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# TEACHERS AND TRAINERS IN A CHANGING WORLD

Building up competences for  
inclusive, green and digitalised  
vocational education and training

## GERMANY

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# **Teachers and trainers in a changing world**

## **Germany**

Building up competences for inclusive, green and digitalised vocational education and training (VET)

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## CHAPTER 1. Introduction

In view of emerging issues during the last decade like digitalisation of the world of work, growing diversity following immigration, and environmental crisis, the COVID 19 pandemic accelerated the need to adapt to these new demands also in the professional development of trainers and teachers, by developing and acquiring digital skills as well as skills on sustainability and inclusiveness.

In 2015-16, important VET policy programmes were initiated in these emerging fields: the overarching initiative VET 4.0 to face the challenge of digitalisation, the BBNE funding programme on sustainable development in VET <sup>(1)</sup>, and the Alliance for initial and further training as well as the Educational Chains initiative to address early leaving, inclusiveness and mismatch in apprenticeship. These broad policy initiatives have already implemented numerous funding priorities and sustainable projects and were consolidated under the overarching governmental strategy 'Pact for VET' since 2017. One of its priorities is the continuous professional development (CPD) of trainers and VET teachers to enable them to face the challenges of digitalisation and diversity of apprentices.

After giving an overview of the main types of VET teaching and training staff at the different learning environments (Chapter 2), Chapter 3 presents the initial and continuing education and training of VET school teachers, followed by Chapter 4, which describes the professional development of in-company trainers. Chapter 5 illustrates the cooperation between the IVET learning venues to support the professional development of teachers and trainers. National funding programmes and initiatives on CPD of VET staff in the fields of digitalisation, sustainability and inclusiveness are described in Chapter 6. Finally, Chapter 7 presents national surveys of teaching and training populations.

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<sup>(1)</sup> *Berufsbildung für nachhaltige Entwicklung*: <https://www.bibb.de/de/33716.php>

## CHAPTER 2. Types of teaching and training professionals

This chapter presents a definition of initial vocational education and training (IVET) in Germany. In a second step, it introduces the main types of IVET teaching and training professionals.

### 2.1. Main types

#### 2.1.1. Country-specific definition of IVET

In Germany, IVET is defined as training undertaken typically after full-time compulsory education (i.e. after 10th grade or lower secondary) to acquire the necessary knowledge, skills and competences for employment in a particular occupation or group of occupations. Its main pillar is the apprenticeship scheme or dual system at upper secondary level. There are also school-based IVET programmes at upper secondary level (under the jurisdiction of the federal states i.e. *Länder*) for specific occupations. We are focusing on the apprenticeship scheme in this article as it plays a predominant role in Germany.

Apprenticeship or dual training is carried out in two learning environments, i.e. at part-time vocational schools (*Berufsschulen*) and in companies. Apprentices either attend the two places of learning alternately or simultaneously, with a 70% share of work-based learning. In school-based programmes, instruction takes place (either partly or exclusively) in full-time vocational schools. These programmes can have an on-the-job training component, i.e. a component of some practical experience at the workplace. In 2020, there were 1 329 million in-company apprentices attending part-time VET schools versus 1 006 million learners at secondary full-time VET schools (Destatis, 2020a/2020b).

#### 2.1.2. Main categories / types of teaching and training professionals

Table 1 presents the different types of teachers and trainers in the German IVET system.

Table 1. Types of teachers and trainers in the German IVET system

Type of training	Type of staff
<b>Work-based IVET programmes</b>  (dual system of training: apprenticeship)	<b>Training staff in companies:</b> <ul style="list-style-type: none"> <li>• At least one registered responsible trainer (mostly part-time) having passed the examination on trainer aptitude;</li> <li>• Skilled workers providing training at their particular workplace, without being trainers themselves.</li> <li>• Full-time trainer or master craftsperson in company or inter-company VET centre, as well as VET manager in large company.</li> </ul> <b>Teachers in part-time VET schools:</b> <ul style="list-style-type: none"> <li>• University trained VET teachers for vocational and general subjects;</li> <li>• University trained grammar-school teachers for general subjects;</li> <li>• Side-entering teaching staff without a teacher qualification but with expertise for vocational subjects with teacher shortage;</li> <li>• 'Technical' teachers for vocational practice with work experience (e.g. Meister, technicians) having attended a further training course with the federal state seminars of pedagogy.</li> </ul>
<b>School-based IVET programmes</b>	<b>Teachers in full-time VET schools:</b> <ul style="list-style-type: none"> <li>• University trained VET teachers for vocational and general subjects;</li> <li>• University trained grammar-school teachers for general subjects;</li> <li>• Side-entering teaching staff without a teacher qualification but with expertise for vocational subjects with teacher shortage;</li> <li>• 'Technical' teachers for vocational practice with work experience (e.g. Meister, technicians) having attended a further training course with the federal state seminars of pedagogy.</li> </ul>
<b>External learning facilitators</b>  (mentors, coaches, counsellors)	<ul style="list-style-type: none"> <li>• Individual 'career start mentors' for the transition from school to apprenticeship and 'VerA senior volunteer coaches' <sup>(2)</sup> for apprentices at risk of early leaving from VET until successful completion of their training;</li> <li>• Youth social workers in training schemes for vulnerable groups, training counsellors at the chambers, vocational guidance counsellors employed by the federal employment agencies, etc.</li> </ul>

Source: compiled by the authors – ReferNet Germany.

## 2.2. VET schools

In the vocational school system, there is a variety of upper and post-secondary VET school types <sup>(3)</sup>. These in turn are subdivided into a large number of VET



programmes within the various occupational sectors. There are two main categories of secondary VET schools:

- (a) **part-time VET schools** (e.g. *Berufsschule*, *Berufskolleg*) complementing in-company training of apprentices in the dual system; and
- (b) **full-time VET schools** for school-based programmes at different levels (e.g. *Berufsfachschule*, *Berufsaufbauschule*, *Fachoberschule*, *Berufsoberschule*, *Fachgymnasium* or *berufliches Gymnasium*). This includes health care programmes (e.g. for nurses, physiotherapists), pre-vocational introductory programmes <sup>(4)</sup> and VET schools for learners with disabilities.

### 2.3. Teaching and training professionals by type of VET school

VET teachers' university and practical training is designed for teaching in all types of VET schools mentioned above in 2.2. In some *Länder* <sup>(5)</sup>, there are further training courses to become a subject teacher or teacher of vocational practice in most VET school types (also VET schools for persons with disabilities) without university studies.

Furthermore, education providers commissioned by the employment agencies employ 'career start mentors' (*Berufseinstiegsbegleiter*) to support learners encountering difficulties as they make the transition from lower secondary school to apprenticeship. 'VerA senior volunteer coaches' can carry on after the career start mentors by accompanying apprentices facing problems and being at risk of early leaving from VET until successful completion of their training (Huisman, 2018).

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<sup>(2)</sup> VerA is an offer to anyone who encounters difficulties in training and is thinking of dropping out of their apprenticeship. On request, SES provides these young people with senior experts with professional and life experience - retired professionals who are specifically prepared for their task. <https://vera.ses-bonn.de/>

<sup>(3)</sup> They may have different names in the different *Länder*.

<sup>(4)</sup> e.g. *Berufsvorbereitungsjahr* BVJ, *Berufsgrundjahr* BGJ, pre-VET for refugees

<sup>(5)</sup> e.g. Baden-Württemberg, Bavaria, North Rhine-Westphalia, Saxony, Rhineland-Palatinate

## CHAPTER 3.

# Teaching and training professionals in school-based settings

### 3.1. Legislation

In the field of initial education and training as well as continuous professional development of teachers, the federal system confers cultural sovereignty on the federal states (*Länder*) and accords them the right to pass legislation in school-related matters. Vocational school teachers are thus trained under the jurisdiction of the *Länder*. The Standing Conference of the Ministers of Education and Cultural Affairs (*Kultusministerkonferenz, KMK*) is a national coordinating platform ensuring common standards and mutual recognition, e.g. through framework agreements, information and monitoring of the *Länder* systems <sup>(6)</sup>.

#### 3.1.1. VET teachers with university degree

Since the Bologna process was introduced in 2003, each federal state has different general conditions and requirements with regard to access to higher education, structure and content of curricula and duration and nature of practical training, all of which are defined by the university itself (Hensen/Hippach-Schneider, 2016). However, the process is regulated by an agreement adopted by the KMK in 1995 and last amended in 2018, the **Framework agreement** on the training and examination for teaching at the secondary level II (vocational subjects) or for vocational schools (Teaching post type 5) (KMK, 2018). This agreement is the legal basis and ensures common standards and mutual recognition of VET teachers' initial qualification at university countrywide. The KMK produces a comprehensive annual overview of the structures of teacher initial education and training in the *Länder* (KMK, 2020).

Furthermore, the concepts of initial and continuing training of VET teachers are based on the '**Common content requirements** of the *Länder* for the specialised sciences and didactics in teacher education' (KMK, 2008 - last revised in 2019), the '**Standards for teacher education: educational sciences**' (KMK, 2004 - last revised in 2019), as well as priorities specific to the federal states (KMK, 2020a).

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<sup>(6)</sup> <https://www.kmk.org/kmk/information-in-english/standing-conference.html>

In the last years, due to an increasing shortage of VET teachers in certain vocational subjects <sup>(7)</sup>, the education ministries of all 16 federal states launched recruitment campaigns to attract **side entrants**, but with different conditions and focuses, depending on their own specific needs <sup>(8)</sup>. In 2013, the KMK formulated a joint decision on how to attract and train teachers in areas of shortage (KMK, 2013). Most *Länder* also have regulations on the additional pedagogical and didactical education, practical training (preparatory service is mandatory) and examination of side entrants coming from other university fields (mostly technical/scientific courses of study), as in Rhineland-Palatinate <sup>(9)</sup>. In case of several years of experience in the relevant field of work, this may replace the preparatory practical service, as in North-Rhine-Westphalia (NRW) <sup>(10)</sup>. The schools also employ side-entering teaching staff without a teacher qualification but mostly with a university master degree in a technical field.

### 3.1.2. University trained grammar-school teachers at VET schools

The *Länder* regulate the education and training of grammar-school <sup>(11)</sup> teachers. The KMK framework agreement for teaching post type 4 (KMK, 2018a), the content requirements and the standards for teacher education mentioned above serve as references.

### 3.1.3. Teaching staff with VET qualification and further training

There is no KMK framework agreement on the training of specialised teachers for vocational subjects (e.g. *Fachlehrer*, *technische Lehrkraft*), which is regulated by *Länder* legislation, e.g. in Bavaria <sup>(12)</sup>. In 2000, the KMK Secretariat has been

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<sup>(7)</sup> e.g. side-entering teacher at VET school in NRW (*Lehrkraft am Berufskolleg*) with shortage in the fields machine technology, electrical engineering, social pedagogy, and health: <https://www.lehrer-werden.nrw/chancen/berufskolleg>

<sup>(8)</sup> Federal states recruiting side entrants as teachers: [https://cp.sodis.de/dbs/lehrer-werden/lw.php?doc=read\\_dbs&mode=zeigen&seite=1573](https://cp.sodis.de/dbs/lehrer-werden/lw.php?doc=read_dbs&mode=zeigen&seite=1573)

<sup>(9)</sup> *Landesverordnung über die pädagogische Zusatzausbildung und Prüfung von Lehrkräften im Seiteneinstieg (Lehrkräfte-Seiteneinstiegsverordnung)*. <http://landesrecht.rlp.de/jportal/?quelle=jlink&query=P%C3%A4dZAusLehrAPrV+RP&psml=bsrlprod.psml>

<sup>(10)</sup> *Gesetz über die Ausbildung für Lehrämter an öffentlichen Schulen. (Lehrerausbildungsgesetz – LABG)*: <https://www.kmk.org/dokumentation-statistik/rechtsvorschriften-lehrplaene/uebersicht-lehrerpruefungen.html>

<sup>(11)</sup> German *Gymnasium* (upper secondary school leading to general higher education entrance qualification).

<sup>(12)</sup> <https://www.km.bayern.de/lehrer/lehrausbildung/berufliche-schulen/fachlehrer.html>

commissioned to compile a register of references for legislation on teacher training in the Länder and to update it annually <sup>(13)</sup>.

Regarding the training of teachers of vocational practice (*Lehrer für Fachpraxis*), there is a framework agreement as overarching instrument (KMK 1973), but the Länder implement their own regulation, as in Saxony <sup>(14)</sup>.

#### 3.1.4. CPD for VET teaching staff

Like initial training, CPD of teachers is under the responsibility of the respective federal state. Consequently, there is not just one legal basis, but 16 different legislations regulating CPD of VET teachers. However, again, the KMK is the coordinating platform: it has compiled a detailed overview on the legal basis, responsibility, requirements, organisation and main approaches of CPD of teachers in the 16 Länder (KMK, 2017). In its resolution '**Länder common guidelines for the CPD of teachers** as a component of their professionalisation in the third phase of teacher education' adopted in March 2020, the KMK underlines the importance of lifelong education and training for teachers through in-service CPD (KMK, 2020a).

### 3.2. Qualification and competence requirements

#### 3.2.1. VET teachers with university degree

Applicants sometimes underestimate the demands of working as a teacher. For this reason, the KMK adopted some recommendations on **aptitude assessment** in the first phase of teacher training in 2013 (KMK, 2013a). The general competences and teacher mission statement for the areas of teaching, educating, assessing and innovating are defined in the KMK standards for teacher education (KMK, 2004/2019). The **subject-related profiles** in the KMK common content requirements (KMK, 2008/2019) describe the competences to be achieved in the

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<sup>(13)</sup> Übersicht zu den Lehramtsprüfungen und -befähigungen in den Ländern der Bundesrepublik Deutschland: <https://www.kmk.org/dokumentation-statistik/rechtsvorschriften-lehrplaene/uebersicht-lehrerpruefungen.html>

You can also refer to the German Education Server:

<https://www.bildungsserver.de/Ausbildung-zum-Fachlehrer-fuer-Fachpraxis-8747-de.html>

<sup>(14)</sup> Verordnung des Sächsischen Staatsministeriums für Kultus über die berufsbegleitende Ausbildung und Prüfung für Lehrkräfte für den fachpraktischen Unterricht an berufsbildenden Schulen im Freistaat Sachsen.

<https://www.revosax.sachsen.de/vorschrift/2948-Fachlehrerverordnung>

course of study as well as the individual content-related focal points <sup>(15)</sup>. The **pedagogical, subject-specific and didactical basic qualifications** in the areas of diversity, inclusion (joint learning of learners with and without disabilities), basics of special needs diagnostics as well as teaching and learning in the digital world are of particular importance <sup>(16)</sup>.

The university programme is concluded with a **Master of Education degree** or a first state examination. The duration of the practical **preparatory service** in a vocational school (*Vorbereitungsdienst*) is a minimum of 12 and a maximum of 24 months. The preparatory service shall be concluded with the [second] **state examination**, which qualifies the candidate to become a teacher (KMK, 2018).

The standard period of study before starting the preparatory service is at least six semesters for the Bachelor's programme and at least two semesters for the Master's programme; in total, including practical work, it is 10 semesters and corresponds to a study effort of 300 ECTS credits <sup>(17)</sup>. **Practical work** (e.g. 42 weeks in-company placements and 10 weeks school internships) related to the vocational specialisation chosen is required – so generally 52 weeks <sup>(18)</sup> – and included in the university programme preceding the preparatory service. The qualification and competence requirements to enter the teaching force are the same for **side entrants**, but they can prepare the state examination with an additional pedagogical and didactical education as well as practical training while already in school service <sup>(19)</sup>. Sometimes, the schools also employ side-entering teaching staff without a teacher qualification but mostly with a university master degree in a technical field and some work experience.

### 3.2.2. University trained grammar-school teachers at VET schools

The qualification and competence requirements for grammar-school <sup>(11)</sup> teachers are the same as described above, except that the practical work until the Master exam is limited to the 10 weeks of school internships – without the 42 weeks of in-company placements.

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<sup>(15)</sup> [https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen\\_beschluesse/2008/2008\\_10\\_16-Fachprofile-Lehrerbildung.pdf](https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2008/2008_10_16-Fachprofile-Lehrerbildung.pdf)

<sup>(16)</sup> <https://www.kmk.org/themen/allgemeinbildende-schulen/lehrkraefte/lehrerbildung.html>

<sup>(17)</sup> The standard period of study for courses leading to a first state examination rather than a master (which is still the case in a small minority of federal states) is 9 semesters and corresponds to 270 credit points according to ECTS.

<sup>(18)</sup> The completion of a relevant apprenticeship can be considered as proof of such subject-specific activity.

<sup>(19)</sup> Lasting 2 years in NRW  
[https://recht.nrw.de/lmi/owa/br\\_text\\_anzeigen?v\\_id=10000000000000000076](https://recht.nrw.de/lmi/owa/br_text_anzeigen?v_id=10000000000000000076)

### 3.2.3. Teaching staff with VET qualification and further training

The prerequisites for admission to the further education programmes and preparatory service leading to the qualification as subject-related teacher or teacher for vocational practice at VET schools are usually:

- (a) an intermediate secondary school leaving certificate; and
- (b) depending on the federal state and the chosen subject area, either a master craftsperson's (following an apprenticeship) or technician's examination in conjunction with corresponding professional experience, or sometimes even the first state examination for teachers at vocational schools <sup>(20)</sup>. Bavaria, who has been training and employing most such staff at VET schools compared to other Länder, is requiring the master craftsperson's or technician's examination plus at least 3 years of work experience, and explicitly *excludes* a university education as equivalent.

The duration of the further training programmes (including the mandatory one-year preparatory service) for subject-related teachers varies between 2 to 4 years (full-time), depending on the federal state and chosen subject combination, compared to 18 months for the qualification as teacher for vocational practice according to the framework agreement (KMK 1973). The further training for subject-related VET teachers is regulated in five Länder (Baden-Württemberg, Bavaria, NRW, Rhineland-Palatinate and Saxony) and leads to different degree titles <sup>(21)</sup>.

## 3.3. Initial training programmes

### 3.3.1. VET teachers with university degree

As mentioned in 3.1 and 3.2, there are specific initial training programmes to prepare those teaching theoretical subjects (general and vocational) in all types of VET schools/centres (under the jurisdiction of the *Länder* with a coordinating role by the KMK). The VET teacher initial education and training has a two-phase structure: first a course of studies at a university, then the preparatory practical service in a vocational school.

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<sup>(20)</sup> See leaflet on the Berufenet portal (for career orientation) of the federal employment agency: <https://berufenet.arbeitsagentur.de/berufenet/bkb/9392.pdf>

<sup>(21)</sup> <https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/kurzbeschreibung/weiterbildungsdauerabschluss&dkz=9392&such=Fachlehrer%2Fin++berufliche%2Fallgemeinbildende+Schulen>  
German Education Server <https://www.bildungsserver.de/Ausbildung-zum-Fachlehrer-fuer-Fachpraxis-8747-de.html>

The first phase takes place at state-recognised universities and, at least partially, in higher education establishments, equivalent to universities (*Pädagogische Hochschule* in *Baden-Württemberg*) and sometimes also in cooperation with universities of applied sciences (*Fachhochschulen*). Students acquire fundamental occupational and pedagogical knowledge, e.g. the study programme Business and Economic Education Programme (*Wirtschaftspädagogik*) deals with how economic content is taught and acquired in trade schools and in companies. In doing so, it considers individual learning processes, organisational and structural conditions from an interdisciplinary perspective. As a graduate of the MSc Business Education, students will be able to design school and company learning processes and have a sound knowledge of economics (Deissinger, 2010).

The prerequisite for access to the courses of study are general or subject-specific university entrance qualifications or a qualification recognised as equivalent. The prerequisite for access to a master study programme is a bachelor degree in the same subject. While the focus of the bachelor studies is on the chosen general (e.g. physics) and vocational subject (e.g. electrical engineering) as well as educational and social sciences, the studies at the master level focus on occupational didactics and the elements of teaching/educational theory in the VET system. Sixteen occupational specialisations <sup>(22)</sup> may be chosen as fields of study. In addition to the university courses, the first phase of teacher training includes a period of practical training (12 months in total) that takes place both at a vocational school and mostly in a company. Thus, initial practical experience is gained and acquired theoretical knowledge is applied. The organisation and implementation of this practical training vary between the *Länder*. This study phase is completed with a Master or first state examination.

The second phase of the teacher training for vocational schools is the probationary period (*Vorbereitungsdienst*), a service that prepares for working as a vocational school teacher. The aim of the preparatory service is the practical school training based on the academic training. The training should also take into account the teaching and educational work in dealing with inclusion and heterogeneity. Training in the preparatory service includes independent teaching to a limited extent. The preparatory service lasts at least 12 and up to 24 months,

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<sup>(22)</sup> Business and administration; Metal technology; Electrical engineering; Construction technology; Wood engineering; Textile technology and design; Laboratory technology/process technology; Media technology; Colour technology, interior design and surface technology; Health and body care; Nutrition and home economics; Agricultural economics; Social pedagogy; Nursing and care; Vehicle technology; Information technology. The *Länder* may allow additional occupational fields. *Source*. KMK (2018).

and is completed with the (second) state examination. This examination serves to establish whether the prospective teacher has the required professional competence and can fulfil the educational tasks independently.

As already mentioned, most *Länder* also recruit side-entrants due to teacher shortage in certain vocational subjects. They offer training programmes with additional pedagogical and didactical education, practical training (preparatory service is mandatory) and teacher examination for side entrants coming from other university fields (mostly technical/scientific courses of study). This additional training can be completed in-service. Some schools also employ side-entering teaching staff without a teacher qualification but mostly with a university master degree in a technical field and some work experience.

### **3.3.2. University trained grammar-school teachers at VET schools**

University and practical school training of the grammar-school teachers are the same as for VET teachers regarding the programme structure; just the study courses are different (general subjects instead of technical/vocational subjects). The practical experience of 42 weeks in a company is not required (KMK, 2018a).

### **3.3.3. Teaching staff with VET qualification and further training**

The further education and training programmes qualifying as subject-related teacher (*Fachlehrer*) and teachers of vocational practice (*Lehrer für Fachpraxis*) (KMK 1973) have a theoretical part and a practical part – the preparatory service in a vocational school. The contents of the theoretical classes are on pedagogy including special needs education content, VET pedagogy, educational psychology and sociology, methodology and didactics of practical teaching, some occupational theory, school organisation, school and vocational training law, school-related youth and parental law. The preparatory service includes observation, instruction under supervision and independent teaching. For more information on length, etc., please see Section 3.2.3.

## **3.4. Requirements for continuous professional development**

CPD of VET teaching staff (all types) is intended to continuously develop the professional competences of teachers. It shall ensure that staff development in the subject-related and didactic professional areas and in school organisation and school management corresponds to the state of scientific development and professional practice in enterprises and institutions (KMK, 2018, p. 4).



Following a study on CPD of teachers (Daschner/Hanisch, 2019), the KMK adopted a resolution with **common guidelines for the CPD of teachers** (see Section 3.1.4). It underlines the importance of in-service CPD due to the changing conditions (e.g. growing heterogeneity of learners; inclusion and digitalisation). The KMK instigates a transparent, efficient and sustainable in-service CPD offer, adapted to needs and objectives, covering a broad thematic and format diversity, and following criteria of quality. This shall motivate and support teachers in building their **personal professionalisation portfolio** (KMK, 2020a).

In the legislation of all 16 *Länder* (KMK, 2017), there is a **CPD obligation** for teachers. The scope of this obligation varies according to the *Länder* and the type of teachers and schools. In the city-state of Hamburg for example, VET teachers shall follow CPD for 45 hours per year. Mostly, the head of the school is responsible for the implementation of this CPD obligation for its teaching staff.

Each school draws up a **CPD plan** based on qualification needs assessments and on results of internal or external evaluations. A broad spectrum of VET teaching competences and topics are covered: technical, pedagogical/didactic and transversal. The CPD is offered in different formats, depending on the objectives and needs. However, the preferred formats are half-day CPD on-site (to avoid cancellation of classes), as well as in-process CPD at school, distributed over a school year (e.g. in modular sequential format, i.e. building on each other), allowing time to discuss with colleagues as well as reflection time on the own practice and thus more sustainable. Sometimes the offer is regional or state-wide (KMK, 2017). Online and blended learning formats are becoming more common, especially since the Covid-19 pandemic <sup>(23)</sup>.

The CPD offer can be provided through different structures but is often organised by federal institutions dedicated to quality development of schools and teachers <sup>(24)</sup> and subordinated to the respective federal ministry of education. These federal institutions provide guidance to VET schools and teachers on CPD offers, e.g. in North Rhine-Westphalia by 53 local competence teams <sup>(25)</sup>. CPD can also be organised by the school or close to the school by a local institution, universities, and external providers. The CPD trainers are mostly teaching staff themselves and sometimes, freelance lecturers, increasingly regarding CPD on digital competences. The trainers receive further training for this task or have to

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<sup>(23)</sup> e.g. Learning materials and platform for teachers CPD in NRW:  
<https://www.learnline.schulministerium.nrw.de/>

<sup>(24)</sup> e.g. Landesakademie, Landesinstitut, Kompetenzzentren für Qualitätsentwicklung in Schulen.

<sup>(25)</sup> CPD for teachers in North Rhine-Westphalia by local competence team:  
<https://www.lehrerfortbildung.schulministerium.nrw.de/Fortbildung/Kompetenzteams/>

prove that they have special qualifications. Cooperation with universities is organised selectively, mostly for selected thematic focal points of CPD for teachers. To ensure the quality of training, feedback forms from participants and trainers are collected and evaluated. In some cases, there is an external monitoring and evaluation of the CPD measure (KMK, 2017).

### 3.5. Data on teachers and trainers in school-based settings

In 2019/20, there were **124 653 teachers** employed in all types of VET schools (Destatis, 2020b, Table 5.3). This number has been quite stable between 2010 and 2019, with just a peak in 2016/17. The majority of these were university trained VET teachers (51 822), followed by the university trained grammar-school teachers (32 973) – especially in Baden-Württemberg and North Rhine-Westphalia. Teaching staff without a teacher qualification <sup>(26)</sup> counted 24 723 persons, followed by the subject-related teachers and teachers for vocational practice accounting for 7 818 teachers.

The national education statistics provide the data and key figures that serve as a basis for planning for policy-makers and public authorities and for further analyses by the scientific community. The KMK secretariat regularly produces documentation and evaluations for the school (including vocational schools) and higher education sectors (including university training programmes for vocational teachers). Of particular importance is the annual publication **‘Pupils, Classes, Teachers and Graduates of Schools’** with detailed tables, graphs and time series over 10 years for all *Länder*, the projection of pupil and graduate numbers. The data basis for school statistics is the data requested from the highest education authorities of the *Länder* and for higher education statistics the data of the official higher education statistics of the statistical offices of the Federation and the *Länder* <sup>(27)</sup>.

The KMK publication on teacher recruitment provides a statistical overview of the three phases for recruiting new teachers: teacher education, preparatory service and recruitment into the public school service (including side entrants). The data is presented by teaching type and federal state. The documentation covers a period of at least 10 years and has been updated every two years since 2007 with

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<sup>(26)</sup> According to a KMK expert, this category contains mostly university graduates with a master in a technical field with teacher shortage in VET schools. Some also come from the world of work and could be seen as hybrid teachers.

<sup>(27)</sup> <https://www.kmk.org/dokumentation-statistik/statistik.html>

data that are requested from the *Länder* by means of a separate survey. In the interim years of the documentation, an updated extract of the table is made available <sup>(28)</sup>. However, there is no systematic collection of data on CPD of teachers yet (Daschner/Hanisch, 2019).

According to the tables on the recruitment of teachers in 2019 (KMK, 2020c), 2 503 applicants for becoming a VET teacher (Type 5) were recruited – almost all those who had just completed their preparatory service (2 545). Additionally, 1 598 subject-related vocational teachers were recruited (mostly in Baden-Württemberg, Bavaria and especially in North Rhine-Westphalia in schools for learners with disabilities), few teachers for vocational practice (244, half of those in Bavaria), and finally 402 side entrants for VET teaching (e.g. in electronic engineering, metal working technic, social pedagogy and nursing), especially in NRW and Bavaria. In 2019, 2 003 students were preparing the final qualification as VET teacher (Master or state examination), especially in NRW and Lower Saxony.

According to the last full-update of the KMK documentation on teacher recruitment (KMK, 2019, p 13), the teacher shortage and the new regulations have favoured the recruitment of university side entrants from 2013, with a peak between 2015 and 2017. Since 2017, the recruitment of VET teaching staff (subject-related) via further training (on top of a VET advanced qualification) rather than with university degree has increased significantly as well. Regarding the balance between recruitment demand and supply of VET teachers for upper secondary education, the situation is tense nationwide with a yearly average of 2 900 calculated new applicants in relation to almost 3 900 necessary recruitments in the years 2020 to 2030. Accordingly, the recruitment needs cannot be met on average (KMK, 2020b, p 23).

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<sup>(28)</sup> <https://www.kmk.org/dokumentation-statistik/statistik/schulstatistik/einstellung-von-lehrkraeften.html>

## CHAPTER 4. Training professionals in work-based settings

### 4.1. Definitions

Training professionals in work-based settings are called **in-company trainers** (*betrieblicher Ausbilder*). Trainers are responsible for planning training content and schedules and for conducting in-company vocational training programmes, as defined in a BIBB terminology (BIBB, 2017). They provide apprentices with the knowledge and practical skills required for an occupation and are their point of contact in the company. Only those who are personally and professionally suitable are allowed to act as trainers (Vocational Training Act, BBiG § 28-30).

In-company training personnel can be divided into the following categories:

- (a) **Training managers** coordinate the entire training of a (large) company for individual occupations or occupational groups.
- (b) **Full-time in-company trainers** are predominantly employed in large companies with a training workshop, which, however, account for only a small share of all training companies. Both first categories are a very small minority in companies.
- (c) **Part-time in-company trainers** provide training directly at the workplace, alongside their other work duties. They are trainers in the sense of the BBiG. Their (part-time) activity in training includes providing workplace experience. In small companies, they may simultaneously hold the position of training manager.
- (d) **Skilled workers providing training** are employees who provide training at the workplace without being trainers themselves. In the crafts sector, these skilled workers may be journeymen or foremen. There is no uniform job title for this group of persons. Both last categories represent the large majority of staff providing training.

Even if many parties are participating in the training process, the trainers (in the sense of the BBiG) bear the overall responsibility.

In addition to in-company training, vocational trainers also perform an educational task at third learning venues such as inter-company training centres (ÜBS/ÜLU – details are provided in Section 5.2.2) and at external training service providers. Here they are usually entrusted with training tasks on a full-time basis.

## 4.2. Legislation

Anyone who provides or wants to provide an apprenticeship in Germany has to observe the legal provisions – in particular, those laid down in the Vocational Training Act (BBiG), if applicable, the Trades and Crafts Code (HwO), the Protection of Young People in Employment Act (JArbSchG), the Ordinance on Trainer Aptitude (AEVO) and the corresponding framework curriculum. Further, the BIBB Board Recommendation No 162 sets out criteria for the suitability of training venues and their training personnel.

### 4.2.1. Vocational Training Act - Trade and Crafts Code

Only those who are personally and professionally qualified may train apprentices. This is set out in the Vocational Training Act (BBiG) in § 28-30 and the Trade and Crafts Code (HwO) in § 22. Anyone who is not allowed to employ children and young people (see also JArbSchG), or who has repeatedly or seriously violated the BBiG (or the HwO) or rules and regulations based on those is considered personally unsuitable. A person is considered professionally suitable if he or she possesses the professional skills, knowledge and abilities as well as the pedagogical skills, knowledge and abilities required to impart the contents of the training. A completed vocational training or course of study in a field corresponding to the training occupation can demonstrate professional aptitude. The aptitude of the training staff is guaranteed by the competent chamber that registers them (e.g. chambers of industry and commerce, chambers of skilled crafts).

### 4.2.2. Ordinance on Trainer Aptitude (AEVO)

Professional qualification of trainers also includes vocational and occupational pedagogical knowledge. The Ordinance on Trainer Aptitude (AEVO), which was published based on BBiG <sup>(29)</sup>, specifies what this consists of in concrete terms and how proof of this can be provided. Any company carrying out apprenticeship has at least one employee who is the designated responsible trainer and has proven his aptitude to take over this task by successfully passing the examination according to the AEVO (which is also part of the Meister exam). Although legally regulated this is not a formal educational qualification and is therefore so far not allocated to the German Qualifications Framework.

According to this ordinance, vocational and occupational pedagogical aptitude includes the competence to independently plan, conduct and monitor vocational

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<sup>(29)</sup> The AEVO was first published in 1972 and modernised in 1999. It was suspended between 1.8.2003 and 31.7.2009, and reinstated in 2009 after a second modernisation.

training in the fields of action: checking training prerequisites and planning training; preparing training and assisting in the recruitment of apprentices; conducting and completing training. For example, one skill to be acquired is the ability to identify learning difficulties of apprentices, and to give individual learning support and guidance. Whether knowledge is available in these four fields is determined in a training aptitude test, which is carried out by the competent bodies (the chambers). These competent bodies are responsible for adopting regulations and setting up boards to conduct aptitude examinations for trainers.

The knowledge relevant to the examination is imparted in so-called 'training of trainers' courses (AdA courses). In 2009, the Board of the BIBB has published a **framework plan** with details of the knowledge to be imparted in the preparatory courses (BIBB, 2009; Ulmer, 2009/2019). The BIBB recommends taking a 115-hour course to prepare the AEVO examination. The relevant bodies (mostly the chambers) organise such courses, offered in different formats (attendance, distance learning or blended formats).

In the skilled crafts, anyone who has passed the master craftsperson's examination in the occupation in which training is to be provided may train, since AEVO is part of the Meister degree. The liberal professions (doctors, dentists, veterinarians, tax consultants, lawyers, experts, notaries and pharmacists) are entitled to train with the corresponding degree and do not require the training aptitude examination.

#### **4.2.3. Suitability of training venues and personnel**

In its 2015 recommendation No 162, § 2.5.2, the BIBB Board recommends that a part-time trainer should not train alone more than three apprentices on average, and a full-time trainer, not more than 16 apprentices in a group accordingly. In § 2.5.3, the recommendation summarises the qualification requirements and CPD options for the in-company training staff according to its level of responsibility (BIBB, 2015).

### **4.3. Provisions for continuous professional development**

Needs analyses have been carried out since the 1960s mostly by the BIBB in the form of research projects (e.g. explorative or case studies, surveys) to monitor the competences needed by trainers, ensure the quality of IVET and CVET in companies and adapt the train-the-trainer course offer accordingly.

The following advanced vocational qualifications for in-company trainers build on one another and are intended to be closely related to the trainer's own

professional environment. In addition to the **examination in accordance with the Ordinance on Trainer Aptitude (AEVO)**, the advanced VET qualifications of ‘**certified initial and continuing education pedagogue**’ <sup>(30)</sup> (EQF level 6) and ‘**certified vocational pedagogue**’ <sup>(31)</sup> (EQF level 7) have been developed by VET stakeholders in 2009. They provide professional skills in pedagogy and management in a broad sense (e.g. planning, designing, monitoring, mentoring and leading). These qualifications entitle trainers to take additional tasks, such as searching and selecting apprentices or managing training. The competences acquired and occupational profiles include, among others, online tutoring, development of teaching materials, quality management, ability to identify apprentice skills, drafting exams, mentoring and leading trainers and skilled workers providing training (BMBF, 2013).

Similar to preparation courses to prepare the AEVO exam, the range of these preparation courses is large and allows the choice between different forms of teaching and learning. In addition to part-time and full-time seminars, evening and weekend offers, there are also numerous online courses, mostly combined with attendance phases. The courses can be provided in or outside the company, for example by the chambers or other institutions providing CVET (courses for EQF level 7 qualification takes place in cooperation with higher education institutions, e.g. university of Rostock). The duration of the advanced courses are 500 hours for EQF level 6, and around two years for EQF level 7 qualification. As for the AEVO, the ‘competent bodies’ (mostly the chambers) are responsible for the organisation and carrying out the examinations and the certifications.

The 2012 framework curriculum takes up the content specifications of the BIBB Board of 2009 on the framework regulation for training regulations for disabled persons in accordance with § 66 BBiG / § 42m HwO. According to this, an **additional qualification in rehabilitation education for trainers (ReZA)** of 320 hours is generally required for trainers to conduct appropriate vocational training for disabled persons both in companies and in inter-company and extra-company facilities or vocational rehabilitation measures. The prerequisite is

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<sup>(30)</sup> *Geprüfter Aus- und Weiterbildungspädagoge:* [http://www.gesetze-im-internet.de/awp\\_dfortbv/AWP%C3%A4dFortbV.pdf](http://www.gesetze-im-internet.de/awp_dfortbv/AWP%C3%A4dFortbV.pdf)  
[https://www.berufenet.arbeitsagentur.de/berufenet/faces/index;BERUFENETJSESSIONID=plnNkpOXplXmQyo2r9BTLO\\_vztlEXFVOA7Wpmhej9PeXQiLH2rTf!976053252?path=null/kurzbeschreibung&dkz=77111](https://www.berufenet.arbeitsagentur.de/berufenet/faces/index;BERUFENETJSESSIONID=plnNkpOXplXmQyo2r9BTLO_vztlEXFVOA7Wpmhej9PeXQiLH2rTf!976053252?path=null/kurzbeschreibung&dkz=77111)

<sup>(31)</sup> *Geprüfter Berufspädagoge:* <https://berufenet.arbeitsagentur.de/berufenet/faces/index;BERUFENETJSESSIONID=xCfNkaFE7QdsUtUW2eVYHxlnwzoFTIsF-ORUWE3HkV1tujdnMo1g!1166079799?path=null/kurzbeschreibung&dkz=59179>



completed vocational training and an AEVO training qualification (Vollmer, K. et al, 2020).

From the non-formal perspective, there is a variety of opportunities for punctual CPD provided by the employer, the chambers <sup>(32)</sup> and other educational institutions. For example, regular updating of specialist knowledge and skills is necessary, in particular in the technical-commercial and the skilled crafts occupations. Digital media literacy is of high importance as well (see Chapter 6). The portal [www.foraus.de](http://www.foraus.de) is a trainer information and exchange forum. It also provides the possibility for trainers to further qualify themselves through online learning modules. This flexible and low-threshold offer is important to address specific competences of trainers as the formal advanced qualifications described above are very demanding and time-consuming and the demand has been quite limited among employers and trainers – see Chapter 7 (Schley, 2018; Bahl, 2019).

#### 4.4. Data on trainers in work-based settings

Data on in-company trainers (e.g. on number, examinations) is collected yearly by the Federal statistical office (Destatis, 2020a). The BIBB is analysing these data and presents its own calculations and analyses in its yearly Data Report on VET in the dedicated Section A 5.9.

At least one trainer per training company is registered with the competent body (usually the chamber). As described in Data Report 2021 (BIBB, 2021, A 5.9, p 169-174 in pre-release), **643 023 trainers** were registered nationwide in 2019 in the fields of industry and commerce (47.4%), skilled crafts (32.2%), liberal professions (13.2%), agriculture (3.8%), public service (3.0%) and home economics (0.4%). Compared to the previous year, the total number decreased slightly, but the lowest point since 2010 (675 198) was in 2017 (636 078). In terms of age distribution, the largest age groups among trainers were those aged 50+ with 50%, and those aged 40-49 with almost 25%. Of all the trainers registered in 2019, three-quarters were men. Their share was even much higher among trainers over 50 years old.

As a rule, trainer aptitude is demonstrated by passing an examination in accordance with the AEVO. In 2019, 98 478 people took trainer aptitude examinations in the various training sectors and 92.7% passed (91 335). More than a third of these were women (35.6%). Since 2010 (67 182), the number of passed AEVO examinations has constantly increased with just a slight decrease in 2017/18.

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<sup>(32)</sup> [www.stark-fuer-ausbildung.de](http://www.stark-fuer-ausbildung.de)



Since the AEVO examination is part of the master craftsperson's / bachelor professional qualification, it is also interesting to have a look at these data: 40 467 persons took part in the master craftsperson's examination in the various occupational fields in 2019 and 86.2% passed (34 899).

In 2019, 150 candidates took and 111 of them passed the examination for the advanced VET qualification 'certified initial and continuing education pedagogue' (EQF level 6). As for the advanced VET qualification 'certified vocational pedagogue' (EQF level 7), 141 took and 123 passed the examination (Destatis, 2020a, Table 6.1a2).

## CHAPTER 5. Partnerships between schools and companies

The Vocational Training Act mentions both companies and part-time vocational schools as learning venues for apprentices and stresses their necessary cooperation. Partnerships between all dual training actors and venues are anchored in formal documents and guidelines, as described in Section 5.2. In practice, some forms of cooperation are well established, but other forms are still limited and need to be expanded, with digitalisation being both a cause and an enabler.

### 5.1. Examples of practice

Common CPD of VET teachers and in-company trainers has been encouraged since 1997 by the Board of the BIBB in its Recommendation No. 99 (see Section 5.2) but does not exist yet in practice. Formal CPD offers for VET teachers in companies and vice versa for trainers in VET schools do not exist either. As described in the next section, reasons for this are the different legal bases for CPD teachers (*Land*) and trainers (*Bund*). Further, such CPD activities are one of the last steps in a long process of communication and collaboration. As described in Section 4.3, there are CPD offers for trainers in the field of pedagogy and didactics as formal advanced VET programmes at EQF levels 6 and 7 in cooperation with universities. The BMBF programmes InnoVET and INVITE currently fund such partnerships of VET excellence, which may also involve CPD of trainers at universities or centres of VET excellence <sup>(33)</sup>.

### 5.2. Cooperation between VET schools and companies

This section is mainly based on the brochure ‘Learning venue cooperation in VET’ with materials for in-company trainers <sup>(34)</sup>. After describing the legal provisions and

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<sup>(33)</sup> InnoVET: [https://www.inno-vet.de/innovet/de/home/home\\_node.html](https://www.inno-vet.de/innovet/de/home/home_node.html)

INVITE: <https://www.bibb.de/de/120851.php>

<sup>(34)</sup> [https://www.foraus.de/de/themen/foraus\\_107679.php](https://www.foraus.de/de/themen/foraus_107679.php)

guidelines for learning venue cooperation (*Lernortkooperation, LoK*), we will give examples of established forms of cooperation in dual training.

#### **5.2.1. Legal provisions for cooperation of learning venues**

The basic formal link between VET schools and training companies are the recognised training regulations, which are designed in a cooperative process between the Federal government, the federal states and the social partners. The company is bound to the training plan set in the regulation and the VET school and teachers are bound to the corresponding framework curricula. In consequence, there is a strong inherent formal link from the start. Cooperation between companies and VET schools as learning venues is regulated in legal provisions to which the partners in dual training are bound in the content and organisation of their educational mission. The Vocational Training Act stipulates in Section 2, that the IVET learning venues (e.g. companies, vocational schools, inter-company training centres) shall cooperate in implementing vocational training.

Already in 1997, the Board of the BIBB had issued a '**Recommendation on cooperation between learning venues**' (No 99), which defines the tasks of learning venue cooperation in more detail (BIBB, 1997). This recommendation remains relevant and important, as its implementation is still not very widespread.

- (a) working groups of trainers and teachers for information purposes;
- (b) initiation or strengthening of cooperation through existing bodies such as vocational training and examination committees at the chambers, school conferences, state committees;
- (c) joint training projects to develop or strengthen methodological and didactic cooperation of trainers in vocational school teaching or of teachers in in-company work placements and to intensify communication;
- (d) joint participation of trainers and teachers in further training measures in vocational pedagogy and technical subjects to develop a common pool of experience.

One example of good practice is the **Hamburg School Act** of 2006, which succeeded in committing both dual training partners (companies and VET schools) – despite the two different legal systems - to quite extensive cooperation: e.g. meetings of trainers and teachers twice a year, or coordination of the curriculum between companies and schools.

#### **5.2.2. Examples of cooperation in dual training**

##### **1. Inter-company vocational training centres (*ÜBS / ÜLU*)**

In addition to the 'classical' learning venues company and vocational school, inter-company training centres fulfil an important function, in particular in the craft trades

and agriculture. They contribute largely to ensuring that training is not only company-specific, but also occupation-specific training.

## *2. Joint training*

Since many small companies are unable to teach certain training contents, they have joined forces to form training partnerships. In the network, the companies can complement each other in the practical vocational training.

## *3. Assisted training*

Assisted training is a form of cooperative training. A training provider takes on the role of a service provider who ensures that training relationships between apprentices and company /vocational school are established and run successfully. The services offered to young people include application training, work placements in the preparatory phase, tutoring, counselling and assistance in coping with life and securing a livelihood during training. Companies receive support in the form of application and training management, counselling and information with regard to specific target groups as well as cooperation between learning venues. The assisted training is anchored in the German social code (SGB III).

## *4. Cooperation in the examination system*

Volunteer work on examination boards enables trainers and teachers to get to know each other in a completely new setting and to establish contacts. This formalised cooperation in the form of regular meetings creates trust between the two bodies, provides an opportunity for agreement and often leads to closer cooperation in the regular course of training. The exchange in the examination board also ensures that the company and the school are always up to date.

## *5. Example of good practice: joint project BLok*

The portal Foraus.de provides a wide offer of thematic guides, videos on learning venue cooperation and examples of best practices, like the **joint project BLok**. New technologies can support innovative pathways for cooperation between learning venues in VET. The 'Online report book to strengthen cooperation between learning venues' (BLok) is a further development of the paper-based report book which represents such an approach <sup>(35)</sup>. The BLok online report book is accessible to all actors in dual training: e.g. apprentice, training company, vocational school and inter-company vocational training centre. BLok enables transparent, structured and location-independent documentation of the respective learning goal progress. This promotes the cooperation between partners at all

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<sup>(35)</sup> The platform was created as part of a project funded by the Federal Ministry of Education and Research and the European Social Fund of the European Union (2009-2012). BPS Bildungsportal Sachsen GmbH now operates the training portal. The service is available throughout Germany and for all dual training occupations:  
[www.online-ausbildungsnachweis.de](http://www.online-ausbildungsnachweis.de)

learning venues, facilitates the coordination and interlocking of the training content, and enables the strengthening of self-responsibility and the initiation of reflection processes (BIBB, 2020b). There are many other examples of best practice promoting learning venue cooperation thanks to digitalisation, e.g. DigiTS, Wilo-Brain, Smart Factory (BBS Brinkstraße, Osnabrück), Karl-Arnold-Schule Biberach <sup>(36)</sup>.

### 5.3. Hybrid teachers and trainers

#### 5.3.1. Hybrid trainer

In-company trainers are in a way hybrid as most of them are part-time trainers with some pedagogical skills (see Chapter 4), having to do their share of 'productive' work as skilled staff during the rest of their working time. Some skilled workers or master craftspersons are changing sides at some point in their career by qualifying as teacher for vocational practice or as subject teacher in VET schools (see Chapter 3), but only their career is hybrid in time not as simultaneous activity.

#### 5.3.2. Hybrid teacher

In order to improve the current and future supply of teaching in selected technical subjects at vocational schools (electrical, automotive and mechanical engineering), the Ministry of Education in North Rhine-Westphalia (MSB NRW) is implementing a comprehensive programme with the support of the business associations and chambers. Part of this programme is the possibility of **part-time teaching at vocational schools** (alongside the job in the industry) to a mutually agreed extent. Applicants should have an engineering degree from a university (of applied sciences) in one of the subjects mentioned <sup>(37)</sup>.

Another part of the programme is to attract university students in such needed technical subjects to join the VET teacher university programme as side-entrants with additional courses in pedagogical and didactical subjects as well as mandatory preparatory practical training (see Chapter 3).

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<sup>(36)</sup> [https://www.foraus.de/de/themen/foraus\\_107679.php](https://www.foraus.de/de/themen/foraus_107679.php)

<sup>(37)</sup> <https://www.schulministerium-nrw-de.prod-drupal.nrw.de/nebenberufliche-lehrkraefte-am-berufskolleg>

#### 5.4. Data on cooperation and hybrid teachers

There is no data available on cooperation and partnerships, neither on 'hybrid' teachers/trainers. However, the following statistical category (see Section 3.5) could contain so-called hybrid teachers from the world of work: Teaching staff without a teacher qualification counted 24 723 persons, representing about 20% of teaching staff at VET schools in 2019/20 (Destatis, 2020b, Table 5.3). According to a KMK expert, this category contains mostly university graduates with a master in a technical field with teacher shortage. In addition, some also come from the world of work, e.g. through the NRW recruitment programme mentioned above, and could be seen as hybrid teachers.

## CHAPTER 6. National and EU-funded projects and initiatives

### 6.1. Digital skills for remote and blended teaching

#### 6.1.1. Platforms with distance learning resources

The online platforms 'Forum for trainers', [www.foraus.de](http://www.foraus.de), 'Digital media in VET', [www.qualifizierungdigital.de](http://www.qualifizierungdigital.de), and 'Qualification Network Q 4.0' [www.netzwerkq40.de](http://www.netzwerkq40.de) provide in-company trainers and VET school teachers with suitable online resources and tools for distance learning of theoretical and practical components, addressing the implications of COVID-19. The digital platforms offer online training modules and allow sharing and collaborative design of teaching and training material.

One example on the platform Foraus is the **Smart Factory video** <sup>(38)</sup> showing how a modern didactic-methodical concept is implemented at BBS 2 – the 'Vocational School 2' – in Wolfsburg in the training of automation and mechatronics technicians. The project aims to give trainers ideas for their own training practice on the complex interrelationships of Industry 4.0.

The platform Digital media in VET organises a **roadshow** (online since 2020) to disseminate products of funded projects <sup>(39)</sup>, for example the **online report book for apprentices BLoK** described in Chapter 5.

The **Network Q 4.0** provides new training and discussion formats guiding in-company trainers, e.g. using design thinking and bootcamps as well as frequent online meetings, Q 4.0 talk, Q 4.0 meet or Q 4.0 work. The website offers an online media library, featuring own studies, publications and videos, a newsletter and is present on social media.

#### 6.1.2. Developing digital skills and didactic competences in distance teaching for trainers and VET teachers

The projects MIKA seminars and Digi-Gap both equip VET trainers and teachers respectively with digital skills, remote and blended teaching pedagogies.

Based on the research work and the funding initiative, 'Digital media in VET', the **Digital change qualification initiative Q 4.0** was launched in 2019 to set up and test innovative continuing education and training concepts. These concepts

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<sup>(38)</sup> <https://www.foraus.de/de/themen/smart-factory-industry-4-0-in-vocational-education-and-training-135395.php>

<sup>(39)</sup> <https://www.qualifizierungdigital.de/de/roadshow-online-5995.php>

aim to enhance the media and IT skills of in-company trainers and their ability to adapt the content of the training process to digital changes. The **MIKA seminars** are part of this initiative and are being tested at five locations in cooperation with several chambers of skilled crafts as well as chambers of commerce and industry. The seminars focus on six learning fields, e.g. 'Understanding the digital world', 'Communicating and collaborating', 'Creating and sharing content'. Since the seminars for the trainers mostly take place alongside their jobs, the MIKA seminars are offered in blended learning format. The 'MIKA learning world' available from mid-2021 is intended to support the self-learning phase and supplement the previous offer in the BIBB's trainer portal at [www.foraus.de](http://www.foraus.de). The seminar concept should be directly oriented towards the everyday work of the participants. The content is conveyed over a period of ten to twelve weeks. After completing the seminar, the participants receive a certificate <sup>(40)</sup>. At the final stage, the BMBF and the involved partners will decide in which format the developed qualifications will be introduced: either as nation-wide recognised additional qualifications, further training modules or become part of the Trainer Aptitude Ordinance (AEVO) – see Chapter 4.

Besides investing in schools' digital infrastructure (DigitalPakt Schule) as well as in teachers and students equipment (Corona-Hilfe I, II and III), the Federal government and the federal states supplemented the '**Quality Initiative for Teacher Education**' with a new funding guideline in 2020. Funding focuses on the topics, '**Digitalisation in teacher education**' and '**Teacher education for vocational schools**'. For example, the project '**Digi\_Gap**' aims to analyse digital gaps in relation to didactic, organisational, individual and technological factors in educational processes within the framework of systematic research and to generate approaches to closing them for all phases of teacher education as well as in the school context <sup>(41)</sup>.

### **6.1.3. New technologies for CPD of trainers and VET teachers**

The following funding programmes are embedding the newest technological developments (i.e. AI, augmented and virtual reality) into VET teachers and trainers' CPD:

**Inter-company vocational training centres (ÜBS)** are designed to supplement in-company training, since SMEs are often unable to provide all the stipulated learning content. In the meantime, ÜBS have developed into

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<sup>(40)</sup> <https://www.foraus.de/de/themen/seminarkonzept-medien-und-it-kompetenz-fuer-ausbildungspersonal-mika-119648.php>

<sup>(41)</sup> <https://www.qualitaetsoffensive-lehrerbildung.de/de/digitale-luecken-in-der-lehrkraeftebildung-schliessen-eine-vorstellung-des-projekts-digi-2336.html>



multifunctional centres of education, providing also advanced training and continuing education. Through the special **ÜBS digitalisation programme** <sup>(42)</sup>, pilot projects in competence centres are helping to accelerate the digitalisation of processes in the training of apprentices. They develop innovative teaching and learning concepts and disseminate them as multipliers. For example, the **DiQua project** team set itself the goal of identifying the effects of digitalisation on the occupational activity profiles of carpenters, painters and varnishers, and, based on this, drawing conclusions for the qualification of training personnel and the further development of inter-company training <sup>(43)</sup>.

In 2019, the Federal Ministry of Education and Research (BMBF) launched the funding programme 'Shaping the future - innovations for excellent vocational training (**InnoVET**)', which aims to support collaborative projects in adopting innovations (e.g. artificial intelligence) and developing corresponding qualification concepts in VET <sup>(44)</sup>. The **SPERLE project** for example qualifies teaching staff in vocational schools, companies and further education institutions to create motivating learning resources for personalised learning with digital media <sup>(45)</sup>. Another example is the **BM=x<sup>3</sup> project**, which develops and tests a decentralised supra-regional vocational training academy for the high-technology sector with micro- and nanotechnology (MNT) occupations <sup>(46)</sup>.

## 6.2. Green skills for sustainability

Green skills are inherent to sustainability. Cedefop defines green skills as 'the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society' (Cedefop, 2012).

Since 2015, BIBB has been funding eighteen '**VET for sustainable development**' projects (BBNE) <sup>(47)</sup>. Until 2020/21, they experimented and evaluated relevant curriculum concepts, digital teaching, learning materials and examination questions on green skills for initial and continuing VET, e.g. on energy saving and energy efficiency, carbon and water footprint, or thinking about resources. These projects led – among others – to recommendations for

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<sup>(42)</sup> <https://www.bibb.de/de/36913.php>

<sup>(43)</sup> [https://www.foraus.de/de/themen/foraus\\_112991.php](https://www.foraus.de/de/themen/foraus_112991.php)

<sup>(44)</sup> [https://www.inno-vet.de/innovet/de/home/home\\_node.html](https://www.inno-vet.de/innovet/de/home/home_node.html)

<sup>(45)</sup> <https://www.inno-vet.de/innovet/de/die-projekte/alle-projekte-von-a-bis-z/sperle.html>

<sup>(46)</sup> <https://www.inno-vet.de/de/bm-x---attraktive-berufliche-bildung-in-mikro-und-nanotechnologie-durch-exzellente-berufe.html>

<sup>(47)</sup> 'VET for sustainable development' (BBNE): <https://www.bibb.de/de/33716.php>

organising VET and related didactic guidance. A strong partnership between businesses, scientific support and the responsible authorities was encouraged.

A **transfer programme for training staff** (2020-22) <sup>(48)</sup> follows the VET for sustainable development (BBNE) programme to support in-company trainers to develop green and sustainable skills. Consortia (experienced partners of the BBNE pilot projects) were selected in summer 2020 with seven collaborative transfer projects, which started in November 2020 for 2 years. One example is the BBNE sustainability project ANLIN 'Apprenticeship promotes sustainable places of learning in industry', which now has a successor: the **transfer project ANLIN<sup>2</sup> 'Trainers and apprentices become sustainability experts'**.

### 6.3. Preventing early leaving from VET

The VET teacher and the trainer should also be able to call for external support measures if needed (e.g. assisted training – see Section 5.2.2 – or individual coaching as described below).

'**VerA individual coaches**' <sup>(49)</sup> are retired professionals (e.g. former in-company trainers), who volunteer to support apprentices facing problems and at risk of dropping out of VET until successful completion of their training. Apprentices, parents, trainers and companies, VET teachers and vocational schools, training guidance of the chambers or employment agency can contact the VerA team (Huismann, 2018).

To equip trainers in supporting the specific target group of young refugees in apprenticeship, the **Chambers' portal for trainers, 'Stark fuer Ausbildung'** (Strong for apprenticeship) <sup>(50)</sup>, addresses intercultural aspects for in-company trainers, focusing on refugees. For example, the portal offers a comprehensive trainer manual with modules on integrating refugees into apprenticeship, webinars on the subject and an online CPD for trainers 'Integrating refugees in and through apprenticeship'. The Chambers association (DIHK) is also broadcasting a podcast 'Be a Mentor (Sei ein Mentor)' for in-company trainers since July 2020. In October 2020, the focus of the podcast was on communication with refugee apprentices during the corona crisis. The BIBB portals [www.foraus.de](http://www.foraus.de) and [www.überaus.de](http://www.überaus.de) are also promoting the intercultural competences of in-company trainers.

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<sup>(48)</sup> ANLIN<sup>2</sup> : <https://www.bibb.de/de/121439.php>

<sup>(49)</sup> <https://vera.ses-bonn.de/>

<sup>(50)</sup> [www.stark-fuer-ausbildung.de](http://www.stark-fuer-ausbildung.de)

Podcast 'Be a mentor': <https://seieinmentor.podigee.io/>

## CHAPTER 7. National surveys of teaching and training populations

On behalf of the BMBF, BIBB has conducted a one-year study in 2020/21 to investigate whether the **ordinance on trainer aptitude (AEVO)** <sup>(51)</sup> and the corresponding framework plan (both dated 2009) still adequately reflect the challenges of in-company training processes (regarding digitalisation, sustainability, demographic development, heterogeneity) or whether there is a need for modernisation. One element of the study was an **online survey** among VET actors involved with the AEVO with almost 3 900 participants. The online survey was aimed at human resources managers, training managers, trainers, training advisors at the chambers, training providers for CPD of training staff, works/staff councils, youth and apprenticeship representatives and examiners. Based on the study results, BIBB recommends to keep the AEVO/AMVO ordinances in their current version due to their open wording but to update the contents of the corresponding BIBB framework plan by end of 2022. Further training and refresher courses for trainers should supplement the current offer <sup>(52)</sup>.

From 2009 to 2012, BIBB conducted a research project on the ‘Situation of training staff in apprenticeship’ (SIAP). In the course of a case study approach, personal interviews were conducted with various training stakeholders (personnel and training management, full-time and part-time trainers, supervisors, employee representatives, apprentices) in enterprises nationwide (Bahl/Blötz, 2012) <sup>(53)</sup>. The results of this survey are still relevant since they have been the basis for forthcoming actions. In 2019, the main author of the SIAP study concluded:

*“The general call for professionalisation of VET personnel in German and European policy does not adequately respond to the particular situation of workplace trainers. Policy summarises them under the joint label of an occupational group, but as we have seen, the persistent analogy with VET teachers at schools is misleading. In apprenticeship at least, we have to speak of an additional function and need to target a much more heterogeneous group of employees. (...) VET policy needs to better address the benefits of investing in the training of trainers on the part of companies. (...) Finally, professional development of workplace trainers requires, as a starting point, the systematic reflection of their role within the respective company context.*

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<sup>(51)</sup> And part IV of the Meister exam AMVO, which corresponds to the AEVO.

<sup>(52)</sup> BIBB study published with recommendations for action on modernising the qualification of training personnel:  
[https://www.bibb.de/de/pressemitteilung\\_145713.php?from\\_stage=ID\\_96240&title=Qualifizierung-des-Ausbildungspersonals-modernisieren%21](https://www.bibb.de/de/pressemitteilung_145713.php?from_stage=ID_96240&title=Qualifizierung-des-Ausbildungspersonals-modernisieren%21)

*Strengthened awareness and self-esteem in their role as learning facilitators (...) are prerequisites for the development of personal strategies to negotiate the contradictory demands they face.” (Bahl, 2019, p 218)*

In 2009, the AEVO framework was amended and two advanced VET programmes were adopted to promote the professionalisation of trainers, as detailed in Chapter 4. However, demand has so far fallen short of expectations. To explore the reasons for this low demand, a research survey was conducted on the **acceptance of the advanced training qualification ‘Certified Vocational Pedagogue’** in 2018 among candidates, education providers and chambers carrying out the exams (Schley, 2018).

## CHAPTER 8. Conclusions

Several studies in the last decade have shown that in-company trainers need more recognition and support in 'producing' the future skilled workers (Bahl, 2019). In view of changing work conditions due to digitalisation, economic and productivity pressure, heterogeneity and changing needs of apprentices, trainers need support in redefining their role and updating their skills. This is the background of the current study on the trainer aptitude examination AEVO, as well as of the study on the acceptance of the CPD for trainers as 'certified vocational pedagogue'. Addressing the current and future shortage of skilled staff by improving the attractiveness of apprenticeship cannot be achieved without improving the work conditions of trainers and promoting their considerable role in securing future skilled labour.

On the school side of apprenticeship, VET teachers are similarly affected by the changing conditions due to digitalisation and diversity, and there is a shortage of VET teaching staff as well. Consequently, the KMK has been planning to reform both the initial and continuous professional development of VET teachers. One way of making apprenticeship more attractive and a motivating experience to all persons involved is the cooperation of learning locations (school, company and ÜBS) and actors (apprentice, trainer and VET teacher), as shown in the best practice projects in Chapters 5 and 6.

We therefore suggest addressing the following topics in a future potential European survey among trainers and VET teachers:

- (a) **Recognition and job satisfaction** (How can the work conditions be improved? Definition of role in the company?)
- (b) **Support and CPD needed** (Is it possible to participate in CPD? Does the current CPD correspond to the needs, i.e. topic & skills, format?)
- (c) **Cooperation between learning venues** (How can such cooperation be activated and established in the apprenticeship?)

It would be important to involve apprentices in the survey, since they are the closest partners of trainers and VET teachers, as well as the company management, as they need to back their trainers and be ready to invest in their CPD.

## List of abbreviations

AEVO	Ordinance on trainer aptitude ( <i>Ausbilder-Eignungsverordnung</i> )
BBiG	Vocational Training Act ( <i>Berufsbildungsgesetz</i> )
BIBB	Federal Institute for Vocational Education and Training ( <i>Bundesinstitut für Berufsbildung</i> )
BMBF	Federal Ministry of Education and Research ( <i>Bundesministerium für Bildung und Forschung</i> )
CPD	Continuous professional development
CVET	Continuing vocational education and training
Destatis	German Federal Statistical Office ( <i>Statistisches Bundesamt</i> )
EQF	European Qualifications Framework
foraus	Forum for trainers ( <i>Forum für Ausbilder</i> )
HwO	Trade and Crafts Code ( <i>Handwerksordnung</i> )
IVET	Initial vocational education and training
JArbSchG	Youth employment protection act ( <i>Jugendarbeitsschutzgesetz</i> )
KMK	Standing Conference of the Ministers of Education and Cultural Affairs of the <i>Länder</i> ( <i>Kultusministerkonferenz</i> )
NRW	North Rhine-Westphalia ( <i>Nordrhein-Westfalen</i> )
SME	Small and medium-sized enterprise
ÜBS	Inter-company vocational training centre ( <i>Überbetriebliche Berufsbildungsstätte</i> )
ÜLU	Inter-company vocational training centre in skilled crafts sector. ( <i>Überbetrieblichen Lehrlingsunterweisungen im Handwerk</i> )
VET	Vocational education and training

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