



**Learning for Jobs
OECD Reviews of Vocational
Education and Training**

Mexico

Viktória Kis, Kathrin Hoeckel, Paulo Santiago

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Summary: Strengths, Challenges and Recommendations

This review of vocational education and training (VET) in Mexico is part of “Learning for Jobs”, the OECD policy study of VET, a programme of analytical work and individual country reviews designed to help countries make their VET systems more responsive to labour market needs. The review of Mexico assesses the main challenges faced by the VET system and presents an interconnected package of five policy recommendations. Each recommendation is described in terms of the challenge, the recommendation itself, supporting arguments, and issues of implementation.

Strengths

The Mexican VET system has many strengths:

- Mexico’s will to address the challenges faced by VET is illustrated by numerous recent initiatives, such as the reform of the technological baccalaureate (*bachillerato tecnológico*) and the creation of trainee grants (*becas de pasantía*).
- VET in Mexico plays an important social role by providing learning opportunities to students at risk of dropping out. Various initiatives, such as “mobile training units” (*unidades móviles*) reach out to students in remote regions with limited opportunities for learning.
- In some fields and subsystems of upper secondary VET, Mexico has excellent data on the labour market outcomes of VET graduates through the Labour Market Observatory (*Observatorio Laboral*).
- Encouraging measures have been taken to integrate VET into a broad framework of lifelong learning, including the elimination of dead-ends (*e.g.* introduction of the baccalaureate in CONALEP) and recent reforms aiming to facilitate mobility within the educational system.
- There are some excellent examples of collaboration between VET schools and employers, such as the Playa del Carmen project (for a case study on school-industry collaboration see OECD, 2009a).
- Many VET teachers and trainers have work experience in their field and often continue to work in industry part-time, which should help to keep their vocational skills up-to-date.

Challenges

At the same time the system faces a number of challenges:

- Effective coordination and coherence within upper secondary VET remains a challenge. The various subsystems of upper secondary VET sometimes have divergent interests, which hinders effective policy development.
- Linkages between the VET system and employers are relatively weak, illustrated by the low level of involvement of employers in VET policy development.
- The existing set of VET qualifications is not regularly updated and has limited recognition in the labour market.
- The pedagogical preparation of some VET teachers and trainers is insufficient.
- There is wide variation both in the quantity and quality of workplace training for VET students.
- There are weaknesses in the availability and use of data for policy making purposes and to inform stakeholders.

Recommendations

1. Integrate consultation between employers and upper secondary VET within a single coherent set of consultative arrangements. Include all subsystems in this framework to facilitate a collaborative approach to policy development.
2. As a long-term strategic goal, create quality standards for workplace training and a traineeship contract to expand workplace training and improve its quality.
3. Ensure that VET teachers and trainers receive pedagogical training before or shortly after entering the profession and provide some training to workplace supervisors. As a means of improving the vocational skills of the VET workforce, make relevant work experience a prerequisite for trainers and require schools to develop strategies to update the vocational skills of VET teachers and trainers.
4. Explore options to develop a national vocational qualifications framework.
5. Improve the data on labour market needs and on labour market outcomes of VET. Develop the capacity to analyse and use data both for policy making and to inform stakeholders. Improve career guidance offered to prospective and current VET students.

Chapter 1

Introduction

This chapter describes the OECD policy study of VET, the review of Mexico, summarises the main features of the Mexican VET system in upper secondary schools and sets out an assessment of its strengths and challenges.

1.1 The OECD policy review of Mexico

This is one of a series of reviews of vocational education and training (VET) in OECD countries (see Box 1.1). Its terms of reference are in Annex A.

Box 1.1: Learning for jobs: the OECD policy study of vocational education and training

This study seeks to help countries **increase the responsiveness of VET systems to labour market requirements**. It aims to improve the evidence base, identify a set of policy options, and develop tools to appraise VET policy initiatives.

A programme of *analytical work* draws on evidence from all OECD countries. It includes an international questionnaire on VET systems, reviews of previous OECD studies and the academic literature on topics such as costs and benefits of VET, the quality of VET provision and analysis of labour market outcomes based on statistical data from labour force surveys and PISA (the OECD's Programme on International Student Assessment).

Country policy reviews that provide country-specific policy recommendations will be carried out for Sweden, the United Kingdom (England and Wales), Hungary, Australia, Norway, Mexico, Korea and Switzerland between the end of 2007 and the end of 2008.

The results of both the analytical work and the country reviews will feed into the *initial comparative report* which will be available on the OECD website in 2009.

A *second phase* of this work, with further country reviews in Austria, Belgium (Flanders), the Czech Republic, Germany, Ireland and the United States (South Carolina and Texas), will take place in 2009 and 2010. The *final comparative report*, drawing together all the conclusions of the study will be published in 2010.

The website for the activity is www.oecd.org/edu/learningforjobs.

The review follows the standard methodology established for the OECD policy review of VET. At the outset, the Mexican authorities were invited to complete a detailed questionnaire. Equipped with the responses and other background information, three members of the OECD Secretariat (see Annex A for biographical details) visited Mexico on 22 September – 2 October 2008 for two weeks: one week of fact-finding visits to assemble information on the characteristics of VET in Mexico and, within the terms of reference, to identify the main policy challenges; and one week of policy visits to conduct further interviews in various parts of Mexico (see Annex A for the programme of visits) in order to develop policy recommendations. This review presents their recommendations, with supporting analysis and data. An earlier draft of this report was submitted to the Mexican authorities for verification of factual information in order to ensure that the description of the Mexican VET system presented in this document is correct.

The review deals with a deliberately limited set of issues. The topics were defined by the terms of reference agreed with the Mexican authorities, and limited to issues on which the review could draw on international experience or could otherwise usefully add value to the domestic policy debate.

The review concentrates on initial VET programmes provided under the Upper Secondary Education Undersecretariat, in particular three types of programmes: “training for work”, training leading to the title “technical professional – baccalaureate”

(*profesional técnico – bachiller*) and to the “technological baccalaureate” (*bachillerato tecnológico*).

1.2 The structure of the report

This first chapter places the Mexican review of VET in the context of the OECD policy study of VET, presents the structure of the report, describes the main features of Mexico’s upper secondary VET system, and examines its strengths and challenges. The second chapter proposes policy recommendations.

Each policy recommendation is set out as:

- *The challenge* – the problem that gives rise to the recommendation.
- *The recommendation* – the text of the recommendation.
- *The supporting arguments* – the evidence that supports the recommendation.
- *Implementation* – a discussion of how the recommendation might be implemented.

1.3 A snapshot of the system

In Mexico compulsory education (including primary and lower secondary education) finishes at the age of 15 and about half of those aged 15-to-19 are enrolled full-time or part-time in education¹ (OECD, 2008a, see also Annex B.1). All programmes at upper secondary level require the payment of a tuition fee.

VET provided under the Upper Secondary Education Under secretariat includes three main types of programme:

- “Training for work” (*formación para el trabajo*) courses at ISCED 2 level are short training programmes, taking typically 3 to 6 months to complete. The curriculum includes 50% theory and 50% practice. After completing the programme, students may enter the labour market. This programme does not provide direct access to tertiary education.

Those who complete lower secondary education may choose between two broad options of VET at ISCED 3 level. Both programmes normally take three years to complete and offer a vocational degree as well as the baccalaureate, which is required for entry into tertiary education.

- The title “technical professional – baccalaureate” (*profesional técnico - bachiller*) is offered by various subsystems (see Table 1.1), though one subsystem (CONALEP) includes two thirds of the students. The programme involves 35% general subjects and 65% vocational subjects. Students are required to complete 360 hours of practical training.
- The programme awarding the “technological baccalaureate” (*bachillerato tecnológico*) and the title “professional technician” (*técnico profesional*) is offered by various subsystems (see Table 1.1 for an explanation of subsystems). It

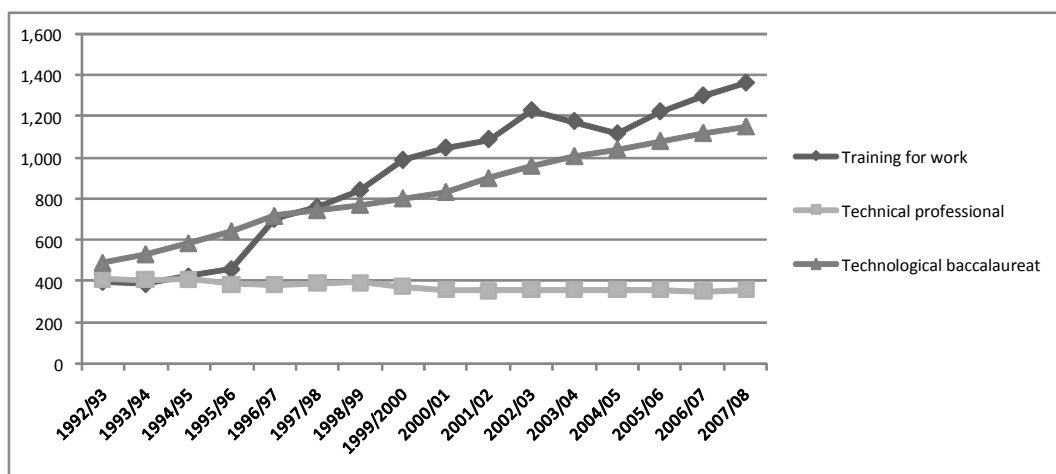
1. These are OECD categorisations. In Mexico the usual categorisations, as assessed by SEP, are as follows: *secundaria* (13-15 years), *media superior* (16-18 years), *superior (19-24 years)*.

includes more general and less vocational education: 60% general subjects and 40% vocational subjects.

Figure 1.1 shows trends in enrolment in upper secondary VET in Mexico.

Figure 1.1: Enrolments in upper secondary VET in Mexico

Thousands of students, 1992-2008



Source: SEP (2009)

The upper secondary VET system in Mexico is composed of over a dozen subsystems², which differ from each other to varying degrees in their main characteristics (*e.g.* content, administration, target group). Table 1.1 provides an overview of the main subsystems providing upper secondary VET. The large number of school types and corresponding administrative units within the Ministry of Public Education makes the institutional landscape of Mexican VET complex by international standards.

2. The term “subsystem” refers to administrative units within the Upper Secondary Education Undersecretariat of the Ministry of Public Education, which are responsible for VET programmes.

Table 1.1: Subsystems and schools in Mexican public upper secondary VET

VET programme	Centralised units of the Upper Secondary Education Under secretariat of the Ministry of Public Education (SEP-SEMS)		Decentralised units of state governments, with federal participation		Decentralised units of the federation	
	Administrative unit	School(s)	Administrative unit	School(s)	Administrative unit	School(s)
Technological baccalaureate	Directorate General (DG) for Industrial Technological Education (DGETI)	CETIS CBTIS	DG for Industrial Technological Education (DGETI)	CECyTE	Centre for Technical Industrial Education (CETI)	
	DG for Agriculture and Livestock Education (DGETA)	CBTA CBTF				
	DG for Sea Science and Technology Education (DGECyTM)	CETMAR CETAC				
Technical professional – baccalaureate			DGETI	CECyTE	National College of Technical Education (CONALEP)	CONALEP
Training for work	DG for Training for Work (DGCFT)	CECATI	DG for Training for Work (DGCFT)	ICAT		

Source: SEP (2007)

The General Education Law states that both federal and state governments are responsible for the administration of VET. The federal government manages upper secondary VET through three Directorate Generals (DGs) under the Upper Secondary Education Under secretariat: the DG for Industrial Technological Education (DGETI), the DG for Agriculture and Livestock Education (DGETA) and the DG for Sea Science and Technology Education (DGECyTM). Federal schools are funded by the federal budget, in addition to their own funding sources. The latter vary according to the school's socio-economic environment and the subsystem to which it belongs.

The state governments are responsible for the management of “decentralised institutions of state governments with federal participation”, such as the State Centres for Scientific and Technological Studies (CECyTE) and Institutes of Training for Work (ICAT). These institutions are funded 50% from the federal budget and 50% from the state budget. The state governments also manage “decentralised institutions of the federation”, such as CONALEP schools. These are funded by the state budget. CONALEP schools in Oaxaca and Mexico City are an exception to this and are managed by the federal government.

1.4 Strengths and challenges

Strengths

The Mexican VET system has a number of strengths:

- Mexico’s will to address the challenges faced by VET is illustrated by numerous recent initiatives, such as the reform of the technological baccalaureate (*bachillerato tecnológico*) and the creation of trainee grants (*becas de pasantía*).
- VET in Mexico plays an important social role by providing learning opportunities to students at risk of dropping out. Various initiatives, such as “mobile training units” (*unidades móviles*) reach out to students in remote regions with limited opportunities for learning.
- In some fields and subsystems of upper secondary VET, Mexico has excellent data on the labour market outcomes of VET graduates through the Labour Market Observatory (*Observatorio Laboral*).
- Encouraging measures have been taken to integrate VET into a broad framework of lifelong learning, including the elimination of dead-ends (*e.g.* introduction of the baccalaureate in CONALEP) and recent reforms aiming to facilitate mobility within the educational system.
- There are some excellent examples of collaboration between VET schools and employers, such as the Playa del Carmen project (for a case study of school-industry collaboration see OECD, 2009a).
- Many VET teachers and trainers have work experience in their field and often continue to work in industry part-time, which should help to keep their vocational skills up-to-date.

Challenges

At the same time the system faces a number of challenges:

- Effective coordination and coherence within upper secondary VET remains a challenge. The various subsystems of upper secondary VET sometimes have divergent interests, which hinders effective policy development.
- Linkages between the VET system and employers are relatively weak, as illustrated by the low level of involvement of employers in VET policy development.
- The existing set of VET qualifications is not regularly updated and has limited recognition in the labour market.
- The pedagogical preparation of some VET teachers and trainers is insufficient.
- There is wide variation both in the quantity and quality of workplace training for VET students.
- There are weaknesses in the availability and use of data for policy making purposes and to inform stakeholders.

Chapter 2

Policy Recommendations

The Mexican VET system has many strengths, including initiatives to provide opportunities for learning in remote regions, some excellent data on labour market outcomes and good examples of school-industry collaboration. But it would benefit from enhanced consultation with employers, more and better workplace training, a stronger VET teacher and trainer workforce, a better way of organising vocational qualifications and improved use of evidence in policy making. To this end we propose a set of five interconnected recommendations.

First, we propose to integrate consultation between employers and upper secondary VET within a coherent set of consultative arrangements. Second, as a long-term strategic goal, we recommend quality standards for workplace training and a traineeship contract to expand workplace training and improve its quality. Third, to improve pedagogical skills, we argue that VET teachers and trainers should receive pedagogical training before or shortly after entering the profession and provide some training to workplace supervisors. As a means of improving the vocational skills of the VET workforce, we recommend relevant previous work experience as a prerequisite for trainers. Schools should also be required to develop strategies to continuously update the vocational skills of teachers and trainers. Fourth, to increase clarity in VET provision, we propose an exploration of options to develop a national vocational qualifications framework. Finally, improving the evidence base on VET could inform policy makers and serve as a basis for career guidance to VET students.

2.1 Consultative arrangements to engage employers and develop VET policy

Challenge

Despite government efforts, employer engagement in VET remains weak. During the review visit some employers reported to the team that many firms have little interest in collaborating with VET schools to obtain human resources and have little interest in the VET system. In addition, the institutional landscape of Mexican upper secondary VET is complex and fragmented (see also Section 1.3 and 2.4). Interviews with employers suggest that this also presents an obstacle to employer engagement in VET.

Currently, the formal framework allowing employers to influence the VET system is weak. At national level there are limited standing arrangements for consultation. There is no body (*e.g.* commission or council) involving policy makers and employers, where employers could be systematically consulted about VET policy. At state level, State Commissions for the Planning and Programming of Upper Secondary Education (CEPPEMS) deal with strategic planning and are responsible for coordination between state level authorities and the various subsystems of upper secondary education. But employers have a minor role in these commissions. For example the founding document of the CEPPEMS of the state of Guerrero states that it should include one employers' representative among its 23 permanent members³. Interviews conducted during the review visit indicate that the effectiveness of the CEPPEMS in coordinating VET provision and reaching out to employers varies greatly.

During the review visit the team formed the impression that existing links between the VET system and employers' organisations are often fragmented: some employers' organisations interact with some subsystems and not with others, and therefore cannot meaningfully be involved in the overall development of VET policies. Although employers are consulted about the size and mix of VET provision, it was reported to the team that provision is defined separately for each subsystem with little or no coordination between them. This increases the risk of mismatch between VET provision and labour market needs.

There is a wide variation in the quality of links between individual institutions and local employers. In one subsystem (CONALEP) each school has a liaison committee (*Comité de vinculación estatal y de plantel*) responsible for links with local employers, but it was reported to the review team that the effectiveness of liaison committees varies widely. Many schools in other subsystems have also established partnerships with local employers. Overall, despite many excellent examples of school-firm partnerships, they are largely dependent on the ability and willingness of the principal to build such links, alongside the local economic context.

Recommendation 1

Integrate consultation between employers and upper secondary VET within a coherent set of consultative arrangements. Include all subsystems in this framework to facilitate a collaborative approach to policy development.

3. www.dgpei.uagro.mx/listarArc.php?vCA=710&nTabla=pag_darchivo

Supporting arguments

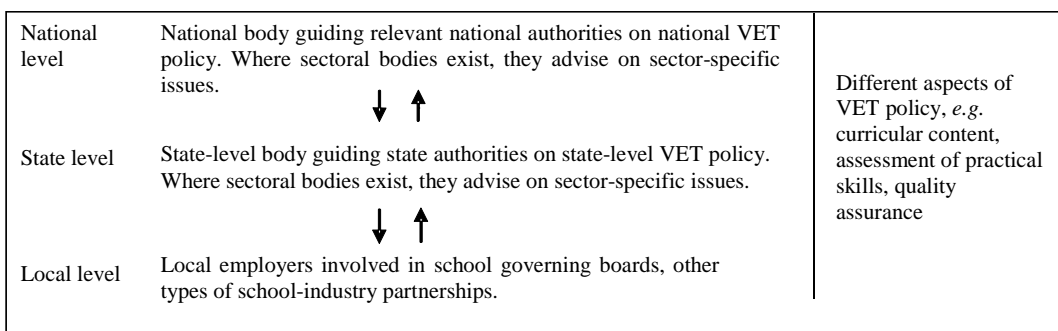
This recommendation could mean, for example, creating a council including representatives of employers and of all subsystems of upper secondary VET, and policy makers from the Ministry of Public Education. Such a council might have sub-groups organised regionally or sectorally. Although VET policy development should involve a range of stakeholders (*e.g.* employers, trade unions), this section focuses on employer engagement because of the fundamental role of employers in achieving a VET system that is responsive to labour market needs. Three arguments support this recommendation. First, effective consultation with employers is needed to develop coherent VET policies that meet labour market needs. Second, a comprehensive framework for consultation facilitates employer engagement in VET. Third, employer support for VET policies facilitates their implementation.

The development of coherent and responsive VET policies requires effective consultation with employers

If VET policy is developed without the involvement of employers, it is hard for VET to respond to labour market needs. In particular, continuous updating of VET provision, curricula and qualifications requires a framework for efficient negotiation and decision making, involving both policy makers and employers.

Comprehensive (*i.e.* not broken down by subsystems) participation of employers in VET policy development would help the development of an overall strategic vision within the upper secondary VET system. “Comprehensive” does not mean that consultation should be limited to a single body, but that it should avoid fragmentation. In many OECD countries the framework for dialogue between the VET system and employers involves various levels (see Figure 2.1 for a general scheme of industry involvement in VET and Box 2.1 for country examples). At national level dialogue between the main stakeholders helps to develop strategy, while regional and sectoral consultation meets more specific needs. Local collaboration helps to create partnerships between VET schools and local employers. This creates quite a complex framework of consultation already, and the benefits of any further disaggregation between subsystems are very unclear.

Figure 2.1: Simplified national framework for industry involvement in VET



Fragmented consultation of employers when defining VET provision increases the risk of mismatch between provision and labour market needs. In countries with well-established apprenticeship systems, employer willingness to offer apprenticeships sends a signal of labour market needs and may guide provision. In Mexico, however, workplace training for upper secondary VET students is limited and of varying quality (see

Section 2.2). Therefore, at least in the short run, effective consultation with employers at various levels alongside good labour market data (see Section 2.5), is essential in order to adapt VET provision to labour market needs. The mix of VET provision also needs to be coordinated between subsystems to ensure that skills needs are covered and avoid over providing some skills.

If there is a framework for employer consultation, employers can also signal if the institutional structure of VET needs to change. In the United Kingdom employers have been pushing for a simplification of the institutional landscape, notably through the employer-led UK Commission for Employment and Skills (UKCES, 2008, for a description of UKCES see Box 2.1). A framework for consultation with employers on VET strategy in Mexico may help simplify the institutional structure of VET.

A comprehensive framework for dialogue facilitates employer involvement

Fragmented consultation with industry makes it more difficult for employers to interact with the VET system. According to some employers interviewed during the review visit, there is a noticeable political willingness and efforts to build links with employers, but efficient strategies are lacking and many employers end up losing interest. Creating a framework for consultation involving all subsystems could help address this issue: employers would interact with the VET system as one entity rather than separately through different subsystems, and they could more easily shape VET strategy.

Employer support facilitates policy implementation

Formulating VET policies in dialogue with employers also facilitates their implementation. In Norway, extensive dialogue with employers and trade unions was crucial in the preparation and implementation of a major reform of VET in 1994 (Payne, 2002). Similarly, social partnership is embedded in the institutional structure of apprenticeships in several European countries (Ryan, 2000). Conversely, in the United Kingdom weak employer engagement in VET has hindered the implementation of apprenticeships (Payne, 2002; Ryan, 2000) and has been an obstacle to effective policy development in VET (Gleeson and Keep, 2004). Stronger employer engagement is also a pre-condition to the implementation of other recommendations contained in this report: the development of high quality workplace training (see Section 2.2) and progressively creating a vocational qualifications framework, recognised by employers (see Section 2.4).

Implementation

Stronger employer engagement requires the bodies that represent employers to be widely recognised by them. Weak support and recognition by employers of bodies that are supposed to represent them has been identified as a cause of low industry engagement in VET (Gleeson and Keep, 2004). Conversely, such bodies can support the implementation of VET policies, if recognised by individual employers. In Norway, for example, employer bodies hugely facilitated the expansion of apprenticeships by actively promoting apprenticeships among their member firms (Bowman, 2005). Employer bodies can also improve industry involvement by informing employers about existing ways to engage with the VET system. Interviews conducted during the review visit suggest that employer awareness of existing initiatives needs to be increased. The representativeness and effectiveness of existing employers' bodies in Mexico was not examined in the course of this review.

Employer engagement in VET may build on existing employer bodies at different levels, such as in Denmark and Norway. The recently created UK Commission for Employment and Skills provides a different model, which does not rely on well-organised employer bodies. Box 2.1 describes these country examples.

Box 2.1: Institutional mechanisms for employer involvement in VET

Employer involvement in VET in Denmark

In Denmark, social partners are involved in VET through various bodies at national, sectoral and local level:

- At national level, the **Advisory Council for Initial Vocational Education and Training** (*Rådet for de Grundlæggende Erhvervsrettede Uddannelser* [REU]) advises the Ministry of Education on national issues affecting the VET system. It monitors trends in the labour market and recommends the creation of new VET qualifications, and the adaptation or abolition of existing ones. The REU also monitors existing VET programmes and recommends measures to adjust these to labour market needs. It is composed of 20 members drawn from the social partners, school leader and teacher associations, and members appointed by the Ministry of Education.
- At sectoral level, **national trade committees** (*de faglige udvalg*) advise on specific qualifications relevant to their sector, as well as the content, structure, duration and assessment of VET programmes. They play a key role in ensuring the continuous adaptation of VET programmes to labour market needs. In addition, trade committees are responsible for approving training places: based on a set of criteria they approve and inspect firms that want to host trainees. The trade committees include both employers and employees, have their own secretariat and are funded by the social partners themselves.
- **Local training committees** (*de lokale uddannelsesudvalg*) advise VET schools on local issues concerning VET and promote links between VET schools and the local labour market. The local training committees are composed of members of sectoral bodies, which are also represented in the national trade committees. They are appointed by the trade committees on the recommendation from the local branches of the sectoral bodies. The local training committees also include representatives from the VET schools, teachers and trainees.

Source: Danish Ministry of Education (2005)

Box 2.1: Institutional mechanisms for employer involvement in VET (continued)

Employer involvement in VET in Norway

- At national level, social partners (employers and trade unions) contribute to VET policy development through two key bodies. The **National Council for VET** (SRY) advises the Ministry of Education and Research and the Directorate for Education and Training (the operational arm of the Ministry) on all important questions concerning the structure, content, training qualification levels and delivery of upper secondary VET. The nine **Vocational Training Councils** (VTCs) represent the expertise in the various trades under the respective study programmes. VTCs advise the authorities and SRY on the overall structure of provision, and on training content and methods in the various trades.
- At county level, **County VET Committees** (including employers and trade unions) advise on VET provision to meet regional labour market needs, on the approval and supervision of companies that may train apprentices, and on questions relating to examinations and career guidance.

Source: Norwegian Directorate for Education and Training (2008)

UK Commission for Employment and Skills (UKCES)

UKCES was launched in April 2008 with the aim of increasing the employer voice in the United Kingdom's VET system and help the United Kingdom increase employment, skills and productivity. The commissioners of UKCES are leaders in their field (*e.g.* chief executives, chairs, directors).

Primarily advisory in nature, it aims to:

- Develop an independent view of how employment and skills services can be improved to achieve increased employment retention and progression, skills and productivity.
- Provide advice to inform strategic policy development, analysis and exchange of good practice to drive and shape the skills and employment system to meet the needs of employers and individuals.
- Express its advice and recommendations to the highest levels of governments in the United Kingdom.
- Fund and manage the Sector Skills Councils and advise Ministers on their re-licensing.

Source: www.ukces.org.uk;
www.ukces.org.uk/pdf/remit001f%20FINAL%20Appendix%201%20Remit%20Letter%20180308.pdf

2.2 Practical training in workplaces

Challenge

The quantity and quality of workplace training offered to VET students vary significantly among subsystems and individual schools. The need to expand workplace training has been recognised by the government, as illustrated by the recent creation of trainee grants (*becas de pasantía*), a significant development in this area. But obstacles remain and sustained efforts will be needed to achieve extensive and high quality workplace training.

Table 2.1 illustrates the extent to which 15-year-old students receive training with local business.

Table 2.1: Students receiving training with local business

Percentage of 15-year-olds in schools where the principal reported that more than half of students from the school received some training in local business as part of school activities during school year

National programme	Technological baccalaureate	Technical professional
%	9	23
S.E.	2.81	8.51

S.E. – Standard error

Source: PISA 2006 database.

In some subsystems of upper secondary VET, practical training in the workplace is not compulsory (*e.g.* CECATI-s). One reason why it is optional in CECATI-s, reported by several schools to the review team, is that many students work part-time and it is often assumed that this will give them relevant work experience. But, some students do not work and there is no requirement that part-time workers are able to use their time at work to enhance the skills relevant to their training.

Teachers and trainers from several subsystems reported to the review team that the quality of workplace training is highly variable. First, requirements regarding the content of workplace training are very weak. For example, in one subsystem (CONALEP) even though practical training in firms is compulsory, there is no requirement that the training should be related to the student's VET programme. Schools reported to the review team that although they aim to place students in firms in the relevant field, this is not always achieved. Second, even when workplace training takes place, it is not always integrated into the curriculum of VET programmes. There are no mechanisms to ensure that a fixed set of skills, appropriate to the target, are covered during workplace training. Third, interviews conducted during the review visit suggest that mechanisms for monitoring the quality of workplace training are few and weak. Where they exist, they may mean that students have to prepare a report on their practical training, signed by the receiving firm, and sometimes the school is in contact with the firm. However, the criteria for monitoring firm-based training are weak.

The legal framework regulating workplace training is weak: there is no contract signed between the receiving firm and the student setting out the conditions of training. Many of our informants told us that in one large subsystem (CECATI) students are not insured for industrial accidents, which may occur during firm-based practical training.

Several employers reported to the review team that this is an important barrier to the expansion of firm-based practical training for students from this subsystem. However, we have also been told by SEP that CECATI students are insured for such accidents, so the exact circumstances here may require some clarification.

Recommendation 2

As a long-term strategic goal, create quality standards for workplace training and a traineeship contract to expand workplace training and improve its quality.

Supporting arguments

This recommendation is supported by four arguments. First, workplace training can be beneficial both to employers and students. Second, it directly signals employer interest in a VET programme. Third, quality standards help promote high quality workplace training. Fourth, traineeship contracts remove a barrier to workplace training. The expansion of workplace training and the improvement of its quality has been recommended in several OECD reviews of VET and some of the key arguments supporting these are echoed here (Sweden Kuczera *et al.*, 2008a; Norway Kuczera *et al.*, 2008b; Hungary Kis *et al.*, 2008; Australia, Hoeckel *et al.*, 2008; OECD, 2009b).

This recommendation is a long-term objective, its immediate implementation may be difficult due to the current global economic downturn (see section on implementation).

Workplace training can provide benefits to employers and students

First, workplaces can offer a strong learning environment. Many occupational skills are developed more efficiently in the workplace than through efforts to transfer theoretical knowledge, learned at school, into practice (Woerkom, Nijhof and Nieuwenhuis, 2002; Aarkrog, 2005). Soft skills, such as dealing with clients and teamwork, are typically better learned on the job. While a school setting provides an opportunity for students to develop further that learning through reflection, it is difficult to simulate situations that develop such skills. A good learning environment requires up-to-date equipment for practical training. This is hard to ensure in schools, because some equipment is too costly and would need to be regularly renewed to keep up with rapid technological change (*e.g.* CNC⁴ machines). The expansion of workplace training could help alleviate this challenge – at least in regions where firms using up-to-date technologies are present – by making use of equipment already available in firms, together with the personnel familiar with these. Improved training quality is beneficial to students, since it improves their employment prospects, and to employers, since it reduces the costs involved in the training of newly hired employees.

In some cases practical training is more effective in school settings. Some workplace training involves high risks and costs, for example when it makes use of dangerous or expensive equipment that might be damaged by trainees, and technically efficient simulation is possible. For example, the training of train drivers is more cost-effective in simulated cabs than in real trains. In addition, basic practical skills may be more effectively learned off the job, and further improved in the workplace. Off-the-job training sites typically operate at a slower pace, giving students more time to refine their

4. Computer numerical control.

skills or develop skills that would be hard to learn in a rapid-paced workplace environment (Robertson *et al.*, 2000). Finally, workplace training may sometimes be too narrowly focused on firm-specific skills and not equip students with the range of skills needed in the target occupation. Practical training in school settings can complement workplace training to ensure that students acquire a range of skills (for a discussion of quality standards for workplace training see below). VET should therefore balance practical training in school-settings and in workplaces.

Second, workplace training facilitates school to work transition by allowing students and employers to learn about each other. Students can learn about the kind of work they may or may not want to pursue and, at least, about one employer. For employers, taking on trainees can be an opportunity to learn about their performance as potential recruits, as well as to equip them with the skills needed by the firm (Autor, 2001; Clark, 2001). The benefits from assessing potential employees' productivity are particularly high in countries with highly regulated labour markets, since remitting the wrong person is costly if they receive a high wage and cannot be dismissed. Regulations on temporary employment are relatively stringent in Mexico (see Figure B.5 in Annex B) and employers often use informal labour or subcontract to small informal firms (OECD, 2007b). Workplace training, within a well designed legal framework, could provide employers with another option: they could legally hire young people as trainees, learn about their performance and, after the end of the traineeship period, decide to employ them or not. This would allow them to take on young people as formal labour, but at a lower cost than involved in hiring them as temporary workers. This might help young people who would otherwise be employed in the informal sector enter the formal sector, while also learning new skills. At the same time, a well-designed legal framework setting out the content of training, the rights and obligations of both employers and students would ensure that students are not abused as cheap labour (see below section on quality standards and traineeship contracts).

Third, employers may benefit from students' productive contribution. These benefits depend on various factors, including how the firm allocates tasks to apprentices. In Switzerland, in two-thirds of cases apprenticeship training is profitable already during the training period (Schwepfer and Wolter, 2002), but in Germany apprenticeships involves net costs for firms (Beicht, Walden and Herget, 2004). A study comparing the costs and benefits of apprenticeships in these two countries (Dionisius *et al.*, 2008) suggests that the tasks allocated to apprentices are an important determinant of this difference: Swiss apprentices spend more time doing productive work than German apprentices.

The question arises whether the increased productive contribution of apprentices is at the expense of training quality. In analysing firms' motives to train, some authors distinguish between substitution motives (*i.e.* substituting apprentices for workers) and investment motives (*i.e.* training to meet a future need of qualified labour) (*e.g.* Franz and Soskice, 1995; Neubäumer and Bellmann, 1999 in Mohrenweiser and Backes-Gellner, 2006; Smits, 2006). Research from Norway (Askilden and Øivind, 2005) and the Netherlands (Smits, 2006) suggests that firms training for substitution motives tend to use trainees as a cheaper substitute for unskilled workers. Smits (2006) found that the quality of training is better in firms training with investment rather than substitution motives.

Evidence from Switzerland challenges this. Dionisius *et al.* (2008) indicate that, despite the difference in terms of productive contribution, the relative performance of Swiss and German apprentices seems to be identical at the end of training. Swiss firms manage to pay off the costs of training during the training period by allocating students to

productive tasks and using apprentices in skilled jobs to a greater extent than German firms. This shows that using apprentices productively does not necessarily imply using apprentices as cheap unskilled labour. The authors further argue that the main reason for higher cost-efficiency of training in Switzerland include high training costs (wages of apprentices and trainers, equipment), less regulated labour market and higher labour force mobility than in Germany, and regulations setting up minimum requirements for the quality of training. High apprentice costs mean that there is no real incentive to substitute apprentices for unskilled labour and they must instead seek returns by placing them in skilled jobs. The existence of regulations setting out the content of workplace training (Smits, 2006) and quality standards (Dionisius *et al.*, 2006) are identified as essential to ensure high quality learning (see below).

Workplace training can help adjust VET provision to employer needs

The willingness of employers to offer workplace training to VET students indicates their interest in a given VET programme. If there is a shortage of workers in an occupation, employers will be particularly keen to offer training, while if the job market is saturated, they will be unlikely to take on trainees. In countries with well-established apprenticeship systems the availability of workplace training can be used as a key lever to determine the size and mix of VET provision. In Denmark, for example, the Ministry of Education can limit access to programmes in which students are unable to find a training place in a firm due to the overall employment situation in the sector (Danish Ministry of Education, 2005). But Mexico does not have a strong tradition of firm-based practical training. The reluctance of firms to take on VET students may also be due to various barriers (*e.g.* lack of regulations for workplace training) rather than a lack of interest in the programme. Nevertheless, the willingness of firms to offer training can be used as an indicator of relevance to local employer needs.

Quality standards support high quality workplace training

While workplace training offers many advantages, reaping its full benefits requires quality assurance. Firms are often attracted to forms of training that immediately increase their productivity, which may conflict with the interests of students (Cornford and Gunn, 1998; Kilpatrick, Hamilton and Falk, 2001; Smits, 2006). Even if a firm has an interest in providing good training, there may still be a difference between the firm's interest and those of students: firms tend to have a preference for firm and occupation-specific skills, while students also need skills that are transferable to other firms and possibly other occupations (Smits, 2006). There is also variation in the quality of training according to the characteristics of firms. Research from Australia suggests that small firms are also unlikely to have dedicated training staff (Hawke, 1998), the training offered tends to be unplanned (Vallence, 1997), informal and firm-specific (Seagraves and Osborne, 1997). While workplace training needs to yield benefits to employers to encourage them to offer sufficient training places, it should not be so firm-specific that it inhibits future professional mobility. This argues for quality standards and a training plan for workplace training. Training plans should be developed with the involvement of employers to ensure relevance to their needs but counterbalanced with sufficient occupation-wide to allow for future mobility.

Quality standards are a binding set of rules defining the terms of workplace training. They may cover the content and duration of training, the assessment of training outcomes and trainers' qualifications. Quality standards should prevent the placement of students in

unskilled tasks and training in a firm that is not relevant to their VET programme or training too narrowly focused on the needs of a specific firm. They should ensure that training meets minimum standards in all workplaces, including smaller firms. Ryan (2000) in a review of apprenticeships in several European countries suggests that in the United Kingdom the lack of external regulations for apprenticeships leaves room for low quality training, while he notes that in Germany and Denmark there is stronger quality control and permission for training is withdrawn for companies that provide substandard training. Similarly, in Switzerland firms need to meet quality standards to be licensed to take on apprentices and the quality of practical training is monitored (see Box 2.2).

Box 2.2: Quality control of workplace training in Switzerland

Quality is controlled at two levels. Host companies are responsible for checking the progress of students. To help companies improve quality, the Swiss Conference of VET/PET¹ Agencies and employers', employees' and trade associations created the *QualiCarte* project. It provides a checklist of 28 quality criteria (see Annex C) describing key aspects of workplace training (including the engagement of the company, particular aspects of the initial phase of the training and the subsequent training process). These criteria are used by companies for self-assessment.

Cantonal authorities control the quality of workplace training by issuing licenses, which host companies must obtain to provide workplace training to VET students. To acquire a license, companies must meet technical and staff criteria, and demonstrate that their training programme complies with quality standards and the content of training matches the needs of the occupation.

1. PET Professional education and training

Source: OPET (2008)

There is some tension between the goal of expanding workplace training and that of improving its quality. Quality standards can create a burden on employers, which may discourage them from offering workplace training. But quality standards can also help employers to achieve their objectives (see Box 2.2, and Annex C for an example).

Traineeship contracts remove a barrier to workplace training

Specific contracts for apprentices or trainees exist in many countries (Box 2.3 provides examples). A study of five European countries (Ryan, 2000) identified the existence of a strong institutional framework, including a legal framework for apprenticeships, as an important condition to the successful implementation of apprenticeship training. In Mexico, employers reported to the review team that the lack of legal arrangements (in particular concerning the insurance of trainees) is a barrier to the expansion of workplace training in VET. The creation of a contract for trainees, setting out legal arrangements, would solve this problem: it would avoid the need for individual employers to make their own arrangement for a contract, and it would cover trainees against unforeseen risks. By setting out the rights and obligations of both trainees and receiving firms such contracts could also be a tool to control the quality of workplace training.

Box 2.3: Contracts for workplace training

In Australia, the Australian Apprenticeship/Traineeship Training Contract is a legally binding agreement between the employer and the apprentice. A representative of the Australian Apprenticeships Centre is required to be present at the signature of the contract, and advises both parties on their rights and responsibilities as outlined by the National Code of Good Practice; and ensures that the apprenticeship is appropriate to both parties and that they have received relevant information. The training contract outlines the employer's obligation to employ and train the apprentice; provide the relevant wages and conditions and ensure that the apprentice receives adequate facilities and supervision. Employers need to submit a training plan, which must be endorsed by the concerned training provider (VET school). The contract stipulates a probation period, during which either party can terminate the agreement. Upon completion of the probation period, only by mutual agreement is it possible to transfer, suspend, cancel or vary the contract.

Source: www.training.com.au/portal/site/public/menuitem.7e75abb80a4e4690f9fa5a1017a62dbc/

In Switzerland, an apprenticeship contract is signed by the VET student, the student's legal guardian and the host company. Legally binding, these contracts must remain in effect for the entire duration of the VET programme. In almost every respect, apprenticeship contracts are equivalent to work contracts (based on Articles 344 to 364a of the Swiss Code of Obligations). The only difference is that apprenticeship contracts include a clause whereby the host company agrees to provide the student with practical training. The apprenticeship contract also sets out the salary conditions for the entire period of training.

Source: OPET (2008).

In Austria, a training contract, concluded between the host company and the student, forms the basis of the training relationship. The student (apprentice) receives health, accident, pension and unemployment insurance. The training relationship is regulated by the labour and social law, as well as particular employee protection regulations for young people. Apprentices receive a salary (*Lehrlingsentschädigung*), according to the occupation, which is determined through collective negotiation. The training relationship finishes at the end of a training period defined by relevant regulations.

Source: www.bmukk.gv.at/schulen/bw/bbs/berufsschulen.xml#toc3-id4

Implementation

At the time of writing, in early 2009, it is clear that the global economy is entering a downturn, putting a myriad of pressures on employers. Offering high quality workplace training involves a commitment and costs, which employers may be reluctant to bear in a period of economic uncertainty. In Australia, for example, during the early 1990s recession apprenticeship numbers fell by 25% in three years (NCVER, 2001). While employers cannot be expected to offer more and better workplace training in the short-run, expanding workplace training and improving its quality should be maintained as a long-term strategic objective. The rest of this section concerns general implementation issues regarding workplace training.

While employers can benefit from providing workplace training, quality provision also involves costs. These include the wages of trainees, the time of experienced employees, mistakes by inexperienced apprentices (Richardson, 2005), teaching

materials, special clothing and administrative costs (Rauner, 2007). The perceived costs and benefits of workplace training determine employers' incentives to offer workplace training.

Ensuring sufficient training places in firms is a challenge in many countries. Evidence from Switzerland indicates that workplace training is offered mainly in occupations in which students fully compensate for the costs of training during the apprenticeship period (Wolter, Mühlemann and Schweri, 2006). Training opportunities are also more likely to be offered in occupations that do not allow trainees to switch to other employers after completing their training or where expensive and occupation specific machines force schools and firms to cooperate (*e.g.* aeronautics).

Specific incentives might be needed to encourage employers to offer workplace training to VET students, recognising that firms might be discouraged by the risk of poaching. Some countries (*e.g.* Austria, Switzerland) attempt to get round this problem by setting up sectoral training funds to which all companies from the sector contribute, while those that train are reimbursed (OECD, 2008b). Small firms typically face further obstacles to training: the fixed cost of using one employee's time to supervise trainees is a proportionately greater burden for these firms and they often lack the capacity to deal with the administrative aspects of workplace training. The implementation of good quality control mechanisms might further increase this burden. To encourage employers to take on VET students, Mexico could consider setting up bodies that facilitate the allocation of VET students to companies by sharing the burden involved (see examples in Box 2.4).

Box 2.4: External bodies involved in apprenticeship training

Training Offices in Norway

Training Offices (TO) (*opplæringskontor*) are owned and funded by companies, and usually relate to specific trades. TOs work actively to identify new potential training companies and establish new apprenticeship places, supervise companies with apprentices, and train staff involved in the tutoring of apprentices. Many training offices organise the theoretical part of the apprentices' training. They often sign apprenticeship contracts on behalf of smaller training enterprises, thereby becoming accountable for completion of the training and its results (Norwegian Directorate for Education and Training, 2008).

Group training organisations in Australia

Group training organisations (GTOs) are not-for-profit organisations supported by the Australian state and territory governments, with some charges to host employers. GTOs employ apprentices and hire them out to employers. They sometimes focus on a particular industry or a particular region. The tasks performed by GTOs include selecting apprentices to suit the needs of employers, arranging and monitoring training both on and off the job, taking care of the administrative duties involved, and ensuring that apprentices receive a broad range of training experience (if necessary, apprentices are rotated from business to business).

Source: www.training.com.au.

For research papers on GTOs see www.ncver.edu.au/publications/bytheme.html

In many OECD countries some of the costs of workplace training are covered by public funds to reduce the costs to employers. Examples of funding arrangements are presented in Table 2.2. Once quality standards and a traineeship contract are in place, in the longer run Mexico might consider providing financial incentives to employers. Financial incentives should be available only to firms that meet quality standards for workplace training. This could involve shifting part of the public funds from schools to workplaces (at least in areas where up-to-date equipment is available in local firms): rather than subsidising the acquisition of new equipment in schools, some public funds could be used to encourage firms to take on VET students for workplace training and use the equipment available there.

Table 2.2: How governments and employers support workplace training

Country	Public funding		Firms' collective contribution (e.g. training levy)	Employers contribution to VET		
	Direct subsidy	Tax deduction		Training equipment	Salaries of VET trainers	Travel expenses of a trainee
Australia	No	Yes	No	Yes	Yes	Yes
Austria	Yes	Yes	In some sectors	Yes	Yes	Yes
Denmark	No	No	Yes	Yes	Yes	No
Finland	Yes	No	No	-	-	-
France	No	Yes	Yes	Yes	Yes	No
Norway	Yes	No	No	Yes	Yes	Yes
Netherlands	No	Yes	-	Yes	Yes	Yes
Switzerland	No	Yes	In some sectors	Yes	Yes	Yes

Source: OECD (2008b)

High quality workplace training requires the active involvement of schools, so that schools and employers can have a shared understanding of the purpose of training, and clearly defined and complementary roles and responsibilities. In an ideal learning environment teachers and trainers work closely with workplace training supervisors to ensure that students obtain the necessary skills (Robertson *et al.*, 2000). It is therefore important that workplace training, in particular its content, is integrated into the curricula of VET programmes and VET teachers and trainers view workplace training as an important part of the learning process.

2.3 Enhancing competences in the VET workforce

In this report, the expression “VET workforce” refers to VET teachers and trainers in schools, and supervisors of trainees in workplaces⁵.

5. We shall refer to “VET teachers” as those who are primarily responsible for imparting theoretical vocational skills in schools, and “trainers” as those who are primarily responsible for practical vocational skills in schools. The term “supervisor” will refer to those in workplaces who supervise students in practical training in the workplace.

Challenge

Weaknesses in the pedagogical skills of VET teachers and trainers

Many VET teachers and trainers, who enter the teaching profession after or while working in industry, do not receive any pedagogical training before starting to teach. The option to enter the teaching profession without formal pedagogical training removes one obstacle for potential applicants who are employed in industry. However, the lack of pedagogical training means that some teachers and trainers start teaching without the skills needed to transmit their skills and knowledge to students. Numerous VET teachers and trainers reported to the review team that they had had difficulties at the beginning of their teaching career due to the lack of pedagogical skills. This situation is different from most OECD countries, where lack of workplace experience is a more common problem (see OECD, 2009b).

A number of recent initiatives (e.g. the “Agreement on teaching competences” defining the expected competences of teachers in the National baccalaureate system [SNB], “Training programme for upper secondary education teachers”⁶) were designed to address the problem of pedagogical training of teachers. However, they do not cover all VET teachers and trainers (e.g. some subsystems, such as CECATI, are not covered by agreements regarding the SNB) and are not targeted at the specific training needs of VET teachers and trainers coming from industry.

Table 2.3 shows the share of fully certified teachers in upper secondary VET programmes.

Table 2.3: Proportion of fully certified teachers in Mexico

National programme	Technological baccalaureate	Technical professional
Proportion of fully certified teachers	27	41
S.E.	0.04	0.2

S.E. – Standard error

Source: PISA 2006 database.

Weaknesses in the vocational skills of VET teachers and trainers

By “vocational skills”, we mean skills exercised in specific occupations in industry. Two problems arise regarding the vocational skills of VET teachers and trainers. First, not all VET teachers and trainers have industry experience in their occupation before entering the teaching profession. In some subsystems of upper secondary VET relevant work experience is not an entry requirement, although interviews during the review visit suggest that schools often prefer to hire teachers and trainers with relevant experience.

Second, there is no system to ensure that teachers and trainers keep their vocational skills up-to-date. The requirements of workplaces change rapidly, in particular in fields using high technology. Without regular contact with industry, teachers and trainers are likely to lose familiarity with current skills requirements and working methods. Many Mexican VET teachers and trainers complement their income by working in industry at

6. <http://www.profordems.sems.gob.mx/profordems/>

the same time as teaching and some subsystems (e.g. CONALEP) strongly encourage part-time work. While this approach is very welcome, and allows some teachers and trainers to keep their skills up-to-date, it does not cover the entire workforce. Not all teachers and trainers work part-time outside the school and some teachers and trainers do not work in their “teaching” occupation. Also, some of those who work in their teaching occupation are employed in firms that do not use up-to-date technologies and therefore are not in touch with the latest equipment, working methods and skills requirements.

At the same time, there are excellent examples of arrangements to update teachers’ and trainers’ vocational skills. For example, in the field of mechatronics, the National Centre for Updating Teachers’ Competences (*Centro Nacional de Actualización Docente*) of one Directorate General (DGETI) offers “refreshing” training courses to VET teachers and trainers, who are then expected to share their newly acquired knowledge with colleagues. However, there is no means of ensuring that all teachers and trainers update their skills through part-time work, periods spent in the relevant industry or special updating centres. There is no overall strategy and limited resources to guarantee that all VET teachers and trainers update their knowledge and skills, and the updating of vocational skills is often left to the initiative of individual teachers and trainers.

Insufficient preparation of practical training supervisors in firms

Quality regulations covering workplace training for upper secondary VET students are weak (see Section 2.2). Employees who supervise students in practical training do not receive targeted training that would provide them with the skills needed to support the learning of students. Some teachers reported concerns to the review team about the low quality of some of the firm-based training in which students participate. Low quality may have various causes but inadequate preparation of supervisors is likely to be one of them.

Recommendation 3

Ensure that VET teachers and trainers receive pedagogical training before or shortly after entering the profession and provide some training to workplace training supervisors. As a means of improving the vocational skills of the VET workforce, make relevant work experience a prerequisite for trainers and require schools to develop strategies to update the vocational skills of teachers and trainers.

Supporting arguments

This recommendation is supported by four arguments. First, VET teachers and trainers need relevant work experience in industry to be familiar with competence needs and working methods in their occupation. Second, their vocational skills need to be regularly updated to keep up with rapidly changing technologies and practices. Third, VET teachers and trainers need pedagogical training to be able to transmit their knowledge and skills effectively. Fourth, training for workplace training supervisors improves the quality of training.

Work experience increases familiarity with competence needs and working methods

It is widely accepted by VET teachers and employers that VET teachers and trainers should have relevant work experience to ensure that they are familiar with the

requirements and working methods of real workplaces. Although empirical evidence on this issue is scarce, a review of existing evidence in the United States (Lynch, 1998) suggests that having relevant work experience is helpful, particularly to novice teachers, since it provides them with a context and increases their confidence in teaching for their occupation. However, beyond a threshold level more work experience does not further improve teaching effectiveness.

Vocational skills need regular updating

Vocational skills become obsolete over time, particularly in sectors with rapid technological change. “Back to industry programmes” allow VET teachers and trainers to use sabbaticals or professional leave to work some time in industry and update their knowledge of technologies and practices (Loveder, 2005). Box 2.5 provides an example of a programme in Finland, which allows VET teachers to spend some time in industry.

Box 2.5: School-industry co-operation to improve the VET teacher and trainer workforce

The Telkkä programme in Finland was based on close cooperation between teachers and workplace training supervisors. It was implemented with the aim of: improving the ability of VET to respond to the needs of working life; update VET teachers’ vocational skills; developing a model for improving VET through teachers’ on-the-job periods in industry; and improving the pedagogical skills of workplace supervisors with the help of teachers in on-the-job placement in industry.

The programme included a two months period for VET teachers spent in the relevant industry, during which teacher-worker pairs were formed, offering an opportunity for teachers to update their vocational skills and workers, who also work as workplace training supervisors, to improve their pedagogical skills. The training period was preceded by a seminar and planning (to clarify goals, expectations) and followed by feedback from teachers and employees, a synthesis of experiences and dissemination to the broader community.

Teachers reported a wide range of benefits, such as increased familiarity with recent work practices and requirements and the equipments used, easy access to firms for study visits, the possibility to invite industry workers to give a lecture at the school, increased confidence, respect from students and motivation. The training period also allowed teachers and workers to discuss issues related to workplace training for students and improve training plans and assessment methods for these.

Source: Cort, Härkönen and Volmari (2004)

VET teachers and trainers need good pedagogical skills

While vocational skills are key competences for VET teachers and trainers, pedagogical skills are also needed for effective VET teaching. A small-scale interview-based study of VET teachers in Australia (Corben and Thomson, 2001) argues that excellence in VET teaching requires not only vocational skills, but also expertise in teaching and learning methodologies, a focus on learners and a belief in the value of education and training.

Although the existing literature on VET teachers and trainers who enter the teaching profession directly from industry in Mexico is scarce, there is a substantial literature on alternatively certified VET teachers (*i.e.* teachers who enter the profession with

occupational experience but without a traditional teacher certificate) in the United States. A literature review on alternatively certified teachers (Lynch, 1998) argues that improving the training of VET teachers is essential to enhance the quality of VET. The studies reviewed by Lynch suggest that exclusive reliance on relevant work experience as if it were a guarantee for effective VET, should be avoided. While teachers coming from industry bring with them valuable skills, they also face challenges when they have little or no pedagogical training.

One study argues that, in addition to the usual difficulties encountered by teachers at the beginning of their careers, VET teachers who start without any pedagogical training face additional challenges due to their lack of familiarity with the curriculum, lesson planning and ways to deal with misbehaving students (Heath-Camp and Camp, 1990). Beginning teachers need both emotional and instructional support, including assistance with curriculum development, teaching materials, classroom and time management (Heath-Camp and Camp, 1992; Kirby and Le Bude, 1998; Joerger and Bremer, 2001).

Training for workplace supervisors has a positive impact on the quality of workplace training

Employees who supervise VET students in practical training also need a particular set of skills, including pedagogical skills, to provide high quality training to VET students. Studies from Australia suggest that apprentices highly value the social skills of trainers, such as communication skills, the ability to deal with conflicts and unexpected mistakes (Harris *et al.*, 1998). However, providing good supervision is demanding, since potential supervisors often lack the skills to provide support and have to juggle the supervision of trainees with other work responsibilities (Harris, Simons and Bone, 2000).

Research evidence suggests that when workplace training supervisors receive targeted training, they do a better job at developing the skills of trainees. In Germany, the suspension of formal training for supervisors seems to have had a negative impact. Until 2003, employees who wanted to work with apprentices had to pass a national examination (AEVO), preceded by optional training offered by chambers of commerce. This requirement was suspended for five years because some firms considered it burdensome. Preliminary evaluations of this measure show that drop-out rates are higher in firms that have no qualified supervisors and the same firms complain more frequently about the performance of their apprentices. A survey of chambers of commerce revealed that many stakeholders associated the suspension of formal qualifications for trainers with deterioration in the quality and image of VET (BIBB, 2008).

Implementation

Box 2.6 provides an example of specific training for VET teachers who come from industry and start teaching without previous pedagogical training. Incentives for teachers and trainers to participate in pedagogical training could include a higher salary following training and flexible ways to follow such courses.

Box 2.6: Training VET teachers in Switzerland

The Swiss Federal Institute for Vocational Education and Training (SFIVET) offers training courses leading to a federal certificate to people who work in industry and wish to teach part-time in a VET school at upper secondary level. Entry requirements for the training course include a tertiary degree in the relevant field, at least six months work experience in the relevant field, and part-time employment as a teacher – applicants start teaching and follow the course at the same time. The length of the programme is 300 hours, typically completed over a 6 month period.

At the end of the programme, participants are expected to be able to plan and give classes, and evaluate these. The programme includes:

- Context of vocational education and training.
- Young adults in training: theories of learning.
- Structuring teaching: from preparing a lesson to evaluating the competences acquired by students.
- Teaching techniques and application to the case of VET schools.
- Developing your teaching potential: teaching styles, communication skills, relationships with students.
- Observing and analysing lessons given by participants.

Source: Swiss Federal Institute of Vocational Education and Training
www.ehb-schweiz.ch/fr/formation/certificats/Documents/Certificats.pdf

Training periods for VET teachers and trainers may combine pedagogical training with time spent in teaching practice. In the Netherlands, for example, some teacher training institutions collaborate with VET schools, allowing future teachers and trainers to acquire experience in teaching and at the same time alleviating staff shortages in schools (Dinjens and Visser, 2006).

Although no substitute for pedagogical training, induction programmes may also be helpful for teachers who start teaching without any pedagogical preparation. Evidence from the United States shows that induction programmes, if they are to be effective, should be tailored to the specific needs of VET teachers coming directly from industry (Kirby and Le Bude, 1998; Lynch, 1998). Good practices include providing a mentor (Heath-Camp and Camp, 1992) or a support team to assist beginning teachers (Kirby and Le Bude, 1998).

Although requiring formal pedagogical qualifications for workplace training supervisors has appeal and is compulsory in some countries (see Box 2.7), in the Mexican context a more gradual approach may be more appropriate, bearing in mind the risk of creating an obstacle to employer engagement in workplace training.

Box 2.7: The training of apprentice supervisors in Switzerland

In Switzerland, firms need to meet quality standards to be licensed to take apprentices. For those who supervise apprentices, there is a required course of 100 learning hours covering pedagogy, law, the education system, problems with drugs and alcohol, etc. Supervisors cannot look after more than two apprentices and must have a certain level of education. Cantonal inspectors visit companies to ensure that the apprentices are learning something useful. If there are weaknesses in the training provided, cantonal staff provide some “coaching” to the company. Companies consider this an advantage, since if they can provide better training to their apprentices, apprentices will do better work for them.

Currently, the tradition of workplace training for VET students is relatively weak in Mexico and the costs of pedagogical training for supervisors could discourage many firms from taking on VET students for training. While training for supervisors does involve costs, it can also increase the benefits of practical training to firms, since better trained supervisors can help trainees to be more productive. Training for supervisors can also have spill-over benefits, since the competences acquired tend to be shared among colleagues. This is particularly important, since regular employees also assist trainees’ learning experience by answering questions and providing informal feedback (Robertson *et al.*, 2000). One option may be to provide optional short courses for supervisors, as in Norway (see Box 2.8).

Box 2.8: Optional training for apprentice supervisors in Norway

In Norway optional training is offered by counties to employees involved in supervising apprentices. Some counties provide the training themselves, others ask schools or training offices to ensure its provision. The courses are free to participants, since counties provide for the course, learning material, subsistence and travel expenses. However, the firm is responsible for the supervisor’s pay during the course.

Typically the duration of the training is two days (or four half days) per year. Often there is a time interval between each training session, so that supervisors may practice what they have learnt and prepare a report, which is then presented at the next session.

National guidelines, developed in cooperation with VET teacher training institutions, are available on the internet and can be adapted to local needs. The form of training typically includes role-play and practice. Supervisors learn to cover the curriculum, complete evaluation procedures and administrative forms, prepare a training plan for apprentices and follow through the plan.

Source: Norwegian Directorate for Education and Training, personal communication, 22 January 2009.

Opportunities for updating the vocational skills of VET teachers and trainers may be offered through short periods of time spent working in industry. Collaboration and exchange between schools and workplaces can provide an opportunity both for teachers to update their vocational skills and workplace supervisors to improve their pedagogical skills. As illustrated by the Telkkä programme in Finland (Box 2.5), the period spent by VET teachers in firms and exchanges between firm-based employees and practising teachers can benefit both sides. Such collaboration arrangements can also be part of schools’ overall strategy to build links with local employers. Incentives could also be created to encourage teachers and trainers to update their vocational skills. This could be

done through special funding schemes to which teachers and trainers would apply, or could be part of a reward system for teachers and trainers.

2.4 A national vocational qualifications framework

Challenge

Little harmonisation and coherence of the provision across subsystems

The large number of subsystems and programmes (see Table 1.1), combined with the lack of co-ordination across subsystems leads to a lack of shared strategic vision within upper secondary VET (see also Section 2.1 on strategic policy development and co-ordination between subsystems) and scattered VET provision across subsystems (SEP, 2008a). Scattered provision results in a lack of clarity for stakeholders. It is difficult for employers to have a clear view on the value of qualifications (*e.g.* distinguish between the qualification *profesional técnico* offered by one subsystem [CONALEP] and the *técnico profesional* offered by another [DGETI]). For prospective students it is hard to understand the characteristics of different options. Although there are some “common programmes” (*carreras communes*) that use the same curriculum and content in different subsystems, there are still some programmes with similar content but different names (*e.g.* *Análisis y Tecnología de Alimentos* in DGETI vs. *Análisis y Tecnología de los Alimentos* in CECyTE). This means that there is likely to be some duplication of efforts within the VET system in the elaboration of programmes.

Existing reforms are welcome but need to go further

It is welcome to see that the Mexican government has started to overcome some of these overlaps. SEP informed us about ongoing efforts to organise VET provision by occupational areas (*campos de formación profesional*), and revise the content of programmes with a view to establishing shared curricula across subsystems. Current reforms could be taken further to ensure coherence in the VET system. The Integral Reform of upper secondary education is designed to resolve many problems of incoherence in the general education system. The Common Curricular Framework defines generic and subject-specific requirements for the acquisition of the baccalaureate. Regarding vocational competences (*competencias profesionales*), it defines various aspects (*e.g.* relevance to working contexts, based on occupational standards) to be taken into account in their definition. However, the Common Curricular Framework only suggests how vocational competences should be defined. Vocational qualifications delivered by different subsystems are not harmonised according to their outcomes (*i.e.* acquired vocational competences) within a common framework.

The curricular reform of the technological baccalaureate (*bachillerato tecnológico*) also seeks, alongside other objectives, to improve coherence in upper secondary VET. For example, a policy document (Upper Secondary Education Undersecretariat, 2007) states that the content of programmes will correspond to the levels of competence 1, 2 and 3 defined by the Council for Standardization and Certification of Labour Competences (CONOCER). Different subsystems will be expected to promote the equivalence of

programmes and establish mechanisms to adjust VET programmes that are similar to each other and eliminate duplications⁷.

These are welcome, but currently they do not cover all subsystems, although SEP informed us that it aims to include all subsystems in the reform by 2012. Also, the reforms do not directly harmonise VET provision, only encourage harmonisation. In the light of the large number of subsystems and considerable divergence between them, further reforms with more prescriptive elements (as in the case of the universal baccalaureate) covering all the subsystems would be needed to ensure coherence, clarity and efficiency across subsystems.

Qualifications are not systematically adapted to competence needs

Currently upper secondary VET lacks mechanisms for consultation with employers to ensure that qualifications include the up-to-date competences demanded on the labour market. This means that there is a risk that VET curricula and qualifications do not reflect labour market needs. The ongoing institutional reform of the Council dealing with competences and qualifications (CONOCER) is designed to address this problem by creating effective updating mechanisms of competences and qualifications, as well as building a link between the competences defined by CONOCER and upper secondary VET.

It is difficult to assess the value of VET qualifications on the labour market because of the lack of detailed data on labour market outcomes. However, a number of employers reported to the review team that VET qualifications do not send a clear message to employers on the competences of VET graduates. The fragmentation of the upper secondary VET system also limits the signalling value of qualifications to employers.

Recommendation 4

Explore options to develop a national vocational qualifications framework.

Supporting arguments

This recommendation is supported by two arguments. First, a national vocational qualifications framework (NVQF) has the potential to increase clarity and coherence across subsystems. Second, it can help ensure that qualifications reflect up-to-date competence requirements and respond to labour market needs. Box 2.9 provides a definition of qualifications frameworks.

7. The provision of different Administrative Units will have to promote the equivalence of programmes and specialisations that may be common, as well as potential continuing training routes, which may be available through the full use of the provision of the VET system. [...] The Administrative Units will establish mechanisms to convert specific programmes and specialisations that may be common, according to the Guidelines for Organising VET Provision". *"La oferta de las distintas Unidades Administrativas deberá promover la equivalencia de las carreras y especialidades que pueden ser comunes; así como las posibles rutas de formación continua que se logren abrir mediante el aprovechamiento integral de esta oferta del sistema de Educación Tecnológica. [...] Las Unidades Administrativas establecerán los mecanismos para convertir las carreras y especialidades específicas que puedan ser comunes, atendiendo a los Lineamientos de la Organización de la Oferta de Formación Profesional."*

Box 2.9: Qualifications frameworks and qualifications systems

A *qualifications framework* is a rank order of qualification levels, allowing each qualification to be assigned to a specific rank. It classifies qualifications according to a set of criteria for levels of learning achieved.

Qualifications systems include **all aspects** of a country's activity that result in the **recognition of learning**, and is therefore a much wider concept. Qualifications systems may be more or less integrated and coherent. An explicit qualification framework, when it exists, is a component of the qualifications system.

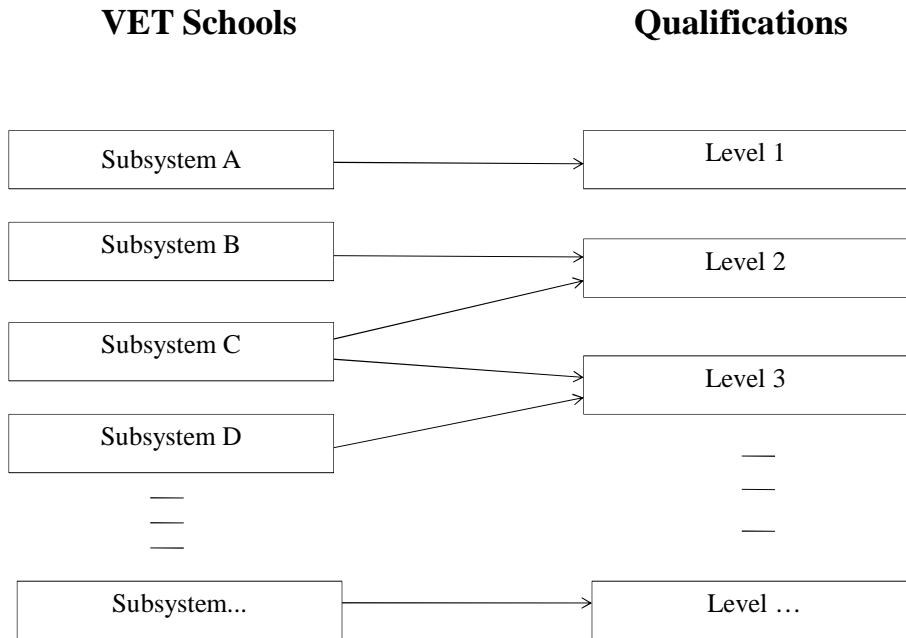
Source: OECD (2007a, p.22)

Increased clarity in VET provision

National qualifications frameworks may be used to create a system of coordination of qualifications. Assigning qualifications to a national level clarifies how they relate to each other. This can help harmonise qualifications that may be overlapping and competing with each other (Coles, 2006). In New Zealand, for example, the NVQF was used to overcome compartmentalisation in the education and training system, while respecting the integrity of its different parts (Coles, 2006).

Clarity is important for at least three reasons. First, employers who hire VET graduates need to have a clear view on the meaning of different qualifications. Second, prospective students need clear information on the programmes available when choosing between different options. Third, clarifying how programmes offered by different subsystems relate to each other is essential to allow for mobility within the system and support lifelong learning.

A NVQF in Mexico could help different programmes and subsystems to position themselves clearly, both in terms of level and content. The existence of various levels could allow subsystems to be clearly distinguishable, while courses offering the same content at the same level, even though offered in different subsystems, could lead to the same qualification (see Figure 2.2). Shared targets (*i.e.* competences required for a given level of qualification), could ensure clarity, while allowing different subsystems to maintain their specific features. In other words, harmonisation would not imply uniformity – similarly to the harmonisation of generic and subject-specific competences in the case of the Integral Reform.

Figure 2.2: Relationship between subsystems and a vocational qualification framework

An NVQF needs to be carefully implemented (see below). In countries where national qualifications frameworks have been used to reduce unnecessary overlaps, their success has been partial (Coles, 2006).

Increased relevance of qualifications to labour market needs

Qualifications need to reflect up-to-date competences to be meaningful to employers. Arguably, NQFs including competence-based qualifications and national standards for occupations could increase clarity about the competences, skills and qualifications in demand on the labour market (Coles, 2006).

Implementation

Quantitative evidence on national qualifications frameworks is scarce, but a number of common themes have emerged in the literature drawing on international examples. This section provides an account of these.

Assess the suitability and feasibility of different types of qualifications frameworks

The design of qualifications frameworks involves a number of dimensions. Choices regarding each dimension depend on the national context. Table 2.4 outlines some of these characteristics, for more details see Young (2005), Coles (2006) and Tuck (2007).

Table 2.4: Main dimensions in the design of qualifications frameworks

Dimension		Potential benefits
Tight vs. loose	Tight	More prescriptive about qualification design and quality assurance, they typically have a strong regulatory function, applying common rules across all qualifications (Tuck, 2007). Country examples: United Kingdom, New Zealand, South Africa (Young, 2005).
	Loose	Provide a map of qualifications with a "communicative" purpose. They are less prescriptive and allow room for differences in approach (Young, 2005; Tuck, 2007). Country examples: Australia, Scotland (Young, 2005).
Inclusive vs. partial	Inclusive	Covering all qualifications, can ensure coherence across all qualifications (Coles, 2006)
	Partial	Partial coverage, e.g. in terms of level, occupational sector. May be easier to implement, allow for piloting and staged development (Coles, 2006).
Central vs. stakeholder-led design	Designed by a central agency	May be used as a tool for wider reform and may be linked to other national policies (Coles, 2006).
	Developed by stakeholders	Ensures greater buy-in from stakeholders and can better respond to regional specificities (Coles, 2006).

Lessons from international experience

Decisions regarding the possible creation and implementation of a NVQF should take account of the problems often encountered by countries. First, the implementation of national qualifications frameworks is often associated with administrative difficulties, such as a proliferation of bodies dealing with quality assurance, standard setting and assessment. The lack of appropriate expertise among staff may lead to an excessive focus on bureaucratic procedures rather than the quality of learning. This often results in a lack of trust in the new qualifications and complaints about the slowness of the process (Young, 2005).

Technical problems may also arise. NQFs require new approaches to assessment and a new language of standards to define criteria applied to a wide range of qualifications. They are based on outcomes, providing a framework for assessment rather than for provision. The resulting challenge is how to relate an outcomes-based framework to curriculum, teaching and learning (Young, 2005). Raffe (2003) argues that the effectiveness of a qualifications framework can depend on other factors shaping the surrounding institutional context. In particular, the professional development of teachers and trainers need increased attention because qualifications frameworks create new demands on them (Young, 2005). Complementary measures may include capacity building within the Ministry of Public Education to enhance expertise to develop curricula based on competences, or training for VET teachers and trainers to prepare them for teaching curricula based on competences elaborated by Council for Standardization and Certification of Labour Competences (CONOCER).

Finally, political difficulties may arise from tensions between public bodies, such as different ministries or agencies dealing with qualifications (Young, 2005). In New Zealand, for example, tensions between the qualifications authority and the Ministry of Education were the source of serious problems (Philips, 2003).

Regardless of the existence of a national qualifications framework, there remains a risk of proliferation of qualifications. Although qualifications should cover a wide range of occupations and competences demanded in the labour market, the number of qualifications should be limited to a reasonable level. An excessive number of qualifications damages the signalling value of qualifications to employers. Some OECD countries have consequently reduced the number of qualifications (e.g. Hungary recently

reduced the number of qualifications from about 800 to 400). The “optimal” number of qualifications varies according to the particular national context.

International experience helps to identify the critical factors in successful implementation of national qualifications frameworks. First, consultation with employers is crucial to ensure that qualifications are recognised on the labour market. This requires strong employer engagement in their elaboration and updating. Interviews with various stakeholders during the visit suggest that CONOCER has faced problems resulting from the disengagement of employers. Therefore particular attention should be paid to increasing trust on behalf of employers in the new wave of work carried out by CONOCER. Policy tools to increase employer engagement in VET are discussed in Section 2.2.

Second, experience from various countries shows that pragmatic and incremental change is more likely to succeed than a radical break with previous qualifications systems (Young, 2005; Raffe, Gallacher and Toman, 2007). In Mexico some elements are already in place or are being developed. For example, five levels of competences already exist under the Council for Standardization and Certification of Labour Competences (CONOCER) and a competence-based approach has already been applied in upper secondary VET, although difficulties have occurred with the updating of these competences. The competences and norms currently under development by CONOCER could form the basis for the elaboration of national vocational qualifications. In addition, current efforts (within the Sectoral Coordination of Academic Development, COSDAC) to eliminate similar programmes (*carreras semejantes*) offered within the technological baccalaureate reflect acknowledgement of the need to reduce unnecessary overlaps in the system. Finally, the ongoing Integral Reform of upper secondary education is intended to implement similar changes in the general education side of upper secondary education. This suggests that one option might be to introduce national vocational qualifications in certain industrial sectors first and then gradually extend them. For instance, national vocational qualifications could be created in fields where occupational standards are widely agreed, homogeneous across the country and it is in the interest of all stakeholders to create a national qualification (e.g. the aeronautics industry).

Another key to success is the existence of consensus, compromise and partnership (Young, 2005; Raffe, Gallacher and Toman, 2007). Qualifications rely on trust, since they inevitably claim to represent more than they can demonstrate. As illustrated by the cases of Ireland, Scotland and New Zealand, effective consultation processes and principled compromises are essential (Young, 2005). Such a partnership approach is demanding in terms of coordination, and can slow down the pace of change, since each step requires the agreement of stakeholders (Raffe, Gallacher and Toman, 2007). Also, Young (2005) warns that excessive involvement of stakeholders with political interests but lack of technical knowledge can undermine the role of specialists from relevant occupational sectors.

Support from different institutional sectors in the VET system also facilitates effective implementation. Raffe, Gallacher and Toman (2007) argue that one of the factors behind the success of the Scottish framework is that it was supported by all institutional sectors of learning, while other country examples, such as New Zealand and South Africa, show that the disengagement of some institutional sectors can cause difficulties. In the Mexican context, the effective implementation of a vocational qualifications framework would require support from all subsystems.

In building consensus and partnership, it is important to take account of regional diversity within Mexico and the resulting variety of skills needs. Qualifications and curricula should allow for sufficient flexibility so that VET can respond to specific regional needs. Coles (2006) argues that in federal countries, engaging regions is very important in the development of a qualifications framework.

Finally, expectations need to be realistic about the capacity of the framework to achieve change, as well as regarding the speed at which change may be achieved (Raffe, Gallacher and Toman, 2007).

Resource implications

The scope of the framework and its intended purposes affect the costs of implementation and maintenance. The costs of implementing a national qualifications framework could include policy analysis, assessment of international experience, development and modelling of options, creation of task groups, engagement and consultation of stakeholders, the establishment of a specific national body and pilots. While the central administration costs of a qualifications framework may be small, further costs can arise from associated processes, such as quality assurance procedures and the development of standards (Coles, 2006). At the same time, in a better coordinated qualifications system there are likely to be some cost savings, for instance in the development of standards. A national qualifications framework can also be a tool for quality assurance, improving the efficiency of public investment in VET (Coles, 2006).

Young (2005) argues that, when considered a separate policy initiative, as in New Zealand, South Africa and the United Kingdom, a NQF is always seen as taking resources away from other activities. Conversely, when regarded as a way of reforming the VET system, it gains a more strategic role. Young further argues that high cost systems of certification are characteristics of low trust systems of VET, while high trust systems like Germany operate with lower costs. Therefore, it is suggested, investment into institutional capacity building, improved training and professional development for teachers and trainers is necessary to develop trust and limit the costs of the qualifications framework.

A final factor affecting the use of a potential vocational qualifications framework in Mexico is the cost to students. The price of certification/acquisition of a qualification should be limited to a reasonable level. Otherwise, if the costs of certification to students outweigh the expected benefits (*i.e.* expected returns to the acquired certificate on the labour market), it is a rational choice for students not to undergo the process of certification.

2.5 Availability and use of VET information

Challenge

Existing sources of information on labour market outcomes are very useful but should be improved to cover remaining gaps. The Mexican Labour Market Observatory collects and publishes extensive, up-to-date information on labour market outcomes, but some gaps remain. Information on labour market outcomes is not broken down by subsystems and only a third of technical baccalaureates are included in the database. There are other initiatives to follow-up VET graduates (*e.g.* use of a special hotmail address to contact VET graduates, follow-up surveys in some subsystems), but these remain fragmented.

Measuring the labour market outcomes of VET graduates is further complicated because education and labour market data are not in line with each other. Interviews conducted during the visit indicate that differences in definitions between datasets create an obstacle to the analysis of available data. ENTELEMS is another important recent initiative aiming to collect data on the labour market outcomes of upper secondary graduates. It was a survey of 15-34-year-olds carried out in 2008 by the National Institute of Statistics and Geography (INEGI) in agreement with SEP, as an additional module of the regular National Survey of Occupation and Employment (ENOE). This survey can be a valuable source of information, but it remains a snapshot of the situation and would need to be repeated regularly to provide information on changes over time.

These gaps mean that students have little information on labour market outcomes on which to base career choices. They may choose occupations that are less demanded on the labour market, while there may be shortages in other sectors. There is very limited quantitative evidence to judge the degree of match between VET provision and labour market needs. But in one VET school visited during the review, it was argued that due to weak career guidance, many students in the region are not aware of the many job opportunities in high-technology sectors and therefore choose traditional trades.

Putting existing data to work also remains a challenge. Some VET data are already publicly available, but the use of data could be increased both to inform policy making and to guide stakeholders, including prospective VET students. Although there are some good examples of well developed career guidance for VET students (*e.g.* a USB key wristband with career information⁸), interviews conducted during the review visit indicate that some students do not have access to good quality career guidance. Those responsible for career guidance are not always well-prepared for the task and there is little coordination between the subsystems in the career guidance they provide.

The lack of information on labour market outcomes also means that VET schools have few incentives to close down programmes as long as they are popular among students, even though their labour market outcomes may be poor. The attractiveness of VET programmes cannot be influenced by their outcomes, if these are not known. Unless other external incentives (*e.g.* targeted funding for certain programmes) intervene to adapt provision to employer needs, VET provision is likely to follow supply considerations (*e.g.* availability of teachers, trainers and equipment) rather than labour market needs.

A comprehensive nation-wide survey of employers' skills needs is missing. Some information is collected by the Ministry of Labour and Social Security but there is no centrally managed overview that could inform policy decisions.

VET research is weakly developed and coordinated. Very few researchers work in the area of VET. There are no government initiatives that focus specifically on promoting VET analysis.

Recommendation 5

Improve the data on labour market needs and on labour market outcomes of VET. Develop the capacity to analyse and use data both for policy making and to inform stakeholders. Improve career guidance offered to prospective and current VET students.

8. For more information, see: www.orientacionvocacional.sems.gob.mx/OV/Diptico/index.php

Supporting arguments

This recommendation is supported by five arguments. First, a comprehensive framework for following up VET graduates provides information on the ability of VET to meet skills needs. Second, publishing information on labour market outcomes can be a tool for quality control. Third, extending the scope and improving the quality of career guidance is the basis for informed student choice. Fourth, active promotion of VET research enriches the VET knowledge base on which policy making is founded. Finally, a nationwide employer survey would indicate broad skills needs.

A comprehensive follow-up framework provides information on the ability of VET to meet labour market needs

Data on labour market outcomes, if collected and published on a programme and institution basis, would allow the performance of VET graduates from different programmes and institutions to be compared. Currently performance indicators are mainly indicators of input. Output indicators (including labour market outcomes) would help to assess the performance of VET schools and inform stakeholders. Data on labour market outcomes may also be used to inform policy makers and facilitate public decisions about VET provision. Such data can also serve as a basis for career guidance and help students make informed choices (see below).

Collecting high quality data on labour market outcomes requires a methodology shared across subsystems. Otherwise it will be difficult, for example for prospective students, to compare the outcomes of a programme in one subsystem with the outcomes of a similar programme offered by another subsystem. In addition, definitions used in the education and employment sector will need to be harmonised, so that labour market outcomes can be linked to education and training.

Publishing data on labour market outcomes is an tool for quality control

The availability of data on labour market outcomes can also be an important tool for quality control. In some VET schools there are already arrangements to make indicators publicly available. The national “transparency day” initiated by the current administration aims to increase the accountability of schools. Including high quality data on labour market outcomes in the published information could create an incentive for VET schools to improve the labour market outcomes of their students.

Informed student choice requires high quality career guidance

At the end of lower secondary education students make an important career choice between upper secondary institutions and programmes, and it is crucial to ensure access to high quality information on the range of options available (*e.g.* further studies, labour market opportunities). Interviews conducted during the review visit suggest that students often rely on informal sources of information, such as family and friends, to find out about VET programmes and the situation in the labour market. While informal sources have many strengths, they are often less reliable than formal sources. Also, they may confine choices to the familiar rather than opening up new horizons. High quality career guidance compensates for the fact that disadvantaged students are less well-informed about the available options than their more privileged peers (OECD, 2004).

Good career guidance is particularly important in the light of the complex structure of upper secondary VET in Mexico (see also Section 1.3). The roles and characteristics of different subsystems may not be clear to prospective VET students. Career guidance services offered by different subsystems need to be coordinated, to ensure that potential students receive a comprehensive picture of the options available.

Active promotion of VET research capacity allows evidence based policy making

VET is a relatively new priority for educational authorities. Developing the evidence base for policy making requires increased focus on research on VET and systematic and improved coordination between existing experts in the field. In order to put data to use, it is necessary to enhance the capacity of educational authorities to analyse data and make use of existing evidence (e.g. from the Labour Market Observatory) for policy making.

A national survey of employers provides information on broad skills needs

A regular survey of employers, providing nationwide data as well as data broken down by regions, would help identify skills needs at a very general level, e.g. the importance of literacy and numeracy, and soft skills like teamwork. The results of such a survey could inform VET policy making. Systematic consultation of employers through a survey could usefully add to institutional mechanisms for dialogue with employers (see Section 2.1) and help match VET provision to labour market needs.

Implementation

Follow-up of VET graduates

The establishment of a comprehensive follow-up survey, covering all subsystems and all occupations with a shared methodology, could build on existing initiatives (e.g. the Labour Market Observatory, ENTELEMS, and follow-up surveys in some subsystems). Currently existing mechanisms, if successful, could be rolled out nationally.

Another way of collecting information on labour market outcomes is through a personal identifier linked to labour market data. In some countries (e.g. Sweden, Norway, Finland) such an identifier is linked to a range of administrative data (e.g. education, labour market, tax). However, interviews conducted during the visit suggest that in Mexico such methods may face political and technical obstacles (e.g. privacy regulations). Another option would be a graduate destinations survey, administered to those leaving VET programmes around one year after completion, to establish whether graduates are working and in what occupation, whether they are pursuing further study, or whether they are unemployed or otherwise not in the labour market. A survey can also ask graduates about what they thought of their VET programme – whether it was well taught and provided them with relevant skills for example. In this way such surveys become a tool to monitor quality in VET programmes. Other countries are successful in gathering labour market performance data through school leaver surveys (see Box 2.10).

Box 2.10: The School Leavers' Survey in Ireland

In Ireland, each annual School Leavers Survey is based on a national sample stratified by programme of school leavers, who are contacted approximately one year to 18 months after leaving school. Face-to-face interviews, used in this survey since its beginning in 1980, have become more difficult as a result of declining response rates and high costs (McCoy, Kelly, & Watson, 2007). Therefore the 2007 School Leavers Survey used a multi-mode approach.

The selected individuals were asked to complete an online questionnaire and could also ask for a paper copy. Participants were offered an incentive to complete the questionnaire, their names entered in a draw for one of eleven prizes. After a few weeks those who had not completed the questionnaire received reminder postcards and received paper copies of the questionnaire a few weeks later. Those who were particularly difficult to reach (*e.g.* early school leavers) were followed up by telephone initially and then face-to-face (ESRI, personal communication, 11 April 2008).

The fieldwork is carried out by trained interviewers who contact and interview the selected school leavers throughout the country. Given the variation in response rates between leavers from different programmes, the results were re-weighted to give unbiased estimates (McCoy, Kelly, & Watson, 2007).

For gathering and disseminating demand and supply side VET information and fostering its use in particular for career guidance, it is essential that the education and employment sides (represented by the respective ministries) collaborate tightly. A common terminology should be ensured and efficient information flows made possible.

Career guidance

There is a system of career guidance already in place and, as mentioned earlier, there are some very good examples of career guidance. SEP informed us that the career guidance programme, which was disseminated through CD-s and the internet, provided information on different programmes and labour market opportunities. These could be used as a basis for further development of career guidance to ensure that guidance is provided to all potential, as well as current VET students and includes information on the range of options available (including general education and VET programmes, labour market opportunities), their content and their outcomes. Relevant public authorities should collaborate in the design and provision of career guidance. Box 2.11 provides an example of how public authorities – such as employment offices – may be involved in career guidance activities.

Box 2.11: Joint career advice by schools and employment offices in Germany

In Germany, a co-operation treaty between the Federal Employment Office and the Permanent Conference of the Education Ministers of the German States¹ sets out the joint obligation of schools and employment offices to provide impartial, up-to-date and professional career advice.

Joint career counseling starts at least two years before the end of any school programme. It takes into account the individual interests and skills of students and future labour market needs. Counselling takes place in schools during class hours or during special events on the premises of local employment offices, either on an individual basis or in groups.

Schools are expected to provide students with basic information on the functioning of the economy and the labour market, on different occupations and on the principles of career choice. They also co-operate with local employers to offer students insights into the world of work and arrange contacts for practical training.

Employment offices inform students about the requirements of different occupations and provide students with up-to-date information on the state of the labour market, on apprenticeship and higher education opportunities, as well as possibilities of direct labour market entry after school.

Schools and local employment offices co-operate in various ways. They form local and regional networks involving various stakeholders, such as employers and higher education institutions. Schools are involved in developing the information provided by employment offices and joint training courses are held for teachers and employment office staff. Schools and employment offices also harmonise their planned measures and projects every year.

1. German states are autonomous in terms of their education policy. The Permanent Conference is a coordination body between the states (Länder), which meets regularly and sets rules that apply to all states.

Source: *Rahmenvereinbarung über die Zusammenarbeit von Schule und Berufsberatung zwischen der Kultusministerkonferenz und der Bundesagentur für Arbeit* (2004) (Framework for cooperation of schools and career guidance services concluded between the Permanent Conference of the Ministers for Education and Cultural Affairs of the Länder and the Federal Employment Agency)
www.arbeitsagentur.de/zentraler-Content/A03-Berufsberatung/A031-Berufseinsteiger/Publikation/pdf/Rahmenbedingungen-Schule-Berufsberatung.pdf

Career guidance can also usefully build on links with employers and offer “work experience” to young students before they make career decisions. In Switzerland, short “taster apprenticeships” (*Schnupperlehren*) for secondary students allow students to “taste” various careers before making decisions about VET pathways. Clearly such work experience arrangements carry costs (*e.g.* insurance arrangements, brokerage services to create links with employers). But costs can be reduced if local employers agree to contribute by providing for instance internship placements or mentoring programmes.

Strengthening the evidence base

One way of strengthening the research evidence base on VET is to establish a specialised research institute, responsible for analysing VET data and disseminating research findings. Box 2.12 describes some examples from various OECD countries.

Box 2.12: National VET Research Institutes

Australia. The **National Centre for Vocational Education Research (NCVER)**, founded in 1981, is a not-for-profit organisation owned by federal, state and territory ministers responsible for VET. It employs over 80 persons. NCVER's main tasks are: *i*) collecting VET statistics; *ii*) managing the national VET research grants; *iii*) managing a VET research database; *iv*) disseminating the results of research and data analysis; *v*) building links with similar organisations in other countries; and *vi*) undertaking commercial consultancies. These various activities are financed mainly (85%) by the Department of Education, Employment and Workplace Relations, other revenues come from other state bodies and private consultancy activity.

Source: www.ncver.edu.au

Austria. The **Institute for Vocational Education and Training Research (Österreichisches Institut für Berufsbildungsforschung)** was established in 1970 through an initiative of employee associations and the Ministries of Labour and of Science and Research. This non-profit institute, employing around 10 staff, mainly aims to facilitate a better understanding of VET in Austria and promote interdisciplinary research in the field. Its research activity centres around: *i*) initial and continuing VET, including at tertiary level; *ii*) career guidance; *iii*) evaluation of individual programmes and institutions; *iv*) labour market analysis; *v*) new teaching and learning methods; and *vi*) economics of VET.

Source: www.oeibf.at

Germany. The **Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, BIBB)** founded in 1970 is funded by the Federal Ministry of Education and Research and employs around 500 people. Its decision-making bodies include representatives from employer and employee associations, federal and state governments. Its main tasks are: *i*) analysing labour market trends, particularly future skills needs; *ii*) compiling general statistics and conducting research on the German VET system; *iii*) managing several VET research databases; *iv*) supporting training enterprises and VET training centres through targeted training programmes; *v*) contributing to the development of qualification frameworks; and *vi*) engaging in international co-operation.

Source: www.bibb.de

Korea. The **Korean Research Institute for Vocational Education and Training (KRIVET)**, established in 1997, is a government-funded research institute whose purpose is to inform VET policy making and to disseminate VET-related data and knowledge. It has 130 full-time researchers. Its main tasks are: *i*) analysing national VET policies; *ii*) supporting the network of VET stakeholders; *iii*) developing and propagating VET programmes; *iv*) conducting research on qualifications systems; *v*) evaluating vocational training institutes; *vi*) carrying out regular labour market analysis and managing the resulting database; *vii*) providing career guidance; and *viii*) promoting international co-operation.

Source: www.krivet.re.kr

Another approach is the establishment of a network of researchers. In Switzerland the “Leading Houses” (LHs) constitute a network of government-funded, long-term research projects attached to one or more higher education institutions (for a case study on LHs see OECD, 2009c). Leading Houses aim to fill gaps in the evidence base on VET and to develop the VET research community. Since 2004, six LHs have been commissioned by the Federal Office for Professional Education and Technology, covering issues such as the quality of VET; learning strategies; firm behaviour and training policies; transitions, skills and labour.

The choice of institutional form depends on the national context and the functions assigned to the institution. At present Mexico does not have a well established research base on VET. One advantage of creating a researcher network similar to the Swiss Leading Houses would be that the VET research would be integrated in a wider researcher community, rather than functioning as a separate institution in isolation.

Employer surveys

To create a comprehensive survey of employer needs, Mexico could usefully build on existing surveys. This might be carried out by employer organisations, such as the chambers of commerce, and might be coordinated by the Ministry of Labour and Social Affairs. In England, the National Employer Skills Survey is conducted by the Learning and Skills Council (a non-departmental public body). In other countries, such as Hungary and Australia, the chambers of commerce coordinate regular assessments of employer skills needs on national level. To be effective, the survey should be based on a representative sample and use a carefully piloted questionnaire.

Acronyms

CBTA	Centro de Bachillerato Tecnológico Agropecuario
CBTF	Centro de Bachillerato Tecnológico Forestal
CBTIS	Centro de Bachillerato Tecnológico Industrial y de Servicios
CECyTE	Centro de Estudios Científicos y Tecnológicos Estatales
CEPPEMS	Comisión Estatal de Planeación y Programación de Educación Media Superior
CETIS	Centro de Estudios Tecnológicos Industriales y de Servicios
CETI	Centro de Enseñanza Técnica Industrial
CETMAR	Centros de Estudios Tecnológicos del Mar
CETAC	Centros de Estudios Tecnológicos de Aguas Continentales
COBACH	Colegio de Bachilleres
CONALEP	Colegio Nacional de Educación Profesional Técnica
CONOCER	Consejo de Normalización y Certificación de Competencia Laboral
COSDAC	Coordinación Sectorial de Desarrollo Académico (dependiente de la SEMS)
DGB	Dirección General del Bachillerato
DGECyTM	Dirección General de Educación en Ciencia y Tecnología del Mar
DGETA	Dirección General de Educación Tecnológica Agropecuaria
DGETI	Dirección General de Educación Tecnológica Industrial
ENOE	Encuesta Nacional de Ocupación y Empleo
ENTELEMS	Encuesta Nacional de Trayectorias Educativas y Laborales de la Educación Media Superior
ICAT	Instituto de Capacitación para el Trabajo
INEGI	Instituto Nacional de Estadística y Geografía
NQF	National Qualifications Framework
NVQF	National Vocational Qualifications Framework
SEP	Secretaría de Educación Pública
SEMS	Subsecretaría de Educación Media Superior
SNB	Sistema Nacional de Bachillerato
VET	Vocational education and training

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Annex A

Background Information

1. Terms of reference for Mexico

The terms of reference set out the sectoral focus of the policy review of VET in Mexico and identify some key policy issues that will receive particular attention during the review.

The review will focus primarily on initial VET at upper secondary level in Mexico (*i.e. bachillerato tecnológico, profesional técnico, formación para el trabajo*), taking account of developments at other levels.

The review of VET in Mexico will examine the responsiveness of the VET system to labour market needs. Within this overarching issue, it will have a particular focus on the following topics:

- School to work transition: how the VET system can ensure that VET graduates can successfully integrate into the labour market.
- Efficiency and funding of VET: how efficiency may be increased by improving funding mechanisms in VET.
- Efficiency and quality in VET: how efficiency may be increased by enhancing quality of VET and thereby improving the labour market outcomes of VET graduates.

2. Biographical information

Kathrin Hoeckel works as a Policy Analyst in the OECD Directorate for Education is a policy analyst at the OECD Directorate for Education, where she works on ‘Learning for Jobs’ – OECD Reviews of Vocational Education and Training. She is responsible for several country reviews and for analytical work on costs and benefits in VET. Prior to this activity, Kathrin worked on the issue of school leadership (*Improving School Leadership*, 2008) and took part in writing the final comparative report and disseminating the findings of a thematic review on adult learning (*Promoting Adult Learning*, 2005) at the OECD. Kathrin holds a M.Sc. in history and political science from Munich University (Germany) and a Master’s degree in public administration from the London School of Economics and Political Science. Kathrin is of German nationality.

Viktória Kis is a Policy Analyst at the OECD Directorate for Education, where she works on ‘Learning for Jobs’ – OECD Reviews of Vocational Education and Training. She is responsible for several country reviews and for analytical work on the quality of VET. Prior to this project, she worked on the Thematic Review of Tertiary Education. Before joining the OECD as a consultant to the World Bank she worked on the evaluation of a school grant programme in the former Soviet Republic of Georgia. She also coordinated a meeting at Rimisp – Latin American Centre for Rural Development in Chile. She holds a Master’s degree in International Affairs from Sciences Po Paris and an M.Sc. in Educational Research Methodology from the University of Oxford. She is a Hungarian and Vietnamese national.

Paulo Santiago, a Portuguese national, is a Senior Analyst in the OECD Directorate for Education, where he has been since 2000. He is the project manager for the Thematic Review of Tertiary Education and has led reviews of tertiary education policy in several countries, including Mexico. The Review, which was conducted over the 2005-08 period in collaboration with 24 countries around the world, was recently completed with the publication of Tertiary Education for the Knowledge Society. Previously he assumed responsibility for a major cross-country review in the area of teacher policy. He holds a PhD in Economics from Northwestern University where he also lectured. With a background in the economics of education, he specialises in education policy analysis.

3. Programme of the review visit

Monday 22 September 2008, Mexico City

Meeting with representatives of the Upper Secondary Education Under Secretariat, Ministry of Public Education
Meeting with representative of *Mexicanos Primero*
Meeting with representatives of CONOCER

Tuesday 23 September 2008, Monterrey

Visit to VET school (CECATI)
Visit to VET school (CONALEP)
Meeting with employers
Meeting with local policy makers

Wednesday 24 September 2008, Chihuahua

Visit to a VET school
Meeting with representatives of a decentralised VET school
Meeting with State Director of Upper Secondary Education
Visit to a VET school (CECATI)

Thursday 25 September 2008, Mexico City

Meeting with expert from the Inter-American Development Bank
Meeting with representatives from various subsystems of the Upper Secondary Education Under secretariat, Ministry of Public Education
Meeting with employers

Friday 26 September 2008, Mexico City

Meeting with expert from the Inter-American Development Bank
Meeting with representative from the Ministry of Labour and Social Affairs
Meeting with representative from the Upper Secondary Education Under secretariat, Ministry of Public Education

Monday 29 September 2008, Guadalajara

Visit to a school (CECATI) in Guadalajara
Visit to a firm that offers practical training to VET students
Visit to a school (CONALEP) in Zapopan

Tuesday 30 September 2008, Mexico City

Meeting with academic expert (*Universidad Iberoamericana*)
Visit to a school (DGETI)

Wednesday 1 October 2008, Mexico City

Visit to the “Chrysler Project” (collaboration between a firm and SEP)
Meeting with representative of *Canacintra* (National Chamber of Transformation Industries), CONALEP representatives and employers
Meeting with representative of an industrial trade union

Thursday 2 October 2008, Mexico City

Meeting with the employer bodies (*Consejo Coordinador Empresarial, Coparmex*)
Meeting with representatives of the Upper Secondary Education Under secretariat, Ministry of Public Education and CONOCER

Annex B

International and National Statistics

Table B.1: Enrolment rates, by age

Full-time and part-time students in public and private institutions (2008)

	Ending age of compulsory education	Number of years at which over 90% of the population are enrolled	Age range at which over 90% of the population are enrolled	Students aged		
				5 to 14 as a percentage of the population aged 5 to 14	15 to 19 as a percentage of the population aged 15 to 19	20 to 29 as a percentage of the population aged 20 to 29
Australia	15	12	5 - 16	99.6	82.7	33.2
Austria	15	13	5 - 17	98.1	82.0	20.0
Belgium ¹	18	16	3 - 18	99.4	95.5	29.2
Canada ²	16-18	m	m	m	80.2	26.0
Czech Republic	15	13	5 - 17	99.9	89.9	20.2
Denmark	16	13	3 - 16	97.4	83.1	37.8
Finland	16	13	6 - 18	95.1	87.9	42.9
France ¹	16	15	3 - 17	101.0	85.9	20.1
Germany	18	14	4 - 17	98.8	88.6	28.5
Greece	14.5	13	6 - 19	98.1	92.8	32.0
Hungary	16	14	4 - 17	100.3	87.5	24.9
Iceland	16	14	3 - 16	98.8	84.6	37.2
Ireland	16	12	5 - 16	101.2	87.8	20.2
Italy ¹	15	13	3 - 15	100.7	81.5	20.2
Japan	15	14	4 - 17	100.7	m	m
Korea	14	12	6 - 17	94.9	85.9	27.6
Luxembourg ³	15	12	4 - 15	96.2	73.5	9.2
Mexico	15	9	5 - 13	100.9	48.8	10.9
Netherlands	18	13	5 - 17	99.6	88.7	26.9
New Zealand	16	12	4 - 15	101.0	74.4	29.4
Norway	16	14	4 - 17	98.8	86.3	30.0
Poland	16	13	6 - 18	94.5	92.6	31.0
Portugal	14	11	5 - 15	103.8	73.0	20.9
Slovak Republic	16	12	6 - 17	96.8	84.8	17.3
Spain ¹	16	14	3 - 16	101.0	80.2	21.8
Sweden	16	13	6 - 18	98.8	87.8	36.1
Switzerland	15	12	5 - 16	100.3	83.5	22.1
Turkey	14	6	7 - 12	82.9	45.2	11.3
United Kingdom	16	12	4 - 15	100.7	69.7	17.3
United States	17	11	6 - 16	98.0	78.4	23.1
OECD average	16	13		98.5	81.5	25.1
EU19 average	16	13		99.0	84.9	25.1

Table B.1: Enrolment rates, by age (continued)

Full-time and part-time students in public and private institutions (2008)

	Ending age of compulsory education	Number of years at which over 90% of the population are enrolled	Age range at which over 90% of the population are enrolled	Students aged		
				5 to 14 as a percentage of the population aged 5 to 14	15 to 19 as a percentage of the population aged 15 to 19	20 to 29 as a percentage of the population aged 20 to 29
Partner countries						
Brazil ²	14	10	7 - 16	93.1	79.6	21.2
Chile	18	10	7 - 16	91.2	72.2	2.5
Estonia	15	12	6 - 17	102.2	87.4	26.6
Israel ⁴	15	13	5 - 17	95.8	65.0	20.6
Russian Federation ²	15	9	7 - 15	81.5	73.5	18.7
Slovenia	14	12	6 - 17	96.4	91.3	32.7

Note: Ending age of compulsory education is the age at which compulsory schooling ends. For example, an ending age of 18 indicates that all students under 18 are legally obliged to participate in education. Mismatches between the coverage of the population data and the student/graduate data mean that the participation/graduation rates may be underestimated for countries such as Luxembourg that are net exporters of students and may be overestimated for those that are net importers.

1. The rates “4 and under as a percentage of the population of 3-to-4-year-olds” are overestimated. A significant number of students are younger than 3 years old. The net rates between 3 and 5 are around 100%.

2. Year of reference 2005.

3. Underestimated because many resident students go to school in the neighbourhood countries.

4. Excludes programmes for children younger than 3 years old, resulting in substantially lower figures than in previous years.

Source: OECD (2008a).

Table B.2: Performance of 15-year-olds in science, reading and mathematics

Mean score and variation in student performance on PISA science, reading and mathematics scale (2006)

Country	Science scale				Reading scale				Mathematics scale			
	Mean score		Standard deviation		Mean score		Standard deviation		Mean score		Standard deviation	
	Mean	S.E.	S.D.	S.E.	Mean	S.E.	S.D.	S.E.	Mean	S.E.	S.D.	S.E.
Australia	527	(2.3)	100	(1.0)	513	(2.1)	94	(1.0)	520	(2.2)	88	(1.1)
Austria	511	(3.9)	98	(2.4)	490	(4.1)	108	(3.2)	505	(3.7)	98	(2.3)
Belgium	510	(2.5)	100	(2.0)	501	(3.0)	110	(2.8)	520	(3.0)	106	(3.3)
Canada	534	(2.0)	94	(1.1)	527	(2.4)	96	(1.4)	527	(2.0)	86	(1.1)
Czech Republic	513	(3.5)	98	(2.0)	483	(4.2)	111	(2.9)	510	(3.6)	103	(2.1)
Denmark	496	(3.1)	93	(1.4)	494	(3.2)	89	(1.6)	513	(2.6)	85	(1.5)
Finland	563	(2.0)	86	(1.0)	547	(2.1)	81	(1.1)	548	(2.3)	81	(1.0)
France	495	(3.4)	102	(2.1)	488	(4.1)	104	(2.8)	496	(3.2)	96	(2.0)
Germany	516	(3.8)	100	(2.0)	495	(4.4)	112	(2.7)	504	(3.9)	99	(2.6)
Greece	473	(3.2)	92	(2.0)	460	(4.0)	103	(2.9)	459	(3.0)	92	(2.4)
Hungary	504	(2.7)	88	(1.6)	482	(3.3)	94	(2.4)	491	(2.9)	91	(2.0)
Iceland	491	(1.6)	97	(1.2)	484	(1.9)	97	(1.4)	506	(1.8)	88	(1.1)
Ireland	508	(3.2)	94	(1.5)	517	(3.5)	92	(1.9)	501	(2.8)	82	(1.5)
Israel	454	(3.7)	111	(2.0)	439	(4.6)	119	(2.8)	442	(4.3)	107	(3.3)
Italy	475	(2.0)	96	(1.3)	469	(2.4)	109	(1.8)	462	(2.3)	96	(1.7)
Japan	531	(3.4)	100	(2.0)	498	(3.6)	102	(2.4)	523	(3.3)	91	(2.1)
Korea	522	(3.4)	90	(2.4)	556	(3.8)	88	(2.7)	547	(3.8)	93	(3.1)
Luxembourg	486	(1.1)	97	(0.9)	479	(1.3)	100	(1.1)	490	(1.1)	93	(1.0)
Mexico	410	(2.7)	81	(1.5)	410	(3.1)	96	(2.3)	406	(2.9)	85	(2.2)
Netherlands	525	(2.7)	96	(1.6)	507	(2.9)	97	(2.5)	531	(2.6)	89	(2.2)
New Zealand	530	(2.7)	107	(1.4)	521	(3.0)	105	(1.6)	522	(2.4)	93	(1.2)
Norway	487	(3.1)	96	(2.0)	484	(3.2)	105	(1.9)	490	(2.6)	92	(1.4)
Poland	498	(2.3)	90	(1.1)	508	(2.8)	100	(1.5)	495	(2.4)	87	(1.2)
Portugal	474	(3.0)	89	(1.7)	472	(3.6)	99	(2.3)	466	(3.1)	91	(2.0)
Slovak Republic	488	(2.6)	93	(1.8)	466	(3.1)	105	(2.5)	492	(2.8)	95	(2.5)
Spain	488	(2.6)	91	(1.0)	461	(2.2)	89	(1.2)	480	(2.3)	89	(1.1)
Sweden	503	(2.4)	94	(1.4)	507	(3.4)	98	(1.8)	502	(2.4)	90	(1.4)
Switzerland	512	(3.2)	99	(1.7)	499	(3.1)	94	(1.8)	530	(3.2)	97	(1.6)
Turkey	424	(3.8)	83	(3.2)	447	(4.2)	93	(2.8)	424	(4.9)	93	(4.3)
United Kingdom	515	(2.3)	107	(1.5)	495	(2.3)	102	(1.7)	495	(2.1)	89	(1.3)
United States	489	(4.2)	106	(1.7)	m	m	m	m	474	(4.0)	90	(1.9)
OECD total	491	(1.2)	104	(0.6)	484	(1.0)	107	(0.7)	484	(1.2)	98	(0.7)
OECD average	500	(0.5)	95	(0.3)	492	(0.6)	99	(0.4)	498	(0.5)	92	(0.4)

Source: PISA 2006 dataset.

Table B.3: Enrolment in upper secondary VET in Mexico by school maintainer

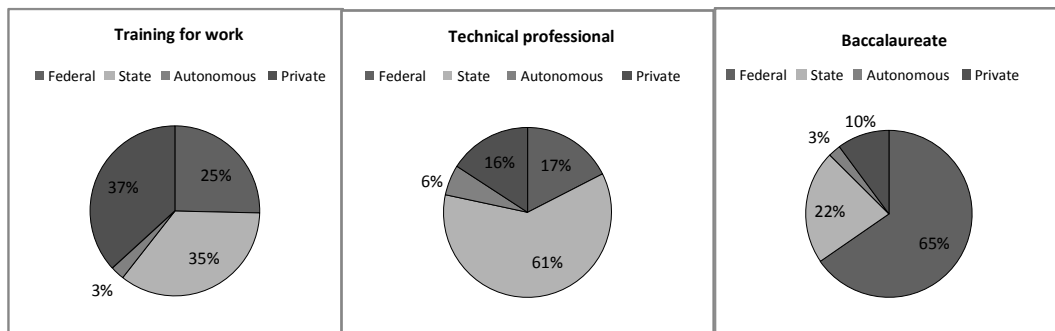
2007/08, thousands

	Training for work	Technical professional	Technological baccalaureate
Federal	346.7	62.6	750.5
State	481.3	218.4	253.4
Autonomous	36.2	21.0	27.453
Private	502.1	56.7	116.5

Source: SEP (2006).

Figure B.1: Enrolment in upper secondary VET in Mexico by school maintainer (percentages)

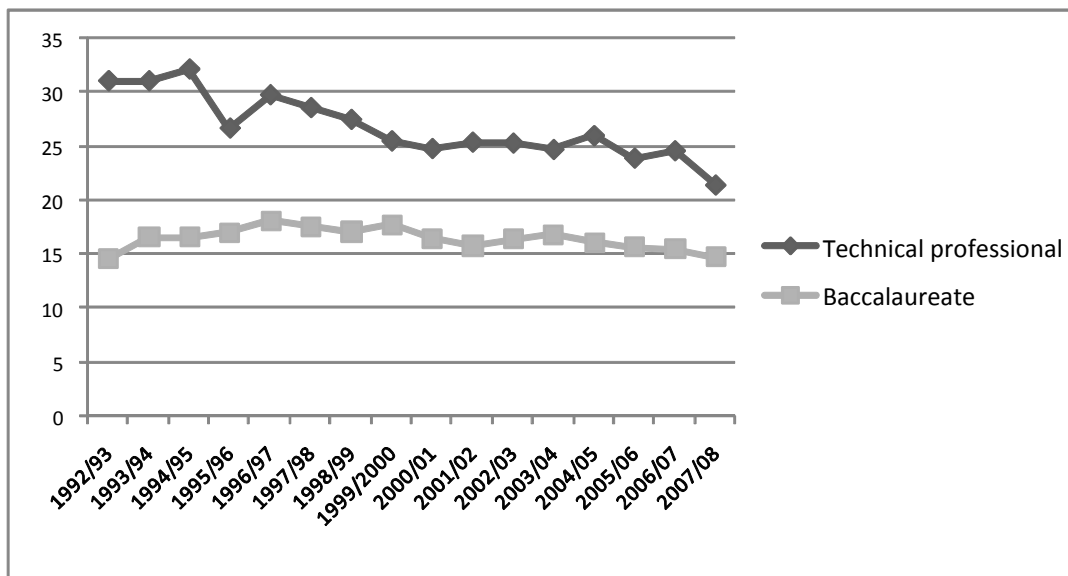
2007/08



Source: SEP (2009).

Figure B.2: Drop-out rates

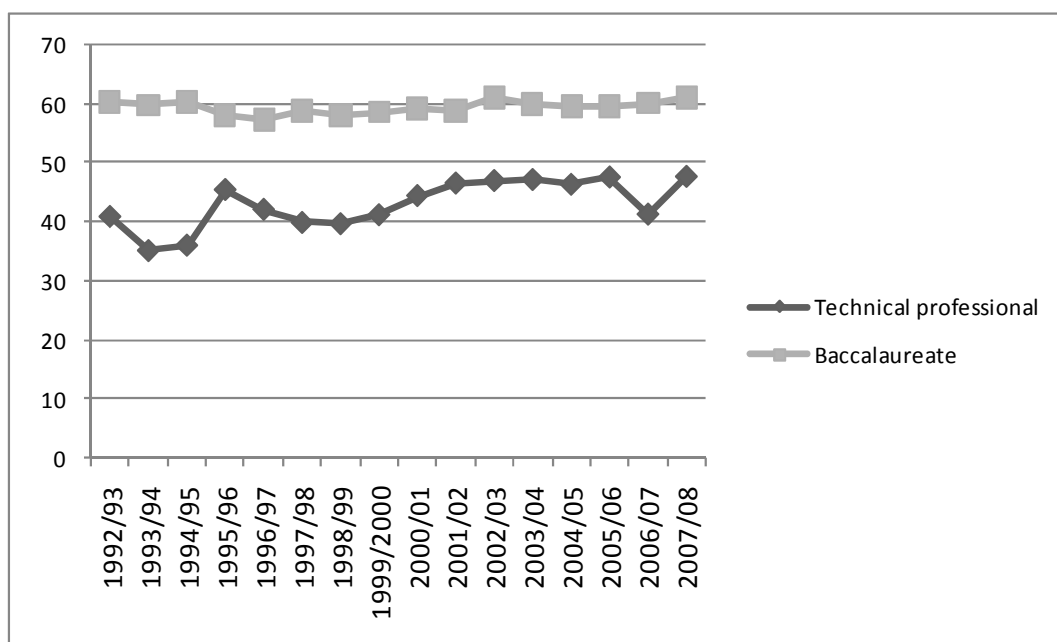
1992-2008



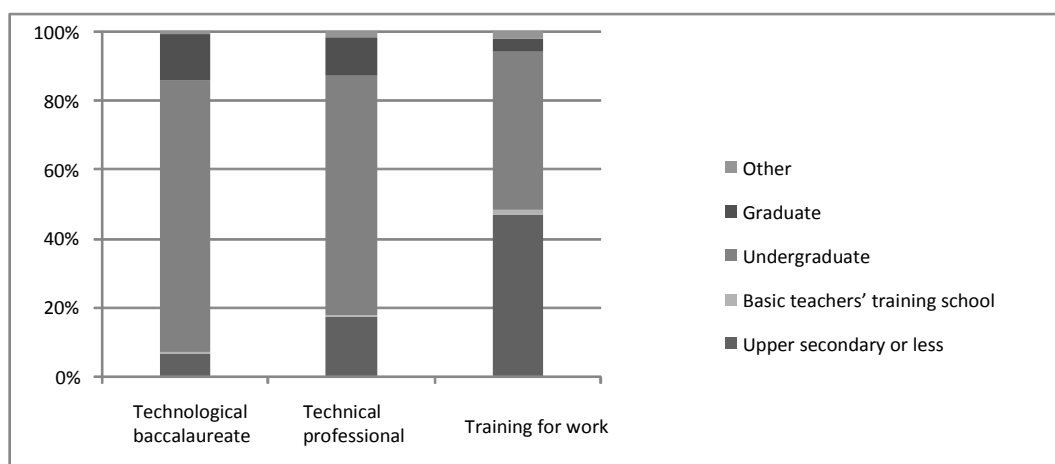
Source: SEP (2009).

Figure B.3: Terminal efficiency

1992-2008

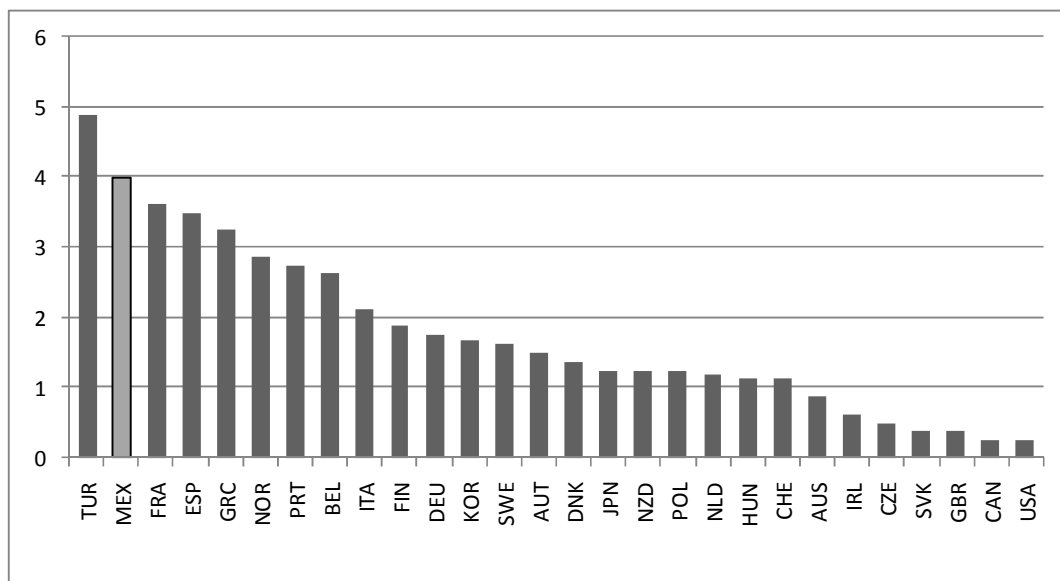


Source: SEP (2009).

Figure B.4: Educational level of teachers in upper secondary VET (2007/08, 2006/07)

Data refer to the beginning of 2007/08 for teachers in the Technological Baccaureate, and “Technical professional”, and the end of 2006/07 for “Training for work”. Data include teachers of all the subjects from public and private schools.

Source: SEP (2008b).

Figure B.5: Regulations on temporary forms of employment

Source: OECD, *ELS* database.

Annex C

QualiCarte

Company/institution

Date

Name of supervisor

Assessment

-- does not meet criteria - partially meets criteria + meets criteria (there is room for improvement) ++ meets criteria well

Quality indicators	Assessment				Notes
	--	-	+	++	
Hiring: The receiving company/institution establishes the conditions of hiring.					
1. The criteria defining the expected profile of the apprentice are announced.					
2. Interviews are conducted with the applicants, in addition to other recruitment tools.					
3. “Taster apprenticeships” (short periods allowing potential apprentices to learn about the job) are organised.					
4. The results of the application process are communicated clearly.					
5. Information is provided on working conditions.					
6. The terms of contract are explained to the apprentices.					
Starting the training: A special programme is prepared for the initial period spent in the company/institution.					
7. The persons responsible for the apprenticeship are designated.					
8. The apprentice receives a personal welcome.					
9. Information is provided on the activities of the company/institution and the relevant industrial field.					

10. The apprentices are informed about work, security, health and hygiene regulations.					
11. A workplace equipped with the necessary tools is available to the apprentice.					
12. The apprentices are informed about the importance of the training plan (methodological guide, apprenticeship plan etc.).					
13. There is a regular dialogue between the apprentice and supervisor during the probationary period. At the end of the probationary period a training report is written together with the apprentice.					

Training: The company/institution helps the apprentice acquire competences required in the labour market and takes the time to provide training and progressively transmit their knowledge and skills.					
14. The training of the apprentice provided by supervisors is embedded in the company/institution.					
15. The training plan and other tools to support learning are used in an interactive way.					
16. The supervisor defines clear and measurable objectives.					
17. The different working methods and procedures are planned, demonstrated and explained.					
18. Tasks carried out by the apprentice are subjected to qualitative and quantitative control.					
19. The apprentice progressively becomes involved in the company's activities, with increasing autonomy.					
20. The performance of the apprentice in the VET school and industry courses is taken into account and discussed.					
21. The supervisor supports each apprentice according to his/her potential and needs.					
22. The supervisor prepares a training report at the end of each semester, according to relevant regulations ("ordinances").					
23. The supervisor takes into account the feedback received from the apprentice as much as possible.					

Responsibility of the training company/institution: The company/institution is engaged and collaborates with all those involved in the training.					
24. If the apprentice has difficulties, the supervisor contacts his/her parents, school or relevant VET office.					
25. If there is a risk of breaking off the apprenticeship contract, the training company/institution immediately informs the relevant authorities.					
26. The departure of the apprentice is in order.					
27. The supervisor continuously updates his/her skills needed to support apprentices.					
28. The company/institution provides the supervisor with the necessary time, financial and material resources.					

Objectives	Deadline

The supervisor (name and signature)

For the company/institution (name and signature)

Learning for Jobs

OECD Reviews of Vocational Education and Training

MEXICO

For OECD member countries, high-level workplace skills are considered a key means of supporting economic growth. Systems of vocational education and training (VET) are now under intensive scrutiny to determine if they can deliver the skills required. *Learning for Jobs* is an OECD study of vocational education and training designed to help countries make their VET systems more responsive to labour market needs. It will expand the evidence base, identify policy options and develop tools to appraise VET policy initiatives.

VET in Mexico plays an important social role and numerous recent initiatives illustrate the country's will to address the challenges faced by its VET system and integrate VET into a broad framework of lifelong learning. At the same time, the Mexican VET system faces some challenges, including ineffective coordination and coherence within the VET system, weak linkages between employers and VET, and insufficient pedagogical preparation of teachers and trainers. Among the review's recommendations:

- Integrate consultation between employers and upper secondary VET within a single coherent set of consultative arrangements.
- As a long-term strategic goal, create quality standards for workplace training and a traineeship contract to expand workplace training and improve its quality.
- Ensure that VET teachers and trainers have adequate pedagogical preparation and up-to-date vocational skills.
- Explore options to develop a national vocational qualifications framework.
- Improve career guidance, VET data and analysis.

OECD is conducting country VET policy reviews in Australia, Austria, Belgium (Flanders), the Czech Republic, Germany, Hungary, Ireland, Korea, Mexico, Norway, Sweden, Switzerland, the United Kingdom (England and Wales), and the United States (South Carolina and Texas). The initial report of *Learning for Jobs* will be available on the OECD website in 2009. The final report on the study's findings will be published in 2010.

Background information and documents are available at www.oecd.org/edu/learningforjobs.