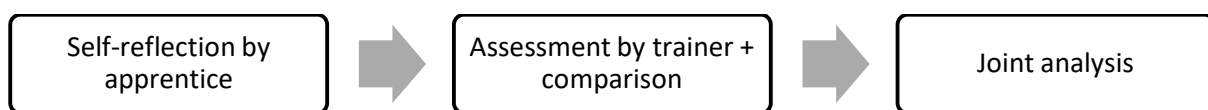


Figure 19 Possible approach for reviewing learning objectives

1. Self-reflection by the apprentice

First, the apprentice should assess themselves; they should evaluate how they see themselves, what they are good at, and what they still need to work on. Being able to assess oneself realistically is very important, not only during training but also later in life.

2. Assessment by the trainer and comparison

In the second step, the trainer should give their assessment. When evaluating performance, it is important to base the assessment on clear criteria. The process then involves comparing the apprentice's and the trainer's perceptions to identify where there is overlap and where there are differences. The reasons behind any differences in perception should be investigated further.

3. Joint Analysis

Finally, the learning methods are analysed together in terms of effectiveness and functionality. This enables the learning methods to be adapted appropriately, both tailored to the apprentice and generally for improving apprenticeship training.

Another method is through assignments and projects where apprentices are required to independently research, write or create something. The quality of the final product then provides a clear evaluation of their capabilities.

Additionally, exams and tests are commonly used to assess theoretical knowledge. These assessments can be conducted both in traditional (pen and paper) formats and in digital formats. Each approach has its advantages and disadvantages.

One of the key benefits of digital exams is automation, which means that tests can be instantly corrected by the digital system. As a result, apprentices can receive feedback on their performance immediately after answering the questions and can recognise their mistakes right away. Additionally, it saves the instructor time that would otherwise be spent correcting the answers. Furthermore, digital assessments provide a fairer and more impartial evaluation process through the elimination of human bias. Another significant advantage is the ability to track an apprentice's performance over time, presenting results in a way that both the apprentice and the instructor can easily interpret. This data allows trends to be identified, such as a sudden drop in performance, which can lead to early intervention and support where necessary.

However, there are some challenges and dangers associated with digital exams. As with all digital applications, data protection is of the utmost importance. Clear guidelines for data collection, storage, and gathering must be established to prevent potential problems. In addition, digital assessment has the problem that the design options are limited, especially if the trainer has little to no experience with such systems. This is particularly noticeable when attempting to automate the evaluation, as this usually requires predefined answers. This limits the possibility of open-ended questions. However, AI could come into play here, allowing even more complex questions to be evaluated. However, this comes with its own set of risks, as AI-powered assessments may occasionally produce errors, meaning instructors would need to manually check the results. Another challenge with online tests is the increased potential for cheating, as the opportunities for cheating aids are far greater than in traditional, pen and paper exams.

A more innovative option made possible by digitalisation is game-based assessment. While the development of such assessment systems usually involves a great deal of effort, they open up a wide range of possibilities. If the assessment is well thought out and well designed, the quality of the assessment can be massively improved. This type of assessment allows for the measurement of skills that cannot be captured by normal tests, such as creativity, problem solving, or critical thinking. Game design allows apprentices to be placed in realistic scenarios that reflect real-world challenges. This brings the assessment closer to reality, which increases the relevance of the evaluation. Additionally, game-based assessments can provide more comprehensive and constructive feedback, which can further aid in the apprentice's development.

Tool: SimCityEDU:

Pollution Challenge! is an educational game designed to engage students in real-world environmental issues, using elements from the popular SimCity franchise. Created through a collaboration between GlassLab, ETS, Pearson, the ESA, and Electronic Arts, the game helps students act as mayors, addressing pollution while balancing economic and social factors. The game integrates assessments aligned with Common Core and Next Generation Science Standards, offering personalised feedback and progress reports for teachers and students. SimCityEDU also includes a number of tools such as dashboards, lesson plans, and an online community for educators to share resources. Available for download, the game aims to bridge the gap between entertainment and education, fostering critical thinking and problem-solving skills necessary for future success.

<https://www.ea.com/news/glasslab-launches-simcityedu?isLocalized=true>

An important part of the assessment process that is often overlooked or not carried out properly is giving feedback. Feedback lets the apprentice know what they are doing well and where there is room for improvement. It is important to give the apprentice structured and well-thought-out feedback. For this purpose, the sandwich method can be used:

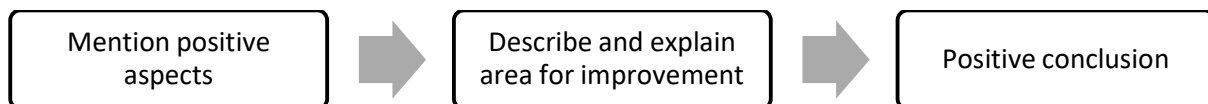


Figure 20 Sandwich method for giving feedback

1. Mention positive aspects

First, it is important to explain what the apprentice is already doing well and what the trainer is satisfied with. This is also a good opportunity to discuss the positive effects this has.

2. Describe and explain area for improvement

Then it should be explained what the apprentice needs to do better and why – as well as what the effects of the change are. Ideally, only one improvement should be mentioned here, the one that is most important to the trainer and has the greatest effect.

3. Positive conclusion

It is important to end on a positive note. This can be achieved by encouraging or complimenting the apprentice. It is important that the compliment is sincere; otherwise, it will not have the desired effect. If the conversation ends on a positive note, there is less risk of them feeling like they are doing everything wrong and losing motivation.

In addition to the feedback itself, it is also important to note that feedback should be given as early as possible, in a suitable setting, for example, in a quiet office rather than a noisy workshop, and that the intention behind the feedback is positive.

As already mentioned in 2.4, formal certification is essential for apprenticeships. Certification ensures that apprentices possess the necessary skills and knowledge. For companies, certification provides a basis for evaluating the qualifications of applicants and potential employees. Furthermore, the training is seen as more valuable if, upon completing their apprenticeship, the apprentices do not end up empty-handed, but can present a certificate confirming what they have learnt. In most countries, certification depends on a type of final examination that tests the knowledge and skills acquired according to the curriculum. This examination is usually the last hurdle in apprenticeship training before apprentices enter working life (or further training).

However, in situations where no formal exams exist or where there are no predefined performance evaluations, alternative methods of certification can be introduced to ensure apprentices still have a way to prove their competencies. One such solution is the use of digital badges. These badges can be awarded when apprentices demonstrate their skills in specific competencies. Unlike traditional certifications, badges provide a more flexible and ongoing way of recognising achievements, allowing apprentices to earn them incrementally throughout their training.

Badges offer several advantages. They make the learning process more transparent by documenting the gathered skills as the apprentices progress. This can be motivating, as they can see their achievements grow step by step. Moreover, badges can be shared online, providing apprentices with a modern way to showcase their qualifications to employers. This is particularly beneficial in today's digital world, where employers often look for verifiable, skills-based evidence.

Digital badges also help bridge the gap between education and employment. As apprentices earn badges for specific job-related skills, employers can easily see which competencies have been acquired, allowing for smoother transitions into the workforce. This system provides a more personalised approach to certification.

4.7 Ensuring social inclusion

Social inclusion is a critical aspect of modern Quality Apprenticeship programmes, and as discussed in section 1.7, it can provide significant benefits for both apprentices and organisations. By promoting a diverse and inclusive environment, companies not only improve the learning experience for apprentices but possibly also enhance employee satisfaction, creativity, and overall productivity.

This section will explore various methods (additionally to those mentioned throughout the programme) and strategies that can be applied to make Quality Apprenticeship programmes more inclusive, ensuring that all apprentices, regardless of their background, have equal opportunities to succeed and contribute to the organisation's growth.

Social inclusion affects a variety of different groups of people – one of these is people with learning difficulties. People with learning difficulties have specific difficulties in certain areas. A selection of potential causes of learning difficulties are briefly described below:

ADHD - Attention-deficit/hyperactivity disorder:

Attention-deficit/hyperactivity disorder is an attention disorder; people with this disorder are more easily distracted, often inattentive and impulsive. On the other hand, they may have positive characteristics such as enthusiasm, empathy, and creativity.

Dyslexia & Dysgraphia - Reading and writing difficulties:

People with those difficulties have trouble reading and writing words. They often cannot visualise words in their minds and therefore sometimes have to resort to auditory strategies. In many cases, however, this leads to mistakes.

Dyscalculia - Math learning disability:

People with dyscalculia have difficulty recognising the meaning of numbers and proportions. Affected individuals may have found other ways to do mental arithmetic, which can make it difficult to recognise this weakness.

DCD - Developmental coordination disorder:

DCD, also known as dyspraxia, is a lifelong coordination and developmental disorder. People affected by this disorder experience difficulties with both fine and gross motor skills, which can lead to challenges in daily life and at work.

As the symptoms of developmental disorders and other potential causes of learning difficulties can be very varied and people often find ways to work around the disorder, it is difficult to identify the problems and their causes. However, once the problems are known, it is possible to adapt the training accordingly. Below is a selection of different methods that can be used to make apprenticeships more inclusive.

Adapting the training programme

The training programme should be designed in a way that meets the diverse needs of apprentices. This might mean focusing more on certain learning methods or providing additional support such as language courses, tutoring, or practical assistance. Some adaptations work really well, others do not, which is why ongoing adjustments should be made even during training.

Adapting the physical environment

For apprentices with walking difficulties or other physical impairments, it is important that rooms are equipped to be accessible, with ramps instead of stairs, and that special equipment is provided, such as height-adjustable tables, special tools, etc.

Individual adjustment of working conditions

For apprentices with special needs - whether due to disability or other personal circumstances - flexible working conditions like adjusted working hours could be established.

Introducing a mentoring programme

A mentoring programme can be introduced, where experienced employees, especially those from diverse backgrounds, support apprentices in need. This programme should focus on addressing diversity-related challenges, fostering an inclusive culture, and ensuring apprentices feel

supported in a safe and understanding environment. Mentors can help apprentices navigate workplace dynamics, encouraging them to embrace differences and feel valued.

Awareness-raising training for employees

Awareness training on topics like diversity, inclusion, and unconscious bias is crucial. These training sessions help raise awareness among the workforce about the challenges and needs of apprentices from minority groups, which helps with creating a respectful work environment.

Exemplify diversity as a company and supervisor

The company and its supervisors should actively demonstrate a commitment to diversity by setting clear examples. This could include promoting diverse hiring practices, celebrating cultural events, and ensuring equal opportunities for all apprentices, regardless of their background. Supervisors, through their actions and decision-making, can lead by example, ensuring that inclusive behaviours are embedded into the company culture.

Employee discussions following incidents with potential consequences

In the event of incidents that are not in line with inclusion, staff discussions must be held to address the issues immediately. To be well prepared for such situations, companies should develop strategies and procedures in advance so that they can act quickly and effectively when the need arises. These discussions should aim to identify the root cause, raise awareness of inclusion and, where necessary, establish corrective measures. Creating a platform for open dialogue can promote understanding, strengthen personal accountability, and ensure alignment with the company's inclusion values.

Practical example:

KomKom, the German abbreviation for 'Competence Expansion through Competence Assessment', founded by Chance B, is an innovative qualification initiative aimed at educationally disadvantaged individuals, including those with learning difficulties and lacking formal school qualifications. Launched in 2021, the KomKom network is a collaboration of various organisations across Austria that jointly implement the KomKom method and further develop qualifications. The programme combines basic education and vocational training within a work-based learning context, offering practical, individualised support to participants. Upon successful completion, participants receive a formally recognised certificate, with KomKom qualifications aligned with the National Qualifications Framework (NQR). By proving their abilities through an accredited certificate, participants gain easier access to job opportunities and a better path into the labour market.

<https://zeroproject.org/view/project/03808d89-4caa-ef11-b8e9-0022489c2733>

Good practice:

Fair Shot is a social enterprise café and UK charity offering 15 young adults (aged 16-24) with learning disabilities and/or autism the chance to gain real-world work experience through its Supported Internship Programme each year. The programme provides high-quality training, preparing participants to become skilled baristas and café assistants, ready to enter the workforce. After completing the programme, Fair Shot helps graduates transition into their next job with the support of employment partners. This full-time initiative is designed for those ready to move from education to employment, providing a supportive environment for individuals who may lack certain skills or workplace behaviours. Under the guidance of a dedicated coach, learners gain hands-on experience and develop essential skills for future careers.

<https://www.fairshot.co.uk/hospitality-programme>

<https://www.reuters.com/world/uk/london-cafe-gives-workers-with-learning-disabilities-fair-shot-2025-01-22/>

Good practice:

IKEA is actively committed to the integration of refugees. In Portugal, for example, the Refugee Employability Program was introduced in 2021, offering refugees Portuguese language courses (75 hours), sociocultural and employability lessons, and on-the-job training. In 2021, this programme was implemented with 802 refugees in 22 countries, and further commitments were made for the future.

https://habitable-cove.eu/resource/res_16/

<https://www.ikea.com/pt/pt/newsroom/corporate-news/ikea-portugal-apoia-a-integracao-de-refugiados-no-mercado-de-trabalho-pub805e3117/>

<https://www.ikea.com/pt/pt/newsroom/corporate-news/ikea-anuncia-novos-compromissos-para-apoiar-a-integracao-de-refugiados-pub72340250/>

4.8 Checklist

Below is a checklist covering the contents of this chapter.

By answering the following control questions, it is possible for the reader to check whether the individual aspects of this chapter have been sufficiently well developed.

If all questions are answered with 'Yes', it is time to move on to the next chapter. If any questions are answered with 'No' or 'Partially', it is advisable to review these topics again.

Organising Quality Apprenticeship training	Yes	No	Partially	Needed improvements
Do you know the potential benefits of apprenticeships for apprentices?				
Do you know the different ways and methods to recruit apprentices?				
Is active attention paid to using gender-neutral language when recruiting?				
Do you know what is needed for the application to admission and registration of apprentices?				
Have one or more apprentices been recruited, admitted, and registered?				
Has a training plan been drawn up?				
Does the training plan cover all the necessary skills defined in the curriculum?				
Does the training plan include company-specific skills?				
Has the training plan been drawn up in consultation with companies and TVET providers?				
Do you know the importance of the relationship between trainer and apprentice for the training?				

Does the trainer pay active attention that there is a good relationship between them and the apprentice?				
Does the trainer have a good basic knowledge of teaching methods and apply this knowledge?				
Does the trainer have a good basic knowledge of digital methods and apply this knowledge?				
Does the trainer have a good basic knowledge of green methods and apply this knowledge?				
Does the trainer have a good basic knowledge of inclusive methods and apply this knowledge?				
Is the trainer prepared to train disadvantaged people? (if applicable)				
Do you pay active attention to ensure that all apprentices are well accepted into the community and the training programme?				
Is there an established system for regularly assessing the skills of apprentices?				
Are the apprentices' skills measured at regular intervals?				
Is there a system in place to certify apprenticeships?				

5. Post-training transitions and evaluation

Once the apprenticeship training has ended, the final phase of the apprenticeship lifecycle begins - Post-training transitions and evaluation.

A key aspect of this phase is the apprentice's transition from training to the labour market or further education. In order to make this transition as smooth as possible, specific steps must be taken during the training period. But even after the training, there are ways to support the apprentice in their career development.

It is especially important for the company to have the quality of the training assessed from the apprentices' perspective. This allows to identify potential areas of improvement and to enhance the future training. As part of this process, it is also important to assess what apprentices do after completing their apprenticeships. Graduate tracking is a suitable tool for this purpose, as it helps to identify the career paths of apprentices after they complete their training. How graduates fare in the workforce is an important indicator of success of the apprenticeship.

Collecting data is essential, but in order to use it effectively, it must first be evaluated. By analysing the data, correlations can be identified, which allows to draw conclusions. Regular evaluations help ensure that the Quality Apprenticeship remains relevant and effective, enabling the company to refine its approach and improve future training outcomes.

5.1 Transition to labour market

The major advantage of apprenticeships for companies is that apprentices can be tailored perfectly to the company's needs. This is not the only reason it is so important that suitable apprentices are able to continue working for the company after completing their apprenticeship. Apprentices who go on to build their careers within the company are often more loyal and motivated than other employees. Filling vacancies with apprentices can save a huge amount of time and money by eliminating the need for recruitment. Another advantage is that apprentices are already familiar with the company and its processes, so they do not require a lengthy induction period.

However, if the apprentice shows little interest in staying with the company, it is counterproductive to pressure them into staying. Eventually, this could lead to a decline in their motivation, eventually resulting in the termination of the employment relationship.

It is better to present all the options available to the apprentice during their training and prepare them as best as possible for their future. It is not uncommon for apprentices who wish to pursue further education or work at another firm to return to the company afterwards.

To facilitate the transition into professional life, companies can take several steps, which are outlined below:

Since it is beneficial for companies when apprentices remain with the organisation after completing their training, steps should be taken early on to increase the likelihood of retention. One effective approach is to clearly communicate the long-term career opportunities available within the company.

Apprentices should be informed about potential career advancement paths, such as roles they could grow into with experience or further qualifications. It is also helpful to highlight other departments, business units, or locations where relevant positions may be available. If the company operates across multiple sites, apprentices should be made aware of job opportunities at other facilities or branches.

This kind of transparency serves two important purposes: First, it shows apprentices that their efforts can lead to real advancement, creating a sense of direction and motivation. Second, it sends a powerful message of recognition and appreciation, demonstrating that the company sees them as valuable long-term team members.

To ensure that apprentices are well-prepared for life after their training, especially for those who do not want to stay at the company, Quality Apprenticeship programmes should go beyond technical competencies and actively include key career-readiness and entrepreneurial skills. Apprentices should learn how to navigate the job market with confidence. The following topics should be covered during the training by both the TVET centre (theoretical input) and the company (practical application).

- Writing a professional résumé (CV)
- Composing a convincing cover letter
- Understanding the typical steps of a job application process
- Preparing for and performing well in job interviews (e.g., appropriate behaviour, frequent questions, self-presentation)
- Identifying relevant job portals and professional networks
- Communicating effectively in professional settings
- Knowing their rights and responsibilities as employees

These skills help apprentices successfully apply their training in real-world employment contexts and increase their chances of long-term career success.

For those with an entrepreneurial mindset, the Quality Apprenticeship training should also provide a solid introduction to the fundamentals of business creation. Key topics could include:

- The essential steps involved in starting a business
- Legal and administrative requirements for establishing a company
- Understanding different legal business structures (e.g., sole proprietorship, partnership, limited liability company)
- Key legal and tax regulations affecting small businesses
- Available support systems and funding opportunities (e.g., start-up grants, incubators, mentorships)
- Basics of business planning, budgeting, and marketing
- Introduction to entrepreneurial thinking and innovation

Apprentices should be actively supported in gaining a comprehensive understanding of the career options available to them after completing their Quality Apprenticeship. This includes not only the direct job opportunities related to their field of training but also broader possibilities within related industries and professional environments. It is essential that apprentices are introduced to various potential employers and industry sectors where their acquired skills are in demand.

To facilitate this, training programmes should include guidance on how to research job markets and discover relevant opportunities. Apprentices should be introduced to a variety of career resources and support services, such as:

- Public employment agencies (e.g., national or regional labour market services)
- Chambers of commerce and industry
- Trade associations
- Job fairs and career events
- Online job portals and professional networks
- Alumni networks or mentoring programmes

Additionally, providing apprentices with real examples of career paths taken by former apprentices can help them visualise different trajectories and better understand what is possible with their qualification.

Another valuable path after completing a Quality Apprenticeship is continuing education. Further education allows apprentices to deepen their professional expertise, acquire new qualifications, or even shift into new areas of specialisation. It can be pursued in a variety of formats, depending on personal circumstances and career goals.

Many programmes are designed to be completed alongside work, such as evening classes, weekend seminars, or part-time courses. Others require full-time commitment, such as advanced vocational qualifications, technical college programmes, or preparatory courses for higher education degrees.

To ensure a smooth transition into further education, Quality Apprenticeship programmes should already lay the groundwork for this during the training period. That means not only teaching technical and practical skills but also ensuring that apprentices meet the academic and general education requirements often needed for advanced training.

In particular, attention should be paid to strengthening key areas of general education, such as:

- Mathematics
- Reading comprehension and written communication
- Scientific and technical literacy
- Digital competence
- Language skills, especially in professional or technical English
- Critical thinking and learning strategies

These subjects form the foundation of higher education. The inclusion of general education subjects significantly expands the opportunities offered by apprenticeships. This diversity of opportunities enhances the flexibility of apprenticeship graduates, making apprenticeships a more attractive option for young people.

Tool:

Bob-emploi is a digital platform that offers personalised coaching and career counselling through Artificial Intelligence. Based on employment data from the French government, the system supports individuals who are unemployed, underemployed, or at risk of job loss. The process begins with a data-driven analysis of the user's situation. From this, the platform generates tailored job search strategies. An AI-powered virtual coach then guides users with personalised advice. Since its launch in 2016, Bob has helped over 270,000 jobseekers in France with free, accessible, and scalable coaching.

<https://www.bob-emploi.fr/>

5.2 Quality assurance and graduate tracking, assessing effectiveness

It is extremely important to assess the quality of apprenticeship training after completion. Evaluating the programme can reveal potential areas for improvement, which makes it possible to enhance future training. This process not only enables continuous improvement but also provides insight into the effectiveness of the training. Graduate tracking, for example, evaluates the career paths of graduates, which helps to determine how well the training has prepared them for the world of work. In addition, tracking graduates makes it possible to find out whether the skills and knowledge they have learned match the needs of the industry. Ultimately, this feedback loop enables organisations to refine their training methods and maintain a high standard of education for future apprentices.

In order to effectively assess the quality of apprenticeship training, it is important to implement certain methods and tools that enable identifying strengths and weaknesses. By using these assessment methods, data can be collected that provides insight into the quality of education. This, in turn, enables to initiate the right changes and to improve the training programme.

There are several methods available to evaluate the quality of an apprenticeship programme. Among these, Key Performance Indicators (KPIs) are particularly useful, as they provide measurable insights into the success of the training.

Typical KPIs for apprenticeship training are:

- Percentage of people who drop out of training
- Percentage of people who attend the final exam
 - And pass
 - And fail
- Percentage of apprentices who remain with the company after training
 - Percentage of people who move to another company
 - Percentage of people who continue their education after training
- Percentage of apprentices who were satisfied with the training
- Net costs/net benefits of training for the company

If a company wants to gain a detailed and neutral view of the strengths and weaknesses of its training programme, it is essential to obtain feedback from its apprentices. Ideally, they should be asked for their opinions right after completing the apprenticeship. The following questions aim to capture the apprentice's perspective on various aspects of their training, helping to identify strengths and areas for improvement for future apprenticeships.

General impressions and satisfaction with the apprenticeship

- How satisfied was the apprentice with the apprenticeship overall?
 - Would the apprentice choose to pursue an apprenticeship again, either in the company, in the respective field or in general?
- Did the apprenticeship meet the apprentice's expectations?
 - If not, how did the apprentice's expectations differ from the reality?

Strengths and positive aspects of the training

- What were the most positive aspects of the apprenticeship from the apprentice's perspective?
- What specific skills or knowledge did the apprentice gain that they think will be valuable for their future?

Areas for improvement

- What did the apprentice consider the least beneficial part of the apprenticeship?
 - Why was this part of the training not helpful?
 - How could this aspect be improved?
- Was there anything the apprentice felt was missing during the apprenticeship?
 - Were there specific topics or equipment that the apprentice thinks should have been included?
 - Which areas should have received more focus, according to the apprentice?

Workload and challenges

- Did the apprentice feel overwhelmed or under-challenged during the apprenticeship?
 - If so, which tasks or areas specifically caused these feelings?

Vocational school and external training

- How did the apprentice feel about the vocational school?
 - Did the apprentice find the content useful and relevant to their work?
- How well was the theory (and practice) taught by the TVET provider aligned with the on-the-job training?
 - In what ways could the collaboration between the company and the training provider have been improved?

Relationship with mentors and trainers

- How satisfied was the apprentice with their trainer(s)?
 - What aspects of their guidance did the apprentice find most helpful?
 - Were there areas where the apprentice felt the trainer's support could have been improved?
 - How was the communication with the trainer (e.g., respect, feedback, task clarity)?

Company culture and integration

- How well did the apprentice feel integrated into the company environment?
 - What was their relationship like with colleagues?
 - What was their relationship like with trainers and other key figures?

- Were there any issues or challenges that the apprentice faced in the workplace that no one was aware of? (If so, they should explain why these problems occurred.)
- Did the apprentice experience any form of bullying, mistreatment, or harassment?

Miscellaneous tasks and responsibilities

- Was the apprentice asked to perform tasks unrelated to their training (e.g., lawn mowing, snow shovelling, cleaning, running errands)?
 - If so, which tasks were assigned by whom?

Overtime and work-life balance

- Did the apprentice have to work overtime often during their apprenticeship?
 - Was this overtime within the acceptable limits, or did it exceed what was agreed upon?
 - Was the overtime voluntary or mandatory?
 - Was the overtime paid or unpaid?

Preparedness for the future

- How well does the apprentice feel prepared for the future after completing their apprenticeship?
 - Do they feel prepared for further education? (Even if the person does not plan to pursue further education)
 - Do they feel adequately prepared for the professional world?
 - How do they feel about their personal development after completing the apprenticeship?
- If apprentice left the company:
 - Why did the apprentice leave?
 - Has the apprentice switched to another company and/or industry or did the apprentice leave to undergo further education?
- If apprentice stayed with the company:
 - What made them stay?

Additional feedback

- Is there anything else the apprentice would like to share about their apprenticeship experience that has not been covered by the questions above?

Tool:

‘Lehrlings-Spiegel’ (Apprentice-Mirror) offers a digital survey in which the questions are automatically evaluated. A certain number of access codes are ordered, which are then passed on to the apprentices. After completing the questionnaire, the system creates an evaluation and sends it to the company. The questionnaire has been specifically designed for companies that provide apprenticeships and is typically used during the training period. However, the questions can also be adapted so that the tool can be used after the training has finished.

<https://www.lehrlings-spiegel.at/>

Measuring the success of apprenticeship programmes often requires tracking graduates, as this allows organisations to evaluate whether the training effectively prepares young people for the workforce. In smaller companies, it is usually easier to determine graduates’ career paths through personal contacts. However, when conducting evaluations for larger companies, or on a regional or national level, the process becomes more complex.

In simplified terms, tracking graduates can be broken down into four key steps:

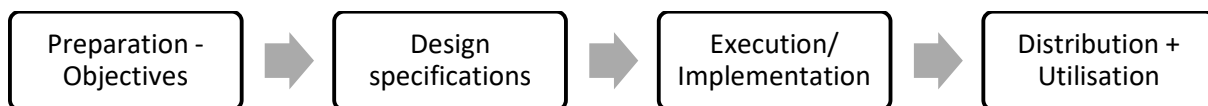


Figure 21 Four key steps for tracking graduates

1. Preparation - Objectives:

The first step in this phase involves identifying the purpose of the graduate tracking. It is important to define the objectives and what the tracking system is intended to achieve. This includes formulating key research questions that will guide the process. Alongside this, it is necessary to determine what success looks like in this context. Are there existing success

indicators, or is it necessary to define them from scratch? For example, success could be defined as 'A certain percentage (%) of graduates secure employment or continue their education within six months after graduation'.

Once the purpose and success criteria are established, the next step is to assess whether there are existing systems that can be utilised, or if a new system must be developed from the ground up. Afterwards, the focus lies on identifying the individuals or groups involved in the tracking process. This may include not only graduates but also individuals who have dropped out of their programmes or those who have moved abroad after completing their studies.

When the relevant groups are determined, the next step is to define which tracking methods will be employed. These might include administrative data matching, surveys, or a combination of both. Finally, clear responsibilities for data collection must be assigned, ensuring accountability and facilitating smooth implementation.

2. Design specifications:

In this phase, the first task is to define the appropriate timing for conducting the tracking. To gather detailed and relevant feedback that closely follows the completion of the programme, it can be conducted immediately after graduation. However, it is important that the tracking is repeated in the future to capture the graduates' career progression over time. Typically, tracking is carried out between 3 to 12 months after graduation, with longitudinal tracking extending 3 to 5 years later.

In addition to determining the timing, it is also necessary to define which data will be collected. This may include socio-biographical data, socio-economic status, employment status, and other relevant information. Whenever such data is being gathered, data privacy must be a key consideration during the planning phase. The graduate tracking measures must comply with GDPR regulations to ensure that all personal data is handled appropriately and securely.

3. Execution/Implementation

This step depends on the tracking method chosen earlier.

If using surveys: The first step is to decide how to collect the data. The survey can be conducted in person, by telephone, online, or using a combination of these methods. In order to be able to

reach graduates even after some time has passed, a database with contact details must be available and constantly maintained. In addition, flyers or other materials should be produced that explain the purpose of the survey to respondents and make it easier for them to answer the questions. However, before the questionnaires can be sent out or the survey conducted, a pre-test should be carried out. The pre-test identifies incorrect, unclear, or manipulative questions so that they can be corrected in advance. There are several strategies for achieving a good response rate (around 60-70% for telephone surveys, 30-60% for email surveys): The questionnaire should be short, incentives can be offered, a helpdesk should be available to answer questions, and regular reminders should be sent out.

If using administrative data matching: Administrative data matching uses public information sources. The focus here is on identifying the available data and its relevance. An agreement must be developed for the shared use of the data, defining how and for what purpose the data will be used. Key identifiers can be used to link and compare different databases to prevent duplicates. Examples of key identifiers include name, gender, date of birth, etc.

If using a combination of methods: This involves linking the data and filling any gaps by cross-referencing information from different sources. The combined approach requires more effort, but allows for a more comprehensive analysis and a more robust tracking process.

4. Distribution and utilisation

The final phase begins with defining the intended use of the gathered data and identifying stakeholders, for which the data might be valuable.

Once this is clarified, the data can be analysed. At this stage, it is particularly interesting to explore how different factors interact with each other, revealing deeper insights and patterns.

Once the analysis is complete, the last step is to share the findings with the relevant parties. Depending on the interest and needs of the recipients, they may receive either a summary of the results, comparative data, or the raw data itself.

Tools:

For a more in-depth understanding, the two guides listed below provide comprehensive guidance:

<https://data.europa.eu/doi/10.2766/263936> (Beadle et al., 2020)

<https://www.motive-euproject.net/wp/wp-content/uploads/2024/02/WP-6.5-MOTIVE-Graduate-Tracking-guidelines-EN-1.pdf> (MOTIVE Project, 2024)

Practical example:

ATRACK (Absolvent*innen tracking, graduate tracking) is a programme for tracking graduates from universities. It was originally funded by the Ministry of Education, Science and Research, and was conducted by TU Graz and 13 other universities from Austria together with Statistik Austria. Since 2022, 35 Austrian universities have been working together with Statistik Austria (Statistical Office of the Republic of Austria). Career entry points are analysed based on register data, social security data, labour market integration data, as well as career histories and income data.

<https://www.tugraz.at/en/studying-and-teaching/studying-at-tu-graz/graduates/graduate-tracking-project> (MOTIVE Project, 2024)

5.3 Drawing conclusions from the results and initiate changes

Merely collecting data is not enough. To achieve sustainable improvements, the collected data must be thoroughly analysed and interpreted. By doing so, opportunities for improvement can be identified and effectively implemented.

To ensure that apprenticeship training is inclusive, it is necessary to examine the background and circumstances of apprentices when analysing the data. Factors such as participation, drop-out rates, and the career paths after finishing the training must be analysed in relation to background, gender, disability, etc.

Especially in the early stages, there is often significant potential for improvements due to the lack of experience, and companies should be proactive in using these insights to refine their Quality Apprenticeship programmes. Simply conducting a single analysis and drawing conclusions from it is insufficient. Instead, continuous improvement is essential to ensure that the training remains aligned with the latest industry standards and that apprentices receive the best possible education.

Whenever possible, the companies' findings should be compared with data from similar companies or national-level statistics. This allows organisations to understand not only their own performance but also how they measure up against broader trends in the sector.

By identifying patterns, strengths, and areas of weaknesses through this comparison, companies can make evidence-based decisions that strengthen the training programme and improve outcomes for future apprentices. Moreover, analysing trends over time can help highlight recurring issues, potential gaps in support, or areas where resources could be better allocated.

In some countries, regular surveys are conducted on apprenticeship training, with success criteria being assessed on a national scale. These are ideal for assessing the quality of one's own training programme in comparison with similar ones. The following data from Austria is provided as an example and can be used as a further point of comparison.

Practical example: Comparative data from Austria:

- Completion rate (2023)
 - 79.9% of apprentices completed their programme
 - Overall dropout rate: 20,1%
 - Dropout rate of domestic apprentices: 15.3%
 - Dropout rate of foreign apprentices: 32.3%
 - Dropout rate of people with a starting age of 15: 7% (2011-2020)
 - Dropout rate of people with a starting age of 16: 12% (2011-2020)
 - Dropout rate of people with a starting age of 17: 21% (2011-2020)
 - Dropout rate of people with a starting age of 24: 34% (2011-2020)
- Timing of apprenticeship dropouts: (2023)
 - Within 3 months: 40.6%
 - Within 12 months: 28.3%
 - Within 24 months: 19.2%
 - Within 36 months: 10.0%
 - After more than 36 months: 1.7%
- (Voluntary) Final exam (2023)
 - 87.4% of apprentices attempted the final exam and passed successfully
 - 6.9% attempted the exam but did not pass
 - 5.7% did not take the exam
- Career choice - would apprentices choose differently after completion? (2023)
 - 52% would choose the same occupation and the same company again
 - 19% would choose the same occupation, but in a different company
 - 11% would choose a different occupation, but the same company
 - 18% would choose neither the same occupation nor the same company
- Unemployment rate of people whose highest education is an apprenticeship
 - 2019: 3,5%
 - 2020: 4,6% (Covid-19)
 - 2021: 5,0% (Covid-19)

More data available here:

<https://www.cedefop.europa.eu/en/news/austria-monitoring-apprenticeship-graduates-underlines-importance-training-success>

<https://www.wko.at/wien/bildung-lehre/qml-jahresauswertung.pdf>

https://www.oegj.at/content/dam/oegj/downloads/dokumente/Lehrlingsmonitor_2024_Online.pdf

Practical example:

Data from Switzerland:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjW5rvQwryOAxVv_7sIHQSfEgAQFnoECBkQAQ&url=https%3A%2F%2Fwww.bfs.admin.ch%2Fbfsstatic%2Fdam%2Fassets%2F12947493%2Fmaster&usq=AOvVaw3HnAV_zfTYORLC3FmUgPpX&opi=89978449

Even in situations where no comparative data is available, it remains essential to carefully examine the results. Every dataset, no matter how limited, holds valuable information that can guide improvements in teaching methods, support structures, and overall programme design. A detailed evaluation allows organisations to pinpoint weaknesses, uncover hidden challenges, and identify areas where apprentices may require additional support or resources.

Once problem areas have been identified, they must be addressed through targeted measures. Possible measures include changing the training methodology, introducing mentoring programmes, providing additional learning materials, and adjusting the training pace. However, it is not enough to simply implement measures; it is also necessary to evaluate how effective they are. Continuous evaluations can be used to measure the effectiveness of the measures and to address upcoming problems promptly. This ensures that apprenticeships are continuously improved and enables future-oriented training. Over the long term, it not only increases the quality of training but also ensures that apprentices are more satisfied, have a higher retention rate, and can be better integrated into the world of work.

5.4 Checklist

Below is a checklist covering the contents of this chapter.

By answering the following control questions, it is possible for the reader to check whether the individual aspects of this chapter have been sufficiently well developed.

If all questions are answered with 'Yes', it is time to move on to the next chapter. If any questions are answered with 'No' or 'Partially', it is advisable to review these topics again.

Post-training transitions and evaluation	Yes	No	Par- tially	Needed improvements
Are apprentices taught business management skills?				
Are apprentices taught general education subjects?				
Do apprentices know what career opportunities they have once they have completed their apprenticeship?				
Do the apprentices feel like they are adequately prepared for the world of work?				
Are there existing systems for measuring the quality of apprenticeship training?				
Is there a system in place to determine apprentice satisfaction during and after the apprenticeship?				
Is there a system in place to track apprentices' career paths after completion?				
Is there comparative data available to compare the success of the apprenticeship?				
Is there a system in place to evaluate the data collected?				
Is the evaluated data used to improve the quality of the apprenticeship?				

6. Appendix

6.1 Glossary

ABC analysis

Business management procedure used to sort items, tasks, etc into three categories based on their importance:

A: very important

B: medium important

C: not important

ALPEN method

Time management technique used to plan the day's schedule based on 5 steps:

A: A-List – create a to-do-list with all tasks of the day

L: Length – define how long the tasks last

P: Plan a buffer – 40% of the day should be free

E: Establish decisions – Prioritise and start with most important tasks

N: Notation – control, what was achieved, if problem occurred

Apprenticeship & Quality Apprenticeship

Training programme that combines a practical component (in-company training) with a theoretical component (training at TVET centre). Quality apprenticeship training in specific means that certain requirements are met in order to guarantee a certain level of quality.

Apprenticeship agreement

Formal, legally binding document that outline the responsibilities and obligations throughout the apprenticeship period of both the employer and the apprentice.

Apprenticeship life cycle

Model developed by the International Labour Organisation (ILO) that divides apprenticeship training into four phases:

1. Developing Quality Apprenticeship programmes
2. Preparing quality training places
3. Organising apprenticeship training
4. Post-training transition and evaluation

Augmented Reality (AR)

Computer-assisted extension of human perception, in which digital content such as graphics, text, or 3D models are superimposed onto the real environment in real time using cameras. The physical environment remains visible, and the content is inserted into the environment via smartphones, tablets, or VR glasses.

Big data analytics

Systematic processing and analysis of large amounts of data to gain valuable insights.

Chatbot

A computer programme that simulates human conversations in order to provide quick answers. It is widely used to handle inquiries in customer service, marketing, and sales.

Collective Agreements

Written, legally binding agreements between companies (or associations of companies) and trade unions that set out salaries and working hours to ensure that certain minimum standards are met.

Cost-benefit analysis

A structured, data-based process in which the anticipated costs are compared with the calculated benefits in order to evaluate the usefulness of an investment, project, or programme.

Curriculum

Document in which learning content and learning objectives for specific training are specified and described.

Digital badges

Verifiable, transferable, and portable digital credentials that reflect skills, achievements, or competencies acquired through education, training, or experience.

Digitalisation

Ongoing integration and use of digital technologies to fundamentally change processes in business and everyday life.

Alternative definition: conversion of analogue information into digital formats.

Diversity

Conscious recognition, appreciation, and inclusion of people's diverse characteristics, such as age, gender, background, religion, disability, or sexual orientation.

Eisenhower principle

Time management tool that divides tasks into four quadrants according to urgency and importance and prioritises them accordingly.

European Employment Services (EURES)

European cooperation network comprising the European Commission, the European Labour Authority (ELA), national public authorities, and other accredited employment services in the EU countries, as well as Iceland, Liechtenstein, Norway, and Switzerland. EURES promotes the free movement of workers. It provides information and support services for workers and employers and strengthens cooperation and the exchange of information between its member organisations.

European Qualifications Framework (EQF)

A transparency tool developed by the EU that makes qualifications and educational achievements in Europe comparable.

Extended Reality (XR)

Generic term for immersive technologies that merge physical and virtual worlds. It encompasses Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR).

Gamification

The use of game-like elements and principles (such as points, badges, leaderboards, levels) in non-game contexts (e.g., education, work, marketing) to increase people's motivation, engagement, and behaviour change by making tasks more interesting and challenging.

Generation Alpha

Generation comprising all persons born between 2010 and 2024.

Generation Z

Generation comprising all persons born between 1995 and 2010.

Graduate tracking

Survey method to obtain information about a certain education by analysing the career paths of graduates.

Green skills/competencies

Knowledge, skills, values, and attitudes necessary to develop and support a sustainable, resource-efficient, and climate-neutral economy and society.

GROW Model

Coaching framework for achieving goals, which goes through the four phases of Goal, Reality, Options, and Will to support people in developing concrete action plans by defining their goals, analysing their current situation, working out solutions, and committing to the next steps.

Habitable

Project to improve Vocational Education and Training in the Habitat sector, consisting of 17 partners from 6 countries.

Habitat (in the context of Habitable)

Sector that includes a wide group of professional occupations from the sectors of infrastructure construction, housing and installations, activities related to wood and furniture manufacturing, home textiles, electricity, and lighting installations, etc

Hypervideo

Interactive, non-linear videos with integrated clickable elements - such as markers or embedded links - that allow learners to engage with multimedia content in a dynamic and personalised way.

I messages

Communication technique that focus on the feelings and needs of the speaker (trainer) rather than blaming the recipient (apprentice).

In-company trainer

Person in the company who is responsible for the practical in-company part of the apprentice's training.

Inclusion

Unrestricted participation and belonging of all people in society, regardless of individual characteristics such as disability, origin, gender, or age.

International Labour Organisation (ILO)

A specialised agency of the United Nations founded in 1919 that promotes human and labour rights.

Key Performance Indicators (KPI)

Measurable performance indicators that evaluate the success of companies, departments, or projects in terms of strategic goals.

Learning platform

Digital system for providing, managing, and tracking online learning content that enables location-independent, self-directed, and collaborative learning.

Life-long learning

Concept designed to enable people to continuously learn throughout their entire lives.

Massive Open Online Course (MOOC)

A free online course that makes educational content such as videos, texts, and quizzes available to an unlimited number of participants.

Micro-credential

Short, flexible, and targeted educational courses designed to certify specific skills or competencies, often issued as digital badges. They enable rapid upskilling for the labour market and are typically offered by universities or industry experts to validate practical knowledge.

National Qualifications Framework (NQF)

Nationwide system for classifying, structuring, and comparing qualifications based on learning outcomes.

Open Educational Practices (OEP)

Use, creation, and sharing of open educational resources (OER) to improve teaching and learning through collaboration, pedagogical innovation, and improved accessibility.

Open Educational Resources (OER)

Free learning and teaching materials published under an open license and thus made available for further use by anyone interested.

Pareto principle

Concept stating that 80% of results can be achieved with 20% of the total effort, also known as the 80-20 rule.

Regulatory framework

A structured system of laws, regulations, and guidelines established by government agencies or industry associations to govern operations, ensure compliance, and protect the interests of stakeholders.

Retention rate (in education)

Percentage of apprentices who remain with the company after completing their training.

SMART goals

Method for precisely defining goals in order to ensure they are achieved through structure. They stand for Specific, Measurable, Achievable, Relevant, and Time-bound.

Social dialogue

Communication (negotiation, consultation, exchange of information) between representatives of stakeholders like governments, employers, and workers for promoting consensus building and democratic involvement.

Social robot

Autonomous machines that interact with humans, communicate, and provide emotional support through social rules of conduct and norms.

Sustainable Development Goals

Seventeen goals in the area of sustainability defined by the United Nations that are to be achieved by 2030.

Sustainability

The ability to maintain systems, processes, or activities indefinitely by using resources wisely, meeting current needs without compromising the ability of future generations to meet their own needs, and striking a balance between environmental protection, economic development, and social equity.

Technical and Vocational Education and Training (TVET)

Training programme that imparts practical knowledge, skills, and competencies for specific occupations.

Tripartite

Agreements, commissions, or structures involving three parties.

Video annotation (in the context of education)

Practice of adding comments, explanations, or tags to specific moments within a video to enhance understanding and engagement of the students.

Vocational Education and Training (VET)

Training programme that offers specialised, competency-based training for specific occupations, jobs, or careers, often combining classroom instruction with practical work experience.

6.2 List of abbreviations

ADHD	Attention-deficit/hyperactivity disorder
AI	Artificial Intelligence
AR	Augmented Reality
CMF	Common Microcredential Framework
CV	Curriculum Vitae
EFQEA	European Framework for Quality and Effective Apprenticeships
EQF	European Qualifications Framework
ESCO	European Skills, Competences, Qualifications and Occupations
EU	European Union
EURES	European Employment Services
GDPR	General Data Protection Regulation
ILO	International Labour Organization
In-CT	In-company trainer
KPI	Key Performance Indicators
LCMS	Learning Content Management System
LGBTQ+	Lesbian, Gay, Bisexual, Transgender, Questioning/Queer+
LMS	Learning Management Systems
MOOC	Massive Open Online Courses
MR	Mixed Reality
NQF	National Qualifications Framework
OECD	Organisation for Economic Co-operation and Development

OEP	Open Educational Practices
OER	Open Educational Resources
PBL	Problem-based learning
PPE	Personal Protective Equipment
RPA	Robotic Process Automation
SDG	Sustainable Development Goals
SME	Small and medium-sized enterprise
STT	Speech-to-Text
TTS	Text-to-Speech
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States (of America)
VET	Vocational Education and Training
VR	Virtual Reality
XR	Extended Reality

6.3 Table of figures

Figure 1	Logo of Habitable	6
Figure 2	Visual representation of the Quality Apprenticeship life cycle and the six building blocks of Quality Apprenticeship systems based on ILO (International Labour Organization, 2020).	8
Figure 3	Stylised model of the costs and benefits of apprenticeships for enterprises (Gambin et al., 2010).....	16
Figure 4	Representation of the proportion of apprentices who were still employed by the training company one year after completing their apprenticeship based on country (Austria, Germany, Switzerland) and company size (Austria: ≤ 9 employees; 10-49; 50-249; >249, Germany: ≤ 9; 10-49; 50-499; >499, Switzerland: ≤ 9; 10-49; 50-99; >99) (2015, based on data from: Schlögl & Mayerl, 2017).	19
Figure 5	Possibilities for conducting surveys to collect data on skills needs.	55
Figure 6	Possible approach to creating a curriculum based on the occupational profile.	65
Figure 7	Key stakeholders involved in Quality Apprenticeships (based on International Labour Organization, 2017).	86
Figure 8	Possible approach to establish partnerships for Quality Apprenticeships.....	90
Figure 9	Comparison of the median time to entry into working life and the median income after 18 months between graduates (schoolyear 2020/2021) of the compulsory school (CS), apprenticeship (AS), School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), and Academic Secondary School (AHS) (based on data from Statistik Austria, 2025).....	113
Figure 10	Unemployment rate based on highest education (Compulsory school, Apprenticeship, School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), and Academic Secondary School (AHS), University) according to the Labour Force Concept (ILO) by highest educational attainment (2022, Austria), Source: Statistics Austria (microsensus labour force survey) + ibw calculations (Dornmayr, 2023).	114
Figure 11	Employment rate based on highest education (Compulsory school (CS), Apprenticeship (AS), School for Intermediate Vocational Education (BMS), School for Higher Vocational Education (BHS), and Academic Secondary School (AHS), University (UNI)) according to AMS (2024), Source: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiD4uHS38eTAxUM9gIHHcu6F9sQFnoECBkQAQ&url=https%3A%2F%2Fwww.ams.at%2Fcontent%2Fdam%2Fdownload%2Farbeitsmarktdaten%2F%25C3%25B6sterreich%2Fberichte-auswertungen%2F001_spezialthema_0525_V1.pdf&usg=AOvVaw1oXRIZIFxeUAJYm0lcG0-j&opi=89978449	115
Figure 12	Possible approach to creating a training plan.....	129

<i>Figure 13 Visual representation of the different generations, starting with the Baby boomers (1946–1964) and ending with Generation Beta (beginning in 2025).....</i>	<i>133</i>
<i>Figure 14 Overview of the GROW model.</i>	<i>135</i>
<i>Figure 15 Possible approach to resolving conflicts.....</i>	<i>138</i>
<i>Figure 16 Visual representation of the ALPEN method.....</i>	<i>141</i>
<i>Figure 17 Representation of the three classes A, B, and C of the ABC analysis, based on value and effort.....</i>	<i>142</i>
<i>Figure 18 Eisenhower principle as a method of prioritisation.....</i>	<i>144</i>
<i>Figure 19 Possible approach for reviewing learning objectives.....</i>	<i>170</i>
<i>Figure 20 Sandwich method for giving feedback.....</i>	<i>172</i>
<i>Figure 21 Four key steps for tracking graduates.....</i>	<i>189</i>

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