

4 Ensuring the relevance of professional tertiary programmes

To be of value, professional programmes need to develop the skills needed by the labour market. This chapter looks at some evidence and indicators showing how well that is achieved in practice. Work-based learning plays a critical role, both because it provides a powerful learning environment in which students may acquire the hard and soft skills needed in the workplace, and because it offers a framework in which employers and potential recruits may get to know one another, facilitating transition to employment. This chapter reports some new evidence on the use of work placements in professional tertiary education, especially on the extent to which such placements are mandatory. In addition, this chapter describes the institutional architecture which facilitates engagement of professional tertiary education with the world of work. It also provides data on the different fields of study included within professional tertiary education and their links to subsequent labour market outcomes.

Introduction

Close connections with the world of work are important for all tertiary programmes, especially for programmes with professional orientation. A series of case studies of professional tertiary education in Europe found that strong links with social partners represents one of the strengths of this sector. Strong employer engagement appears to be facilitated by looser regulation compared to upper secondary vocational education and training (VET), making it easier to adapt provision to changing needs, and employer interest in the type of skills provided by this sector (Ulicna, Luomi Messerer and Auzinger, 2016^[1]). The first section of this chapter focuses on how countries create linkages between professional programmes and the world of work. It looks at the institutional framework underpinning employer engagement at national, sectoral, regional and institutional levels. Work-based learning receives specific attention in this chapter, because it is a powerful way of connecting education and training programmes with the world of work, and comparative data and information provide rich insights.

Workplaces provide a strong learning environment for the acquisition of both technical skills and generic employability skills, as students learn from real life problems and from professionals familiar with the latest technologies and working methods. Employers benefit from the productive work of students and can save on costly recruitment selection, as they can observe students, as potential recruits, at work and skip much of the initial training that external recruits need (Muehleemann and Leiser, 2015^[2]). When work-based learning is mandatory, provider institutions must develop partnerships with employers. This gives employers valuable influence over the mix of programmes provided, ensuring that students pursue training that is in demand in the labour market and that public funding for skills development is shaped by labour market needs. Work-based learning is also value for money for providers and public authorities: it reduces the cost of delivery, particularly in fields where modern equipment is expensive and needs frequent updating, and where recruiting professionals familiar with the latest techniques is hard and costly (OECD, 2014^[3]).

Recognising the compelling advantages of work-based learning, various recent European declarations and policy documents have called for the development of work-based learning in education and training programmes. These continue the process of enhancing European cooperation in VET, setting out priorities, targets and deliverables. The Bruges Communiqué (2010) set out objectives and actions to enhance the quality of VET, making it more accessible and responsive to labour market needs. The Riga Conclusions, endorsed by European ministers in 2015, included medium-term deliverables designed to raise the quality and status of VET. One of five priority areas was the promotion of work-based learning in all its forms, with special attention to apprenticeships. More recently, the Osnabrück declaration (2020), focused on recovery and transitions to digital and green economies, included the reinforcement of work-based learning and apprenticeships among the deliverables for 2021-2025. In line with this, the 2020 Council Recommendation on VET for sustainable competitiveness, social fairness and resilience includes some specific targets: it encourages countries to work towards ensuring that by 2025, 60% of recent VET graduates benefit from work-based learning during their vocational programme. It highlights the need to include work-based learning in vocational programmes at all levels and further develop apprenticeship schemes, with appropriate support measures and incentives to encourage employer engagement.

The development of work-based learning has been highlighted as one of the main trends shaping the professional tertiary landscape in Europe (Ulicna, Luomi Messerer and Auzinger, 2016^[1]). Yet various barriers mean that not all professional programmes make effective use of work-based learning. For employers providing high-quality work-based learning is demanding, requiring the capacity to manage partially skilled workers and integrate them into work processes, as well as dealing with the associated administrative burden. There are often barriers on the education provider side too, as integrating work-based learning into programmes requires a different organisation of the learning process and different ways of assessing learning outcomes. As a result of these barriers, work placements are sometimes optional additions to programmes or lack quality assurance.

The mix of provision – meaning the fields of study, programmes within fields of study and the number of students within those programmes, needs to reflect various factors. It should take into account immediate labour market needs to allow for smooth transitions into jobs, as well as expected long-term developments so that graduates can have successful careers. Yet often the mix of provision is driven by constraints of provider institutions and student choice that is often not sufficiently informed. Data availability on the mix of provision delivered by professional programmes across OECD countries is very limited. Data by highly aggregated categories of field of study are available only at short-cycle level, giving an indication of the breadth of this sector in different countries, complementing enrolment data which are indicative of their size. At ISCED level 6, countries do not provide data by field of study and programme orientation – and if data were to be collected, they would need to be based on internationally agreed definitions to add real value.

Knowing what graduates of different education and training programmes do upon graduation and the careers they pursue provides crucial feedback on skills systems and informs efforts to improve them. Recognising this, in the 2017 Council Recommendation, European Union Member States made a commitment to collect data on graduates from higher education and VET in a way that allows for international comparisons and benchmarking. The final section of this chapter provides insights on outcomes from different types of tertiary programmes. Given data availability constraints, the analysis primarily concerns short-cycle tertiary education (or programmes that are close equivalents) and provides data on ISCED level 6 programmes as a point of comparison. The analysis explores outcomes in terms of employment rates and earnings, and provides some insights on the basic skills of graduates and work strain as an indicator of job quality.

Insights from comparative data

This section first examines how countries build connections between professional tertiary programmes and the world of work: frameworks for employer engagement and the use of work-based learning in professional programmes. It then looks at the different fields of study within short-cycle tertiary programmes and ISCED level 6 programmes regardless of orientation (it is not possible to break down data by programme orientation at level 6). Finally, it explores employment outcomes associated with professional tertiary education.

Links with the world of work

Employer engagement

The institutional framework underpinning employer engagement typically includes bodies at national and regional level (sometimes involving different bodies for different economic sectors) and/or at the level of individual institutions. At national (or sectoral) level, advisory committees commonly include social partners and provide strategic guidance regarding policy development and implementation in the light of skills needs. Examples include the Advisory Council for Technical Professional Training in Chile, the Assembly of Councillors of state-owned higher education institutions in Estonia, National Professional Advisory Commissions in France, the National Council of Vocational College Education in Norway, the Council for Vocational and Professional Education in Slovenia, and the General Council for VET and Regional Councils for VET in Spain. Several countries also require individual institutions to have systematic engagement with employers through institutional education boards or committees. For example, in France employers are members of higher education institution boards, in Denmark each provider institution is required to have employer panels or education committees with labour market knowledge and in Estonia institutions must include employers in the committees associated with each study programme.

Primarily at national level, but also sometimes regionally, most countries report systematic involvement of social partners in the development and updating of programmes and curricula, through their involvement in advisory bodies such as those set out above and/or accreditation criteria, which require support from social partners for the proposed programmes and curricula. For example, in the Czech Republic the Accreditation Commission for Tertiary Professional Education includes representatives of the world of work and in Luxembourg accreditation committees are composed of 50% national experts or professionals and 50% international experts in quality assurance.

At a more local level, employers and practising professionals also often play an important role in the delivery of professional programmes. Several countries report that professionals often work as regular teaching staff or guest lecturers (e.g. France, Israel, Italy, Luxembourg, Norway). Spain has a specific category of teaching staff, “specialist teachers”: these are experienced practitioners who completed some pedagogical training and teach certain modules part-time. In addition, Spain also encourages teachers to regularly pursue job-shadowing for short periods of time to update their technical skills. More directly, employers may also deliver training themselves through work-based learning, when they host interns or apprentices. They may also support their employees (financially and/or by granting them release from work) who pursue part-time programmes. The use of work-based learning is discussed in detail in the following section.

Finally, in some countries industry representatives take an active role in the design and delivery of final assessments. Their engagement is fundamental in professional examinations – in Switzerland, employers are involved through their professional organisations, which set up examination regulations and employers participate in examinations as examiners. In other types of professional programmes (not professional examinations), industry representatives are less often involved. In Italy, they are systematically engaged, as the final assessments of ITS courses are led by examination boards that include experts from the world of work. In addition, a few other countries report that employers may participate in assessments – such as in examination boards in tertiary professional programmes in the Czech Republic.

Box 4.1 provides some country examples of how social partners are engaged in the design and delivery of professional programmes.

Box 4.1. Employer engagement in professional programmes

Denmark

Employers and/or labour market organisations participate in the design of programmes. They are also involved at the stage when provider institutions submit applications to the ministry for new programmes, as applications must include documentation of labour market relevance. In addition, institutions are required to have employer panels or education committees with labour market knowledge, and involve them in the development of existing and new programmes. Employers are also directly involved in programmes through the mandatory internships.

Estonia

Employer representatives are included in the assembly of councillors of state-owned professional higher education institutions. The assembly of councillors is an advisory body that makes proposals to the rector, the council and the ministry regarding the development of the institution. When HEIs apply to start providing a new programme, they need to justify why the programme is needed, including arguments advanced by relevant professional associations. In addition, each study programme has an associated committee, which includes employer representatives. Upon registration of study programme in Education Information System by the Ministry of Education and Research, the employer’s contribution is also described in the study-programme documentation.

France

National professional advisory commissions (11 in total, for different sectors) oversee the introduction, updating or removal of state-recognised professional qualifications. They are part of “France Compétences”, which identifies skills needs and supports the development of high-quality and efficient models of delivery. In addition, employers are members of the boards of higher education institutions. In the delivery of programmes, experienced professionals are present as teachers, joint projects based on a contract between students and a company are commonly used and work-based learning is systematic, with many institutions having partnerships with employers to secure placements for interns or apprentices.

Italy

Courses in higher technical institutes (ITS) are co-designed with companies. The final assessments are conducted by examination boards, composed of representatives of the school, university, professional training, and experts from the world of work. The provider institutions through the regional coordination Committees analyse the job requests of the regional territory and then plan the training offer. The final exam must include the presentation (written and / or oral) of the resolution of a problem faced during the internship activities which demonstrates the student’s ability to apply the knowledge acquired during the course of study, under the supervision of one or more internal lecturers who can also be accompanied by external professional or corporate experts.

Source: OECD Data collection on professional tertiary education.

Work-based learning

The following paragraphs examine how work-based learning is used in professional programmes. Work-based learning is understood here as “some combination of observing, undertaking and reflecting on productive work in real workplaces” (OECD, 2017^[4]), the definition used in ISCED mappings and the UOE and LSO data collections. Crucially, this definition excludes practical training in simulated work environments such as workshops within provider institutions. Table 4.1 focuses on ISCED level 5 programmes and Table 4.2 on ISCED level 6 programmes that countries currently classify as professional (for programmes classified as “academic” all but one country reported no systematic inclusion of work-based learning in the “Data collection on professional tertiary education”). The tables refer to work-based learning that accounts for at least 25% of programme duration, because this threshold is used in comparative data collections (programmes containing 25-90% work-based learning are considered “combined school and work-based programmes, otherwise they are considered school-based or work-based). Smaller work-based learning components are described under “additional information” in the tables.

In short-cycle tertiary education work-based learning is very common, either a mandatory component for all students, or more selectively, in some programmes and for some of the students (see Table 4.1). Several countries have made work-based learning mandatory for all students and specify its minimum duration: associate degrees in Belgium (both French and Flemish community), academy professional programmes in Denmark, BTS and DUT programmes in France, higher technical institutes in Italy, BTS programmes in Luxembourg, CteSP courses Portugal, short-cycle programmes in Slovenia and higher VET in Spain. Several other countries report that work-based learning is used in short-cycle tertiary programmes, but not necessarily in all programmes and by all provider institutions.

Table 4.1. The use of work-based learning in short-cycle tertiary education

	Includes at least 25% of work-based learning	Additional information
Australia	Yes	Vocational education and training often requires practical elements, including structured workplace learning, as part of the course curriculum.
Austria	No	Practical experience is provided through visits to firms, training in school workshops, training in firms and compulsory summer internships.
Belgium (French Comm.)	Yes	Associate degree programmes include a mandatory traineeship, which accounts for at least 1/3 of the programme.
Belgium (Flanders)	Yes	Associate degree programmes include mandatory work-based learning that accounts for at least 1/3 of the programme (seven months).
Canada	Not all programmes/ students	Work-based learning is a feature of all professional education programmes, but there is variation in its form depending on professional requirements and the design of individual programmes.
Chile	Not all programmes/ students	Higher technical education and professional higher education includes combined school and work-based learning options, but participation in work-based learning is optional.
Colombia	No	
Czech Republic	No	Minimum two weeks of the art practice and at minimum 30 lessons of art teaching practice must be included in the school education programmes.
Denmark	Yes	Internships are compulsory in full-time academy professions programmes. In part-time programmes there is no work placement but relevant work experience is an entry requirement and programme build on it.
England (United Kingdom)	Not all programmes/ students	
France	Yes	DUT and BTS programmes include a mandatory internship (16 weeks), or may be pursued via a work-study pathway alternating school-based and work-based periods.
Germany	Yes	Master craftsman programmes are attended after several years of work experience, which account for about 60% of programme duration.
Israel	Not all programmes/ students	Students may either pursue an apprenticeship or mainly school-based studies with exposure to the industry (e.g. work placement, graduation project carried out in industry).
Italy	Yes	Traineeships are mandatory and account for 30% of programme duration.
Japan	No	About one-third of graduation credits are obtained through practical training, half of which must take place in companies.
Korea	No	The use work-based learning varies across majors and provider institutions, but does not exceed 25% of the curriculum.
Latvia	No	Practical training is compulsory, but work-based learning options are not offered at ISCED level 5 yet.
Luxembourg	Yes	Programmes include at least 228 hours of internship in a professional environment. The minimum length and organisation varies: internships can constitute a whole module or can be part of a module, may be organised in one or several blocks, spread throughout the programme or take place at the end.
Mexico	No	
Netherlands	No	A small share of students pursue combined school and work-based learning programmes.
New Zealand	Not all programmes/ students	The extent to which work based learning is used in professional tertiary education varies across programmes and providers.
Norway	Yes	Higher vocational college education is principally school-based and with an increasing element of web-based learning. Session-based teaching opens for inclusion of work-based learning. Most students are, however, also in relevant employment.
Poland	No	

	Includes at least 25% of work-based learning	Additional information
Portugal	Yes	Programmes include an internship, which takes at least one semester. Additional practical training is included in the technical component of programmes (in laboratories, workshops, and through projects).
Slovak Republic	Yes	
Slovenia	Yes	Programmes are intertwined with work in a working environment. Students must pursue practical training with an employer for at least 10 weeks per year (so 20 weeks in total).
Spain	Not all programmes/ students	All higher VET programmes include a mandatory work placement module of 400 hours / 3 months. Students pursuing dual VET spend over 34% of their programme in work-based learning. Students with previous related work experience may be exempt.
Sweden	Yes (most programmes)	Higher VET programmes leading to an advanced higher VET diploma, include mandatory work-based learning, which accounts for at least 25% of programme duration. Most other higher VET programmes include work-based learning, even though it is not formally required.
Switzerland	No	These programmes not subject to federal regulation.
Turkey	Yes	Work-based learning is mandatory and may take different forms: some postsecondary VET schools offer programmes with 50% at school and 50% in the workplace, while some follow a 3+1 model with one semester in the workplace.

Source: OECD Data collection on professional tertiary education.

The use of mandatory work-based learning is less common in programmes classified as “professional” at ISCED level 6 than in ISCED level 5 programmes (see Table 4.2). Work-based learning is systematically used in professional bachelor’s programmes in Denmark, bachelor of technology or professional bachelor’s programmes in France (which may also be pursued through dual training), professional examinations in Germany, professional examinations and professional education and training (PET) colleges in Switzerland, professional higher education in Slovenia (though its duration may account for less than 25%) and higher VET in Spain. Many countries report using work-based learning but not for all students, with some variation across programmes and provider institutions.

Table 4.2. The use of work-based learning in professional programmes at ISCED level 6

	Includes at least 25% of work-based learning	Additional comments
OECD		
Belgium (French comm.)	No	Work-based learning is a mandatory component for some programmes, but may account for less than 25% of the programme duration.
Belgium (Flanders)	Noz	The institutions of higher education are free to choose their teaching methods and tools.
Canada	Not all programmes/ students	Variation depending on professional requirements and the design of individual programmes. Work-based learning is a feature of all professional education programmes.
Chile	Not all programmes/ students	Professional higher education (non academic degree-granting) includes work-based learning but not for all students. It is mandatory only if the study plan for the provider institution stipulates it. Medical or dental specialisation programmes include different types of work-based learning.
Czech Republic	Yes	Professionally-oriented bachelor’s programmes include work practice of at least 12 weeks.
Denmark	Yes	Approximately 25% of the duration of the programme consists of internships.
France	Yes	Bachelor of technology include a compulsory internship (22 to 26 weeks over 3 years), as do professional bachelor’s programmes (12 to 16 weeks over one year)

	Includes at least 25% of work-based learning	Additional comments
Germany	Yes	Master craftsman programmes are attended after several years of work experience, which is required to pass the final examination.
Japan	Yes	About one-third of graduation credits are obtained through practical training, half of which must take place in companies.
Korea	Not all programmes/students	In some fields, work-based training takes about 2 to 4 weeks.
Latvia	No	Work-based learning is used mostly in medicine and dentistry.
Lithuania	Yes	Work-based learning is increasingly used. Practical training with an employer is mandatory in colleges and accounts for 30 ECTS.
Netherlands	No	A small share of students pursue combined school and work-based learning programmes.
Slovenia	No	Work-based learning is a mandatory component of professional higher education, but may account for less than 25% of the programme duration.
Switzerland	Yes	The combination of professional practice and classroom instruction depends on the type of programme, ranging from mostly work-based learning with some preparatory courses (professional examinations) to full-time education in PET colleges combined with internships.
Partner		
Brazil	Not all programmes/students	Some programmes include mandatory internships.

Source: OECD Data collection on professional tertiary education.

Work-based learning in professional programmes may take different forms, including internships, dual tertiary programmes and past or ongoing work experience as a form of work-based learning. Internships (understood here as work placements of several weeks or months) are commonly used in professional programmes, although they are sometimes shorter than 25% of programme duration – students in BHS programme in Austria must complete summer internships, in Denmark full-time students in professional academy programmes or professional bachelor’s programmes must complete an internship. In France both short-cycle tertiary programmes and bachelor’s level programmes include a mandatory internship with minimum duration defined in national legislation, or else may be pursued through dual training (see Box 4.2). In Italy, both higher technical institute (ITS) courses and professionally-oriented degrees (LP) include mandatory internships. In Portugal, two-year vocational and technical higher education courses (CTeSP) include at least a one-semester internship. In programmes that engage both students seeking an initial qualification and experienced adults, countries often allow for some flexibility. For example, in Denmark those with relevant work experience might pursue their professional bachelor’s programme part time and without an internship, while those studying full-time must complete an internship. Similarly, in Spain, all higher VET programmes include a compulsory work placement, but students with relevant work experience are granted exemption.

Dual tertiary programmes are also increasingly common across OECD countries, although the nomenclature varies from one country to another. They include, for example, dual UAS programmes in Austria, *Master en Alternance* in Belgium (French Community), *alternance* arrangements in France, dual higher education in Hungary, dual higher VET in Spain, degree apprenticeships in England (United Kingdom) and graduate apprenticeships in Scotland (United Kingdom). However, not all dual tertiary programmes are classified as “professional” by countries in comparative data collections. A recent study of higher VET in the European Union (EU) (Ulicna, Luomi Messerer and Auzinger, 2016^[1]) noted that these programmes may be included in a broad definition of “higher VET” but not in a narrow definition – among the examples included in Box 4.2, only France classifies dual programmes as professional in comparative data collections.

Box 4.2. Dual tertiary programmes

France

A wide range of programmes may be pursued via a dual pathway (alternance), including ISCED 5 professional qualifications (e.g. BTS, DUT) and ISCED 6 qualifications (e.g. professional bachelor). Students sign an “apprenticeship contract” and obtain a formal educational qualification upon completion. This contract targets mainly 16-29 year-olds, though those aged 30 or more may also sign an apprenticeship contract in special cases. The contract usually covers one to three years and off-the-job training accounts for at least 25% of the contract duration. “Professionalisation contracts” cover dual training that leads to a recognised professional qualification (not a formal educational qualification). They target students aged 16-25 (or above 26 for job seekers) and usually cover 6-12 months, with off-the-job training accounting for minimum 150 hours and 15-25% of the contract duration.

Germany

Dual study programmes combine a university course (provided by a university, UAS or vocational academy) and company-based practical experience. They are delivered either through alternating blocks of several weeks or months, or alternating days within a week. Programmes are available in business and administration, civil, industrial or mechanical engineering, tourism management, social work and care management. There are three different forms of the programme. **Dual studies with VET** take 4.5 years to complete and yield a university degree and a vocational qualification. **Dual studies with practical training** put stronger emphasis on practical training and lead to a university degree (but no vocational qualification). **Job-integrating dual studies** offer professional development to those who already hold a vocational or professional qualification, or have professional experience, even if they lack the usually required entrance qualification. Students’ coursework is based on a contract signed between their employer, the UAS and the student.

Scotland (United Kingdom)

The Graduate Apprenticeship scheme, launched in 2017/18, is delivered in co-operation with selected universities in partnership with employers leading to a university degree. The programmes are at ISCED levels 5-7, but the overwhelming majority of students are at ISCED levels 6-7. Students spend most of their four-year programmes with their employer, with different release schedules for education at the university. About half of the higher education institutions in Scotland are already involved in the programmes. The programme has grown rapidly, so that in the third year of delivery in 2019/20 there were 1 160 starts on the programme. Graduate apprenticeships are mostly provided in the fields of business management, engineering and IT.

Source: OECD (2020^[5]), *Strengthening Skills in Scotland: OECD Review of the Apprenticeship System in Scotland*, https://www.oecd.org/skills/centre-for-skills/Strengthening_Skills_in_Scotland.pdf; Entreprenre (2022^[6]), *Contrat d'apprentissage et de professionnalisation : quelles différences ?*, <https://entreprenre.service-public.fr/vosdroits/F31704>; StudyCHECK.de (2022^[7]), *Duales Studium* [Dual study programmes], <https://www.studycheck.de/duales-studium>.

A third form of work-based learning is the requirement to have relevant professional experience – past work experience, current employment relevant to the targeted programme or both. For example, professional examinations often require several years of work experience, depending on the targeted qualification. In Germany such work experience accounts for about 60% of total programme duration in the case of Master craftsman examinations. As there is no set coursework, the overall programme duration covers the period relevant employment (work-based learning) and preparation for the examination through

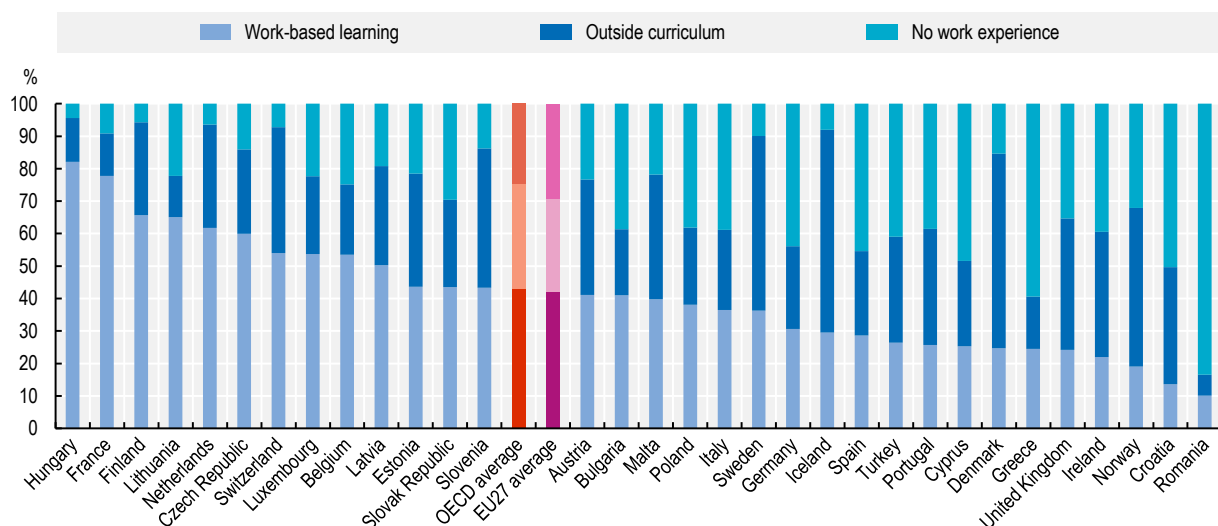
optional courses. In Switzerland, the required minimum work experience is typically around two years for professional examinations, while programmes in PET colleges are pursued part-time by most participants, who work in a company parallel to their studies (or else they must pursue an internship). Similarly, in Denmark, part-time students in professional bachelor's programmes must have relevant work experience and the programme is delivered so as to build on that work experience (e.g. assignments linked to students' work).

Data on participation in work-based learning could, in principle, provide a valuable guide to the extent of work-based learning, and the different forms it may take, including the length of placements. Such data are not systematically collected for tertiary programmes. Nonetheless, some insights are available from the 2016 ad-hoc module on young people on the labour market of the European Labour Force Survey. It included a few questions about respondents' work experience during their studies (highest completed education). Figure 4.1 shows the share of young people who had work experience during their highest level of tertiary studies. The data distinguish between work-based learning that was connected to the respondent's studies ("work-based learning"), or was not connected to their studies ("outside curriculum", such as having a student job at the cafeteria). Work-based learning in this figure may refer to very short periods – the 25% threshold in Table 4.1 and Table 4.2 does not apply here, but Figure 4.2 provides a more detailed picture, indicating the length of the work-based learning period. This figure refers to all tertiary levels (irrespective of the orientation of the programme) – any work experience that individuals had prior to their highest completed programme is not captured here.

On average over 40% of tertiary graduates report having pursued some form of work-based learning as part of the programme leading to their highest qualification. There is substantial variation across countries, with work-based learning reported by the majority of students in ten countries, while in seven countries a quarter or less of respondents report such experience. On average 29% of respondents in EU Member countries report having pursued work that was not part of their study programme, and a the same share of graduates did not pursue any form of work during their latest studies.


Figure 4.1. Distribution of work experience during tertiary studies (2016)

25-34 year-olds



Note: Data for Croatia have limited reliability due to small sample sizes.

Source: European Union Labour Force Survey ad hoc module on young people on the labour market (2016).

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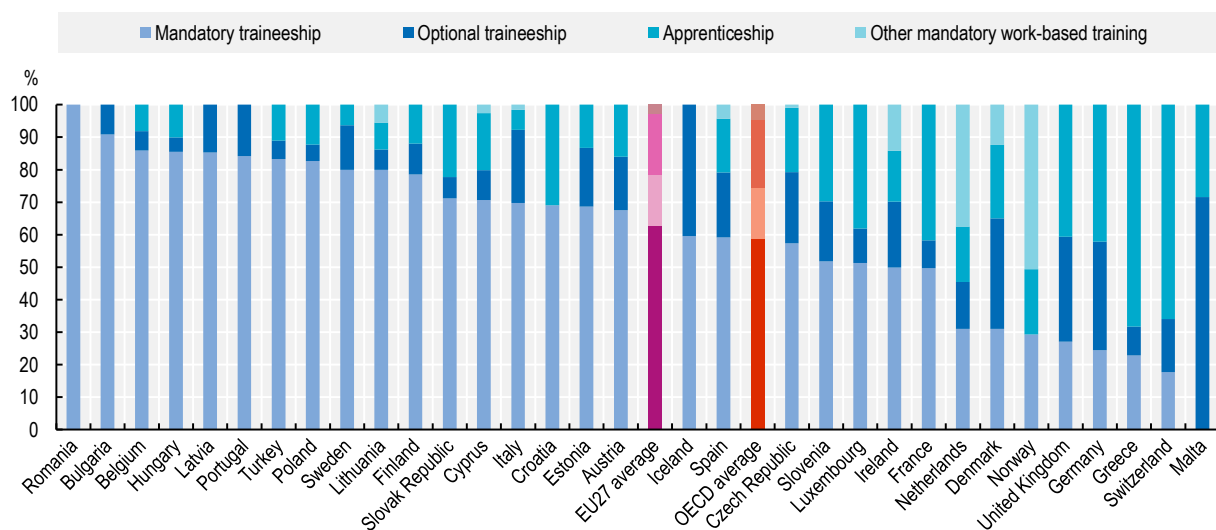
Within the “work-based learning” category reported above, data allow to distinguish between types, based on the payment the person received and the duration of work-based learning. Based on these data, a distinction has been drawn by Eurostat (Eurostat, 2016^[8]) between the following types of work-based learning:

- Apprenticeships: paid work-based learning with at least 6 months duration that is mandatory part of the curriculum.
- Mandatory traineeships: unpaid work-based learning with at least 6 months duration.
- Optional traineeships: work experience that was an optional part of the curriculum, without further information on duration or pay.
- Other forms of mandatory work-based learning: mandatory part of the curriculum, but with no further information on duration or pay.

As shown in Figure 4.2, mandatory traineeships are most commonly used in tertiary programmes and optional traineeships are also frequent. The definition of “apprenticeship” in these data is relatively broad. It not only includes classical apprenticeship arrangements as set out in Box 4.2, but also longer paid internships – for example a professional bachelor’s programme including a 6-month internship would fall in this category.


Figure 4.2. Type of work-based learning experience during tertiary studies (2016)

25-34 year-olds who report work-based learning during tertiary studies



Note: Low reliability due to small sample sizes for the following categories: Mandatory traineeship: Croatia; Optional traineeship: Bulgaria, Luxembourg, Slovenia; Apprenticeship: Croatia, Estonia, Latvia, Malta; Other mandatory work-based training: Cyprus, Czech Republic, Lithuania.

Source: European Union Labour Force Survey ad hoc module on young people on the labour market (2016).

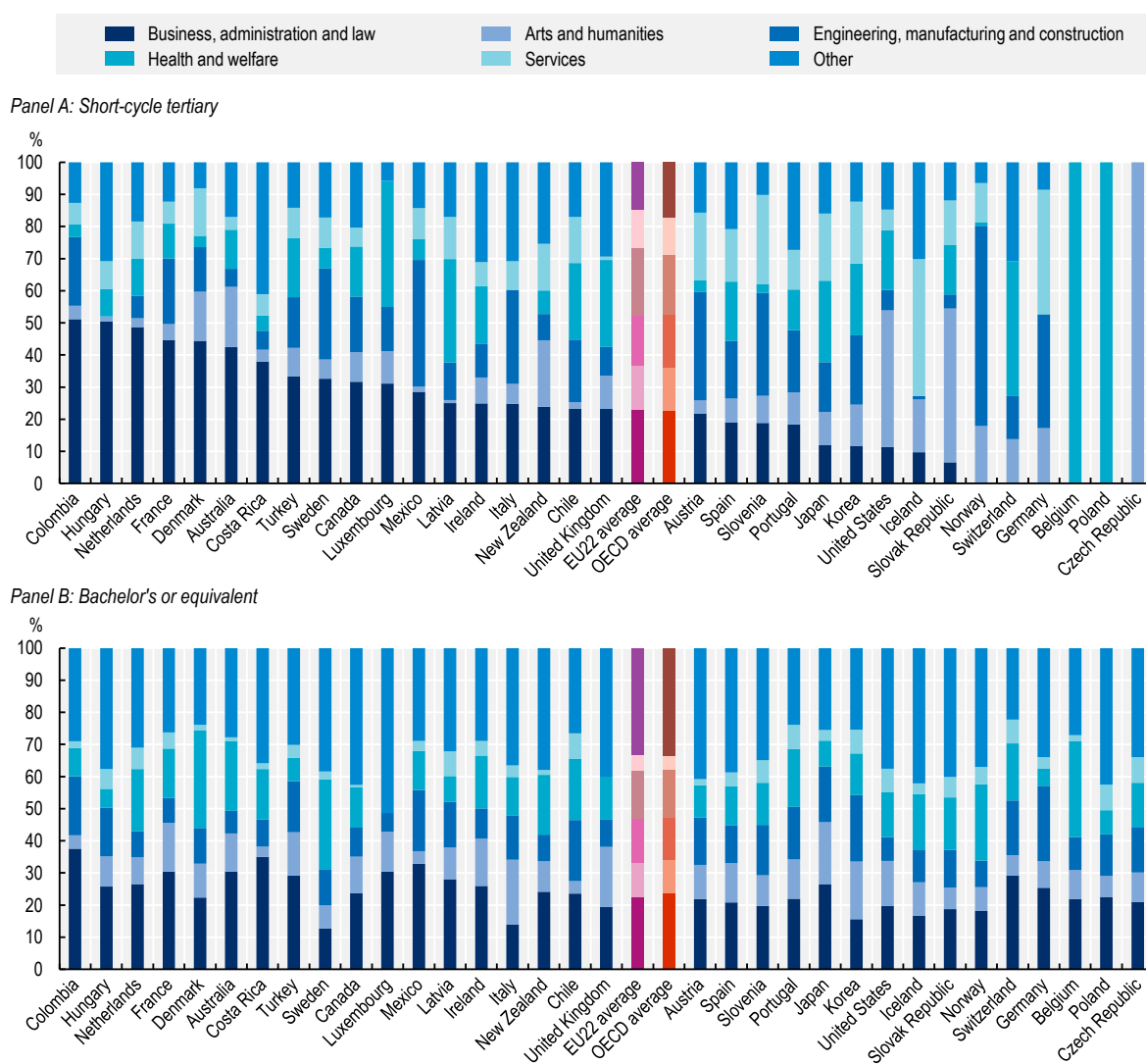
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Targeted fields of study

This section provides insights from comparative data on the different fields of study within professional programmes and explores their relevance to labour market needs. These data are limited to ISCED level 5, which this report treats as professional regardless of how they are classified by the country in comparative data collections. Data on enrolment or graduation by field of study at ISCED level 6 and above cannot be broken down by programme orientation.¹

Figure 4.3 shows the distribution of graduates in the fields of study with the most graduates at ISCED level 5 and 6. The figure uses data on graduates rather than students, so that the results are not affected by the duration of programmes. Among short-cycle tertiary programmes there is considerable variation in the breadth of the fields covered by programmes. A few countries offer only highly specialised programmes at this level, such as the Czech Republic, where conservatory programmes focus on performing arts and colleges of health and welfare in Poland (Belgium used to provide a narrow range of short-cycle tertiary programmes, but recently introduced a new set of associate degrees in a wider range of fields of study – not yet covered by these data). Compared to upper secondary VET, engineering, manufacturing and construction represents a smaller part of the offer: while 33% of upper secondary VET students graduate from the field of engineering, manufacturing and construction (OECD, 2020^[9]), only about 15% of graduates in short-cycle education and in bachelor’s programme have studies in this field. The most common field of study at these levels of education is business, administration and law, with about 25% of students on average across OECD countries.

Figure 4.3. Distribution of graduates by field of study at short-cycle tertiary and bachelor’s or equivalent level (2018)



Source: OECD (2020^[10]) "Education at a Glance", Education and Training – Education at a Glance (database), <https://stats.oecd.org/>.


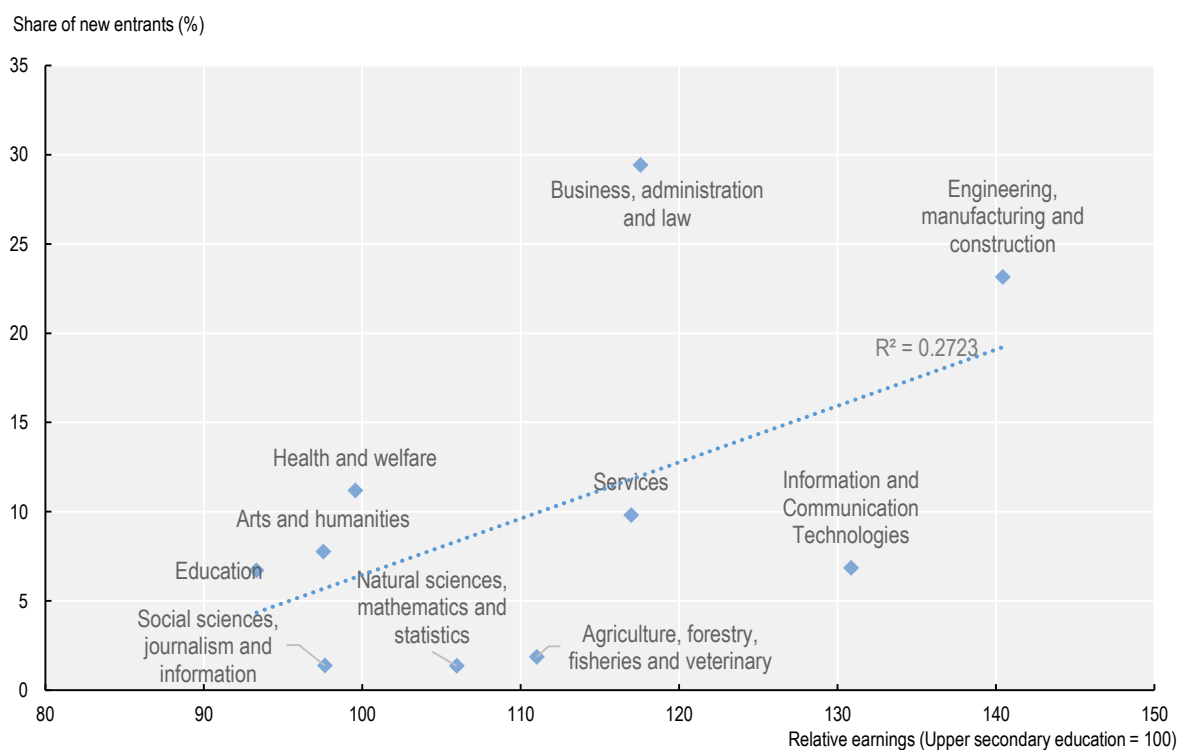
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Figure 4.4 explores to what extent students enter fields of study with the most attractive labour market prospects – the data focus on earnings, recognising that the attractiveness of different career options also depends on many other factors. It focuses on entrants (rather than students or graduates) to capture student choices, rather than the output of the system. The figure shows the relationship between the share of entrants to different fields of study at short-cycle tertiary level and earnings of graduates in those fields. Students' choices of field of study are clearly not solely driven by economic considerations. For example, on average across the 11 OECD countries with data on earnings by field of study, about the same share of students enter short-cycle tertiary programmes in the field of education as in the field of ICT despite the much larger financial returns in the ICT field.


Figure 4.4. Relationship between the share of short-cycle tertiary new entrants and relative earnings, by field of study (2017)

Average by field among countries with available data



Note: Averages are based on data from Australia, Austria, Chile, Costa Rica, Denmark, Estonia, Finland, Latvia, Norway, Sweden and the United Kingdom.

Source: OECD (2020_[10]), "Education at a Glance", Education and Training – Education at a Glance (database), <https://stats.oecd.org/>.

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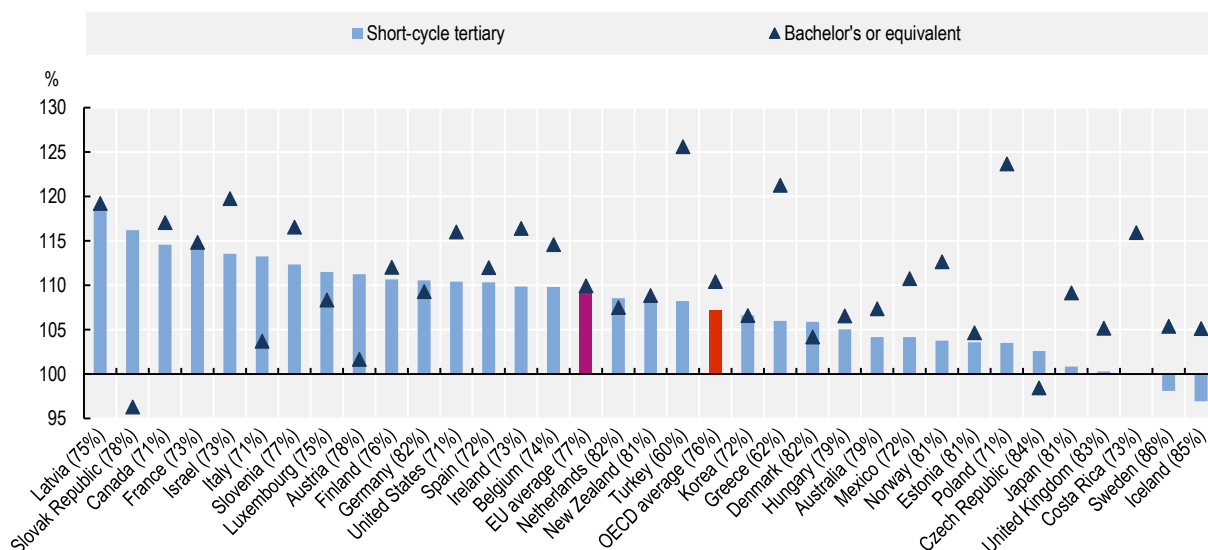
Outcomes from professional tertiary education

This section explores data on outcomes from professional tertiary education, focusing mostly on employment outcomes. The figures only identify short-cycle tertiary programmes as professional – ISCED 5 programmes when the analysis is based on the ISCED 2011 framework, and ISCED 5B programmes when the analysis is based on the earlier ISCED 97 framework (the two categories are not perfect equivalents but are similar). Within ISCED 6 programmes, it was not possible to identify data for professional programmes.

In nearly all OECD countries, adults with short-cycle tertiary qualifications have higher employment rates than those holding only an upper secondary qualification (Figure 4.5). For EU countries on average the benefit, in terms of higher employment, is almost as high as for ISCED level 6 qualifications, although there is substantial variation across countries. Data are collected by orientation at ISCED level 6, but are not presented here, because meaningful comparisons are very difficult.²

Figure 4.5. Employment rate of tertiary-educated adults relative to adults with upper secondary education (2019)

25-64 year-olds; upper secondary education = 100



Note: Values in parenthesis refer to the employment rate of adults with an upper secondary education.

Source: OECD (2020_[10]), "Education at a Glance", Education and Training – Education at a Glance (database), <https://stats.oecd.org/>.

StatLink  <https://stat.link/ebf4t2>

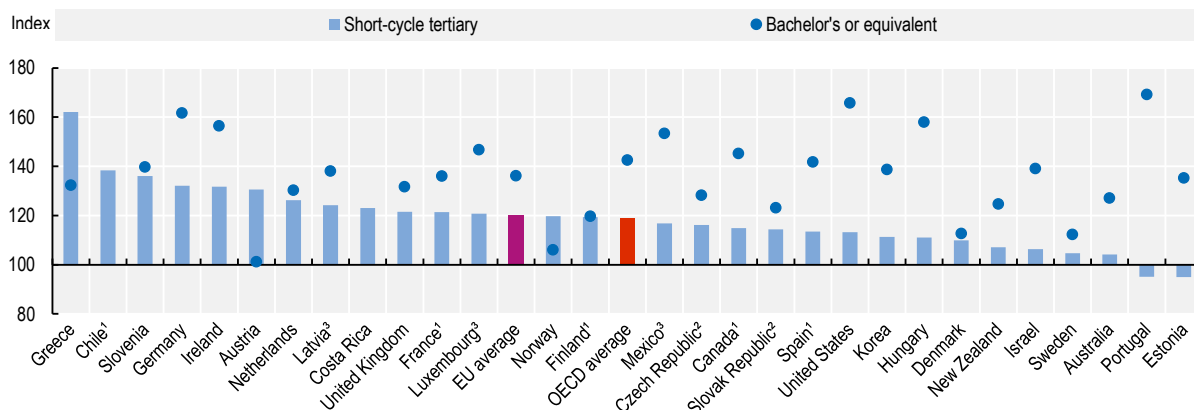
Figure 4.6 shows data on the earnings advantage provided by obtaining a tertiary qualification compared to an upper secondary qualification. A breakdown by programme orientation at ISCED level 6 is not possible with currently available data. Short-cycle tertiary education yields important earning benefits compared to upper secondary education: on average across OECD countries it leads to earnings that are 19% higher than for upper secondary graduates. At the same time, they remain lower than the earning advantage provided by qualifications at ISCED level 6 and above (earnings are 43% higher for ISCED 6 graduates and 89% higher for graduates of ISCED 7 and above than for upper secondary graduates). These averages hide differences between fields of study. As shown in Figure 4.4, earnings differ substantially between fields of study at the short-cycle tertiary level.

Students who had work experience during their studies tend to have higher employment rates than those who did not (see Figure 4.7). Those who pursued apprenticeship-type programmes³ have the highest employment rates. Mandatory traineeships are also associated with better outcomes than programmes without work experience. Pursuing work even outside the curriculum is also linked to better outcomes than not having any work experience while studying, possibly because such experience may develop more general employability skills, such as teamwork⁴. Some national studies also looked at the outcomes associated with the use of work-based learning. For example, a recent study of 2 and 3-year professional tertiary programmes in France (Coupié and Gasquet, 2021_[11]) found that graduates who pursued a dual pathway were more likely to be employed in a job relevant to their qualification and were more often

employed by the company where they pursued their training than those who pursued the mainly university-based option (with an internship).

Figure 4.6. Earnings of tertiary-educated adults relative to adults with upper secondary education (2018)

25-64 year-old full-time and full-year workers; upper secondary education = 100



Note: The following data point are not displayed on the chart because they are above 180: Chile (279 - Bachelor's or equivalent), Costa Rica (199 – Bachelor's or equivalent).

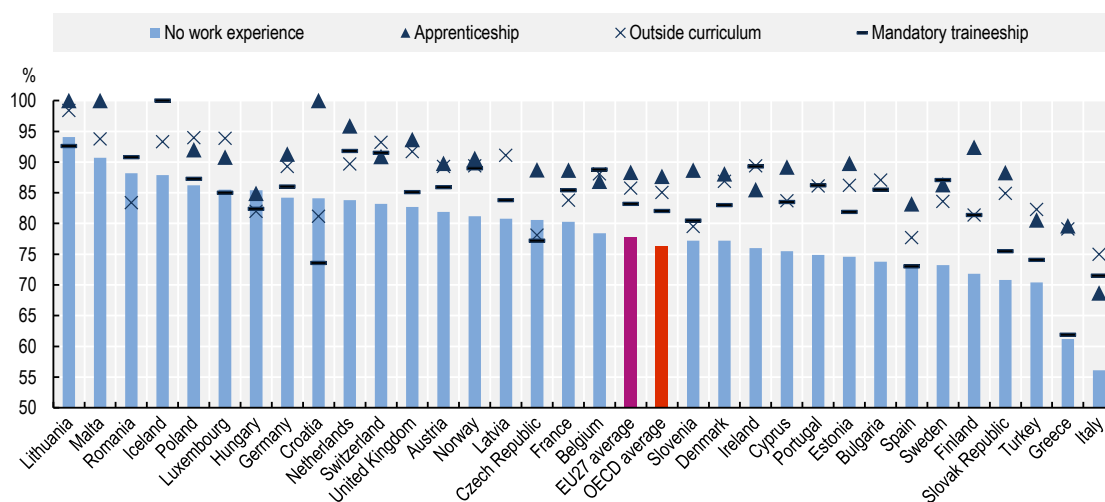
1. Year of reference differs from 2018.
2. Index 100 refers to the combined ISCED levels 3 and 4 of the educational attainment levels in the ISCED 2011 classification.
3. Earnings net of income tax.

Source: OECD (2020_[10]), "Education at a Glance", Education and Training – Education at a Glance (database), <https://stats.oecd.org/>.

StatLink <https://stat.link/47cf2n>

Figure 4.7. Employment rate by work experience during tertiary studies (2016)

25-34 year-olds



Note: Low reliability due to small sample sizes for the following categories: Apprenticeship: Croatia, Estonia, Malta; Mandatory traineeship: Croatia.

Source: European Union Labour Force Survey ad hoc module on young people on the labour market (2016).

StatLink <https://stat.link/kxhlw1>

To monitor the outcomes of students, a number of countries have graduate tracking systems in place, focusing on VET, higher education or both. There are also major ongoing efforts to further develop such systems in a way that will allow for the collection of comparative indicators at the European level. According to the recently published paper by an international expert group dedicated to support these efforts (EC Expert Group, 2021^[12]), a two-step approach is desirable: in the short-term countries should use a European survey of graduates, and in the medium-term countries should adapt administrative data so that they can underpin comparative indicators. Currently 18 member states and European Economic Area countries have graduate tracking systems in place covering VET and higher education (Box 4.3 describes the examples of France and Latvia), while a few more countries cover only VET or higher education. This is an area of ongoing reform in many countries – new tracking measures are in development or have been announced in a dozen of countries (EC Expert Group, 2021^[12]). Information on the outcomes of graduates from professional tertiary education can be used to improve the quality of programmes, the change the mix of provision, and for career guidance purposes.

Box 4.3. Graduate tracking

France

Since the early 1990s, a survey (*Enquête Génération*) targets young people who left the education and training system in the same year. Each cohort is surveyed 3, 5, 7 and sometimes 10 years after they left the education and training system. The survey is designed to explore transition to employment and inform the evaluation and development of employment and training policy. The data collection concerns education and training pathways, work activities, personal and household characteristics. Additional modules explore specific themes.

Latvia

Graduate tracking was introduced in 2018. The ministry provides the data about graduates to the National Statistical Bureau, which connects this data with the data on income from the State Revenue Service, data on employment status from the National Employment Agency and data from other state registers. The data are analysed at individual level and published in an aggregated, anonymous way. This allows each higher education institution to observe the employment rate and average income of their graduates, as well as whether they work in a job that requires higher education.

Data show that among 2018 graduates, the most popular thematic area of study was (1) commercial and management sciences/ professions (20% of graduates); (2) health care and medicine (14.9%); (3) education and pedagogy (10.2%); (4) engineering and technology (7.9%); law sciences (7.3%). Over 80% of those who graduates higher education in 2018 were employed in 2019 (the adjusted employment rate is 88%). Employment rates were particularly high in health and social care, education and agriculture, as well as in engineering, production and processing, and construction. The share of graduates holding jobs that require a higher education qualification varies by field: over 80% of graduates from the fields of sciences, mathematics, statistics and IT, health and social care, and education have jobs that require higher education. Employment rates and the share of graduates in jobs that require higher education were lower among those with a qualification in humanities and arts; services; commercial and social sciences, law.

Source: OECD Data collection on professional tertiary education; Céreq (2022^[13]), *Insertion professionnelle (Génération)*, <https://www.cereq.fr/enquetes-et-donnees/insertion-professionnelle-generation>.

Based on national data, some further insights are available on outcomes from different types of tertiary education. Box 4.4 provides some examples – recognising that Finland currently reports UAS programmes under “unspecified orientation”.

Box 4.4. National evidence on outcomes from applied or professional tertiary education

Finland

Universities of applied sciences (or polytechnics) were established in 1991 to offer bachelor's degrees, which take 3.5-4 years to complete. A study based on longitudinal register data (Böckerman, Haapanen and Jepsen, 2018^[14]) found it led to significant gains in employment outcomes compared to adults with similar pre-enrolment characteristics who did not pursue studies after upper secondary education. For younger persons (aged 19-24 at entry), it found an increase in annual earnings of EUR 1 300 five years after entry and EUR 3 300 ten years after entry, as well as higher employment rates (by 5.1 and 6.6 percentage points respectively). For older students (aged 25-50 at entry), the increase in annual earnings was almost EUR 2 700 five years after entry and over EUR 3 700 ten years after entry. The benefits in terms of employment rates were modest (1.5 to 2.5 percentage points respectively).

Vocational master's programmes were first piloted in 2002 and rolled out, enrolling 4 300 students in 2016. They are provided in universities of applied sciences, which also provide vocational bachelor's qualifications. Entry requires a vocational bachelor's degree and three years of work experience. A study (Böckerman, Haapanen and Jepsen, 2019^[15]) explored the associated labour market outcomes analysing longitudinal register data. It found that obtaining a vocational master's qualification led to a 7% earnings increase four to six years after entry. Attendees received higher earnings regardless of whether they switch employers, and the gains were similar by gender and age. Vocational master's degrees also appeared to help individuals advance in their careers: they were more likely to move up the occupational hierarchy (e.g. to become managers) than those with similar pre-enrolment characteristics who did not pursue a vocational master's qualification.

France

Graduates of professional bachelor's programmes commonly pursue further studies: 41% started a new programme within 30 months of graduation. Among those who entered the labour market, 92% were employed, with the highest employment rates among science, technology and healthcare graduates and those in the fields of law, economics and management. Graduates in the fields of humanities and social sciences had lower employment rates. The majority find that their employment matches their level of qualification (77%) and is relevant to their field of study (82%). Nearly 90% of graduates work in the private sector.

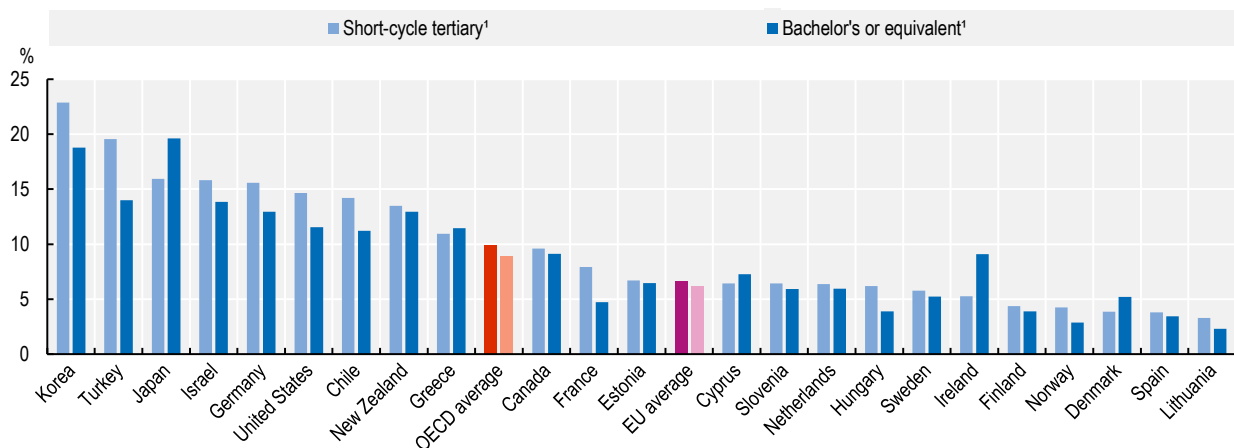
Source: Böckerman, Haapanen and Jepsen (2018^[14]), *More skilled, better paid: labour-market returns to postsecondary vocational education*, <https://ideas.repec.org/s/oup/oxecpp.html>; Böckerman, Haapanen and Jepsen (2019^[15]), *Back to school: Labor-market returns to higher vocational schooling*, <https://doi.org/10.1016/j.labeco.2019.101758>; SIES (2021^[16]), *Légère baisse de l'insertion des diplômés de licence professionnelle au 1er décembre 2020*, <https://www.enseignementsup-recherche.gouv.fr/sites/default/files/2021-12/nf-sies-2021-28-15586.pdf>.

Wages are not the only element to consider when analysing the quality of employment. The OECD job quality framework includes, alongside the obvious dimension of earnings, labour market security and the quality of the working environment. On various potential measures of job quality (e.g. job satisfaction, open-ended contracts) data are available from the Survey of Adult Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC). Our analysis found few differences between graduates of different levels of tertiary education – but this may just reflect that the categories of education

background (i.e. ISCED-97 5A and 5B) were not suited to capture variation in this regard. Therefore, only one measure of job quality is presented here, in addition to the earnings data presented above, to give a flavour of the data available in this area. Figure 4.8 shows a measure of work strain: the share of those working over 50 hours per week. Variation is larger between countries than within countries by educational background. However, in several countries (e.g. France, Korea, Turkey, United States) short-cycle graduates more often have longer working hours than graduates of ISCED level 6 programmes. In some countries, there is little difference by tertiary level or the relationship is reversed with bachelor's level graduates more commonly working over 50 hours per week (e.g. Denmark, Ireland, Japan).


Figure 4.8. Share of workers working more than 50 hours per week, by tertiary educational attainment (2012, 2015 or 2017)

16-65 year-old non-students



Note: Data refer to 2015 for Chile, Greece, Israel, Lithuania, New Zealand, Slovenia and Turkey. Data refer to 2017 for Hungary and the United States. All other countries refer to 2012. The number of working hours per week was capped at 80. The Survey of Adult Skills (PIAAC) is based on ISCED-97 and uses pre-Bologna classification of tertiary education. The labels have been adapted in this chart, so that they use the closest equivalents: short-cycle tertiary education = ISCED-97 5B, Bachelor's or equivalent = ISCED-97 5A.

Source: OECD Survey of Adult Skills (PIAAC), <https://www.oecd.org/skills/piaac/>.

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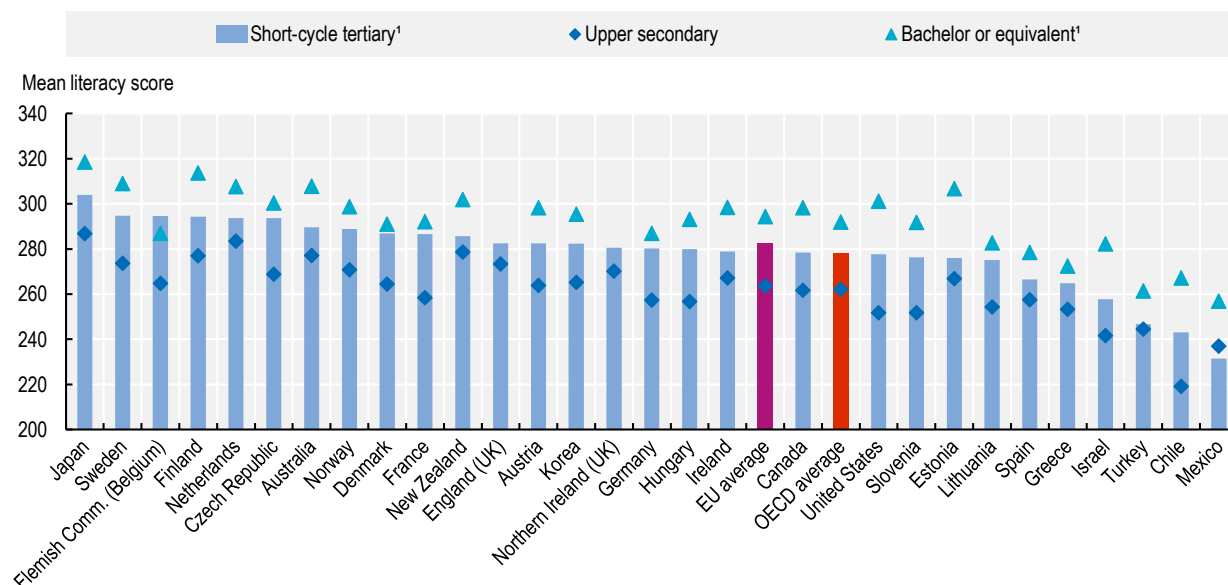
To measure the quality of professional programmes, one could also look at the skills of their graduates. However, data on the skills of graduates are very limited. At an international level, direct measures of graduate skills are only available regarding generic skills: the Survey of Adult Skills (PIAAC) provides insights on literacy, numeracy and problem-solving by educational background. The main potential strength of professional programmes is their capacity to develop specific skills that will enable graduates to smoothly transition to employment in a profession or a specific sector. Such skills are not directly measured by currently available data, and for understandable reasons – establishing the specific skills needed by tertiary graduates and developing reliable comparative measures would be extremely hard.

At the same time, all adults, including those with professional qualifications, need sound basic skills to function as members of society and pursue successful career. Figure 4.9 shows the mean literacy scores of tertiary education graduates, showing substantial variation across countries and revealing relatively low mean scores among short-cycle tertiary graduates in particular. These results do not simply capture the skills-developing impact of different types of tertiary education. They also reflect selection and self-selection into different pathways: upper secondary graduates with stronger literacy and numeracy skills are more likely to enter higher levels of education, while tertiary students with weak basic skills are

more likely to drop out. As indicated earlier by Figure 2.13, in some countries a considerable share of upper secondary graduates (and VET graduates in particular) leave the school system with weak basic skills. Professional tertiary education programmes are often viewed as a vehicle for social mobility and inclusiveness. To exploit their full potential in this role, professional programmes need to identify weaknesses in the basic skills of entrants and offer students support to help fill skills gaps. Differences in skill levels in Figure 4.9 may not only reflect differences in the extent to which these skills were developed in the education system, but also the extent to which individuals continued to develop or maintain their skills during working life.

Figure 4.9. Mean literacy score by level of educational attainment (2012, 2015 or 2017)

Adults aged 16-65



Note: Data refer to 2015 for Chile, Greece, Israel, Lithuania, New Zealand, Slovenia and Turkey. Data refer to 2017 for Hungary, Mexico, and the United States. All other countries refer to 2012.

1. The Survey of Adult Skills (PIAAC) is based on ISCED-97 and uses pre-Bologna classification of tertiary education. The labels have been adapted in this chart, so that they use the closest equivalents: short-cycle tertiary education = ISCED-97 5B, Bachelor's or equivalent = ISCED-97 5A.

Source: OECD Survey of Adult Skills (PIAAC), <https://www.oecd.org/skills/piaac/>.

StatLink  <https://stat.link/m95cq3>

Conclusion

Work-based learning (in real workplaces rather than simulated work environments) is a powerful tool for connecting professional programmes to the world of work:

- Work-based learning is commonly an element in professional tertiary programmes, but is not always mandatory. For example, associate degrees in several countries require a mandatory internship that accounts for a quarter or a third of programme duration. However, in some countries the use of work-based learning remains patchy.
- At ISCED level 6 work-based learning is less common than at level 5. Professional bachelor's programmes include mandatory internships in several countries, or may be pursued through a dual

pathway (e.g. professional bachelor's degrees in France may be pursued through either of those options). In many countries, the use of work-based learning is not systematic, only used in specific fields or remains optional.

- Dual tertiary programmes have been growing across OECD countries, with several countries providing dual options at ISCED level 6 (and a few even at ISCED level 7), though such programmes are often reported as having “academic” or “unspecified” orientation.
- When students pursue professional programmes with relevant work experience (as regular employees rather than as apprentices or trainees), their employment is often acknowledged as a form of work-based learning. In several countries, students with past or ongoing employment receive exemptions from mandatory internships. In professional examinations, having relevant work experience is the only possible route to the qualification.
- Adults who benefited from work-based learning during their tertiary studies tend to have higher employment rates than those who did not, with longer (6 months and above) paid work placements leading to the best outcomes in terms of employment.

In many countries an institutional framework supports engagement with social partners. This usually involves an advisory body at national level, with sometimes sector-specific and/or regional bodies. In addition, some countries require individual institutions to include employers on their boards. Social partners are involved in different stages in the education and training process:

- The introduction and removal of programmes and qualifications, development and updating of curricula is mostly done with the engagement of social partners. In most countries social partners participate through relevant advisory bodies or proof of employer interest is required for accreditation. A few countries let individual institutions design their own curricula and decide on how they engage with employers (e.g. Belgium Flemish community).
- Employers and practicing professionals may also participate in the delivery of programmes: as teaching staff or guest lecturers or by providing work-based learning in the form of dual programmes, substantial internships or while supporting employees who study part time (e.g. preparing for professional examinations).
- Few countries report systematically engaging industry representatives in assessments. However, in the case of professional examinations, industry representatives are strongly engaged in the development of the assessment framework as well as conducting assessments as examiners.

Data on outcomes from professional tertiary education are available only for short-cycle tertiary programmes (a breakdown by orientation is available for employment rates at ISCED level 6 but not included here due to data quality issues).

- Graduates of short-cycle tertiary education have higher employment rates than those holding an upper secondary qualification, and on average across EU member states their employment rate is nearly as high as those of ISCED level 6 graduates (and in a few countries it is higher). In terms of earnings graduates of bachelor's level programmes do better than short-cycle tertiary graduates, with the exception of a small number of countries, but earn less than ISCED level 6 graduates.
- The earnings advantage provided by short-cycle tertiary studies relative to an upper secondary qualification varies considerably across different fields of study. It is highest in the field of engineering, manufacturing and construction, and in ICT. Fields like education, social sciences, journalism and information and arts and humanities yield the lowest earnings advantages.

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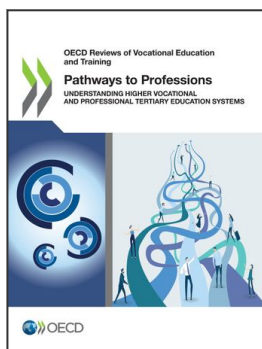
Notes

¹ Although the ISCED-F 2013 could be used, in theory, to help identify programmes with professional orientation, most countries report data based on highly aggregated 1-digit categories based on the ISCED-F2013 framework. Some of the categories are mostly sector- or profession-oriented (e.g. “Engineering, manufacturing and construction”, “Health and welfare”), but others contain a mix.

² Not only internationally agreed definitions are lacking but in some countries the data reported are inconsistent with classification choices in ISCED mappings.

³ Based on the operational definition by Eurostat: paid work-based learning with at least 6 months duration that is mandatory part of the curriculum.

⁴ There is some ambiguity regarding the categorisation of employment that is relevant to tertiary studies and is pursued in parallel – examples would include adults who work while pursuing preparatory courses for professional examinations (e.g. Germany, Switzerland) or adults who work in an occupation relevant to their programme and study part-time (e.g. part-time professional bachelor’s programmes in Denmark). However, for both professional examinations and part-time programmes combined with relevant employment, work experience is an entry requirement rather than part of the curriculum in a strict sense. It is therefore unclear whether such cases are systematically reported under one category, and if so, whether that category is “apprenticeship” or work-based learning “outside curriculum”.



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