



OECD Reviews of Vocational Education
and Training

Teachers and Leaders in Vocational Education and Training

REPORT SUMMARY



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Foreword

Global megatrends, such as automation, digitalisation, the green transition and population ageing, are bringing about structural changes in labour markets around the world. These changes have an impact on skills demand and supply. Vocational education and training (VET) can play a key role in responding to changing skill needs by equipping young people and adults with the right skills.

As in all parts of the education system, teachers and institution leaders are at the heart of high-quality VET. Their importance was highlighted during the COVID-19 pandemic, when the commitment and creativity of teachers and education institution leaders safeguarded the continuity of teaching and learning. Teachers in VET need to have a unique combination of pedagogical and industry-specific skills and knowledge that allow them to effectively teach vocational theory and practice to students. Moreover, as students in VET are often more diverse than in general education programmes, VET teachers play a key role in motivating students and overcoming barriers to learning. Leaders of VET institutions manage complex organisations that often involve close ties with local stakeholders and require smart investment in tools and technologies for teaching a diverse set of VET programmes.

In light of structural changes in the labour market and associated changing skill needs, VET teachers need opportunities to keep their skill and knowledge up to date with workplace practices. They also need to keep abreast of new technologies for teaching and learning and innovative pedagogical approaches. The COVID-19 pandemic has underlined the benefits of the use of digital technologies in education, but also brought some key challenges to light – especially in VET, where practical learning is the norm. Institution leaders play a key role in attracting and retaining VET teachers with the right skills and providing opportunities for professional development. In this respect, the ability of leaders to develop close ties with the world of work is becoming of even greater importance in a changing labour market.

In spite of their important role, data and information on effective policies and practices for attracting, training and retaining VET teachers and leaders are limited. This report aims to fill the knowledge gap, by assessing the key challenges and opportunities for VET teachers and leaders as skills needs change, and by providing international good practice examples and policy pointers to ensure that teachers and leaders can deliver high quality VET. The report is part of the OECD Centre for Skills' broader work on VET, which supports countries in building attractive, inclusive and responsive VET systems.

This report was drafted by Shinyoung Jeon, Pauline Musset and Rodrigo Torres from the OECD Centre for Skills, under the supervision of Marieke Vandeweyer (manager of the VET team) and Andrew Bell (Acting Head of the OECD Centre for Skills). The report has benefited from helpful comments provided by Mark Pearson (Deputy-Director for Employment, Labour and Social Affairs), colleagues in the Centre for Skills, the Directorate for Employment, Labour and Social Affairs, and the Directorate for Education and Skills. Administrative and editorial assistance was provided by Charity Kome, Jennifer Cannon and Rasa Silyte-Niavas from the OECD Centre for Skills and by Sally Hinchcliffe. Aurelien Kaske and Koshi Murakoshi provided research support.

The views expressed in this report should not be taken to reflect the official position of OECD member countries.

Executive summary

Key findings

Teachers and leaders are central to vocational education and training (VET). Often referred to as a “dual profession”, VET teachers require both pedagogical and industry knowledge to prepare young people and adults for the labour market. Institutional leaders in VET play many important roles, from developing and supporting teachers to engaging multiple stakeholders and improving the quality of VET through the allocation of resources and provision of instructional guidance.

The landscape of teaching and learning in VET is changing, as are the skills the labour market needs, reinforcing the need for VET teachers to keep abreast of new pedagogical approaches and classroom technology and keep up to date with the realities of the workplace. For example, increasing demand for basic, digital and soft skills in the labour market means VET teachers need to equip themselves with these skills and teach them to their students.

These diverse and changing requirements create several challenges for the sector. VET teacher shortages are significant in many OECD countries. Half of further education college principals in England (United Kingdom), half of states in the United States, and a third of VET principals in Denmark, Portugal and Turkey reported shortages. VET teacher supply is estimated 80% of the demand in Germany, 70% in Korea and 44% in Sweden. While training is crucial to prepare and develop VET teachers, many countries struggle to cover the full mix of skills they need. Moreover, VET teachers often face barriers to accessing training due to lack of support or incentives, and conflicts with their work schedule. Similarly, the complex set of responsibilities VET leaders face are not always matched with sufficient access to relevant training opportunities and targeted support.

Key recommendations

1. Ensure an adequate supply of well-prepared VET teachers

Increasing the attractiveness of VET teaching could encourage more people to join the profession. Financial incentives and support targeted at initial teacher education and training (ITET) and professional development (PD) can help attract and retain VET teachers. Likewise, targeted financial incentives and support can encourage industry professionals into VET teaching in shortage areas. VET teachers who receive targeted support during their careers are more likely to stay in the profession. For example, the attrition rates among new VET teachers can be reduced through mentoring and structured induction programmes. For experienced teachers, attractive career pathways and targeted support can encourage them to stay in the profession while allowing them to move into senior or management-level positions or into other subject areas.

Employing industry professionals can ease VET teacher shortages. As they generally lack the required teaching qualifications and pedagogical skills, providing flexible pathways for qualification, training and recruitment can ease their entry into teaching. For example, countries may relax qualification requirements, if needed, for industry professionals or for graduates from higher education specialising in the relevant

subjects, and provide alternative routes to obtaining teaching qualifications. Part-time work can also facilitate flexible teaching in VET, but should not come at the expense of VET teachers' working conditions and teaching skills. Collaboration between VET institutions and industry should be strengthened to facilitate the engagement of industry professionals in VET teaching.

2. Effectively prepare and develop VET teachers

Initial teacher education and training programmes should develop future VET teachers' pedagogical skills alongside their basic, digital and soft skills, and the vocational skills and knowledge needed by the labour market. There are many initiatives aiming to develop strong pedagogical and vocational skills in VET teachers. Education and training institutions have to keep their curricula up to date, collaborate with VET institutions to offer practical teacher training, and develop research and innovation into pedagogical approaches. Offering work-based learning opportunities in industry as part of ITET can be particularly helpful for those with no industry background.

Changing teaching and learning environments, as well as the changing needs of the labour market mean VET teachers need to continue to develop their skills after leaving ITET. Several countries give them the means and support to participate in PD. To make such participation more effective, VET teachers' training needs need to be assessed so that relevant, customised and engaging PD can be provided. Participation can be increased by fostering collaboration between VET stakeholders, including VET institutions, teacher and school networks, local companies, and universities and other associations.

3. Promote innovative pedagogical approaches in VET

Innovative pedagogical approaches can improve the quality of VET teaching and foster the development of transversal skills, including soft and digital skills. VET can benefit from the flexibility, cost-effectiveness, safety and other advantages of new technology, such as online learning, virtual/augmented reality, robotics and simulators. Encouraging the adoption of such approaches can begin by fostering VET teachers' capacity to take advantage of new and existing technology. Countries need to help VET teachers to regularly update their pedagogical knowledge and digital skills and adjust their teaching methods by providing training and networking opportunities.

To encourage the effective use of innovative pedagogical approaches, countries should also provide strategic guidance and institutional support to VET teachers. This could include guidance on how to choose effective teaching methods, combined with improving their access to digital devices, high-tech equipment and technical support. Countries can also promote innovation in VET by establishing partnerships between the VET sector and industry to improve the procurement of materials and equipment tailored to teaching and learning needs. More broadly, they need to raise awareness of the importance of innovation, information and communications technology (ICT) and soft skills in VET to encourage collaboration among relevant stakeholders to make VET more innovative.

4. Strengthen VET leadership

VET institutions need well-prepared leaders. They have to understand the VET sector and the labour market while also having the organisational and pedagogical leadership skills needed to improve teaching and learning. To ensure that VET leaders can effectively carry out their complex and varied roles, countries should ensure they are all equipped with the right skills by clarifying their roles and tasks and providing access to initial training and professional development, as part of a coherent skills development strategy. Leaders should also be supported in their role, especially at the start of their careers. It is also important to make VET leadership roles more attractive, by developing middle management roles and leadership teams to assist leaders with their responsibilities, giving suitable external candidates access to the profession, and supporting VET leaders through peer learning.

1 Assessment and recommendations

This section provides an overview of the report and a summary of the key findings and recommendations. It highlights the importance of teachers and leaders in vocational education and training (VET), explains the definitions and methodology used and outlines the changing landscape of teaching and leadership in VET.

The importance of teachers and leaders in VET

Teachers¹ and leaders are central to vocational education and training (VET), a unique form of education that focuses on practical skills and hands-on experience. Often referred to as a “dual profession” (Greatbatch and Tate, 2018^[1]; OECD, 2015^[2]; Andersson and Köpsén, 2015^[3]), VET teachers generally have to have both pedagogical and occupational knowledge and experience. VET teachers prepare young people for work by teaching not only occupational skills but also transversal skills, such as basic and soft skills. They support the school-to-work transition of students with diverse backgrounds, including those who are struggling with academic studies, and adults in need of new, updated or improved skills.

Institutional leaders in VET play a crucial role in ensuring that this diverse group of students have access to high-quality teaching and learning that develops the skills they need. The effectiveness of VET institutional leaders has a significant impact on students’ achievement and teachers’ working conditions (Ruiz-Valenzuela, Terrier and Van Effenterre, 2017^[4]). VET leaders need to be strategic and management focused and have a good understanding of the VET landscape and the factors that could affect it. They also need to encourage more innovative approaches to pedagogy, organisational and institutional matters, while keeping abreast of new and emerging technology that could improve the effectiveness of VET delivery.

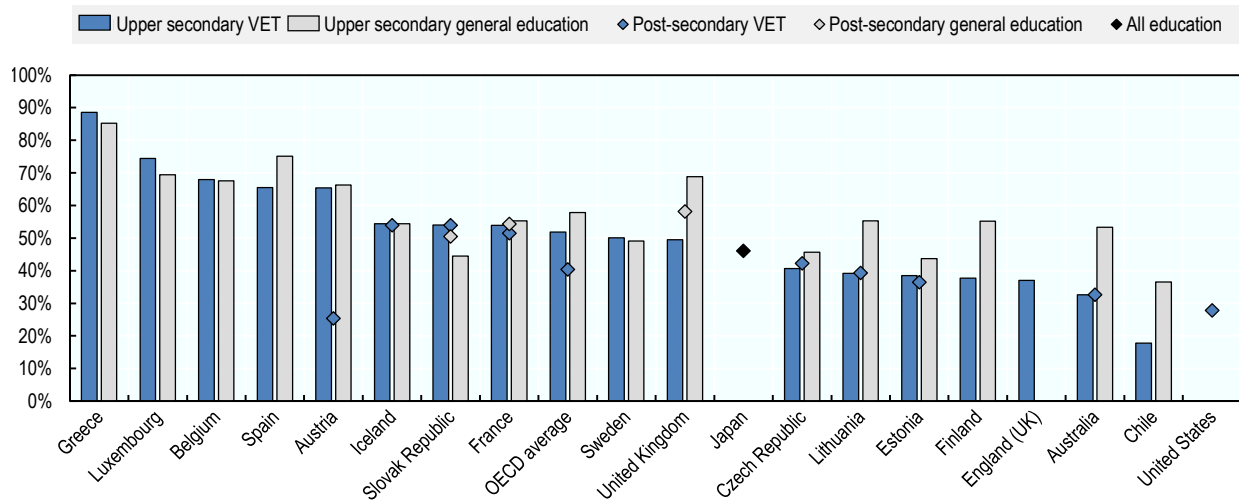
The importance of VET teachers and leaders came even further to the fore during the COVID-19 pandemic and the ensuing school closures implemented in many countries (OECD, 2020^[5]). VET institutions train, assess and award qualifications for many of the professions that formed the backbone of economic and social life during the lockdown, from the health sector to the retail sector (OECD, 2020^[6]). At the same time, VET institutions offer individuals who lost their jobs the opportunity to improve their skills or develop new ones to prepare for employment in different occupations or sectors. To ensure continuity of teaching during closures, many VET teachers and leaders had to be creative. For example, they found new or alternative ways of teaching and learning, often using digital technologies. They also filled students’ learning gaps – caused by the closure of learning venues and interrupted work-based learning – by providing opportunities for practical learning at schools during summer vacations or even during the lockdown where countries allowed it in specific cases (OECD, 2020^[5]).

Teachers and leaders are core resources for the effective provision of VET. On average across the 18 OECD countries, teacher compensation accounts for 52% of the total expenditure of public and private upper secondary VET institutions, and 40% of the total for post-secondary VET institutions (Figure 1.1). The differences between countries are substantial, with upper-secondary VET institutions in Greece spending 89% of their resources on teacher compensation but those in Chile spending only 18%. In the majority of countries with available data, the share of expenditure devoted to teacher compensation in VET is the same or lower than in general education (52% in VET versus 58% in general education at the upper secondary level on average across countries). The Slovak Republic is the main exception; the share for VET is 10 percentage points higher than for general education at the upper secondary level.

Despite their importance, there is limited knowledge and evidence about teachers and institutional leaders in VET. To fill this knowledge gap, this study aims to produce new insights into the strategies and policies that can best help develop and maintain a well-prepared teaching and leadership workforce in VET. The remainder of this section provides an overview of the full report and a summary of its key findings and recommendations.

Figure 1.1. Teachers account for an important share of VET expenditure

Share of expenditure for compensation of teachers (with active teaching responsibilities), all public and private VET institutions, 2017 or latest year



Note: In the case of the United Kingdom, VET institutions are all government dependent private institutions. Data for England (UK) refer to all staff costs in further education colleges (2016-17). Japan (2018) refers to total school education expenditure, excluding expenses for public universities, junior colleges and subsidies to private schools.

Source: OECD (2020^[6]), Education at a Glance 2020: OECD Indicators, <https://doi.org/10.1787/69096873-en>; England: Association of Colleges (2018^[7]), AoC 2018 Report on College Finances,

www.aoc.co.uk/system/files/AoC%202018%20report%20on%20college%20finances%20%2014%20September%2018.pdf; Japan:

MEXT (2020^[8]), Report of Local Education Expense Survey for the First Year of Reiwa (FY2018), https://www.mext.go.jp/content/20201120-mxt_chousa01-100014633_c.pdf.

Box 1.1. About this study: Teachers and Leaders in VET

Objectives

This report aims to help countries develop, maintain and improve their teaching and leadership workforce in VET. While the challenges for teacher recruitment, retention, training and pedagogy as well as school leadership are widely documented and analysed (OECD, 2018^[9]; OECD, 2005^[10]; OECD, 2019^[11]), the specific challenges around teachers and leaders in VET have been under-researched. This study addresses this gap and provides advice to governments and other stakeholders regarding teaching and leadership in VET.

Scope

This report focuses on teachers and institutional leaders in VET at International Standard Classification of Education (ISCED) Levels 3-5 (upper secondary, post-secondary non-tertiary and short-cycle tertiary) paying particular attention to upper secondary education.

Vocational trainers (or apprentice tutors or company trainers) who supervise and teach work-based learning in companies are outside the scope of this study. The study does not include special needs teachers, educational psychologists or counsellors.

Methodology

The report draws on comparative data and the experiences of several OECD countries to distil its policy messages. The information for this report was gathered through:

- *Data analysis and literature reviews:* Key data sources include *Education at a Glance (EAG) 2020* (OECD, 2020^[6]), including the results from an ad hoc survey of teachers in upper-secondary VET programmes; the Teaching and Learning International Survey 2018 (TALIS); the European Union Labour Force Survey 2017-19 (EU-LFS); and relevant national statistics.
- *Study visits and stakeholder interviews:* The OECD review team gathered inputs from a visit to the United States at the end of February 2020 and remote interviews with stakeholders in Denmark, England (United Kingdom),¹ Germany and Japan to discuss key policy questions and identify the main challenges and opportunities for teachers and leaders in VET. Supplementary interviews were conducted with experts in Australia and Belgium (French Community).
- *Inputs and review by the Group of National Experts on VET (GNE-VET):* The OECD team gathered inputs from the members of the GNE-VET through a policy questionnaire. GNE-VET members and members of the Skills Strategy Advisory Group have also reviewed a discussion paper on the topic that included preliminary analysis and policy recommendations.

1. A visit to England was planned in March 2020 but was replaced by remote interviews as a result of the COVID-19 pandemic.

Definitions and methodology

Definition of VET teachers

This study uses two definitions of VET teachers, one based on the subject taught and the other on the type of programme in which the teacher is active. The first defines VET teachers as teachers of vocational subjects, regardless of programme orientation. These VET teachers teach vocational subjects in vocational and/or general programmes. Their counterparts teach general subjects, also in vocational and/or general programmes. The second defines VET teachers as teachers in VET programmes, regardless of the subjects they teach. These VET teachers teach any type of subject – including general subjects – in VET programmes, while general education teachers in this definition teach any type of subject in general programmes.

Categories and definitions of VET teachers vary across countries, datasets and taxonomies, and each have their own limitations. Some existing datasets or taxonomies, including commonly used international occupational classifications, do not distinguish between the types of programmes or institutions in which teachers are employed. This means that even where VET teachers are distinguished from general subject teachers, they could still be teaching in general programmes, making the first definition more useful. On the other hand, not all countries distinguish teachers in VET programmes by teaching subject. The 2020 *Education at a Glance* publication shows that in 21 OECD countries teachers of general subjects can teach in both general and vocational programmes without changes to their terms and conditions (OECD, 2020^[6]). The definition used in different parts of this report will therefore depend on the data source used.

Definition of institutional leaders in VET

Institutional leaders in VET refer to individuals who are appointed or employed in a recognised leadership position to oversee VET programmes and institutions and have responsibility for the goals set by an organisation that offers VET programmes. VET leaders can have different responsibilities in different countries and types of institutions. They could be school leaders in a single- or multi-field vocational school,

or heading a public or private VET institution providing adult learning programmes. They might also be responsible for VET programmes within comprehensive education institutions (that may also provide general education programmes). For example, leaders of VET institutions oversee upper secondary VET schools in Denmark and Germany; further education colleges, independent training providers and adult community centres in England (United Kingdom); vocational high schools, colleges of technology and specialised training colleges in Japan; and career and tech education programmes in high schools and community colleges in the United States.

The changing landscape of teaching and leadership in VET

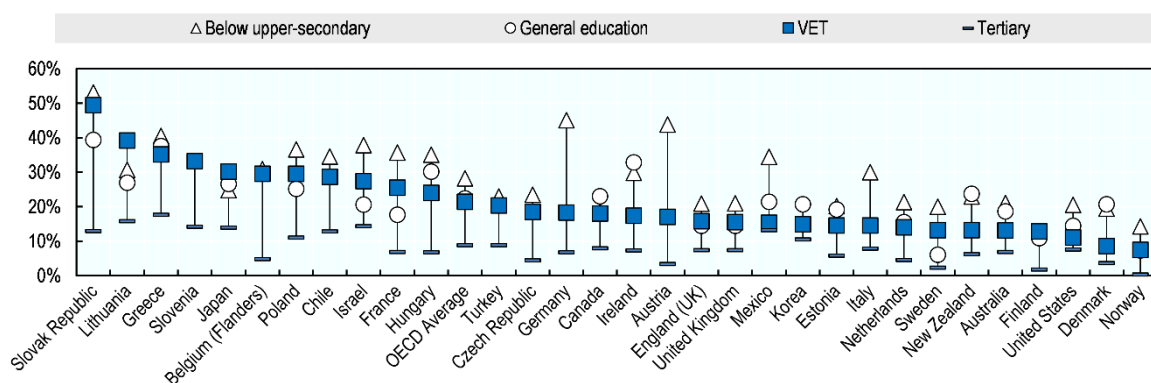
Rapidly changing labour markets call for changes in VET teaching and leadership

Digitalisation, automation, the transition to a low-carbon economy and the COVID-19 pandemic are having a major impact on the skills needed in the labour market, and therefore also on the skills that need to be formed through VET. The occupational composition of employment has changed in OECD countries in recent decades, with employment in middle-skill occupations growing more slowly than low- and high-skill occupations (OECD, 2020_[12]). Digitalisation creates many jobs and changes existing ones, including jobs that require VET qualifications. Automation can transform a wide range of work tasks, including in sectors where VET traditionally plays a key role (OECD, 2019_[13]; Nedelkoska and Quintini, 2018_[14]). Further changes are expected in the coming years. For example, in many European countries, traditional VET occupations such as construction worker or plant operator are expected to become relatively less important in the coming decade, while occupations requiring a higher level of skills in fields that are often outside the scope of traditional VET programmes – but could potentially be delivered within VET systems – are growing (Cedefop, 2020_[15]). In the United States, employment in higher-level VET occupations is also expected to grow, with *wind turbine service technicians* being the occupation with the strongest projected increase in employment (61%) (US Department of Labour, 2020_[16]). These changes in skill needs will necessitate changes to VET curricula, and therefore also to VET teacher training and professional development. They could also imply changes to VET teacher recruitment strategies if more industry experience is desired. Stronger leadership will be fundamental to making these changes happen.

According to the Survey of Adult Skills (PIAAC), many occupations at high risk of automation – i.e. those jobs where a large share of the tasks involved could potentially be automated – had high shares of VET graduates among their young workers. This is the case in occupations such as metal and machinery trades and electrical and electronics trades (Vandeweyer and Verhagen, 2020_[17]). Across OECD countries, on average 28% of young people (16-34 years-olds) with below upper secondary education were employed in jobs at high risk of automation (Figure 1.2). By contrast, among those with an upper-secondary or post-secondary non-tertiary education, 22% of general education graduates and 21% of VET graduates on average² were employed in jobs at a high risk of automation. Only 9% of young tertiary education graduates were employed in jobs at a high risk of automation. Differences between countries are substantial, however, with more than one in three young VET graduates in Greece, Lithuania, the Slovak Republic and Slovenia being employed in highly automatable jobs, compared with less than 10% in Denmark and Norway. The differences between VET and tertiary education graduates were smallest in Denmark, Korea, Mexico and the United States, and largest in Belgium (Flanders), Lithuania and the Slovak Republic.

Figure 1.2. One in five young VET graduates are employed in jobs with a high risk of automation

Percentage of employed graduates (aged 16 to 34) employed in jobs at high risk of automation



Note: High risk of automation is defined as having a probability of automation of at least 0.7. The United Kingdom refers to England and Northern Ireland only. The sample includes employed individuals aged 16 to 34 who are not enrolled in formal education. General education and VET include those who graduated from upper secondary or post-secondary non-tertiary education. The OECD average is an unweighted average of the countries shown. Data include the survey years 2011-12, 2014-15 and 2017.

Source: OECD (2020_[12]), *OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis*, <https://doi.org/10.1787/1686c758-en>.

As VET programmes need to evolve in order to adapt to changing skill needs, VET teachers must not only update their knowledge and practice, but also exploit new approaches to teaching, such as the use of virtual/augmented reality (VR/AR). This process has been accelerated by the COVID-19 pandemic, which has partially shifted VET towards remote learning to ensure the continuity of training. However, not all VET teachers are ready for this change, and there are large differences across countries in their preparedness. For instance, TALIS 2018 data show that before the pandemic the share of upper secondary VET teachers across the six OECD countries/regions with available data (Alberta [Canada], Denmark, Portugal, Slovenia, Sweden and Turkey) who did not feel prepared to support their students through the use of digital technology ranged from 9% in Portugal to 40% in Sweden (see Chapter 4 in the full report, Figure 4.9). More evidence is needed to understand how well VET teachers managed the shift to remote teaching during the COVID-19 pandemic. Evidence from England, collected through surveys on the shift to online learning in 2020 carried out by the Association of Colleges, shows that 98% of 109 colleges reported that their teaching staff were (very or moderately) confident in delivering remote learning using a digital platform in July 2020 (AoC, 2020_[18]). Similarly in November 2020, 98% of 97 colleges described their teachers' confidence and skills with online/blended teaching as moderate (64%) or strong (34%) (AoC, 2020_[19]). VET teachers in Denmark and Germany also reported that they were able to smoothly shift to distance teaching as they were already prepared before the pandemic.

Teacher shortages may hamper effective provision of VET

Teacher shortages in VET are a common challenge in several OECD countries, as are skills shortages in some VET occupations. This double-shortage makes it particularly difficult to recruit and retain VET teachers – not just those teaching vocational subjects but also general subjects in VET programmes. For example, mathematics and science teachers are crucial for many VET subjects, but they are in severe shortages in several countries. These shortages may hamper the sustainable provision of VET, which exacerbate skill shortages.

In many countries, the VET teaching workforce is ageing. On average across the 26 OECD countries with available data, 44% of teachers in upper-secondary VET programmes were over 50 years old in 2018, compared to 41% in 2013 (Figure 1.3). This is higher than the share for general education teachers (39%

in 2018), and the increase between 2013 and 2018 was also greater: a 3.5 percentage point increase for VET teachers compared to a 2.7 percentage points increase for general education teachers on average across 24 countries.³ Data from European countries also show that 46% of VET teachers are aged 50 or older on average, compared to 29% of all tertiary-educated workers and 32% of workers overall. The increase between 2011-13 and 2017-19 was also faster among VET teachers (5 percentage points) than for all workers and tertiary-educated workers (2-3 percentage points).

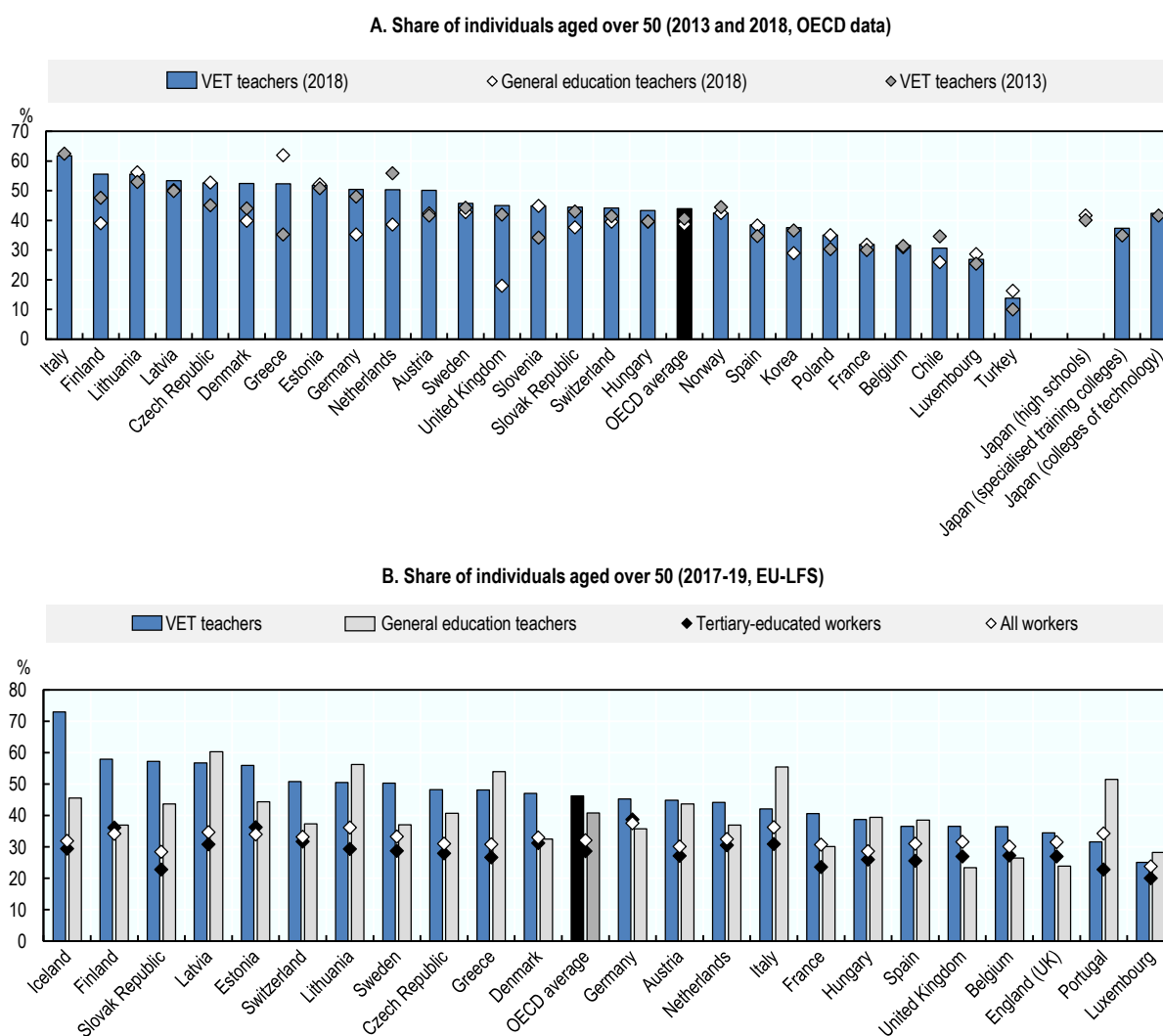
The impact of VET teacher shortages could be significant. Even a minor shortage of teachers in VET can have a long-term impact, as through their impact on students, VET teachers have an impact on industry and the economy. VET teacher shortages can damage the stable provision of specific occupational courses and the sustainable supply of qualified workers for associated occupations. VET teacher shortages may also increase the costs of VET provision. For instance, in England (ACL Consulting, 2020_[20]), higher costs during times of VET teacher shortages may be driven by increased use of lower- or less-qualified teaching staff and temporary or agency staff – which is not always cheaper than hiring suitably qualified teachers – and can lead to increased workloads and stress for existing staff. Shortages can reduce the time available for professional development for existing staff while increasing the need for training for less-qualified teaching staff. A reliance on temporary or agency staff is associated with low retention and high turnover rates which can damage pedagogical continuity. In the longer term, teacher shortages may lead to the decrease in the availability of VET courses or a narrowing of provision and choices for learners (ACL Consulting, 2020_[20]).

It is often argued that the automation of tasks can alleviate shortages in certain occupations or sectors, but it is unlikely that the demand for teaching professionals in general will be readily affected by automation and the increased use of technology in the education sector. Teaching across all education sectors is estimated to be at the lowest risk of automation of all occupations (Vandeweyer and Verhagen, 2020_[17]), as the tasks done by teaching professionals cannot be easily replaced by technology. Teacher-led instruction remains important in the context of increased levels of technology use in VET and the rise of online courses. Online and distance VET courses are still teacher-mediated learning opportunities: teachers need to design and support the courses and teach and assess students. In fact, the widespread adoption of technology in the labour market may increase the need for teachers in order to equip students with the skills needed in increasingly automated economies and societies, and develop the skills they need to contribute to the further development of digitalisation (Vincent-Lancrin and van der Vlies, 2020_[21]).

Attracting industry professionals to the VET teaching workforce is one strategy to avoid or overcome VET teacher shortages. Several countries set relatively relaxed qualification requirements for teaching VET with the aim of recognising the different levels of expertise and experience needed to teach in the sector. Other countries hire under-qualified VET teachers and encourage them to complete the training they need to obtain the required teaching qualification while working (see Chapter 2 in the full report). Even in countries with relatively strict regulations for teacher qualifications, such as Germany, it is possible to hire industry professionals without teaching qualifications under certain circumstances. Despite the benefits of recruiting industry professionals into VET, those who do not have the required teaching qualifications often lack pedagogical knowledge and ability and feel unprepared for teaching.

Figure 1.3. VET teachers are ageing

Share of individuals aged 50 and older



Note: In Panel A in this figure, teachers teach at upper secondary education level and the distinction between VET and general depends on programme orientation, not on the subject they teach. For Italy, 2016 data were used instead of 2013, for Denmark 2014 instead of 2013, for Sweden 2016 instead of 2018, for Norway 2015 instead of 2013 and for Turkey 2014 instead of 2013. For Japan, 2013 and 2016 data were used; for high schools, the data do not distinguish programme orientation, whereas specialised training colleges and colleges of technology are considered as VET. The OECD average does not include Japan.

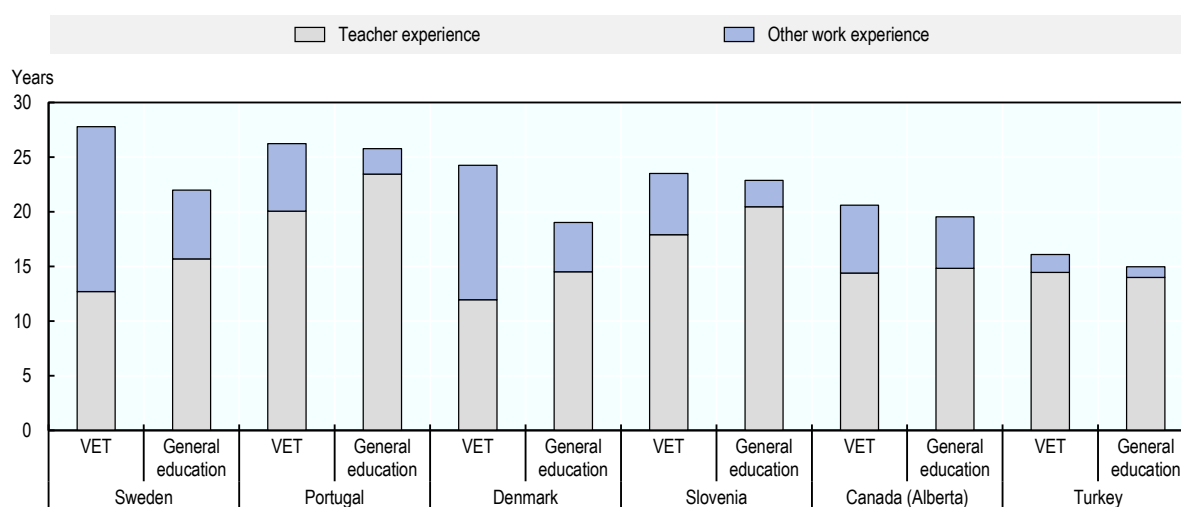
In Panel B in this figure, vocational teachers teach or instruct vocational or occupational subjects in adult and further education institutions and to senior students in secondary schools and colleges (see chapter 1 in the full report for details).

Source: Panel A: OECD, (2020^[22]), OECD.Stat, <https://stats.oecd.org/index.aspx?r=103992#>; Japan: MEXT (2018^[23]), Summary of survey results, www.mext.go.jp/component/b_menu/other/_icsFiles/afieldfile/2018/03/28/1395303_03.pdf. Panel B: Eurostat (2020^[24]), European Union Labour Force Survey (EU-LFS) 2017-19, <https://ec.europa.eu/eurostat/web/microdata/labour-force-survey>.

Many VET teachers gain industry experience before joining the profession, irrespective of whether this is a requirement or not. This is reflected in TALIS data, which show that VET teachers tend to have more non-teaching work experience that is not related to education and teaching than general education teachers (Figure 1.4). This suggests that VET teachers are more likely to enter the profession as a second career, having previously worked in industry or outside the education sector.

Figure 1.4. VET teachers often have more non-teaching work experience than general education teachers

Average years of experience by type of teacher and type of work experience



Note: VET teachers refer to upper secondary teachers who reported in TALIS that they teach practical and vocational skills. Teacher experience refers to their years as a teacher in total. Other work experience refers to years working in other non-education roles. The average total work experience of teachers is slightly higher (on average 1.6 years in general education teachers and 2.1 years in VET teachers) than the sum of these two categories of work experience. All years were reported regardless of whether they worked full-time or part-time.

Source: OECD (2019^[25]), TALIS 2018 database, www.oecd.org/education/talis/talis-2018-data.htm.

Close connections between VET, industry and research remain crucial

Even more than in other forms of education, VET needs to be connected to the labour market and adjust as it changes. For this reason, various forms of interaction and exchange between VET schools and industry are encouraged, including work-based learning for both students and teachers. This is more difficult to provide for teachers than for students: work-based learning for teachers requires not only a good relationship between VET schools and industry, but also support that allows teachers time off from teaching and provides financial and other incentives. Ultimately, VET teachers' industry experience will pay back by supporting more effective learning and a smoother transition into employment for their students.

Another potential benefit from close connections between VET schools and industry is if it encourages experienced professionals from industry to become VET teachers. This can not only help reduce VET teacher shortages, as discussed above, but also increase the share of teachers whose skills and knowledge are up to date with industry practices. Moreover, their industry connections could help to strengthen the ties between their VET institution and the world of work.

Close connections between the VET sector and research institutions – e.g. universities that provide initial and professional teacher education and training, or VET research and innovation centres – also contributes to high-quality VET provision. Through close co-operation with universities and research centres that are

innovating in technology and pedagogy, VET teachers and leaders can become the vehicle for driving innovation in both the VET sector and industry, and equipping the future workforce with new in-demand skills for the labour market.

The skills VET teachers need are becoming more complex

Training programmes for teachers in VET programmes should reflect the fact that employees in today's workplaces need not just occupation-specific and technical skills but also stronger basic, digital and soft skills (UNESCO-UNEVOC, 2020^[26]). Soft skills such as critical thinking, collaboration and communication are becoming more crucial for effective work in the collaborative environments enabled by new technologies. Basic skills, including literacy, numeracy and digital skills, are also essential to cope with changing labour markets and the increasing risks of automation. VET teachers need to facilitate the development of these skills among their students but not all of them know how to effectively teach such skills in a VET setting. In England, for example, the 2018 Training Needs Survey showed that 62% of FE institutions reported that their VET teachers require further training and development on teaching basic skills (English and maths) and incorporating these skills into VET programmes (Education and Training Foundation, 2018^[27]). With the increasing online delivery of VET, teachers also need to have stronger digital skills. Among OECD countries with available data in TALIS 2018, the type of professional development VET teachers reported need most was ICT skills training (46% on average across six OECD countries/regions).

Initial teacher education and training (ITET) and professional development (PD) programmes for VET teachers need to adjust to changing curricula and teaching environments. Training programmes also need to meet the different needs of different groups of teachers. For example, teachers with industry backgrounds would need more pedagogical training, while those without industry backgrounds would need more opportunities to gain occupation-specific skills and experience.

Leadership is more important than ever in VET institutions

Institutional leaders in VET have a crucial set of roles to play, from developing and supporting teachers to engaging employers and other stakeholders, and improving the quality of VET provided, which may be through technological and pedagogical innovation. Leaders face increasing challenges in recruiting well-prepared teachers and putting incentives in place to retain them. VET leaders are also responsible for supporting teachers in their teaching responsibilities and managing pedagogical innovations. Evidence in England suggests that the effectiveness of VET institutional leaders (further education and sixth form college principals) is correlated with learners' achievement⁴ and teachers' employment conditions⁵ (Ruiz-Valenzuela, Terrier and Van Effenterre, 2017^[4]). Similarly in Korea, instructional leadership in VET institutions has a statistically significant effect on the teaching competence of specialist VET school teachers (Kim and Phang, 2018^[28]).⁶

While leaders in VET require multiple competences to carry out their diverse responsibilities, many of them are not well prepared before taking up their role, and might not receive the support they need throughout their career in terms of mentoring and professional development. VET leaders often have a teaching background but leaders need to be more than teaching and learning specialists; they also need a broad range of entrepreneurial and commercial skills. Specialised preparatory training for VET leaders is not always available. In the United States, for example, evidence shows that the training offer for VET leaders is declining (Zirkle and Jeffery, 2017^[29]), and that existing programmes fall short in a few key areas, such as budgeting and finance (Inside Higher Ed, 2013^[30]). While the status of leaders in education and training in secondary and postsecondary education and training settings is high in many OECD countries, and salaries are often higher than for teachers, challenging working conditions – especially in the first years of a leadership role – contribute to low retention rates. Common challenges for novice VET leaders include heavy workloads and complex task management, conflicts with teachers and students, and curriculum and instruction issues (Oleszewski, Shoho and Barnett, 2012^[31]).

Key recommendations for effective VET teacher and leader policies

1. Ensuring an adequate supply of well-prepared teachers in VET

VET teacher shortages are a significant policy concern in several OECD countries. For example, in Denmark, Portugal and Turkey, one third of VET school principals reported shortages of qualified teachers, according to 2018 TALIS data. In England, according to the 2018 College Staff Survey, 53% of further education college principals had found teacher recruitment difficult over the last three years. In the United States, more than half of states reported that they had teacher shortages in one or more VET subjects, according to 2018-19 Teacher Shortage Areas data. Germany estimates that the number of VET teachers would be around 80% of the demand in the coming decade. In Sweden, the supply of new VET teachers is estimated less than half of the demand in the coming decade. In Korea, new VET teachers replaced only 70% of retirees in the past five years. Even in some countries where VET teacher shortages are not pronounced, such as Finland, Japan, the Netherlands and Norway, shortages are anticipated in specific fields and localities.

VET teacher shortages are related to the limited attractiveness of the profession as a career. For example, teachers' salaries – representing the largest single cost in VET – have a direct impact on the attractiveness of the teaching profession. However, in a number of countries, the profession does not offer competitive salaries compared to industry and/or other educational institutions. In addition, many VET teachers feel that their profession is not valued in society. High workloads, poor management of VET institutions and lack of career development opportunities also have an effect on job satisfaction, which in turn has an effect on VET teacher retention.

Countries can ensure a better supply of VET teachers by increasing the attractiveness of VET teaching careers and actively employing industry professionals as VET teachers.

1.1. Increasing the attractiveness of VET teaching careers: Well-targeted incentives and support are proven to be effective to attract and retain VET teachers: for example, targeted bonus and wage incentives for teacher recruitment and retention in VET at shortage subjects or sectors; and financial support for initial teacher education and training and professional development. Belgium (Flanders), England, Korea, Norway and the United States use targeted incentives and support to attract industry professionals or highly qualified teachers to VET teaching. Offering career development support to improve the retention of VET teachers can also help increase the attractiveness of VET teaching careers. VET teachers with targeted career support are more likely to stay in the profession. Attrition among new VET teachers can be reduced by providing them with less challenging working environments when they start and with reduced teaching and administrative workload to have mentoring and structured induction programmes. Mandating induction programmes for new VET teachers can be helpful, and mentors can provide key support during the early years of teaching although, as experiences from Austria and Turkey have shown, having enough well-trained mentors for the induction phase is crucial. Norway provides new VET teachers with guidelines and courses, and Germany offers them the option to receive didactic and methodological advice even after their quite extensive preparatory service period. For more experienced teachers, attractive career pathways with targeted career support encourages them to stay in the profession while allowing them to move into a senior or management-level position or into another subject areas.

In order to attract more industry professionals as VET teachers, countries should aim at:

1.2. Providing flexible pathways into VET teaching: This can be achieved by relaxing entry qualification requirements, if needed, for industry professionals and graduates from higher education specialising in the relevant subject, and providing flexible pathways to obtaining teaching qualifications. Relaxed entry qualification requirements are used as a tool to smooth the

path from industry into VET teaching in Japan, Korea and the United States. However, care must be taken to ensure that relaxed entry rules do not come at the cost of lower quality. Several countries attract industry professionals to enter the teaching profession without the required teaching qualification, but they are either required (in Denmark) or encouraged (in England) to obtain the qualification afterwards. Korea is planning to relax entry qualification requirements for professionals to teach in VET in fields which currently lack relevant teaching qualifications or training for VET teachers, in order to meet rapidly changing labour market demand. Support to help these professionals obtain necessary qualifications is crucial, by providing flexible, modular ITET without going through a full ITET programme while ensuring that such training focuses on skill gaps.

1.3. Attracting more industry professionals to teach in VET while working in industry: This can be achieved by facilitating flexible work arrangements and increasing collaboration between VET providers and industry. Flexible work arrangements such as part-time teaching and co-teaching with fully qualified teachers can help industry professionals to combine working in industry, training as a teacher and teaching in VET. Part-time VET teachers with industry backgrounds can bring a number of benefits, such as overcoming teacher shortages, reducing costs, increasing flexibility in VET provision and bringing in up-to-date knowledge from industry. To fully take advantage of these benefits, the teaching quality and working conditions of these part-time teachers need be ensured. Such flexible work arrangements for industry professionals teaching in VET could be further promoted and facilitated through collaboration between VET institutions and industry. For example, to recognise the mutual benefits for industry and the VET sector and ease VET teacher shortages, a business-education partnership in the United States created a teaching certificate for industry professionals. Policies that permit in-company trainers to more easily become VET teachers and vice versa can also help attract industry professionals into the teaching profession and encourage the exchange of personnel between industry and the VET sector, as has happened in Germany and Portugal.

2. Effectively preparing and developing VET teachers

VET teachers need dual competences. On the one hand, they need to have theoretical and practical knowledge of the subjects they teach and continuously update their expertise in response to changes in technology and working practices. They are often also required to have relevant work experience. On the other hand, they need to have pedagogical knowledge, but often have limited pedagogical preparation. A changing environment for teaching and learning also requires VET teachers to have a wide range of transversal skills including basic, digital, problem-solving and soft skills.

To effectively prepare and develop VET teachers in the face of changing learning and teaching environments requires well-designed initial teacher education and training and professional development opportunities. However, according to 2018 TALIS data, ITET for VET teachers appears to be weaker in developing the required pedagogical skills than training for general education teachers, although the effectiveness of well-designed ITET is evident (see Chapter 3 in the full report: Figure 3.5 and 3.6). A significant proportion of VET teachers do not have the opportunity to develop the full mix of skills they need through ITET programmes.

Countries will therefore benefit from effective and flexible ITET programmes for VET teachers.

2.1. Effective and flexible initial teacher education and training programmes for VET teachers are designed for:

- **Developing and strengthening VET teachers' pedagogical skills along with their basic, digital and soft skills:** Several initiatives exist to impart strong pedagogical skills to VET teachers. Many ITET institutions keep their curricula up to date, collaborate with VET institutions to offer

practical teacher training, and develop research and innovation in pedagogical approaches. Examples include university VET schools in Bavaria (Germany) and more broadly VET teacher training institutes established at Länder level in Germany, and the Teaching to Lead programme in the United States.

- **Providing work-based learning opportunities in VET institutions and in industry:** Work-based learning in the context of ITET for VET teachers takes place in a VET institution to give trainees direct experience of teaching students in a classroom or a school workshop. In many countries, including Austria, Belgium, England and Germany, ITET concludes with a teacher practicum or an internship in a VET institution. Work-based learning can also be organised as an internship, externship or secondment to a company to equip future teachers with industry-relevant skills. In order to ensure that future VET teachers can develop their industry knowledge, building partnerships between ITET providers and employers is crucial.
- **Promoting flexible training and providing necessary support:** In countries where entry qualification requirements are flexible or teachers can obtain the required qualification while teaching, flexible provision is crucial to overcoming barriers to participation in training. This could include online ITET, weekend and evening classes, or part-time training. In order to encourage VET teachers who combine work and ITET to obtain a VET teaching degree, Sweden provides grants and reduces their working hours. In England, where ITET is fee-based and voluntary, new funding schemes have been introduced for those obtaining formal FE teaching qualifications, including the Taking Teaching Further programme. In Wales (United Kingdom), teacher training incentive grants are available for eligible students.

Although many VET teachers participate in professional development (PD) relatively widely, others face barriers due to a lack of support or incentives, or conflicting work schedules. Even among VET teachers who were able to participate in PD, many report significant barriers to accessing training opportunities.

2.2. Increasing participation in relevant professional development opportunities: In order to do so, countries need to consider:

- **Engaging and co-ordinating with stakeholders to ensure that VET teachers receive the training they need:** Making sure that VET teachers receive the necessary training – whether it is on pedagogical, industry or technological aspects – requires the collaboration and co-ordination with multiple stakeholders at different levels. VET institutions, teachers and school networks, local companies, universities and other relevant associations all play different, but crucial, roles in facilitating access to, encouraging and providing PD for VET teachers. For example, industry placements for VET teachers allow them to update their industry skills and knowledge in line with the most recent workplace practices. Denmark, England, the Slovak Republic, Spain and the United States provide good examples of such placements.
- **Giving teachers the means to participate in professional development:** In many countries, participation in PD is voluntary or dependent on senior management decisions, but some countries give teachers the support and resources they need to participate in PD or make it mandatory by law. In Finland, Germany (Bavaria), Italy and Slovenia, VET teachers are obliged to undertake training, while Denmark, Finland and Sweden have other mechanisms to ensure VET teachers' access to PD such as collective agreements between unions and employers or professional development plans. Across the six OECD countries/regions with TALIS data available, the most common measures supporting VET teachers' PD activities are time off from work and access to materials needed to participate in the activities. Financial support and incentives are also common tools to support access to PD in some countries, for example in Denmark and England.

- **Identifying VET teachers' training needs to offer relevant, customised and engaging professional development opportunities:** VET teachers are more engaged in PD when it is relevant to their teaching practice, curriculum and subject; customised to their needs; and up to date. In England, training needs analysis is used to identify skill gaps and PD needs for VET institutions and individual teachers.

3. Promoting innovative pedagogical approaches to VET

The increasing demand for digital and soft skills in the labour market means VET teachers need to foster the development of these skills in their students. Digital skills are indispensable to modern jobs, as automation and digitalisation are taking place in all economic sectors. Similarly, soft skills such as problem solving, team work, verbal communication and leadership are among the most valuable skills for workers, as these are not easily automatable and are strong complements to cognitive and technical skills. In an ever-changing labour market, digital skills and soft skills provide students with the flexibility to adapt to new jobs. VET teachers should gain deeper knowledge about how to develop these skills among their students, especially within practical settings, and integrate innovative teaching approaches into their daily practice.

New technologies such as virtual/augmented reality, robotics and simulators have the potential to foster innovation in VET teaching and learning. These technologies are flexible, cost-effective and safe ways to promote learning. They help students develop technical skills, but also soft and digital skills.

In order to benefit from these technologies and develop the skills that VET students need, countries could consider:

3.1. Fostering the capacity of VET teachers to use innovative pedagogical approaches: VET teachers need to have the right skills to make the most of innovative pedagogical approaches and new technologies. The COVID-19 pandemic exposed how many VET teachers struggled to teach online, confirming the finding from the 2018 TALIS data that around one quarter of upper secondary VET teachers did not feel prepared for the use of digital technologies in teaching. In order to assist VET teachers to update their knowledge on new pedagogies and technologies and their digital skills, teachers need access to PD opportunities. For example, Entr'Apprendre in the French Community of Belgium created work-based opportunities for VET teachers to learn about new technologies in the workplace. VET teachers also need support and guidance to choose effective teaching methods and benefit from PD activities that assist them in fostering students' soft skills. Initiatives such as PBLWorks and Passport to Success in the United States, or the Enhance Digital Teaching Platform in the United Kingdom, show that both face-to-face and online learning modules can effectively support the PD of VET teachers who are looking to innovate their teaching practice.

3.2. Providing VET teachers with strategic guidance and institutional support for the integration of new technologies in VET: In order to increase the use of technology in VET, access to digital devices, high-tech equipment and technical support need to be improved. Countries such as Denmark and Spain have established government-funded centres to strengthen the quality of teaching in VET provision. They also provide high-quality PD to VET teachers on the latest technologies in industry. Initiatives such as the Knowledge Centres for IT in Teaching and for Automation and Robot Technology in Denmark, and the Centre for Innovation in VET in Aragon, Spain, show that these centres are beneficial to both VET institutions and employers. A survey of teaching staff in Dutch VET schools found that the most important enabling factors for the successful adoption of digital technologies in teaching and learning are having a vision and goals that integrate digital technology adoption. Examples such as Digi-Check in Switzerland or SELFIE in EU countries, show how an initial assessment of the strengths and weaknesses of VET institutions in their use of technology can be a good starting point to produce a shared strategy among relevant stakeholders to support digital transformation in VET institutions.

3.3. Establishing partnerships between the VET sector, industry and research institutions:

Countries can also promote innovative pedagogical approaches by establishing partnerships between the VET sector and industry, to improve their access to materials and equipment tailored to meeting teaching and student learning needs, which can further stimulate innovative teaching. For instance, a close collaboration between VET institutions and industry could provide VET teachers with the latest technology in industry to update their teaching practice. Governments could also establish innovation funds to support education technology (EdTech) companies producing digital resources for teaching, such as VR applications and simulators, to encourage the development and adoption of digital technologies in VET teaching for different industries. The development of these digital resources to enhance teaching could benefit from the knowledge of technology experts from research institutions.

3.4. Raising awareness about the importance of innovation, ICT and soft skills in teaching in VET:

Establishing an agenda for policy change works best when there is a shared belief across stakeholders in VET – especially among teachers – about the importance of fostering the development of soft and digital skills and the adoption of technology in VET. In order for reform to take place, it needs a co-ordinated effort among policy makers, VET teachers, industry, researchers and education technology providers to expand the use of technology and promote innovative pedagogical approaches.

4. Strengthening leadership in VET

Institutional leaders in VET play a crucial set of roles, from recruiting and developing teachers to ensuring the quality of teaching and learning. They are also responsible for managing resources and engaging employers and other stakeholders. But VET leaders have not always gone through relevant training before taking up their role, nor do they always have access to PD opportunities. They also may find their first years in the profession highly challenging, and might become frustrated or disengaged and ultimately leave it altogether. For example, in England, one-third of further education (FE) college leaders said in 2018 College Staff Survey that they were likely to leave FE in the next 12 months.

Building and maintaining a pool of effective leaders in VET would be a major benefit to VET institutions and wider society. VET leaders should understand both the VET sector and the modern labour market while also having pedagogical and instructional leadership skills.

To ensure that VET leaders effectively carry out their multi-dimensional roles, countries can consider:

4.1. Clarifying the roles of VET leaders: An improved and up-to-date definition of leadership responsibilities would act as a key point of reference for those considering a VET leadership role, and those organising the selection and training of VET leaders. For example, Austria and Belgium (French Community) clarified the competences and responsibilities of VET leaders through their education reforms by clearly defining the tasks, roles and professional standards of relevant stakeholders including VET leaders. Training programmes for VET leaders have then been developed according to these standards.

4.2. Ensuring VET leaders have access to flexible training opportunities as part of a coherent skills development strategy: To ensure that VET leaders have the right skills to carry out their diverse responsibilities, they need access to specialised training before taking up their role, and to receive support throughout their career through mentoring and PD. Training programmes need to be easily accessible (e.g. through online learning) and aligned with the expected requirements for VET leaders. England provides FE college leaders with a training programme that supports them to understand their role, plan and think about leadership from diverse perspectives. The country also offers an online training programme in digital technology for leaders and teachers in the FE sector, which helps them to be aware of innovative pedagogical approaches and new technological

developments in different industries. Denmark provides optional courses for management staff in VET schools, specifically designed to strengthen their work in management and digital skills.

4.3. Improving the attractiveness of the VET leadership role: VET leaders face many challenges in complex working environments, especially if they are not well-prepared for their roles and receive limited support. Countries should ensure that VET leaders' working conditions are attractive. This can be done by creating middle management roles to support the work of VET leaders – while at the same time offering career progression opportunities for VET teachers to move into leadership. For example, Norway introduced the “teacher specialist” role in VET, for teachers with in-depth knowledge about a discipline or subject area who contribute to the collective PD of VET institutions. Pathways for people interested in taking on VET leadership roles from outside the teaching profession can also be created. Finally, particular efforts should be directed towards supporting VET leaders early in their careers, for example through an induction period for newly appointed leaders. Mentoring and peer-learning opportunities can also support VET leaders in carrying out their responsibilities. In England, the [National Leaders of Further Education programme](#) recruited a team of high-performing leaders to provide specialist support such as mentoring and skills development to struggling VET institutions.

Summary of policy recommendations

1. Teacher supply

- **1.1. Increasing the attractiveness of teaching careers in VET** by providing targeted incentives and offering career development support.
- **1.2. Providing flexible pathways into VET teaching** by relaxing entry qualification requirements, if needed, for industry professionals and at the same time providing flexible means to obtaining necessary teaching qualifications.
- **1.3. Attracting more industry professionals to teach in VET** by facilitating flexible work arrangements in VET teaching and increasing collaboration between VET providers and industry.
- **1.4. Improving the monitoring of VET workforce dynamics** to allow for the early identification of possible severe teacher shortages.

2. Teacher training

- **2.1. Designing effective and flexible initial teacher education and training programmes for VET teachers** to develop industry knowledge and pedagogical skills along with basic, digital and soft skills.
- **2.2. Increasing participation in relevant professional development opportunities**, by engaging and coordinating with stakeholders, giving teachers the means to participate in professional development, and identifying their training needs.

3. Innovative pedagogy

- **3.1. Fostering VET teachers' capacity to use innovative pedagogy**, by providing training opportunities to regularly update their pedagogical knowledge, the use of new technology, and their digital skills to implement them in the classroom.
- **3.2. Providing VET teachers with strategic guidance and institutional support for the integration of new technology into VET**, by establishing a shared vision and common goals to integrate digital technology to VET provision.

- **3.3. Establishing partnerships between the VET sector, industry and research institutions** to get access to the necessary materials and equipment and foster the production of digital resources for VET teaching.
- **3.4. Raising awareness of the importance of innovation, ICT and soft skills in teaching in VET**, to achieve a co-ordinated effort from VET stakeholders to expand the use of technology and innovative pedagogy in VET.

4. Strengthened leadership

- **4.1. Clarifying the roles of VET leaders**, by creating a definition of their leadership responsibilities to constitute a point of reference for those who are considering leading a VET institution, and for those organising the selection and training of VET leaders.
- **4.2. Ensuring that VET leaders have access to initial training and professional development opportunities** by providing training programmes that are easily accessible and aligned with the expected requirements for VET leaders, as part of a coherent skills development strategy.
- **4.3. Improving the attractiveness of the VET leadership role**, including through the creation of middle management roles; and the provision of induction, mentorship and peer-learning opportunities for VET leaders.

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Notes

¹ A VET teacher may also be called a trainer, assessor, tutor, lecturer, educator or instructor.

² The difference in the probability of having a job that faces a high probability of automation between young adults with an upper secondary VET degree and those with an upper secondary general degree is not statistically significant on average across OECD countries.

³ Changes in the average or median age of FE teachers can hide changes in the proportion of older FE teachers. In England, for example, the 2018-19 [Staff Individualised Record](#) (SIR; see Chapter 2 in the full report for more details) indicates that the median age is similar to 5 years ago, but that the proportion of staff aged over 60 increased (Education and Training Foundation, 2020^[32]).

⁴ The study used a panel of principals in further education institutions in England over the period 2003-15, and combined it with data on education performance coming from Individualised Learner Records, the National Pupil Database and the Higher Education Statistics Agency. It also exploited the information contained in the Staff Individualised Records. It focused only on the outcomes of publicly funded learners, i.e. young learners who did their General Certificate of Secondary Education (GCSE) exams between 2002 and 2014. Switching from a principal who is at the bottom 25th percentile in terms of performance (recruitment and wage policies set by the principals) to a principal who is in the top 75th percentile increased students' probability to achieve UK Level 2 by 16 percentage points (pp), to achieve Level 3 by 14 pp, and to enrol in a Level 4 or above by 4 pp.

⁵ The share of teachers with a permanent contract, the share of female teachers, the share of teachers with Qualified Teacher Status (QTS) and teacher's average salary. The results show that switching from a principal who is at the bottom 25th percentile in terms of performance to a principal who is at the top 25th percentile would increase the share of teachers under a permanent contract by 13 pp, the share of female teachers by 6 pp, the share of certified teachers by 14 pp, and the average gross annual salary of teachers by GBP 3 511.

⁶ The population for this study was 26 138 teachers in 473 specialised vocational high schools. Using a random sampling method considering the organisational level (more than 30) and individual level (more than 5 members in the group), the study sampled 450 teachers in 50 specialised vocational high schools. *Instructional leadership* was measured based on the questions used in TALIS (Teaching and Learning International Survey). *Teaching competence* was measured based on 28 standardised questions about teaching skills in pedagogical planning, preparation, deployment, guidance, management and capacity in vocational training in collaboration with industry, etc.

Teachers and Leaders in Vocational Education and Training

Vocational education and training (VET) plays a central role in preparing young people for work, developing the skills of adults and responding to the labour-market needs of the economy. Teachers and leaders in VET can have an immediate and positive influence on learners' skills, employability and career development. However, when compared to general academic programmes, there is limited evidence on the characteristics of teachers and institutional leaders in VET and the policies and practices of attracting and preparing them. VET teachers require a mix of pedagogical skills and occupational knowledge and experience, and need to keep these up to date to reflect changing skill needs in the labour market and evolving teaching and learning environments. This report fills the knowledge gap on teachers and leaders in VET, and produces new insights into what strategies and policies can help develop and maintain a well-prepared workforce. It zooms in on VET teacher shortages; strategies for attracting and retaining teachers; initial training and professional development opportunities for teachers; the use of innovative technologies and pedagogical strategies; and the important role of institutional leaders and strategies for better preparing and supporting them.