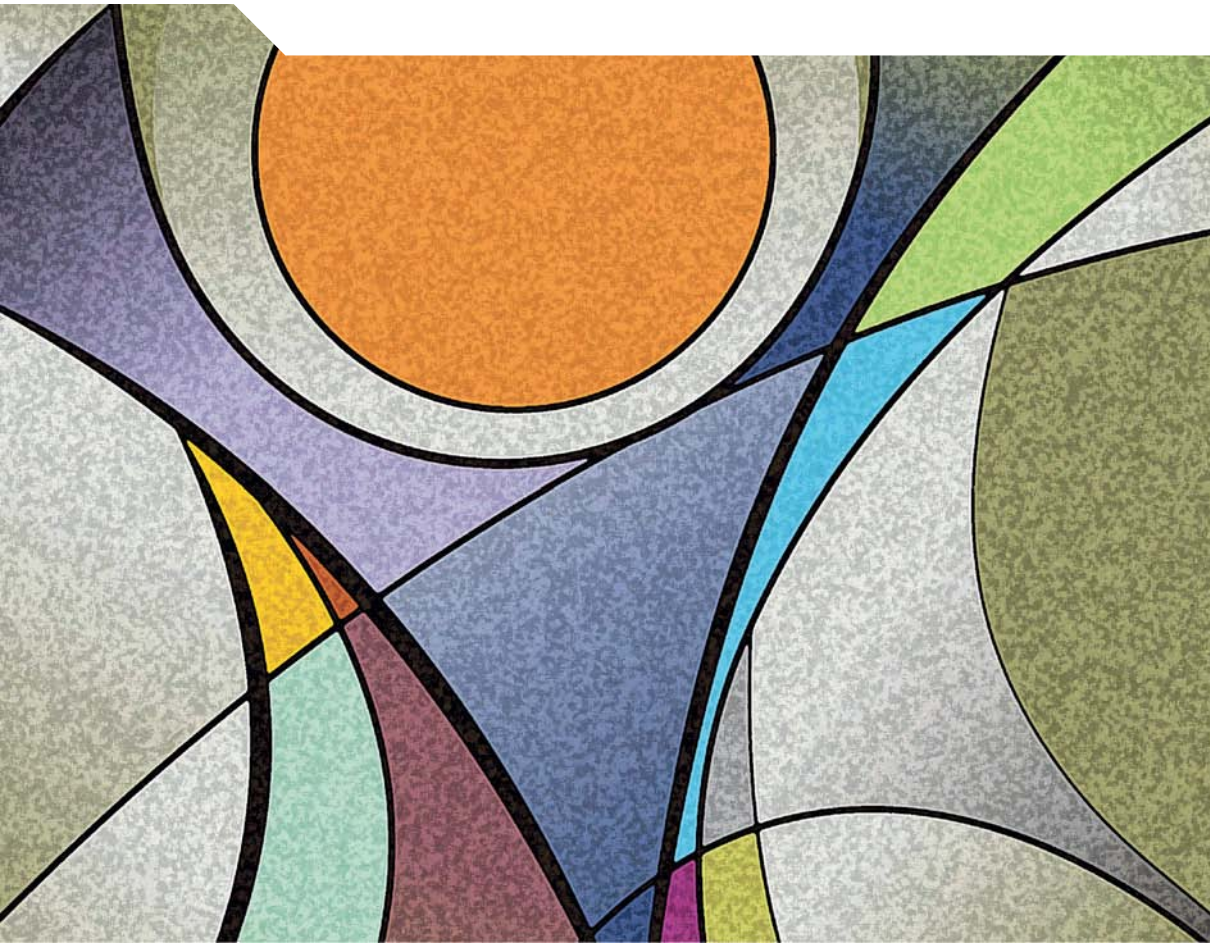
Higher Education in Regional and City Development

Post-Secondary Vocational Education and Training: Pathways and Partnerships

Edited by Jaana Puukka



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Higher Education in Regional and City Development

Post-Secondary Vocational Education and Training

PATHWAYS AND PARTNERSHIPS

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Please cite this publication as:
OECD (2012), *Post-Secondary Vocational Education and Training: Pathways and Partnerships*, Higher Education in Regional and City Development, OECD Publishing.
http://dx.doi.org/10.1787/9789264097551-en

ISBN 978-92-64-09755-1 (PDF)

Series: Higher Education in Regional and City Development
ISSN 2218-3140 (online)

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Foreword

Rapid growth of tertiary education is partly due to the expansion of post-secondary vocational education and training (PSV). A well developed PSV system and links between the different components of the tertiary education sector, universities and PSV institutions contribute to a well functioning human capital and skills development system, and improve the training and employment opportunities of the workforce.

This report is part of the OECD work on Higher Education in Cities and Regions. In the course of the reviews of more than 30 cities and regions, this work has identified PSV-university linkages or lack of them as one of the common issues that impact the engagement of tertiary education in socio-economic development across countries. This report draws on three OECD reviews: the reviews of vocational education and training at secondary level (mainly "Learning for Jobs"), the review of PSV ("Skills beyond School") and the reviews of Higher Education in Regional and City Development.

This report is structured into three parts: PART I provides an overview of PSV. Chapter 1 explains what is meant by PSV and how PSV relates to other components of the education system. It highlights examples of pathways, transition and collaboration in selected countries. Chapter 2 looks at the labour market context and globalisation trends in relation to PSV. It identifies challenges faced by PSV as a result of the changing labour market requirements and globalisation and discusses ways of addressing them. Chapter 3 provides a critical analysis of the de-differentiation trends in tertiary education, highlighting the collaboration between vocational education and universities (Chapter 3).

PART II outlines post-secondary vocational education in Australia, Scotland, Norway, Italy and Spain, and discusses the issues of transition, participation and collaboration in tertiary education. Chapter 4 analyses the impact of Australia's dual sector universities on transition from vocational to higher education. Chapter 5 highlights the college-university links in Scotland and their impact on participation in higher education, focusing on short cycle higher education. Chapter 6 analyses the divide and integration of the three sub-sectors of the Norwegian tertiary education system,

analysing the effects of changes in the national education policy. Chapter 7 provides an overview of the emerging "non-university higher education" system in Italy which is closely aligned with regional development goals.

Chapter 8 highlights vocational education and training in Spain with focus on higher vocational education and training, setting out key statistical education and labour market indicators comparing Spain with other OECD countries. It provides an assessment of the strengths of the Spanish system and identifies policy challenges which need to be addressed in the future.

Acknowledgements

This report was compiled and edited by Jaana PUUKKA (OECD). Key contributors within the OECD were Simon FIELD and Małgorzata KUCZERA, both from the Education Directorate. International experts who contributed to the report were: Jim GALLACHER (Glasgow Caledonian University), Luca DORDIT (IPRASE Trentino), Robert INGRAM (Glasgow Caledonian University), Gavin MOODIE (Royal Melbourne Institute of Technology, RMIT, Australia), Romulo PINHEIRO (Centre for Advanced Studies in Regional Innovation Strategies), Arduino SALATIN (IPRASE Trentino) and Michael YOUNG (University of London). Bonifacio AGAPIN provided assistance in the final editing phase and Louise Binns and Rachel Linden supervised the publication process.

The OECD would like to thank the Euskampus Fundazioa whose generous support made this report possible, and the interest and support of the Spanish Ministry of Education and Science. Our thanks go also to the University of the Basque Country that provided generous support in the organisation of an international event “Collaboration between Vocational and University Education: Building Partnerships for Regional Development" in Donostia/San Sebastián in October 2011. Some of the presentations in this seminar, that examined challenges and opportunities of collaboration between vocational tertiary and university education, are highlighted in this report.

Table of Contents

Executive Summary **.....11**

Part I. Post-secondary vocational education and training; major trends and challenges.....15

Chapter 1. Overview of post-secondary vocational education and training17

What is post-secondary vocational education and training? 18
Two key roles: initial training or upskilling.....19
Entry to and graduation from post-secondary vocational education 23
PSV in educational system: position, transition and collaboration 26
Conclusions.....32
References.....34

Chapter 2. Delivering high level training in a changing world – Post-secondary vocational education and training in context.....37

Changing labour market requirements 38
The impact of globalisation.....48
Policy implications.....53
Conclusions.....61
References.....64

Chapter 3. Differentiation, de-differentiation and collaboration between vocational education and universities.....67

Introduction.....68
A major historical trend: social differentiation 68
De-differentiation.....71
Differentiation, de-differentiation and collaboration 75
Conclusions.....77
References.....78

Part II. Post-secondary vocational education and training: country case studies 81

Chapter 4. Australia's dual sector universities and transfer from vocational to higher education.....83

Organisation of Australian and vocational and higher education.....84
Enrolment figures.....85
Dual sector universities.....88
Transfer from vocational to higher education.....90
Conclusions.....91
References.....93

Chapter 5. College-university links and impact on participation in higher education in Scotland.....95

The role of colleges and universities in Scottish higher education.....96
Higher National Certificate (HNC) and Higher National Diploma (HND).....97
How do students use these qualifications?.....98
Policy initiatives to enhance links between colleges and universities.....103
Conclusions.....105
References.....107

Chapter 6. Bridging the divide in Norway's tertiary education: the impacts of the policy mix.....109

Introduction.....110
System level dynamics and characteristics.....110
Links between the vocational school sector and the college sector.....112
The integration between the college and the university sub-sectors.....114
Policy implications and conclusions.....116
References.....120

Chapter 7. Non-university higher education and regional development in Italy 125

Introduction.....126
Development of non-university higher education in Italy.....127
Good practices in developing non-university HE at local level to support regional development.....131
The impact of good practices on regional development.....140
References.....142

Chapter 8. Vocational education and training in Spain.....145

A snapshot of the vocational education and training system.....146
Comparing Spain with other countries: key indicators.....149
Previous OECD analysis and recommendations.....161
A brief assessment of the Spanish vocational education and training system165
Summary assessment of Spain: strengths and challenges of the system.....170
References.....173

Annex A. Contributors **177**

Annex B. OECD Seminar "*Collaboration between Vocational and University Education: Building Partnerships for Regional Development*" **180**

Tables

Table 1.1. Partnership models between US community colleges and universities 28
Table 1.2. Pathways of access to universities in Catalonia 2004-2008 29
Table 2.1. Categories of workplace tasks 40
Table 4.1. International standard classification of education level and Australian sectors and qualifications 84
Table 4.2. Equivalent full-time students by sector and level of programme, Australia, 2009 86
Table 4.3. Equivalent full-time students by sector and broad field of education, Australia, 2009 87
Table 4.4. Participation rates (%) by sector and age group, Australia, 2010 88
Table 4.5. Domestic students admitted to a bachelor programme on the basis of a vocational education and training (VET) programme, Australia, 2008 91
Table 5.1. Destinations of full-time and part-time students 99
Table 5.2. Destinations of HN completers by subject area of HN programme 100
Table 5.3. Relationship between level of HN study and level of entry to degree programmes 101
Table 5.4. Percentage of HCN/D students entering different university sectors and year of entry 102
Table 5.5. Scottish domiciled students' participation in colleges and HEIs be level and deprivation quintile, 2009-10 103
Table 7.1. Proportion (%) of population aged 16 to 65 at each skill level in different countries, 2003 129
Table 7.2. Partners in Technological Poli Formativi - Assombarda 132
Table 7.3. Partners of the foundation of ITS Malignani 136
Table 8.1. The Spanish labour market 153

Figures

Figure 1.1. Entry rates to post-secondary education 2009 24
Figure 1.2. Graduation rates at post-secondary level by type of education (2009) 25
Figure 1.3. OECD average distribution of students in different fields of studies, by type of programme, 2009 26

Figure 2.1. Earnings of employees 25-34 years-old with different education attainment 2008 or latest year available 39
Figure 2.2. Average education level in European countries by occupation 2004 41
Figure 2.3. Distribution of workers by type of education across occupations43
Figure 2.4. Change in the share of employment by education in elementary and all occupations, EU-27..... 46
Figure 2.5. Distribution of foreign students, by type of post-secondary programme..... 50
Figure 7.1. Percentage of population that has attained tertiary education by age group 2009 127
Figure 7.2. Structure of Poli formativi Assindustria Lombardia 134
Figure 7.3. Structure of ITS Malignani 137
Figure 7.4. Structure of Edmund Mach Foundation..... 138
Figure 8.1. Total population aged 15-24 in 2012 compared to projected population in 2022..... 150
Figure 8.2. Participation in formal and/or non-formal education, by educational attainment..... 152
Figure 8.3. Annual expenditure by educational institutions per student for all services relative to GDP per capita (2008)..... 153
Figure 8.4. Incidence of temporary employment 154
Figure 8.5. Strictness of employment protection..... 155
Figure 8.6. Percentage of technicians and associate professionals in the labour force..... 156
Figure 8.7. Percentage of professionals in the labour force 157
Figure 8.8. Distribution of workers (25-34 year-olds) by type of education across occupations 158

Boxes

Box 1.1. Skills beyond School: the OECD review of post-secondary vocational education and training..... 19
Box 1.2. Diverse systems and institutional missions..... 21
Box 1.3. The National Centre for Dairy Education in Australia 22
Box 1.4. Multi-sectoral institutions in the State of Victoria, Australia 31

Executive Summary

In recent years, labour market requirements have changed and jobs requiring high skills have expanded. In the globalised economy, more workers in all occupations have higher level of qualifications. An increasing number of jobs require combination of sector specific skills and more general competencies that allow employees to interact effectively with others, solve problems and develop new skills. As a result the educational attainment levels in many OECD countries have increased.

Rapid growth of tertiary education is partly due to the expansion of post-secondary vocational education and training (PSV). PSV programmes are typically organised between upper secondary and longer more academic post-secondary programmes. PSV institutions are absent from the global rankings of universities which are research-intensive, attract the highest achieving students and staff, and provide access to the most prestigious jobs. Despite the fact that PSV is often seen as a second choice and less attractive than university education, PSV is booming in many countries. Strong connections with the labour market, close collaboration with employers and well functioning pathways in the education system are reasons for this success.

PSV institutions have grown in number and size to meet the rising demand for tertiary education across OECD countries. They address the demand for higher professional and technical skills from employers and the demand for high level education from groups that traditionally do not participate in post-secondary education. To respond to these demands PSV has been encouraged to develop strong links with local business and enterprises, to cover remote areas and to cater for less affluent students.

PSV programmes have two key basic roles, initial training and upskilling that have implications for the PSV selection criteria, inclusion of workplace training, forms of PSV provision and sometimes the funding of the PSV programmes. Countries vest their PSV systems with many different missions: In some countries PSV prepares young people for specific occupations from the outset, in others it is more commonly used for upgrading skills of the workforce and retraining, in some others it targets

two objectives simultaneously. In some countries the division between academic/research-oriented programmes and the PSV programmes has become increasingly blurred.

Well functioning pathways and collaboration between PSV and longer academic post-secondary programmes are important prerequisites for transition between different levels of education, and improving overall progression in education. Clear rules and conditions, and proximity of education providers facilitate this transition. Smooth articulation requires co-ordination and collaboration among education institutions that can take the form of joint planning, joint admission programmes and structured communication and collaboration between institutions.

In the last 30 years a major trend has been to "de-differentiate" work and education with the pursuit of more flexible forms of work and generic skills, and the blurring of the boundaries between educational institutions. While de-differentiation is pursued to overcome the negative consequences of specialisation and growing social inequalities, it may undermine the specialisation that is important for innovation and growth in the "knowledge economies". As a result, policy makers are increasingly calling for greater collaboration between vocational education and universities. This collaboration should be seen in the historical and social context in which PSV and more academic institutions developed.

In some countries, there is a growing vertical integration of tertiary education where institutions are offering programmes that feed into or take graduates from their initial and core programmes. In the US, Canada, UK and New Zealand some institutions were established as vocational or higher education institutions but more recently started offering programmes from the other sector. Conversely, some universities in Australia and the UK have launched foundation programmes which are the equivalent of senior secondary education and short cycle pathways programmes and prepare students for admission to their core baccalaureate programmes. Some universities offer preparatory and pathways programmes in their own right while others offer these programmes through subsidiaries such as university colleges.

In Australia, the US and Canada, the transition within tertiary education is usually possible, depending on courses covered by students during previous stages of education and the clarity and content of transition rules and conditions at the state level. In the State of Florida, transition is supported by a state-wide articulation agreement and a common course numbering system.

In Australia, learners can in principle directly enter university undergraduate programmes via state government-owned Technical and

Further Education (TAFE) institutions, but there is great diversity across universities to what extent transition actually takes place. While "dual sector" universities (they provide both PSV and university level programmes) support the transition from vocational to academic tertiary education more successfully than other universities, pathways are strongest when the sending and receiving institutions are close academically and geographically. Dual sector institutions also address the needs of the communities which are big enough to sustain one integrated tertiary institution but not big enough for a separate vocational institution and university.

In Scotland, the short cycle programmes have widened access to tertiary education, but the extent to which they are recognised for progression with credit to bachelor degree programmes differs across the Scottish university system, particularly access to the more prestigious institutions remains limited. The Scottish Funding Council for Further and Higher Education and the Scottish Government have facilitated transition between different post-secondary education qualifications and improved the linkages between colleges and universities by establishing the Scottish Credit and Qualifications Framework, "articulation hubs" and legislative actions.

Norway has maintained the demarcations across the binary system of higher education and facilitated the co-ordination between the university and college sectors, which has reduced structural and cultural differences of the two sectors, contributing to increasing homogeneity. This process has led to tension across institutions but also to a closer relationship among the various sectors of the tertiary education system, facilitating mergers.

In Spain, the reform of VET system has been pursued systematically in recent years. Recent reforms have improved permeability in the VET system and access to post secondary education. The VET system as a whole, and the pathways through it, are generally clear.

In Italy, the emerging non-university higher education system – *Poli formativi* and ITS (Higher Technical Educational and Training) – is designed to meet the needs of the labour market and local communities. Best practices align skills development with regional development needs and are based on active role of public authorities and education institutions, enterprises that build networks and an SME-based economy that can absorb skilled graduates. Experiences from Lombardy, Friuli-Venezia Giulia and the Autonomous Province of Trento suggest that success in the non-university higher education is associated to continuity in policy goals at the regional level.

To improve the collaboration between PSV and longer academic tertiary education programmes, to improve the transition between them and to enhance labour market relevance of PSV:

- ensure that tertiary education effectively integrates PSV and gives it a distinct role; ensure balanced expansion of tertiary education enrolment with academically oriented longer tertiary education programmes and vocational programmes, in particular first-cycle professional programmes and short-cycle vocational programmes;
- develop clear pathways between PSV and academic tertiary programmes:
- balance the mix of programmes and skills between employer needs and student preferences through:
  - transparent and reliable information on labour market outcomes and enhanced career guidance and financial incentives to students; flexible, work-oriented study options with adequate support for low-income learners/workers;
  - involvement of labour market actors in the governance structures and the development of programme design, student assessment, approval of new or existing programmes;
  - partnerships between institutions and the business sector;
  - autonomy for institutions to flexibly respond to labour market needs.
- promote the labour market links and relevance of PSV through the mix of programmes and the skills provided in each programme, by balancing the company specific skills with transferable sector-related skills and general skills.

Part I.

Post-secondary vocational education and training; major trends and challenges

This part sets the scene for understanding the major trends in post-secondary vocational education and training (PSV). It explains what PSV stands for and how it relates to other components of the education systems. It highlights examples of transition, pathways and collaboration across tertiary education systems. It explores the consequences of collaboration between PSV and universities in the broad historical and social context and outlines the main features of the Spanish vocational education and training system (VET) with focus on PSV and the policy challenges

Chapter 1.

Overview of post-secondary vocational education and training

Małgorzata Kuczera and Jaana Puukka, OECD

This chapter provides a definition of post-secondary vocational education and training (PSV) and discusses its key roles: initial training and upskilling. It provides comparable international data on entry to, and graduation rates in PSV and university education as well as information about distribution of students in different field of studies across selected OECD countries. It explains how PSV relates to other components of the education system. Finally, it discusses transition between PSV and university education, pathways and cross-sectoral collaboration in tertiary education by highlighting examples from OECD countries.

What is post-secondary vocational education and training?

This section offers a definition of post-secondary vocational education and training (PSV) linked to its role in providing occupation specific training. Institutions whose main role is to provide PSV may therefore be characterised as PSV institutions.

Defining characteristics

PSV institutions have grown in number and size to meet the rising demand for tertiary education across OECD countries (Grubb, 2003). Their aim is to fill a gap in the education market flowing from the increasing demand for higher professional and technical skills from employers, and rising demand for high level education from groups that traditionally did not participate in post-secondary education. To respond to these new challenges PSV has been encouraged to develop strong links with business and enterprises, to cover remote areas and to cater for less affluent students.

The International Standard Classification of Education (ISCED) distinguishes tertiary programmes with a strong academic and theoretical foundation (ISCED 5A) from tertiary programmes that are more focused on specific occupational skills (ISCED 5B) and hence associated with PSV (OECD, 2004). While ISCED allows a comparison of education systems and their outcomes across countries, caution should be taken due to the high degree of diversity of institutions, programme lengths, fields and modes of study duration, content, selection criteria and awarded qualifications.[1]

On the basis of the objectives and outcomes that determine the vocational status, PSV institutions may be defined as those institutions whose main role is to provide PSV programmes, although they may also provide other education and training programmes.[2] Post-secondary programmes that aim to prepare people for careers in higher level technical, professional and managerial positions through the provision of job-specific skills may be regarded as vocational. Alongside job-specific training nearly all PSV programmes provide students with generic skills and theoretical vocational knowledge that are part of professional preparation; in some PSV programmes these elements can be substantial.[3]

Post-secondary programmes can be categorised by programme duration, distinguishing between longer and more academic programmes, often provided at tertiary education institutions which also undertake research, and shorter programmes that prepare strictly for jobs and are delivered by

institutions less likely to undertake research and more likely to fall into the category of PSV. A recent OECD work has adopted a pragmatic definition of PSV (See Box 1.1).

Box 1.1. Skills beyond School: the OECD review of post-secondary vocational education and training

Countries increasingly look beyond secondary school to more advanced qualifications to provide the skills needed in many of the fastest growing technical and professional jobs in OECD economies. The OECD review, *Skills beyond School*, is addressing the range of policy questions arising, including funding and governance, matching supply and demand, quality assurance and equity and access.

The review builds on the lessons of the previous OECD review of vocational education and training *Learning for Jobs*, which examined policy through 17 country reviews and a comparative report. The review also forms part of the horizontal OECD Skills Strategy. Full country policy reviews have been conducted in Austria, Denmark, Egypt, Germany, Korea, Switzerland, the United Kingdom, and the United States. Shorter exercises are undertaken in Belgium (Flanders), Canada, Iceland, Israel, Romania, Spain and Sweden. Background reports have been prepared by France, Hungary and Mexico. The review will yield a number of published country reviews and working papers and will conclude with a comparative report in 2013.

Skills beyond School review has adopted a pragmatic definition of PSV programmes as those that prepare for direct entry to the labour market in a specific profession, are of one year or more in length (full-time equivalent), are provided beyond upper secondary level (ISCED 4, 5), and lead to recognised qualifications. Programmes above bachelor degree (or equivalent) level are excluded. The duration of PSV would therefore typically range from 1 to 4 years, depending on the country.

Source : www.oecd.org/edu/vet

Two key roles: initial training or upskilling

This section discusses the two key roles of PSV: preparing individuals for entry to professions and seeking to upgrade the skills of the current workforce. It highlights how this distinction impacts the selection criteria, inclusion of workplace training, forms of provision and sometimes the funding of the programmes. The distinction is illustrated with country examples.

PSV programmes have basically two key roles: provision of initial training or provision of upskilling opportunities. PSV programmes may therefore provide job-specific skills either to individuals who lack relevant occupational knowledge and skills, or to those who already have relevant job experience and skills but want to upgrade them further. The first category includes young people who have not yet entered the labour market but also adults already in the workforce who want to make a sideway shift in their careers. There is also evidence of university graduates continuing their studies in PSV to acquire more relevant skills set.

The distinction into initial training and upskilling has implications for the selection criteria, inclusion of workplace training, forms of provision and sometimes the funding of the programmes:

- Selection criteria: Relevant work experience is usually required in programmes that aim to upgrade the skills of participants but not in those that prepare for specific professions from the outset.

- Work place training: The function of the work place training depends on the role of the programme. Programmes catering to those with limited relevant professional experience are more likely to provide work place training as an integrated part of programme studies because it is seen as essential and does not duplicate existing work experience. OECD (2010d) offers strong arguments for the provision of good quality work place training. It is one of the most effective and efficient ways of providing some job specific skills and also facilitates recruitment and the transition from school to work. Similar arguments apply to the PSV level if participants do not have relevant work experience. Conversely, programmes aiming at skills upgrading have less need for workplace training as participants are expected to have relevant professional experience.

- Focus of provision: Programmes designed for working adults with or without relevant professional experience are usually provided in a flexible way, including part-time, evening and weekend courses, and modular and distance learning, to better fit the needs of the learners who often combine work and study and usually older and place-based. Programmes providing initial training to younger individuals with limited work experience are more likely to be offered as full-time programmes.

- Funding of the programmes: PSV for working adults often involves higher fees than full-time programmes for young adults with no or limited work experience. The cost is shifted to employers if they fund participation of their employees in PSV wholly or partly.

Diverse systems and institutional missions across countries

Countries vest their PSV systems with many different missions, as illustrated in Box 1.2. In some countries PSV prepares young people for specific occupations from the outset, in others it is more commonly used for upgrading skills of the workforce and retraining, in some others it targets two objectives simultaneously.

Box 1.2. Diverse systems and institutional missions

PSV in Spain is provided in "higher" VET programmes. Students are not required to have professional experience and are selected based on their academic performance. They pay no tuition fees. Workplace training is an obligatory part of the programme. This form of PSV is mainly designed for initial training to support entry to the labour market.

Switzerland has a diversified system of PSV. It includes professional education and training colleges, the federal professional education and training diploma, the advanced federal professional education and training diploma (ISCED 5B). In addition the universities of applied science (ISCED 5A) provide professional bachelor programmes. Depending on the sector, the main objective of the first three components is to allow people who are already in the labour market to build on their current knowledge and education and obtain high level skills within the specific sector or to prepare for a job from the outset (e.g. health sector). Relevant work experience is required upon entry in upskilling programmes. This part of the PSV is therefore not responsible for initial professional education and training and does not provide an option for individuals who wish to change their career. The cost to the students of participation in PSV is higher in upskilling programmes than in programmes provided at universities of applied science and other universities.

In Denmark, the PSV system meets two objectives; it provides initial training and upgrades the skills of those already being in skilled jobs. Professional academies providing 2 years diploma and university colleges providing professional bachelor degree programmes are the main elements of the landscape. The programmes are provided both in a regular and in a parallel system designed for adults. Regular PSV programmes provided in full-time mode and with no requirement for work experience are shadowed by a parallel system that requires relevant professional experience and is offered part-time. Workplace training is obligatory only in the regular sector. PSV studies, both in the regular and parallel system, can be pursued through discrete models which makes the provision more flexible. While education in the regular system is free adult learners pay tuition fees.

Box 1.2. Diverse systems and institutional missions (continued)

In the US, as well as in some other English speaking countries, there is no distinctive vocational (career and technical education in the US) path at upper secondary level. Vocational education and training is provided mainly at post-secondary level, with community colleges being the main provider. Alongside universities they offer a wide range of programmes which can be either academic or vocational, including 4 year degrees, 2 year associate degrees and a variety of shorter programmes. There is no clear distinction between programmes for individuals developing as opposed to upgrading skills. In fact, the vast majority of students in post-secondary programmes below bachelor degree work while studying, 90% working more than 20 hours a week (Levesque *et al*., 2008). But few students in programmes below bachelor degree held jobs that were related to their field of study. The relevance of work experience to the chosen field of study was higher among students in bachelor programmes than in shorter programmes. Work place training as an integrated part of the programme was rare. In the US, like in some other countries such as Korea and Canada, the vast majority of students in post-secondary education, including PSV, pay tuition fees.

Source: OECD: forthcoming

In Australia, government has supported more robust relationships between TAFE institutes and industry sectors that need both initial training and upskilling. One example is the Goulburn Ovens Institute of TAFE industry partnership with the dairy industry to develop the National Centre for Dairy Education (see Box 1.3).

Box 1.3. The National Centre for Dairy Education in Australia

The Australian dairy industry employs 40 000 people on farms and in manufacturing plans, related transport and distribution activities and on research and development projects. Dairy is one of Australia's major rural industries, with AUD 3.3 billion (2005/06) in farm gate production and AUD 2.7 billion a year in exports, making it the country's fifth largest agricultural exporter. However, the industry is facing considerable challenges: the number of farms has steadily decreased and input costs, such as water and feed have risen. This has intensified the need for farmers to be more cost-effective.

Box 1.3. The National Centre for Dairy Education in Australia (continued)

In 2005, The Australian Senate Inquiry into Rural Skills Training and Research found that it was increasingly difficult to attract and retain young people in agriculture. The range of jobs available, the training and educational opportunities, and pay conditions in rural and regional areas were not as attractive as those in cities. Other industries were out-competing agriculture in the attraction and retention of talented, well-trained people. Furthermore, the "baby boomer" generation of farmers was coming up to retirement. Agriculture faculties and teaching staff at educational institutions across Australia where contracting, reducing career opportunities for the young and restricting the learning system's capacity to meet the industry's needs.

The Senate Inquiry concluded that agricultural industries should get involved with vocational training to ensure it is relevant, timely and aligned with the needs of the industry. In response to the inquiry, a national meeting of dairy industry representatives and key industry bodies in May 2005 identified future education and training directions. Dairy Australia formed a partnership with Goulburn Ovens Institute of TAFE (GOTAFE) to address the dairy industry's education and training needs.

The National Centre for Dairy Education is an initiative of Dairy Australia and Goulburn Ovens Institute of TAFE (GOTAFE) at Shepperton. It delivers nationally accredited short courses and customised programmes for dairy and processing organisation, individual farmers and people in the dairy service industry. Courses are offered in agriculture, food technology and food processing as part of a framework of re-skilling and up-skilling. An Industry Education Steering Committee (IESC) guides the direction of education and training, and ensures that the programmes remain relevant to the sector. A national network of nine industry advisory committees provides industry guidance on course content, priorities and outcomes. School-based apprenticeships or traineeships enabling secondary school student the opportunity to work with an employer and complete a nationally recognised qualification are also available. GOTAFE has responsibility for delivering the programme across the State of Victoria.

Source: OECD (2010c), based on NCDEA (2010), National Centre for Dairy Education - Australia website, *www.ncdea.edu.au*, accessed 16 April 2010.

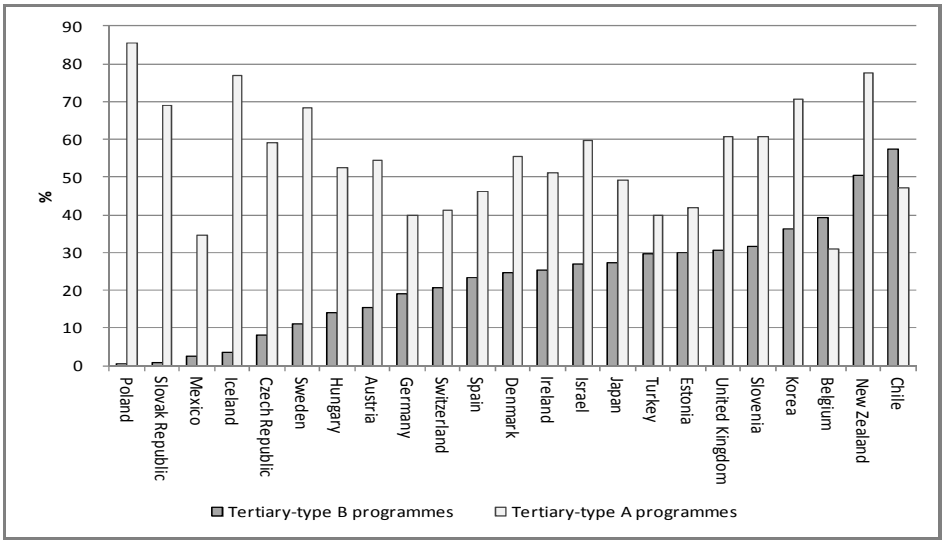
Entry to and graduation from post-secondary vocational education

This section provides descriptive statistics on entry to and graduation rates in PSV and university education as well as information about the

distribution of students in different field of studies across selected OECD countries.

Entry rate and graduation rate are important indications of the importance of the VET sector at post-secondary level. Figure 1.1 and 1.2 show the entry rate to and graduation from tertiary type B and A programmes in OECD countries. These figures should be interpreted with caution due to the high degree of diversity of PSV across countries.

Figure 1.1. Entry rates to post-secondary education 2009



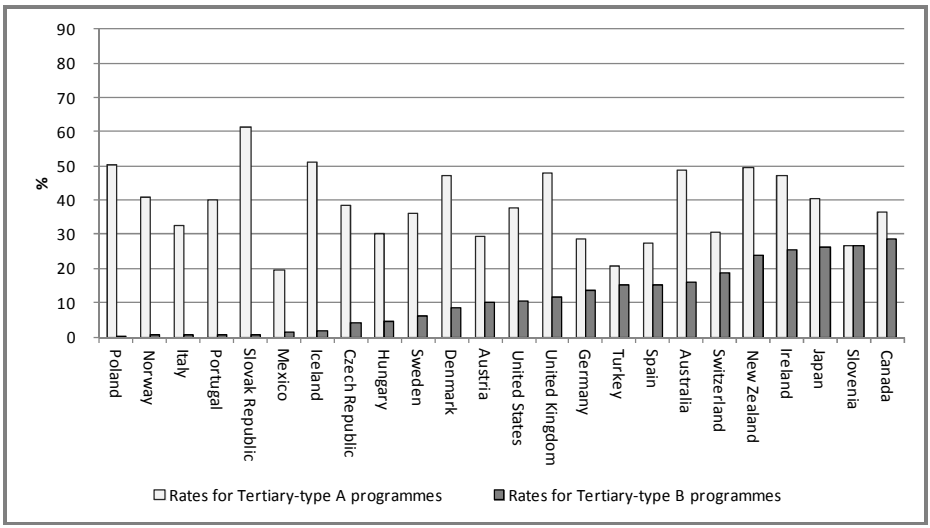
Note: Entry rate is computed as a sum of net entry rates for each year of age (for a definition of net entry rates see OECD 2011b, *www.oecd.org/dataoecd/31/56/48669379.pdf.*

Some countries are missing from the figure for various reasons. In Finland, there are no ISCED 5B programmes; in Italy, Netherlands and Norway the number of individuals entering ISCED 5B programmes is negligible; and in some other countries, such as the US, data are missing.

Source: OECD (2011a), table C2.2; *http://dx.doi.org/10.1787/888932464448.*

Figure 1.2. Graduation rates at post-secondary level by type of education (2009)

Sum of graduation rates for single year of age (first time graduation)

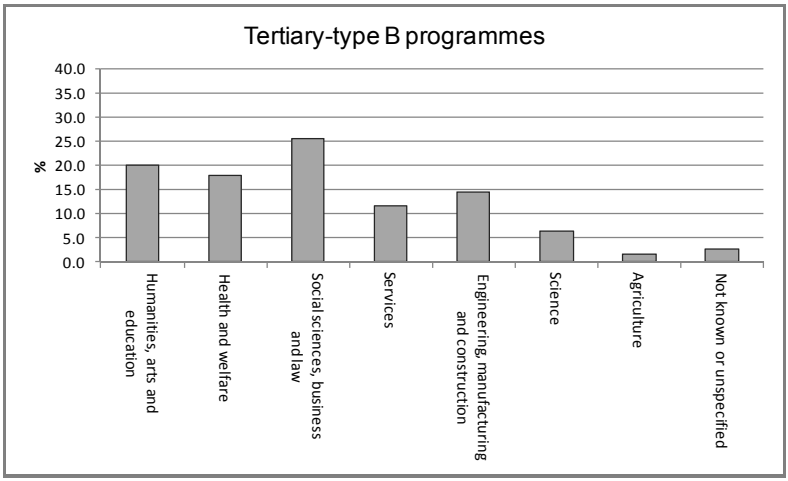


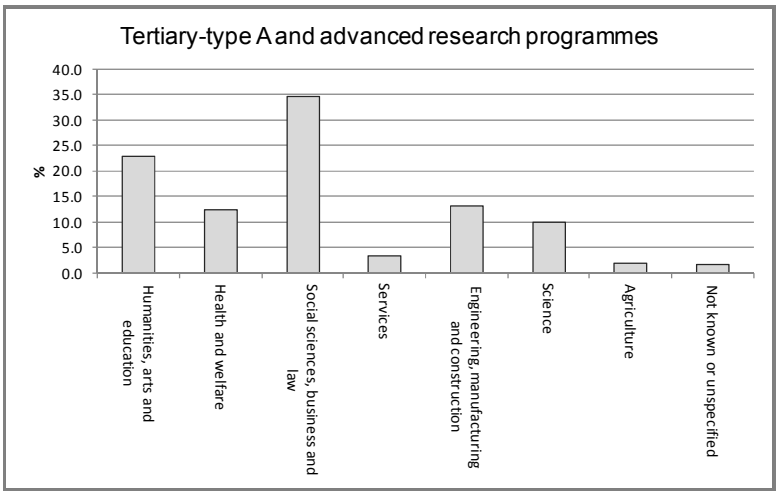
Note: In Australia and Canada the year of reference is 2008.

Source: OECD (2011a), table A3.1; *http:/dx.doi.org/10.1787/888932462434.*

Students in academic programmes (tertiary A) are more likely to study social science, business and law, humanities and arts, education and science than students in tertiary type B (ISCED 5B) (see Figure 1.3). Conversely, the health and welfare sector and services are relatively more important in tertiary type B than in tertiary type A programmes. In some countries, such as Germany and Portugal, more than half of the tertiary type B students are enrolled in the health and welfare field (not shown).

Figure 1.3. OECD average distribution of students in different fields of studies, by type of programme, 2009





Source: OECD (2011a), table A 4.4.; *http://dx.doi.org/10.1787/888932462662.*

PSV in educational system: position, transition and collaboration

This section explains how PSV relates to other components of the education system and briefly touches on the blurring of boundaries between PSV and academic tertiary education system. It discusses transition between

PSV and university education, providing examples of pathways and cross-sectoral collaboration in tertiary education from OECD countries.

PSV in relation to other components of education system

PSV programmes are typically organised between upper secondary and longer and more academic post-secondary programmes. The complexity of educational content and knowledge increases through the sequence of education levels, reaching university and postgraduate studies at the top, so within any individual professional field PSV provides more advanced competencies than upper secondary education and training but less advanced than longer academic post-secondary programmes. For example, in Switzerland IT specialists are trained in upper-secondary VET, PSV (federal diploma) and in longer duration post-secondary programmes (provided at university), allowing a comparison of the skills and knowledge conveyed in programmes of various durations and levels but preparing for one occupation.

In some countries there is a blurred division between academic/research-oriented programmes on the one hand, and shorter and practical ones on the other. This "mission drift" or the blurring of boundaries is partly caused by the fact that some PSV institutions have sought a more academic profile, providing longer and more academic programmes (Masters and PhD level) and carrying out research and development (Grubb, 2003), partly because of the diversification of tasks of more academic institutions that aim to increase the labour market relevance of the education provision.

Pathways, partnerships and multi-sectoral campuses

Well functioning pathways and collaboration between different levels of education are important prerequisites for transition between PSV and longer academic post-secondary programmes and vice versa, and improving progression in education. Transition can be problematic as a PSV qualification is sometimes considered by universities as insufficient for admission to longer academic programmes and PSV graduates might be asked to fulfil additional criteria. In some countries, for example Denmark, this typically involves completion of additional courses when transiting from professional bachelor to master programmes.

In Scotland, articulation arrangements have been established to provide routes for students to progress from short cycle higher education programmes to bachelor degree programmes, but challenges remain. Many students do not gain full credit for their qualifications, opportunities for articulation are spread unevenly across the university sector and students are

often unprepared for transition. The Scottish Government has launched a number of policy initiatives to facilitate more seamless transfer between different qualifications, and to improve the linkages between colleges and universities, including the establishment of the Scottish Credit and Qualifications Framework, the launch of "articulation hubs", and efforts to enhance the linkages between HNs and bachelor degrees through legislation. (See Chapter 4 for more information on the Scottish experience.)

In the US and Canada, the transition within post-secondary education is usually possible, depending on courses covered by students during previous stages of education and the clarity and content of transition rules and conditions.

Smooth articulation requires co-ordination and collaboration among education institutions that can take the form of joint planning, joint admission programmes and regular communication between faculty members of institutions. Table 1.1 presents examples of partnerships between universities and community colleges in the United States and Canada.

Table 1.1. Partnership models between US community colleges and universities

Partnership	Areas of partnership
Guelf University with Humber College Institute of Technology and Advanced Learning (Ontario, Canada)	Four years of full time study leading to two credentials: a university degree and a college diploma; Innovative learning facility.
University of Alberta and Grant McEwan College (Alberta, Canada)	Offers both college and university programmes (regular and applied bachelor degrees, university transfer programmes, diploma and certificate programmes, preparation for both university and college); University transfers programme gives undergraduates the option of taking their first two years in a small-class setting before moving to the University of Alberta.
York University and Seneca College (Ontario, Canada)	Joint degrees offered in media and advertising majors.
University of Oregon, Lane Community College and Southwestern Oregon Community College (Oregon)	Students admitted into dual-enrolment programmes may satisfy the general education requirements for the UO either by completing the Associate of Arts Oregon Transfer degree or by using the "direct transfer" path; Students have access to student services at both the university and community college campuses.
North Carolina State University and Craven College (North Carolina)	Students can enrol towards both associate's and bachelor's degree in one of 17 programme areas; 6 of the 17 programmes can be finished online after completing an associate's degree programme (except nursing which requires on-campus instruction or on-site clinical or practical experience; Institute of Aeronautical Technology in Havelock hosts both associate and bachelor's degree programmes in related fields.

Source: OECD (2012c), based on *www.guelphhumber.ca/; www.macewan.ca; www.senecac.on.ca/degrees/senecayorkdegree; html admissions.uoregon.edu/freshmen/dualenrollment*; *www.cravencc.edu/educational/univconn.cfm;*

The State of Florida has created well functioning pathways on the basis of a state-wide articulation agreement and a common course numbering system. Half of the students in Florida receiving a bachelor's degree originate in the community college sub-system. Created in the 1960s, Florida's Statewide Course Numbering System is a key component of Florida's K-20 system of articulation to facilitate progression among Florida's 11 state universities and 28 community colleges. In the context of a state-wide articulation agreement, the system provides a database of post-secondary courses at public vocational-technical centres, community colleges, universities and participating non-public institutions. The assigned numbers describe course content to improve research, assist programme planning, and facilitate the transfer of students. (State of Florida, 2010)

Dual and multi-sector institutions and campuses

In Spain, education system, including higher vocational education, is highly decentralised to regional level, leading to different approaches in Autonomous Communities (regions). The Autonomous Community of the Basque Country has been leading the development of PSV in Spain. In 2010-2011, 17 401 student were enrolled in higher VET in the Basque Country, meaning that 6.7% of all higher VET students in Spain were in the Basque Country, compared with 3.7% of university students. The prevalence of higher VET is well above the rest of Spain and the Basque Country also features good practices examples that inject innovation to the higher VET development, driven for example by Tknika. In Catalonia, about 16% of university students enter through the higher vocation education programmes (2008), but formal pathways remain limited. In 2010, approximately 43 500 students were enrolled on higher vocational education programmes (OECD, 2010a).

Table 1.2. Pathways of access to universities in Catalonia 2004-2008

	2004	2005	2006	2007	2008
Upper secondary education	80.1	79.6	78.7	79.3	78.4
Bachelors or graduates	2.4	2.4	2.3	2.1	2.1
VET	15.0	14.9	15.9	15.9	16.4
Other	2.5	3.1	3.1	2.7	3.1
Total	100	100	100	100	100

Source: CIC (2009), Oficina de Preinscripció. *Informe de la preinscripció universitària a Catalunya 2008*, CIC, Barcelona.

International Campus of Excellence (CEI) in Spain has provided a mechanism not only to modernise and internationalise universities, but also to promote collaboration between universities and higher VET, opening pathways and addressing widening participation objectives at the regional level in Autonomous Communities. In 2008, Spanish government in collaboration with the Autonomous Communities launched CIE to foster modernisation and internationalisation of Spanish university campuses within the University Strategy 2015. The aim of the programme is to ensure linkages between teaching, research and innovation institutions that form centres of international excellence or centres of international regional excellence. CEI also aims to enhance the universities' role in knowledge and innovation ecosystems that help develop intelligent regions to facilitate social and economic recovery. The 2010 edition included a distinct strand for campuses that aimed to build closer linkages between universities and higher vocational education. In Catalonia, the University Rovira i Virgili was selected in this category. Vocational tertiary education institutions are located immediately adjacent not only to University Rovira i Virgili, but also University of Girona and University of Lleida campuses. This adjacency enables the situations to share facilities, and provides opportunities for the students attending the higher VET institutions to aspire to and experience university life (OECD, 2010b).

In Australia, learners can in principle directly enter university undergraduate programmes via state government-owned Technical and Further Education (TAFE) institutions, but there is great diversity how this functions in practice. TAFE institutions are major providers of post-secondary VET, often located outside metropolitan areas and closely aligned with the key employment sectors. Highest rates of transfer from TAFE programmes to university undergraduate studies happen from the "dual-sector universities" that provide both TAFE and university level programmes, whereas in general the articulation remains an issue. For example in the State of Victoria that has no state wide credit transfer system, only about 11% of commencing university students was offered places in 2007 on the basis of a TAFE award. To address the skills needs and challenges in articulation, the state government introduced in 2009 the Victorian Training Guarantee that entitles all Victorians to a government-subsidised place in vocational education and training. It supports an integrated tertiary education and training sector, with a variety of pathways and multiple entry and exit points, but does not allow university graduates to complement their theoretical learning with more practical skills at the TAFE sector.

While dual sector universities in Australia support the transition from vocational to higher education more successfully than other universities,

pathways are strongest when the sending and receiving institutions are close academically and geographically. Dual sector institutions also address the needs of the communities which are big enough to sustain one integrated tertiary institution but not big enough for separate vocational and higher education institutions. (See Chapter 3 for more information on Australian tertiary education sector).

Cross-sectoral and multi-stakeholder collaborations between universities and TAFE institutes exist in Australia. The education campuses Victoria bring together secondary, post-secondary and university facilities to enhance efficiency and to develop sustainable education and research environments (see Box 1.4.)

Box 1.4. Multi-sectoral institutions in the State of Victoria, Australia

The Gippsland Education Precinct (GEP) is a multi-sectoral "institution" formed by a partnership between Monash University, Kurnai College, Apprenticeship Group Australia (formerly Gippsland Group Training), GippsTAFE and La Trobe City. It aims to improve access and equity in education and enhance employment opportunities through integrated learning pathways from Year 11 to TAFE diploma, university degree or PhD, with strong partnerships with business, industry and all levels of government. By co-locating all four education providers on a single site, the precinct helps widen access by enabling easier transition to apprenticeships, TAFE or university. As part of a AUD 20 million project, the Precinct offers state of the art facilities in all areas including IT, Science, Art, Library, Sport & Recreation and Technology – and students can utilise Monash facilities including laboratories, computers, student union and staff.

The GEP provides the option to remain in Gippsland to live and work. Educational programmes are being developed in close consultation with local industry to help improve the employability in the region and hence its sustainability.

The Deakin at Your Doorstep Programme commenced in 2010 with the aim to allow regional Victorians to study for a VET diploma or Associate Degree embedded in a university degree at local TAFE colleges. Some students go on to undertake full degree programmes, others will be better positioned to obtain employment. The two-year associate degree programme provides a pathway to higher education and addresses the systematic generational disadvantage suffered by rural populations and improves the attractiveness, accessibility and relevance of higher education to these young people and their families. The programme is funded under the DEEWR Diversity and Structural Adjustment Fund programme and delivered from Deakin University's Warnambool Campus.

Box 1.4. Multi-sectoral institutions in the State of Victoria, Australia (continued)

The associate degree will also be delivered through Deakin Learning Centres established at TAFE institutes including Sunraysia Institute's Swan Hill Campus, East Gippsland TAFE's Bairnsdale Campus and Chisholm Institute's Dandenong Campus in 2010 and at Mildura, Sale and Rosebud in 2011. The course, that uses interactive e-learning blended with face-to-face learning, provides an introduction to the foundations of a discipline or several disciplines, develops academic skills required for university study and generic employment related skills. The participating providers have selected the courses to be offered in consultation with each partner rural community in order to meet local skills shortages.

Source: OECD (2011c), based on Monash University (2006), Gippsland Education Precinct website, *www.gep.vic.edu.au*, accessed 16 April 2010.

Some institutions in US, Canada, UK and New Zealand were established as vocational or higher education institutions but more recently started offering programmes from the other sector as part of what seems to be a trend of vertical integration in tertiary education institutions offering programmes that feed into or take graduates from their initial and core programmes. Some vocational colleges are offering associate or bachelor degrees that may be studied by the graduates of their certificates and diplomas. Thus, degrees are now offered by community colleges in the US states of Florida, Texas, Washington and elsewhere; in the Canadian province of British Columbia, Alberta and Ontario (Jones, 2009); by further education colleges in England; by vocational education colleges in Australia; and by polytechnics in Aotearoa New Zealand.

Conversely, some universities in Australia and the UK have recently started offering foundation programmes which are the equivalent of senior secondary education and short cycle pathways programmes, both of which prepare students for admission to their core baccalaureate programmes. Some universities offer preparatory and pathways programmes in their own right while others offer these programmes through subsidiaries such as university colleges (See also Chapter 4).

Conclusions

An increasing number of countries in developing PSV in addition to longer academic tertiary education to address the diverse skills needs of the

labour market. Well functioning tertiary education systems are characterised by pathways that facilitation transition between PSV and longer academic post-secondary programmes. Clear rules and conditions, and proximity of education providers facilitate this transition. Strong links between PSV and university education are the key to success.

Notes

1 . In Switzerland nurses and many health-related programmes are provided in professional education and training colleges that are classified as ISCED 5B, while in Denmark the relevant programmes are offered at university colleges that are defined as ISCED 5A and in Austria at ISCED 4. Also, programmes at ISCED 5B level do not overlap perfectly with PSV programmes, for example the university college programmes in Denmark that are at ISCED 5A level can be considered PSV.

2 . For example, community colleges in the US provide a wide range of vocational but also academic programmes, while Swiss professional education and training colleges are mainly responsible for provision of specific PSV programmes.

3 . Some programmes leading to high status jobs such as doctors, architects and lawyers are also vocational, but they raise different issues from those faced in shorter more technical training programmes.

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Chapter 2.

Delivering high level training in a changing world – Post-secondary vocational education and training in context

Małgorzata Kuczera, OECD

This chapter highlights the wider context in which post-secondary vocational education and training (PSV) operates. It analyses the changing labour market requirements where jobs requiring high and basic skills have expanded to the detriment of jobs with mid-level skills. It analyses the impact of globalisation that affect the demand for PSV skills, and organisation of PSV programmes and institutions. It identifies the key challenges and the opportunities arising from external influences and discusses how countries can ensure the right number of trained people with the right mix of skills.

Changing labour market requirements

This section examines how skill requirements of jobs have been changing and how PSV programmes match these new requirements. It can be shown that jobs requiring high and basic skills have expanded (to the detriment of jobs with mid-level skills), and that the majority of PSV graduates are employed in occupations relying on high skills. It also looks at other factors that affect the demand for PSV such as the quality of education and training.

The demand for education from employers

The demand for labour is reflected in decisions made by employers regarding the employment of workers and their compensation (Hamermesh, 1993). The demand for a particular type of education and training is therefore reflected in employer decisions on the employment and wage level of workers with that that specific type of education and training as compared to workers with other qualifications. Education matter for employers because it affects worker productivity, meaning that two identical workers but with different educational backgrounds performing identical tasks will produce different outputs[1]. Some jobs require high level education and training while in others the comparative advantage of a well educated workforce is low. As a result, changes in the economy and labour market favouring growth in education-intensive jobs will increase the demand for high level education.

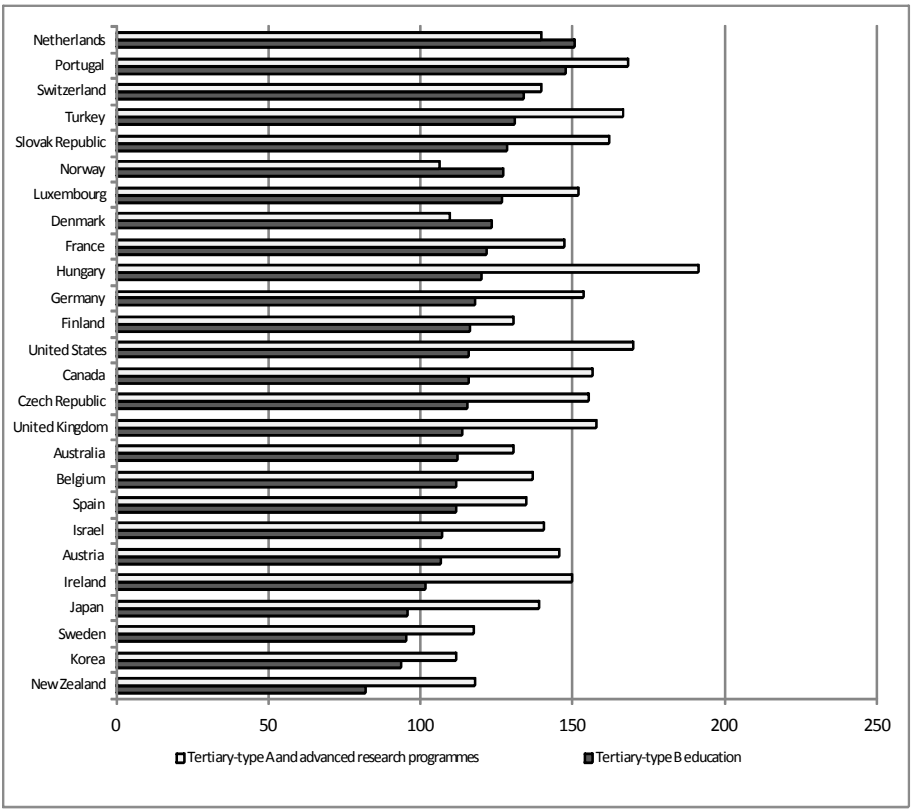
Other factors affecting the demand for education and training include labour market institutions, migration, business cycles and demography. Demand for education from employers is also closely related to the total stock of educated labour already in the labour market – in principle a glut of qualifications in a given field will depress the wage return from that qualification.

Measures of the demand for education

Relative demand for education is reflected in indicators such as the wage and relative employment/unemployment/inactivity rates according to levels of education. The figure below compares the earnings of workers with tertiary B (ISCED 5B) and tertiary A (ISCED 5A) with those educated only to upper-secondary level (earnings of those with upper-secondary education = 100). In most countries employers pay more to workers with

tertiary B than to those with upper-secondary qualifications, but less than to employees with longer academic post-secondary studies (tertiary A).

Figure 2.1. Earnings of employees 25-34 years-old with different education attainment 2008 or latest year available



Notes: Year of reference other than 2008: 2005 - Belgium, Ireland, Turkey; 2006 - Italy, Luxembourg, Netherlands, Portugal; 2007 - Germany, Finland, France, Greece, Japan, Norway, Spain.

Source: OECD (2010a), table A7.1, *http://dx.doi.org/10.1787/888932310206*.

Changes in occupational structure and in job content

Both the occupational mix in countries, and the mix of skills required within each occupation have been changing as a result of economic and technological development. The number of people employed in high skill occupational groups has been growing in the majority of the OECD

countries over recent decades.[2] An upward trend was also observed in low-skill occupations such as elementary jobs and sales and services. At the same time, the middle skill job sector contracted. The number of workers in clerk positions has been steadily falling and employment in fields such as crafts and plant operators also decreased. This phenomenon has sometimes been described as a "hollowing out" of the labour market.

These changes in occupational structure and therefore of the changing demand for education can be partly explained on the basis of linking the introduction of new technologies in the work place to the demand for skills[3]. A new technology tends to favour the skills necessary for its introduction, implying an impact of technological innovations on the skills required on the job, and on employer demand for skills and individual returns to education. Skills are applied by workers to various tasks on the job (Acemoglu and Autor, 2011). Depending on the task different combinations of skills are necessary. Tasks can be divided between "routine/repetitive" and "non-routine" tasks. Routine tasks can be carried out by machines/computers but human labour cannot easily be replaced in non-routine tasks. Both routine and non-routine tasks can be manual or cognitive (examples of occupations by task types are provided in Table 2.1.)

Table 2.1. Categories of workplace tasks

	Routine tasks	Non-routine tasks
Manual	Operating or controlling machines, sorting, repetitive assembling	Truck driving, personal care
Cognitive	Calculating, bookkeeping	Management, problem solving, complex communication

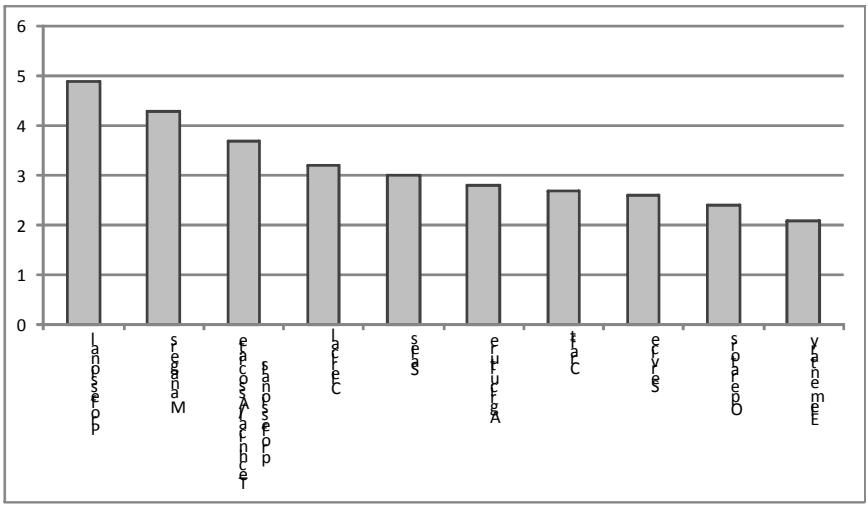
Industries relying on routine tasks have strong incentives to invest in computers to replace labour as the price of computing power declines, and consequently the relative demand for unskilled labour performing routine tasks falls (Autor *et al*., 2003; Autor *et al*., 2008; Autor and Dorn, 2009; Goos and Maning, 2007). Technological innovation therefore leads to an increase in high skill jobs, corresponding to non-routine cognitive tasks, and to a contraction of the middle sector in which routine cognitive and routine manual tasks are highly represented. Conversely, technology has little effect on the manual non-routine occupations requiring the lowest skill level (Autor *et al*., 2006). The observed increase in the number of jobs in certain low skill occupations (such as services and sales) is therefore due to non-technology factors, such as rising living standards that increase demand for education, health and leisure; increasing female participation in the labour

market; and an aging population that puts more pressure on health services (Handel, forthcoming; Cedefop, 2011).

How much education is required for different occupations?

The US evidence shows that while post-secondary graduates are the most likely to work in high skill jobs, those with education below upper secondary level are the least likely. Conversely, in low skill jobs, workers with least education are overrepresented (Acemoglu and Autor, 2011). The middle skill jobs including clerical, craft, machine operator jobs are mainly filled by workers with high school and some college (corresponding with upper-secondary and short post-secondary programmes). The European Social Survey (2004 year of reference) shows that more educated people tend to work in more demanding jobs in terms of skills (see Figure 2.2) (Handel, forthcoming).

Figure 2.2. Average education level in European countries by occupation 2004



Note: Education level is respondent's personal educational attainment (1=primary, 2=lower secondary, 3=upper secondary, 4=post-secondary non-tertiary, 5=first stage tertiary, 6=second stage tertiary) (not available for the United Kingdom).

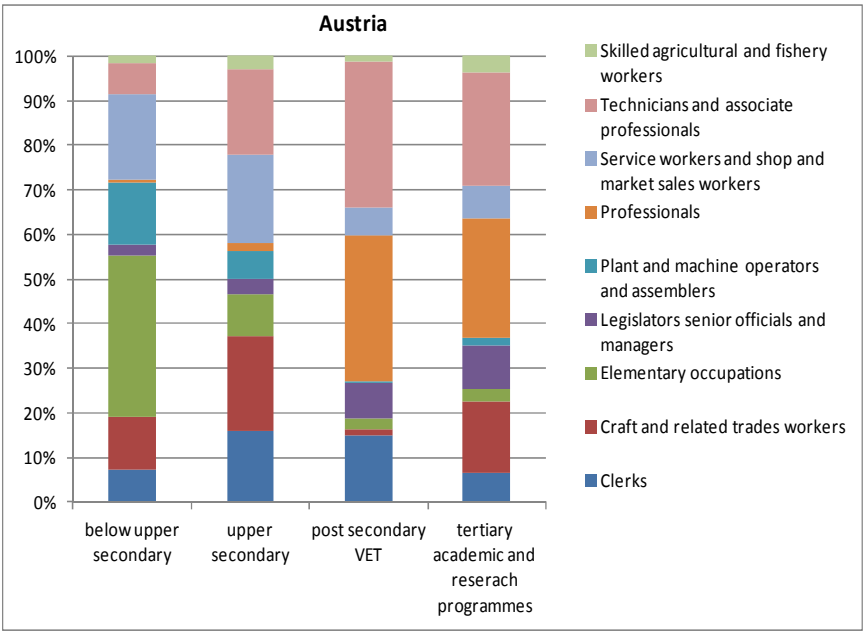
Source: European Social Survey in Handel (forthcoming, table 4).

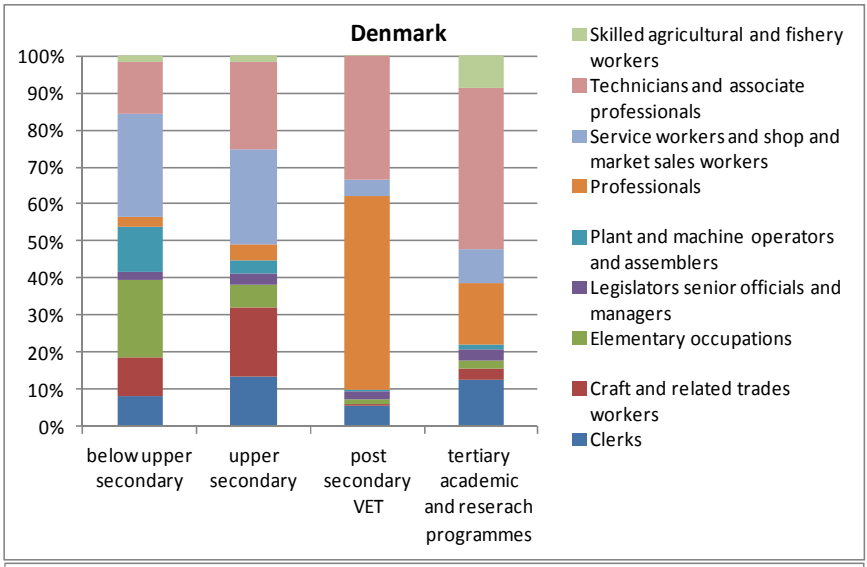
The Eurostat ad hoc module 2009 allows the occupational profile of PSV graduates (ISCED 5B) to be compared with those of other educational groups (see Figure 2.3). It shows that in Austria, Belgium, Denmark, Germany, Switzerland and Spain workers (25-34 age group) with PSV

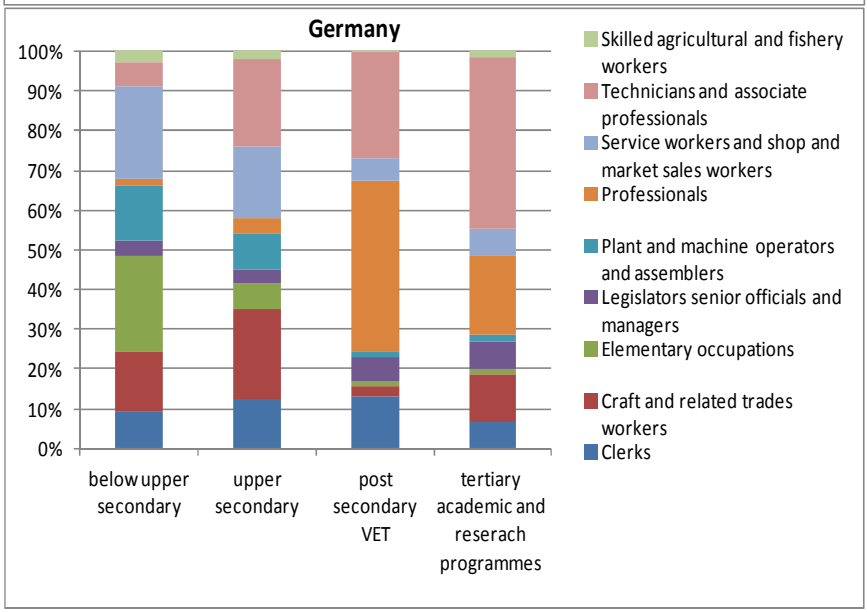
qualifications (ISCED 5B) are more likely to work in the high skill occupations of professionals, technicians and associate professionals than people with upper-secondary education and below. In Austria, Denmark, Germany, Switzerland and Spain employees with PSV are also more often employed as professionals than those with tertiary qualifications (ISCED 5A), with the contrary being true for the occupational groups of technicians and associate professionals, except in Austria. Workers with PSV are less likely to work in elementary jobs, services and craft jobs than those with lesser education qualifications. In many countries PSV graduates are less likely to find themselves in these occupations than their counterparts with tertiary academic studies, with the gap being the most striking in Spain. PSV hence clearly prepares for occupations that require high skills and that have been growing in recent decades. As these occupations are predominantly non-routine, the implication is that further waves of computerisation will only further increase the relative demand for the kind of skills provided by PSV. In some countries PSV graduates are more likely to be employed in high skills jobs than those with tertiary academic qualifications (ISCED 5A), suggesting there may be closer links between PSV programmes and employers than in the case of academic tertiary education.

Figure 2.3. Distribution of workers by type of education across occupations

25-34 year-olds (2009)




Denmark
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
below upper secondary
upper secondary
post secondary VET
tertiary academic and reserach programmes
Skilled agricultural and fishery workers
Technicians and associate professionals
Service workers and shop and market sales workers
Professionals
Plant and machine operators and assemblers
Legislators senior officials and managers
Elementary occupations
Craft and related trades workers
Clerks


Germany
100%
90%
80%
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40%
30%
20%
10%
0%
below upper secondary
upper secondary
post secondary VET
tertiary academic and reserach programmes
Skilled agricultural and fishery workers
Technicians and associate professionals
Service workers and shop and market sales workers
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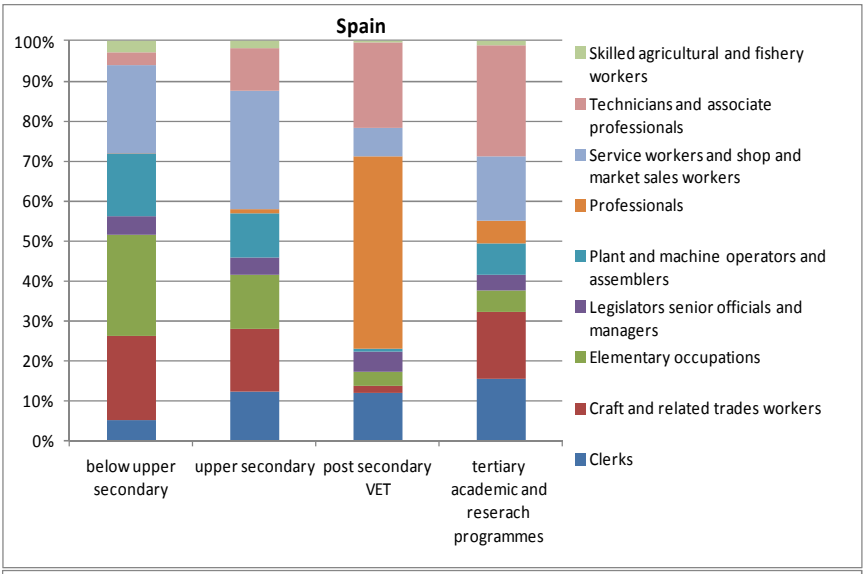
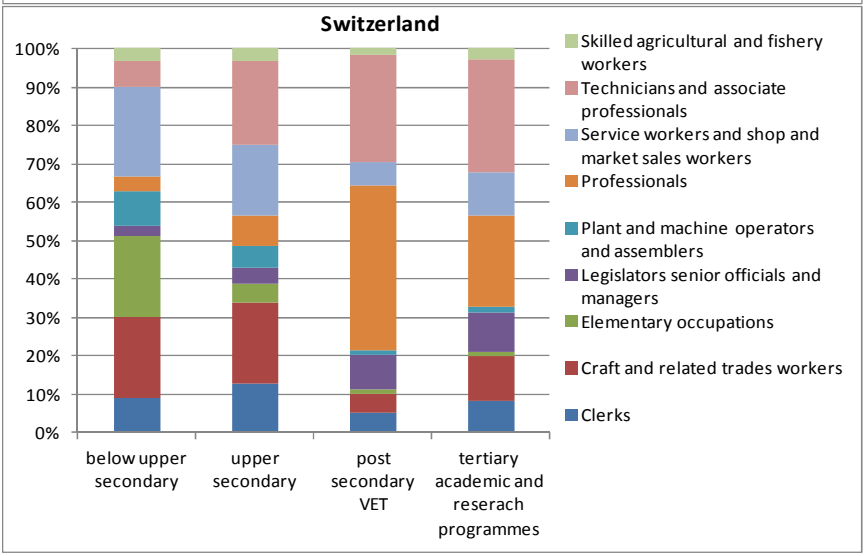
Clerks





Source: Eurostat, Ad hoc module 2009, "Entry of young people into the labour market".

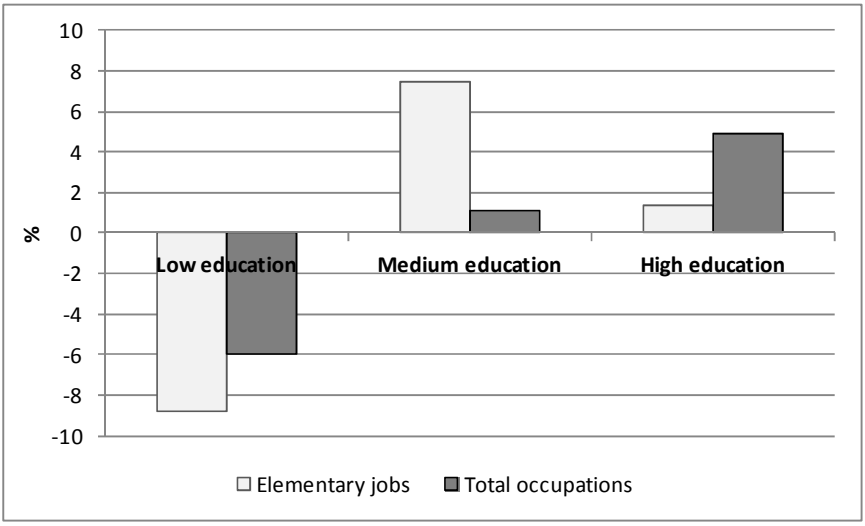
In all occupations more workers have higher level of qualifications

A study of changes in labour market participation by education over time provides an indication of likely trend in the demand for PSV. A

CEDEFOP study of 27 EU countries (CEDEFOP, 2011) reports that between 2000 and 2008, within the total labour force the percentage of workers with low education (less than upper secondary) decreased by six percentage points, while that of employees with high level education (ISCED 5 and above) increased by five percentage points.

Figure 2.4. Change in the share of employment by education in elementary and all occupations, EU-27

2000-2008



Note: Low education refers to education below upper-secondary (below ISCED 3); medium education to upper-secondary and post-secondary non tertiary education (ISCED 3 and 4); and finally high education to post-secondary tertiary education (ISCED 5 and above).

Source: Eurostat, LFS – reference age 15+, in CEDEFOP (2011).

Relative employment of workers with medium and high education grew also in the elementary low skill occupations during the same period, with a 7.5 percentage point increase for workers with medium type education (see Figure 2.4). Such upgrading might involve workers with post-secondary education, including PSV, filling low-skill and medium-skill jobs not traditionally targeted by these programmes, although it could also reflect increasing skill requirements in these jobs. This is in line with the research evidence showing that wage dispersion is substantially larger for more educated workers (Lemieux 2006), which means that some post-secondary

graduates are in high-skill and well paid occupations whereas others perform jobs with lower skill requirements and lower salaries. Precise information on PSV programmes is not available but data presented in Figure 2.4 implies that PSV might better respond to the labour market needs than some academic post-secondary programmes. As a result PSV graduates might on average be less likely to end up in low skill employment.

Signalling value of education

In principle, employees with higher levels of education and training should have better skills and be able to carry out more complicated tasks and deliver higher quality output, and workers with professional credentials should be better prepared to work in a particular sector than those without these qualifications. The demand for various types of education then depends on the extent to which these productivity outcomes of education and training are transparent to employers. Differences in quality are one of the key elements that affect the signalling value of the qualification. The quality of PSV as a demand factor is important from the policy point of view as often it can be directly influenced by education policy makers and institutions.

For any given qualification a high dispersion in graduates knowledge and competencies weakens the positive association between education and skills and therefore the signalling value of the qualification. When hiring, employers usually have limited information on the real productivity of an individual. To distinguish productive employees they use different screening tools such as education credentials. If the productivity of workers with a specific level of education and training is constant over time and across workers, employers can accurately predict the skills of the worker on the basis of his qualification and the signalling value of the qualification is strong. Conversely, high dispersion in job skills in the group of workers with the same education level reduces the value of educational qualification as a source of reliable information on worker productivity.

Quality standards should ensure that graduates meet at least the minimum requirements set on the programme and therefore improve the signalling value of qualifications. Backes-Gellner and Veen (2006) discuss the impact of a central examination – a measure of quality control, on graduate wages. They observe that an increase in the number of upper secondary diploma holders (Abitur) achieved by relaxing quality standards in some schools led to a decrease in the wage premium for Abitur-holders, which might reflect a perception and perhaps the reality of lower productivity of workers with this qualification. In general, the lower the expected quality of the education programme/type, the lower the expected

skills and productivity on the part of graduates. In line with these findings it can be expected that the demand in high skill occupations for PSV of poor or of highly variable quality will be low.

Access to certain occupations is often for those with specific qualifications, for example in well-regulated professions like nursing and teaching. Often the qualification associated with programmes leading to these occupations is delivered upon successfully passing an assessment of skills and competencies. This should guarantee that the programme meets some minimum quality requirements and that only people with relevant skills enter the profession. Because of the strict entry rules to the occupation the demand from employers for graduates in programmes preparing for regulated occupations is less elastic – employers cannot replace a worker with the relevant qualification with an individual who does not have it.

In most countries specific qualifications are required by law in certain regulated professions such as lawyers, and architects, in medium status professions such as nurses and teachers and in skilled jobs such as plumbers and electricians. Preparation for the medium status jobs, and in particular jobs in the health sector and sometimes in the education sector is provided in many countries through PSV programmes, so that preparation for regulated occupations can represent a substantial proportion of PSV overall. In Denmark, nearly three quarters of the graduates from professional bachelor programmes were employed in 2009 in health, education and public administration (Danish Ministry of Education, forthcoming).

The impact of globalisation

Globalisation that has forged stronger connections and dependence between countries affect PSV systems. The effect of globalisation is felt not only through the cross border movements of students and graduates but also through more indirect routes such as foreign direct investments (FDI) and international trade.

Cross border post-secondary education and training

International student mobility has increased dramatically. Between 2000 and 2009 the number of persons studying outside their home country in OECD countries rose by nearly 80% to reach 2.8 million. OECD countries are the major destination for individuals studying abroad; in 2009 more than three quarters of all foreign[4] students were located in the OECD. The US[5] was the most popular destination with one student in five choosing this country, followed by the UK, Australia, Germany and France

(OECD, 2011a). The majority of foreign students in OECD countries were from non-OECD countries.

Rising demand for cross-border education also led to an increase in innovative forms of provision and initiatives: universities propose programmes in other countries for local students, pursue distance learning initiatives and promote partnerships between institutions often involving staff exchange (OECD, 2009).

The increase in cross-border post-secondary education brings many advantages to countries and receiving institutions and host country employers. International student mobility promotes cultural exchange, increases the visibility of the country and the institution internationally, brings additional resources to institutions, and is a source of highly skilled labour that stimulates both research activities and the economy (OECD, 2009; Chellaraj *et al*., 2005). Cross border tertiary education helps a country to expand its stock of skills rapidly. The advantage of international students for host country employers is that they have qualification that can be easily evaluated. Many of the international students also work part time during their studies, allowing them to develop links that facilitate eventual transition to the labour market. Several OECD countries have eased their immigration policies to encourage international students to remain after their studies for employment (OECD, 2012).

The increase in cross-border post-secondary education raises also challenges both to countries and institutions receiving foreign students. Institutions need to adapt teaching methods and study content to a culturally diverse student intake. An outflow of highly skilled students depletes the human resources of the sending country if the students stay in the receiving country after completion of their degree.

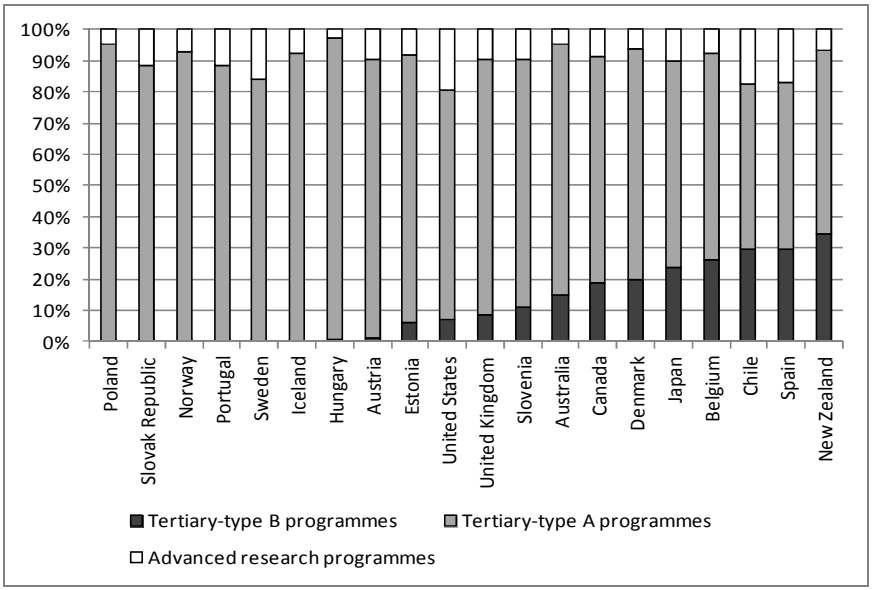
The increase in cross-border post-secondary education brings challenges and opportunities to the countries of origin. The negative effect of the "brain drain" damages the host country development if this is not addressed by brain circulation strategies, such as attracting national "diaspora" back to their countries of origin. Migration flows can also have a positive impact on the stock of human capital in countries of origin. These migrants are a source of additional income for their country of origin through remittances. Returning migrants bring back knowledge and experience that are of use to their home country. A number of countries have addressed the disincentives to return and facilitated return migration through housing, income tax concessions and attractive work benefits. Co-operation on skills policies between source and destination can result in win-win outcomes (OECD, 2012).

Student mobility

International student mobility is less important in PSV than in academic tertiary education. Figure 2.5 shows that in only 8 out of 20 countries do tertiary VET institutions (ISCED 5B) enrol more than 15% of all foreign tertiary students, with New Zealand coming first with more than one third of foreign tertiary students in VET. Data aggregated at country level mask wide variations in the level of foreign student enrolment in individual PSV programmes. In Switzerland, hotel and tourism programmes, often provided in cooperation with foreign partners, enjoy high recognition abroad and attract many international students (Fazekas, forthcoming).

Figure 2.5. Distribution of foreign students, by type of post-secondary programme

(2009)



Source: EAG 2011a, table C3.4, *http://dx.doi.org/10.1787/888932464524.*

The lesser significance of foreign students in PSV may be a result of lack of research orientation of PSV and the more limited transferability of qualifications across countries. Many students choose to study in another country for research purposes (see Figure 2.5) and since PSV institutions rarely undertake extensive research activities they are not attractive to those students. PSV qualifications are more practical in scope and more anchored

in the local context which may create constraints to transfer across countries. Recognition of professional qualifications across countries is often facilitated in the areas in which countries suffer from skills shortages.

Data aggregated at country level mask wide variations in the level of foreign student enrolment in individual PSV programmes. Hotel and tourism programmes in Switzerland are one example, with high recognition abroad and many international students. Often they are provided in co-operation with foreign partners (Fazekas, forthcoming).

Skills gaps and international mobility

To address skill shortages countries may recruit individuals educated and trained abroad, encouraging people from abroad to train in the shortage field. For example, the Australian Government has over the years used migration criteria as a way to solve particular skill shortages and rural development requirements. Migrants need to show particular work skills, be nominated by particular employers, have other links to Australia or have successful business or investment skills and sufficient capital to bring to Australia to establish a business or investment of benefit to the country. Lower points are required for people willing to live in a designated area of Australia. (OECD, 2010c)

Importing nurses from other countries has been a common response to shortages in the profession and in many countries education and training for nurses is provided at PSV institutions. In many developed countries the demand for nurses will increase further in the future due to ageing of the general population and retirements in the health workforce. It is estimated that the demand for nurses in the US will increase by 31% between 2005 and 2020, while the supply will shrink by 7% unless there is an increase in wages (OECD, 2008). Australia and New Zealand give preference to health professionals in admitting immigrants while Germany has bilateral agreements with some Central European countries for the recruitment of foreign nursing aids (OECD, 2008). The Philippines are the biggest exporter of nurses in the world, with enrolments in nursing programmes growing 24-fold between 1990 and 2008, driven primarily by foreign demand (Carlos and Sato, 2008).

While immigration helps to alleviate skill shortages of receiving countries it raises challenges in the management of human resources in both sending and receiving countries. It also yields equity concerns. Outflows of health professionals from poorer to richer countries can deepen shortages in the health sector of poor countries (OECD, 2008). Also, if healthcare education and training is subsidised with public funds, the sending country

incurs a financial loss as this investment in human capital and skills is captured by the receiving country.

Other aspects of globalisation in post-secondary education and training

Globalisation not only involves movement of people but also increasing cross-border movement of goods, services, technology and capital, linked to increasing international competition. For companies it implies more intense international competition in national markets and new opportunities in markets in other countries. Stronger connections and interdependence between local, national and foreign economies also have some tendency to "globalise" the skills and competencies required by firms. To ensure that graduates completing post-secondary programmes are well prepared for increasingly globalised jobs, both local and international aspects relevant to the field of studies need to be well integrated into study programmes. In practical terms, this might require teaching staff to keep abreast of recent research findings and technological innovations and to update study content to reflect recent developments.

When investing, companies take into account human capital availability, in addition to other factors, such as transport costs, plant economies of scale and other local market characteristics. Since capital and high skills are complementary factors in production, firms operating in sectors relying on new technologies hire highly skilled labour to work with innovative technologies. Capital investment and FDI may therefore depend on the existing level of skills and the upskilling capacity of local education institutions. PSV, alongside universities, is a supplier of high level skills to these companies, and can therefore play an important role in attracting national and foreign investments. Yealpe (2003) argues that US multinational companies operating in low skill sectors invest more in countries with a less educated workforce while industries requiring high skill levels tend to invest in countries with a better educated workforce. Evidence also shows that companies with a high research and development (R&D) intensity – typically companies with a high share of non production workers – generate more FDI than companies investing less in technology.

OECD Skills Strategy (2012) notes that while skills policies are typically designed nationally or locally, an increasing number of employers operate internationally and must derive their skills from both local sources and the global talent pool. Some countries have begun to consider skills policies beyond their national borders and invest in the skills in other countries. This has the double advantage of providing well-trained

employees to branches of firms located abroad and reducing the incentives to emigrate, especially among highly skilled individuals.

When R&D intensive companies locate some activities abroad it rarely undermines production activities in the home country. In fact R&D intensity seems to have a positive effect on exports from the home country (Brainard, 1997; Navaretti and Venables, 2004). Yeaple (2003) also observes that firms relying on low skills tend to substitute FDI for exports. To conclude, countries with a highly skilled workforce are less competitive in low skill sectors and therefore to prevent outflow of capital and investment they should promote job creation in high skill areas. PSV is an important element of this skills strategy.

Policy implications

The previous section assessed how demand for skills in the workplace is changing and its impact on employer demand for workers with different levels of education and training. This section pursues this analysis by examining the implications for policy and for institutions. First this section looks at how institutions decide on the provision of programmes on offer taking into account changing employment structure and student preferences. Second, it explores factors that institutions should take into account when defining skills provided on the programme.

Getting the right number of trained people

In order to ensure that the supply of graduates meets demand, the number of graduates from a programme should correspond to the number of available job positions in the sector. The number of available jobs depends on the cost of labour, the total stock of labour with relevant education and training already in the labour market, staff turnover, and other factors, such as technology, affecting the demand for people with particular credentials. The supply depends on student preferences, financial constraints of institutions and involvement of employers in PSV.

Student preferences have a variable influence on the mix of provision in PSV institutions. In some systems the provision is closely tied to student choice, whereas in others it depends both on student preferences and employer needs. When student preferences alone drive provision of programmes the risk of mismatch between the demand and supply for job related skills is greater. Country examples show that some students pay limited attention to labour market prospects when choosing a field of study (OECD, 2010b). This might be because of poor information available to

students on programme outcomes or because people tend to heavily discount future income. In other words they are less concerned about consequences of their decisions if these consequences are delayed in time. As a result, students opt for fields that are more agreeable to study than programmes they enjoy less but that could lead to better labour market prospects.

Provision driven by student choice creates incentives for tertiary education institutions to offer and promote programmes which are popular with students but do not necessarily improve their employability. For example in Korea, student choice drives the mix of provision in most junior colleges who compete for students because tuition fees represent the main source of their funding. While demographic decline increases this competition, colleges have few incentives to scale down popular programmes. (Kis and Park, forthcoming) Conversely, if the mix of programmes is driven exclusively by employer views may bring along an increase in the supply of labour in declining industries and in jobs which are unpleasant and poorly paid so as to maintain wages at a low level.

Governments should work to balance the mix of provision between employer needs and student preferences. This can be facilitated through a number of policy instruments such as: provision of reliable information on labour market outcomes to students, provision of financial incentives, accounting for employers needs and better planned provision.

Reliable information on labour market outcomes to students

Complete, regularly updated and easily available information on labour market prospects can potentially improve the link between student preferences and employer demand for skills. A German study (Heckhausen and Tomasik, 2002) confirms that information on labour market prospects can influence student perception of their "dream job".

To increase transparency in programme outcomes some countries have made career related information widely available. For example in Denmark and the US (South Carolina), students can check information on wages and employment prospects in various professions, programme content and financial aids, and find a PSV provider, through websites (*www.ug.dk/Programmes.aspx;https://www.scpathways.org/EEDA/students.aspx).*Better overall information on labour market prospects in various professions and more weight given to it in student choice also have an impact on institutions.

When tertiary education institutions compete for students they tend to offer programmes popular with students. So, if students are more likely to enrol in programmes providing good preparation for jobs, institutions

increase provision in these programmes so as to attract more students. Indirectly, informed student choice exerts pressure on institutions to improve the quality of programmes, as the lower the expected quality of the programme the lower the expected skills, productivity and labour market outcomes of the graduates.

Imperfect information often prevents students from choosing programmes and institutions best matching their preferences. Students might not be aware that some institutions offer better preparation than others. To overcome this problem institutions running successful programmes might make information on the labour market performance of their graduates. The relevant data can for example be collected through regular follow-up surveys of the graduates or through official data bases if available. Even if the process of data collection and publication of the programme outcomes is voluntary it would send a clear signal to potential students about the performance of the institution and the programme (while recognising that it may also reflect on how selective is the institution and how students have selected themselves).

A recent US initiative addresses the issue of imperfect information in the PSV market, particularly in respect of institutions that sign students in programmes leading to poor job prospects and with a low likelihood of loan repayment. The initiative requires recruiters and promotional materials for career colleges to disclose information on debt burdens of former students for programmes with weak labour market outcomes (*www.ed.gov/category/keyword/gainful-employment*).

Financial incentives

PSV providers often find it difficult to continuously adjust the mix of PSV programmes to labour market needs due to limited knowledge of the labour market needs and costs of such changes. Expansion or creating new programme require upfront investment in teaching staff and new infrastructure (buildings, classrooms and workshops) while reduction of programmes in size often leaves infrastructure and staff underemployed.

Some countries offer financial incentives for institutions to expand and develop programmes with good labour market prospects. In Korea, the government has recently introduced a formula funding regime based on the employment outcomes of graduates to improve the preparedness of junior college graduates to labour market requirements. The direct impact of this initiative on institutions is small as the formula funding represents a relatively modest contribution to the total budget of junior colleges (Kis and Park, forthcoming). Targeted, often one-off grants are available to

PSV providers in some countries, such as the US. Grants are awarded for various purposes including that of meeting skill shortage, *e.g.* in the area of renewable energy and the health sector. A key advantage of targeted grants is that they allow a quick response to the changing demand for skills, and if grants are competitive, they in principle allocate the money to the institutions most likely to make a good use of it. On the other hand, they require more administration staff to handle grant applications in institutions and are often short term only (see for example Huffman and Evenson, 2006 for comparison of competitive grant and formula funding in agriculture).

Accounting for employers needs

Asking employers about the skills they require is another way of addressing industry needs in the provision of PSV. To ensure employers participation in PSV many countries have introduced a legal obligation for tertiary education institutions to consult employers on various matters including the mix of provision. This often translates into inclusion of labour market representatives on governing boards of institutions. In Denmark and the US (South Carolina), institutions cannot open new programmes unless they can demonstrate that there are opportunities for employment in the specific field of proposed study. Ongoing programmes are also assessed according to their labour market performance. In South Carolina at least half the graduates receiving associate degrees must be placed on a job related to their programme or continue in education on full-time basis (Kuczera, 2010). These measures in effect oblige institutions to study the market for graduates and liaise closely with employers.

The willingness of employers to provide workplace training provides a good indicator of employer needs. Wesertaard and Rasmussen (1996) found that Danish companies recruiting more staff (other than apprentices) also train more apprentices[6], indicating that companies expanding production capacities are more likely to provide training to students. In Spain and in Denmark provision of PSV is closely tied to workplace opportunities for students. Institutions cannot provide more places on a programme than the number of training places available to students in the specific field.

The integration of workplace training into programmes means that institutions have to connect with employers to secure training places and to ensure that training meets students and employers expectations. This creates some additional workload for the institution staff. Some institutions (e.g. in Denmark) solve this problem by creating a coordinating position to take care of all matters concerning workplace training arrangements. Workplace training can also be beneficial to institutions as it reduces the

cost of the programme and because it provides opportunities for the teaching staff to get acquainted with recent technologies adopted by companies.

Planned provision

Planned provision is another way of meeting employer needs. In some fields such as nursing, the state is also often the main employer. It may then directly regulate provision by setting an upper limit on the number of training places in the programme (see Annex C in OECD, 2008). Some countries control provision also in other fields according to broad skills forecasts. Such systems allow for various forms of direct and indirect control of training places in state sponsored training institutions. In a system of planned provision institutions face two challenges. First, if the forecast is unreliable their programmes led to poor labour market outcomes and might become less attractive with students. Second, bureaucratic controls mean that institutions may not be able to react quickly to changing demand for skills from students and employers.

Getting the right mix of skills

The responsiveness of PSV institutions to labour market needs depends not only on the mix of programmes but also on the skills provided in each programme. The aim of a PSV programme is to provide the skills and knowledge necessary for successful accomplishment of tasks on the job. When students are trained on old equipment or do not learn about important aspects of their field of specialisation they finish their studies badly prepared for jobs. As a result their comparative advantage in specific occupations is low and employers are more likely to hire people with other credentials. For institutions this might imply decreasing enrolment, lower public funding and lower signalling value of the credentials they provide on the labour market.

Tertiary education institutions therefore need to reflect both employer needs and student interests in the set of skills that students develop through the programme (content of the programme). Employers are primarily interested in skills that allow graduates to contribute to productive activities in their companies. From the student point of view company specific skills securing smooth transition to employment are important but not sufficient. Skills increasing their mobility across companies and sectors, so transferable sector-related skills and general skills are also necessary.

In order to get the right mix of skills beneficial to students and employers, tertiary education institutions need to take into account five key questions:

- Who pays for the provision?
- How to achieve a balance between transferable skills and company specific skills?
- How to ensure and update the skills of teachers?
- How to provide skills that address internationalisation of jobs?
- How to ensure that the programme delivers also general skills?

Funding principles

In defining the content of a programme, tertiary education institutions might follow an economic principle according to which the benefits of the investment are shared among those who made it. So, those who pay for PSV programmes decide on the skills provided in the programme.

Consequently, when PSV programmes are funded from public sources, by students and employers, benefits from skills provided on the programme should be shared by students, employers, and the whole society. Programmes funded from public sources should yield positive outcomes for students and employers as these create positive externalities for the society (higher taxes, lower unemployment benefits, etc). Public funding being equal, the amount of company specific versus transferable and general skills should be proportionate to the relative contribution from employers and students.

An analysis of two extreme cases, when employer or student covers the total cost of the programme, helps in defining the skills provided in the programme depending on its source of funding.

If an individual employer bears the cost of the programme there is an argument for the programme content being dominated by employer specific skills. Students benefit out of it as long as they stay with the same employer. So, from the student point of view the positive effect of the training is likely to disappear in the long run.

A student covers the total cost of the programme in the expectation of future benefits related to better employment prospects, among other things. Consequently, students are also interested in developing skills that correspond to company needs.

To conclude, all programmes but those totally funded by employers should provide skills reflecting both student and employer needs.

Transferable versus company specific skills

Employers are in good position to determine what mix of skills is optimal for specific occupations and therefore it is important to engage them in deciding on the content of the programme. Qualifications recognised by all employers in the sector are transferable across these employers and provide a good indication of skills required in the specific field. Collectively employers have an interest in a flexible and adaptable labour force and are therefore interested in a range of skills that fit the needs of all of them and not any in particular.

Many PSV institutions contribute to local economic development by providing skilled labour to local employers. Consequently, many PSV programmes are designed specifically to respond to local business needs. If there is no direct relationship between PSV institutions and local companies some employers, and in particular small ones, may find it hard to get messages on their skill requirements through at a more aggregated level. A local framework of cooperation also allows a flexible and quick adjustment of programme content to changes in the technology and production methods introduced by local companies. This is possible because companies negotiate and agree changes directly with institutions avoiding many intermediary levels and bodies.

In many systems but not all employers are part of the governance structure of tertiary education institutions. Local autonomy in skill definition not only allows a response to changing labour market structure but also desired modifications in the job market. South Carolina uses the PSV system to attract foreign and retain local investment in the state. It offers tailor-made programmes provided by technical colleges to local industry and financial incentives in the form of free off-the-job training for employees to companies creating new employment places.

However, if an employer has too dominant an influence, programmes may give too much weight to company-specific skills and too little to the transferable skills vital for student mobility between firms and geographic regions. As a result, institutions should ensure that locally defined content is balanced by nationally/regionally agreed standards, if available. In such a context students acquire skills reflecting local labour market needs in addition to common core competencies corresponding with national/regional standards.

The skills of students depend on these of teachers

PSV teachers guide and assist students to develop occupation-related skills. They can only fulfil this task successfully if they themselves have a

good knowledge of the sector and the fast-changing requirements in the relevant field. This is often difficult as many individuals tend to become disconnected from the real workplaces after having started as a teacher and become less aware of organisational and technological innovations adopted by companies. The OECD review of VET (OECD, 2010b) identifies two pathways through which institutions can improve the occupation related knowledge of teachers. First, teachers may be required to have relevant work experience prior to entering the profession. Second, teaching staff needs to systematically update their occupation-related skills. Given the importance of practical skills, all teachers of practical subjects should be encouraged to spend time in workplaces. As teachers of practical subjects think they are too busy to update their skills and knowledge unless in-service training is formally recognised as part of their job and recognised as part of their workload, (Dalton and Smith, 2004), institutions may need to develop wage incentives and formal arrangements for teachers who want to maintain contacts with industry.

Internationalisation of jobs

PSV programmes are often designed specifically to respond to local business needs and to country-specific requirements. But in an economic sector subject to the globalising influences of international trade and foreign direct investment PSV graduates might find it difficult to compete on the labour market against those with more internationally recognised credentials including classical university degrees. For example in many companies investing in Switzerland are unfamiliar with Swiss PSV qualifications and may therefore prefer to employ individuals with more familiar university qualifications. (Fazekas,forthcoming). To increase the visibility of PSV in programmes preparing for professions particularly exposed to globalisation, local content needs to be well balanced with international requirements. For many institutions this is a challenge as foreign firms (where the issues are most salient) are often less well connected to the national PSV systems than local companies.

General skills matter too

An increasing number of employers expect workers to adapt to new work requirements, solve unknown problems and communicate effectively with others. General skills such as literacy and numeracy underpin these competencies. Weak general skills are often a problem in upper secondary VET programmes as VET students spend less time on activities fostering literacy and numeracy skills than those in more academic pathways (OECD, 2010b). This is related to the fact that PSV caters for a population

with diverse needs and levels of academic preparation. It provides a pathway for those who want to pursue their education above upper secondary level but for whom university (or equivalent) is not a viable option. These include graduates of upper secondary VET programmes who do not meet entry requirements to enter university, people already on the labour market who want to improve their skills or retrain but cannot afford or do not wish to return to full time education, and individuals who for many other reasons do not pursue their education in longer post-secondary programmes.

Weak general skills can undermine a student's capacity to follow and complete the programme. For institutions this involves a high student turnover and more challenging teaching environment, and for individuals and the society lost opportunities and money. To assist individuals lacking general skills institutions in some countries such as the US and Denmark encourage students to participate in catch-up courses before starting on PSV programmes. They identify students who lag behind in general skills and who might benefit from catch-up courses through a systematic assessment of the skills of new students. In Denmark, a reduction in the dropout rate among PSV students is one of the national policy objectives and institutions are kept responsible for it. The amount of funding they receive from the state depends on the progression and completion rate in the student intake.

Conclusions

An increasing number of jobs require combination of sector specific skills and more general competencies that allow workers to interact effectively with others, solve problems and develop new skills if necessary. At the same time, the number of jobs, often in services, relying on limited knowledge and skills has also been growing. Individuals respond to these changes by investing more in education. As a result the educational attainment levels in many OECD countries have increased. Good quality PSV prepares for high skill and demanding jobs. Strong links between PSV and labour market are the key to this success.

Notes

1. This statement is based on an assumption that workers with different education types are not perfect substitutes. See Hamermesh (1993) for a literature review on the demand for heterogeneous labour.

2. According to the International Standard Classification of Occupations (ISCO), individuals in occupations classified as "professionals" and "technicians and associate professionals" perform tasks and duties requiring the highest skill level. Handel (forthcoming) using the International Social Survey shows that in the OECD countries for which data are available, individuals employed in these high skill occupations have the highest level of transferable skills in comparison to those working in other occupations requiring lower skills (according to employee responses). ISCO provides a tool for classifying and aggregating occupational information by skills required (*www.ilo.org/public/english/bureau/stat/isco/isco88/index.htm*). Professional group "includes occupations whose main tasks require a high level of professional knowledge and experience in the fields of physical and life sciences, or social sciences and humanities. The main tasks consist of increasing the existing stock of knowledge, applying scientific and artistic concepts and theories to the solution of problems, and teaching about the foregoing in a systematic manner. Most occupations in this major group require skills at the fourth ISCO skill level. Technicians and associate professional group "includes occupations whose main tasks require technical knowledge and experience in one or more fields of physical and life sciences, or social sciences and humanities. The main tasks consist of carrying out technical work connected with the application of concepts and operational methods in the above-mentioned fields, and in teaching at certain educational levels. Most occupations in this major group require skills at the third ISCO skill level" (ISCO, summary of major groups, *www.ilo.org/public/english/bureau/stat/isco/isco88/publ4.htm*)

3. More on the substitution between labour and capital can be found in Hamermesh (1993).

4. Data on student mobility are available for foreign and international students. While foreign students are defined by the nationality, international students are identified by their previous country of study or residence. This paper uses the term "foreign students" to refer to both foreign and international students, unless specified otherwise (OECD, 2009).

5. The US data refers to international students. Data on foreign students are not available.

6. This study evaluates impact of various factors on provision of training to upper secondary students (apprentices), we assume that the results would be similar for PSV students.

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Chapter 3.

Differentiation, de-differentiation and collaboration between vocational education and universities

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Since the mid-19th century, societies have differentiated both work and education. In the last 30 years a counter trend has emerged to de-differentiate work and education with the pursuit of more flexible forms of work and generic skills, and the blurring of the boundaries between institutions. While de-differentiation is pursued to overcome the negative consequences of specialisation and growing social inequalities, it undermines the specialisation that is important for innovation and growth in the "knowledge economies". As a result, policy makers are increasingly calling for greater collaboration between vocational education and universities.

This chapter explores the possible consequences of such collaboration by locating it on broader trends to de-differentiate sectors and institutions that have formerly been distinct. It argues that collaboration cannot be seen in isolation, independently of the historical and social context in which vocational education and universities developed. The chapter proposes an analytical framework for considering this context and its significance for different forms of collaboration and their possible consequences. It concludes by considering the implications of the process of differentiation and de-differentiation for future relations between vocational education and universities.

Introduction

Since the middle of the 19th century, societies have increasingly differentiated both work and education. This has supported the specialisation of jobs, sectors, knowledge, skills, types of institutions and qualifications and has been a primary motor of economic and social progress. However, in the last 30 years a counter trend has emerged to de-differentiate work and education. This was seen in the late 1980s in the post-Fordist attempts to develop more flexible forms of work and workers (Piore and Sabel, 1984), and from the 1990s in the increasing emphasis on generic skills (Reich, 1991) and the blurring of the differences and boundaries between institutions, sectors and intellectual fields that stresses what different sectors, workplaces, knowledge and skills appear to have in common. While de-differentiation is often pursued to overcome the divisive consequences of specialisation in the workplace and growing social inequalities, it undermines the specialisation that will be increasingly important in establishing the conditions of future innovation and growth in the "knowledge economies" of the future. As a result, policy makers are increasingly calling for greater collaboration between vocational education and universities.

A major historical trend: social differentiation

Differentiation has been a dominant trend underpinning industrialisation since the middle of the 19th century. It refers to the broad features of modernisation of societies, not just universities and vocational colleges. The argument that differentiation (of work, institutions, sectors, knowledge and skills) has been a primary motor of economic and social progress and was the widely accepted thesis of American sociologists such as Talcott Parsons and Neil Smelser from the 1960s onwards. The concept of differentiation has a broader canvas which can be traced back to the French sociologist, Emile Durkheim (1984) [1893]. It involves distinguishing between forms of work in different occupations and between forms of knowledge and skill in different disciplines and crafts and the institutions designed to advance each. This differentiation in turn supports specialisation, as exemplified by in the myriad of different jobs, degrees and vocational qualifications that make any modern society stand in sharp contrast to the relative homogeneity of pre-industrial societies. The early sociologists disagreed sharply about the social and political consequences of this specialisation. Whereas Comte and Saint Simon saw it as a source of fragmentation and social breakdown

necessitating a more authoritarian political regime, Durkheim saw it as providing the conditions for new forms of "organic" solidarity which would underpin progress towards democracy.

Specialisation provides the basis for the creation of new knowledge, better products and better services and that in education, the price for knowing more and more about less and less is a price worth paying both for the individual and society. This is because what we understand by "knowing more" is more abstraction and the capacity for generalisation. Of no less significance, as again Durkheim pointed out, the specialisation characteristic of modern societies presents the conditions for greater social integration as their members depend more on what others do and know.

There is a complex relationship between the differentiation of an activity and its institutionalisation in a distinctive institutional form that is related to the scale of the activity and its historical development; this is evident also in the field of education. An important innovation of 19th century schooling was the division of pupils into grades as a basis for teaching groups according to their scholastic development – most often associated with age or years of formal schooling. This "simultaneous instruction", as the innovation was then known, allowed schools to develop pupils' knowledge sequentially much more effectively than the single classroom schools that the innovation replaced, and more efficiently than individual tutoring which was affordable only by the wealthy (Hamilton, 1989). The innovation became possible (and necessary) as schooling expanded and the value of formal education was more widely recognised. The extension of mass and then universal participation up to the secondary level led to the differentiation of schooling into primary and secondary education, and subsequently into compulsory post compulsory and higher education. In some countries this led to the establishment of schools specialising in post-compulsory secondary education. However, even schools offering primary and lower and upper secondary education distinguished these with various forms of internal organisational differentiation. Similarly, as universities have expanded their programmes at both undergraduate and postgraduate levels, they institutionalise these differences in various ways. Many US universities, for example, established graduate schools that were quite separate from undergraduate colleges of arts and sciences.

Similar developments can be observed in the disciplinary specialisation of knowledge. The emergence of biochemistry as a separate discipline and its strong growth in the late 20th century that led to its institutionalisation as a separate department or unit within many universities is but one example. Additionally, organisational forms which may formally be identical sometimes disguise further differentiation. University medical faculties may have the same formal status within universities as faculties of engineering or

law, but their strong association with teaching hospitals for clinical education leads to their different treatment within their university and thus to informal differentiation. Conversely, teaching hospitals are treated differently within health systems even though they may have the same formal status as other hospitals. The limited and largely unsuccessful attempts to extend this model to "teaching schools" (for training teachers) or "teaching companies" (for training engineers) is an indication that the development of teaching hospitals was specific to medicine and not an example of a more generic process.

Research is clearly a distinct activity from teaching, even at advanced levels. Yet Anglophone and many continental European countries not following the Germanic tradition have responded very differently to Cardinal Newman's (1959 [1853]) proposal that all research should be conducted in separate specialised research institutions. Whereas the former countries assume that research is an integral part of any modern university worthy of the name, research in countries such as Franc and Russia still takes place largely in specialised Institutes and Academies such as the CNRS in France. There are some signs however, that the Anglophone model of the "research university" is becoming the norm.

While taught postgraduate and research programmes share some similar organisational forms, they are strongly differentiated by their "curriculum", "pedagogy" and assessment. Furthermore, academic staff are appointed, organised and promoted in different ways and according to different criteria for their teaching and research and research supervision. While teaching and research are often not completely differentiated organisationally within universities, and many if not all staff are engaged concurrently in both activities, teaching and research are strongly differentiated in other ways within universities – especially funding. This is evidence of recognition of the level of specialisation needed to advance the disciplinary knowledge.

The process of specialisation has consequences foreseen long ago by Adam Smith and Emile Durkheim among others that can be both benign or, as Durkheim argued, pathological. It is not a neutral process and has sustained and sometimes increased inequalities. In education one of the clearest expressions of specialisation and the inequalities associated with it is the academic/vocational divide. It is for this among other reasons that governments and international organisations have begun to explore the possibility of collaboration between programmes and institutions that have historically been quite separate.

De-differentiation

Throughout the 19th and 20th centuries the process of specialisation has been both a source of growth and a site of struggle – particularly in workplaces. However, in the last 30 years a counter trend has emerged. Originally this counter trend focused largely on workplaces and the tendency of specialisation to lead to divisions and the alienation of workers. Alternatives were associated with ideas like post-Fordism and "flexible specialisation" (Piore and Sabel, 1984) and the hope that specialisation could take a more flexible form rather than the divisive form associated with the scientific management theories of F.W. Taylor. More recently, a rather different counter-specialisation model has emerged that has a broader focus than industrial work. It might almost be seen as endorsing a reduction in the emphasis on specialisation. In going beyond workplaces, it attempted to identify and promote broader social changes that were not made explicit by a focus restricted to workplaces.

This chapter refers to this model as "de-differentiation" a process that stresses what different sectors, skills, and workplaces appear to have in common. Social scientists such as Manuel Castells linked it to the almost universal and hence de-differentiating use of digital technologies. As a focus of educational policy it is perhaps best seen as a response to the growing complexity and size of the public sector and the post school sector in particular and the problems of co-ordination that this gives rise to.

This de-differentiating trend in education is expressed in a number of ways, for example through:

The increasing emphasis on generic skills that are assumed to apply to very different occupational sectors and jobs, rather than the specialist skills and knowledge associated with particular jobs and occupations. Familiar examples of such skills are "problem solving", "thinking skills", "learning to learn" and "working with others" (Jones, 2009).

The growing number of countries adopting national qualifications frameworks (NQFs) based upon a single common definition of a qualification that applies to all sectors (Allais, 2010) and the spread of the Bologna higher education framework across Europe and beyond (Witte, van der Wende and Huisman, 2008; Marghales, 2009). NQFs stand in strong contrast to former qualification systems in which, for example, vocational and academic qualifications were developed quite separately with quite different structures and purposes.

The blurring of the differences and boundaries between institutions, sectors and intellectual fields. Examples take both a horizontal form – as in

the case of the expansion of multi- and trans-disciplinary programmes and "smorgasbord" modular programmes that allow students to select a variety of subjects without concentrating on any – and a vertical form where, for example, colleges offer both school and university level programmes (Powell and Solga, 2010).

These developments have led to a blurring of older divisions – vocational/professional, further and higher education and the emergence of overarching organisational categories such as "tertiary" and "higher" education rather than universities (Young, 2005; Bleiklie, 2005).

De-differentiation encourages the blurring of boundaries between occupations, sectors, types of institution and relations between institutions in a region. It sees such boundaries as "barriers" to innovation and widening participation – leftovers of a former industrial era. Furthermore, the two models make radically different assumptions about the sources of innovation and economic growth.

De-differentiation: some implications

Although differentiation is still the dominant process underlying economic change, it is forms of de-differentiation which are given increasing priority in current policies. The assumption that occupations and specialist skills and knowledge are becoming increasingly alike has led to calls that qualifications should be more portable and transferable and part of a single framework (Young, 2011). A qualifications framework which relies on a common "generic" model of a qualification appears to embody this "de-differentiated" model of our likely social futures (Lester, 2001; CEDEFOP, 2010; Allais, Raffe and Young, 2009). This "homogenising" of previously distinct qualifications within a single model with a single set of level descriptors is paralleled by the growing emphasis referred to earlier on generic rather than specialist skills and knowledge. The assumption is that new knowledge and skills are developing so fast that any existing knowledge or skills quickly become obsolete. The new generic capabilities are assumed to be resources for generating new knowledge and therefore will not become obsolete.

This picture of social change and the future of industrial societies raise a key question: how far is the de-differentiation model consistent with the widely endorsed view that successful modern societies will increasingly be knowledge economies based on product and service innovation? To put it more sharply, are there any examples of "generic capabilities" expressed independently of any specific occupation or field of knowledge being a source of innovation?

De-differentiation, innovation and growth

The de-differentiation model emphasises similarities between different occupations, knowledge and skills, and assumes that the primary source of innovation is a growing supply of "generically skilled" workers able and willing to move to new jobs, new regions, new countries and the new industries and services as and when they arise. The model plays down the extent to which the sources of innovation that have led to new forms of production and service since the late 19th century phase of industrialisation may still be relevant. It also plays down the extent to which occupations, skills and fields of knowledge vary in the extent to which transferability between them is possible without substantial re-training.

If, as has been true since the late 19th century, it is primarily conceptual developments within fields of knowledge and at the interface between knowledge and practice that have been the source of innovation (Muller, 2009), then specialisation and the vertical and horizontal boundaries associated with it may be more not less important – especially at a time when innovation-based growth is becoming progressively harder.

It has been estimated that by 2030 half the jobs in a typical European country will require graduates (OECD, 2008) – in other words they will be knowledge-based. But what knowledge will they need and how will they acquire it? If the knowledge they acquire is to be a genuine source of innovation, it will be conceptual and acquired by learning and study within specialist disciplinary and cross disciplinary communities. The knowledge needed will be discipline-based not generic and it is in bounded disciplinary communities that the concepts other than those we use in our everyday lives are located and developed.

New knowledge as a source of innovation has never been generated by generic skills such as problem solving and learning to learn; these processes take place only "in contexts" with specific contents. Clear differentiation of qualifications and a prioritising of specialisation (and hence boundaries) is more consistent with such a scenario than a blurring of boundaries to support greater flexibility; this can only weaken the conditions for developing specialist knowledge. Another question that those arguing for a more "seamless system" assume rather than answer is this: who are the potentially mobile workers who are the likely beneficiaries of a more seamless system and the sources of its future growth?

Two groups can be identified – the elite employees of multi-national corporations who can and do disregard qualification frameworks and other instruments of de-differentiation, and the unemployed, usually from disadvantaged communities, who are limited to the low skilled jobs that

knowledge economies continue to generate but do not demand qualifications. It is difficult to see how the former will support widening participation or that the latter will be a source of innovation or economic growth.

Another question worth raising about the de-differentiating model is: what might be lost as skills and knowledge become less specialised, boundaries are weakened between sectors and learners are encouraged to choose their own pathways?

One answer relevant to this question is the sequencing and coherence of curricula that are the conditions for acquiring all but the most mundane and every day knowledge and skills. We know much about the conditions under which people acquire specialist knowledge which applies as much to sophisticated crafts as to the acquisition and application of new ideas from physics or chemistry. Acquiring specialist knowledge (or skills) needs to be sequenced in ways that ensure that learners do not miss key concepts and practices. Pathways to such knowledge cannot rely on the inevitably un-informed choices of learners. If access to specialist knowledge is important, its logic points in a very different direction to the logic of de-differentiation.

Why did the differentiation/specialisation model come under challenge and with what consequences? Major sources of challenges to it have been:

- The massification of the post school system itself (Schofer and Meyer, 2005), and the search more means of coordinating it efficiently; and

- The pressure in every country for a more inclusive system that could allow access to far wider sections of the population.

Developments within private fee-paying education, at least in the UK, suggest that specialisation and democratisation are at odds and that it is difficult for the former to avoid elitism and exclusiveness. There are signs, however, that as source of innovation specialisation may have deeper epistemological roots. As economic growth grinds to a halt across much of the developed world the preferential investment is in conceptually rigorous disciplines, what are known as STEM (science, technology, engineering and mathematics) subjects.

In summary, there are two models of social change: the differentiation model and de-differentiation model. The differentiation model assumes continuing specialisation, the maintenance of boundaries and the distinctiveness of vocational and university education and the hierarchical relationships between them that their separation implies. This model inevitably generates inequalities which an education system based on

specialisation cannot on its own overcome. The second, de-differentiation model sees the source of innovation and growth in the flexibility of workers and their willingness and ability to move easily between sectors and jobs – the new "portfolio worker" is sometimes referred to.

Lifelong learning and policies associated with a shift to learning outcomes, the blurring of differences between college based learning and learning that is possible at work or in the community are the educational consequence of the de-differentiation model and have dominated the OECD (Skilbeck, Wagner and Esnault, 1998; Santiago, Tremblay, Basri and Arnal, 2008) and the European Union where they have motivated the European Union's projects to promote the transparency of qualifications (EUROPASS), credit transfer (ECTS, ECVET) and the European Qualifications Framework (Powell and Solga, 2010). However, there is no evidence that they are or can be a source of innovation. Why then are they supported? There are two possibilities. One is because they have a broad progressive and inclusive appeal even if the evidence on what they can deliver is sparse. Another possibility is that the combination of common definitions of competence and a single national framework of qualifications offers a way of coordinating provision that increasingly complex and difficult to manage; they are then management tools rather than instruments with educational purposes. However, despite the plausible rhetoric, they do not address the question of innovation.

Differentiation, de-differentiation and collaboration

What then do these two interpretations of the current context say about the potential of collaboration between universities and vocational education? Depending on the assumptions made, giving greater priority to collaboration can be seen as an example of either a de-differentiating or a differentiating development. The first arises from recognition that there are more common purposes shared by the potentially collaborating partners than has been the case in the past. From that perspective, collaboration as a de-differentiating process appears like a rational step in policy. It implies that the partners give attention to more broadly defined and shared educational goals and less to their internally defined goals. The questions this raises are:

- what are these common purposes?
- what are the grounds for claiming that they are better achieved by partnerships?
- what purposes are lost by giving more time to collaboration?

The second assumption is that each collaborating partner has resources that the other can benefit from; in other words it assumes that the benefits of de-differentiation can be shared and there is an inter-dependence between universities and vocational providers in achieving their goals. Universities are part of the tradition which stresses that the internal growth of knowledge within disciplines informs not only the humanities and pure sciences but the university's approach to both teaching and research in all fields, even those which have a strong vocational or professional orientation. On the one hand, universities are under increasing pressure from governments to engage in what is known as "knowledge transfer". Collaboration with vocational education providers offers the possibility of access to fields of practice of which universities have no experience and hence potentially can be a source of innovation. On the other hand, collaboration can also be the first step towards a more instrumental purpose for universities where their priorities are governed by the short term demands of different fields of practice and the priorities of governments. One consequence is that universities move towards the route of over-dedifferentiation and lose part of their capacity to act as a source of innovation and new knowledge. Robust mechanisms of support for internal differentiation are needed to protect against this risk.

From the perspective of vocational providers collaboration can be seen as a new form of specialisation as fields of practice previously codified only by procedural knowledge have opportunities to conceptualise their practice by drawing on the specialist knowledge developed in universities. Collaboration also offers potential possibilities to vocational students. Many such students are on vocational courses because they have not achieved the admission requirements of universities or have not been able to pay the fees. However, there are many reasons why students fail admission requirements which have little to do with their capabilities. Collaborative programmes with universities can offer such students a "second chance".

Finally it is also important to bear in mind that the university/vocational education distinction is not as clear as it was in the era when universities led to professions and vocational programmes to crafts or trades. Massification of higher education has led to a diversification of universities and the development of new programmes that draw on the application of knowledge. In a parallel way, some traditional vocational providers now offer university level programmes. Collaboration in such contexts becomes more like a partnership between equals.

Conclusions

The forces, internal and external that underlie both differentiation and de-differentiation will not disappear. The balance may change, but the fact they are fundamentally contradictory and pull in opposite directions will not. Specialisation, clear boundaries and the hierarchies associated with them remain the conditions for the development of new knowledge and the opportunities for the creation of the specialists of the next generation; how else except through disciplinary boundaries will we create the sources of loyalty and commitment to study and research and the conditions for establishing learner identities? On the other hand the anti-specialisation, de-differentiating pressures will not disappear either.

De-differentiation has two strands which are worth distinguishing. The most high profile strand is genericism – the shift from an emphasis on specialist knowledge and skills to generic competences. This we argue is a mistake, or rather a *cul de sac*. It confuses two ideas, genericism and generalisation. Firstly, generecism is a classificatory or procedural process that involves the identification of what superficially appears common between distinct activities. It may be necessary for certain administrative purposes, but it is essentially an accounting device and mechanism of control; it does not have pedagogic or epistemic purposes. Secondly, generalisation is a conceptual process linked to abstraction from particular cases and involves the identification of common underlying causes of specific phenomena – in other words, it requires concepts, not just intuitions.

Broadly speaking while universities have given priority to generalisation; as a consequence they have been selective in the students they recruit and the problems they have given priority to. In contrast, vocational colleges were initially established to give workers access to content that employers saw as relevant to their employment (physics for technician engineers, for example). However, such conceptually-based curricula have increasingly given way to the new forms of genericism – competence-based training tied to measurable outcomes. The new vocational programmes sometimes offer access to employment but increasingly, it is access without content or theory. This suggests that if collaboration between universities and vocational programmes is to be innovative, it has to start with two challenging goals:

- making the generalisations developed by universities more accessible to vocational college students through improved pedagogies, and
- enabling the vocational colleges to replace their genericism with the generalisations developed by universities.

Notes

1. This is a revised version of a paper presented to the OECD/IMHE international seminar "Collaboration between vocational and university education: Building partnerships for regional development", 17-18 October 2011 Donostia-San Sebastián, Spain.

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Part II.

Post-secondary vocational education and training: country case studies

This part provides a snapshot to the recent developments of PSV by highlighting experience from four OECD countries. It analyses the impact of the dual sector universities in Australia, short cycle higher education in Scotland, three sub-sectors of Norway's tertiary education and the emerging non-university higher education in Italy, as well as the vocational education and training in Spain. It discusses the issues of transition, participation and collaboration of different types of post-secondary education and analysis the impact of policy changes.

Chapter 4.

Australia's dual sector universities and transfer from vocational to higher education

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This chapter highlights the Australian tertiary education system that is divided into vocational and higher education systems. It provides information on student enrolment and participation in the vocational and higher education systems as well as the fields of study. It analyses the transition from vocational to higher education and provides evidence that dual sector universities support this transition more successfully than other universities. It shows that pathways are strongest when the sending and receiving institutions are close academically and geographically. Finally, it argues that in addition to stronger pathways, dual sector institutions also address the needs of the communities which are big enough to sustain one integrated tertiary institution but not big enough for separate vocational and higher education institutions.

Organisation of Australian and vocational and higher education

Australian vocational education and training comprises programmes classified in the international standard classification of education as ISCED level 4 – post-secondary non-tertiary education and ISCED level 5B – first stage of tertiary education (practical). The other sector of tertiary education is called higher education and comprises ISCED level 5A – first stage of tertiary education (theoretical) and level 6 – second stage of tertiary education (Table 4.1.).

Table 4.1. International standard classification of education level and Australian sectors and qualifications

ISCED-97	Australian Qualification	Australian Sector
Level 6 – second stage of tertiary education	Doctor of Philosophy	Higher education
Level 5A – first stage of tertiary education (theoretical	Associate, bachelor, masters degrees	Higher education
Level 5B – first stage of tertiary education (practical)	Diploma, advanced diploma	Vocational education
Level 4 – post-secondary non-tertiary education	Certificates I, II III, IV	Vocational education
Level 3 – (upper) secondary education	Senior secondary certificate	Secondary
Level 2 – lower secondary or second stage of basic education	None	Secondary
Level 1 – primary education or first stage of basic education	None	Primary
Level 0 – pre-primary education	None	Pre-school

In Australia, vocational education is provided by registered training providers which can be public or private. Technical and Further Education (TAFE) institutes are public providers of vocational education that are managed and mostly financed by the six states and two territories. 57 TAFE institutes provide 80% of all publicly funded vocational education, whereas about 5 000 private vocational education training providers provide 20% of publicly funded vocational education and probably most privately funded vocational education. The scope of privately funded vocational education is uncertain, because Australia has limited robust data on it.

About 60% of the funding for publicly funded vocational education is provided by state and territory governments, 30% by the Australian Government and 10% is from fees, most of which are paid by students but

some of which are paid by employers. Most states allocate most of their funding by grants to their TAFE institutes. About 20% is allocated by tender open to TAFE institutes and private providers. The second biggest state Victoria allocates all its funding in the form of a restricted voucher tenable at any TAFE institute or private provider. Private providers offer a higher and growing proportion of publicly funded vocational education in Victoria than the other states. Most of the other big states are either planning or contemplating to introduce restricted vouchers.

Higher education is provided by 37 public universities, 2 private universities and some 150 private higher education providers. The public universities offer 93% of all higher education student load. About 45% of the financing for the public universities is provided by the Australian Government, 17% is from domestic student fees, 17% from international student fees and the balance is from a variety of smaller sources including state governments and commercial contracts. Domestic students' fees at public universities are regulated and are paid by an income contingent loan which is available to all students, does not charge interest and is paid through the tax system when students' income reaches about average income. Most private institutions' income is from student fees. Domestic student fees at private institutions are not regulated but may be paid by an income contingent loan similar to the loan available to students at public universities.

The only vocational education recognised in Australia is specified in 70 national training packages which comprise competences derived from workplaces.

Australian higher education curriculum is similar to that in the UK. Australian universities have considerable autonomy in designing their programmes, although this is restricted by the requirements of professional and registering bodies in accounting, engineering, law, nursing, teaching and other professions.

Enrolment figures

The biggest proportion (42%) of Australian tertiary students are enrolled in bachelor programmes, which is the qualification for entry into many big occupations such as accounting, nursing and teaching and is also the entry to many occupations in business and government. The second biggest proportion (15%) of students, are enrolled in certificates III which qualify graduates for entry to the trades and other skilled occupations (Table 4.2). Most students who transfer from vocational to higher education transfer from a certificate IV or (advanced) diploma to a bachelor degree. Associate

degrees were recently introduced in Australia and enrolments are still small, although increasing strongly.

Table 4.2. Equivalent full-time students by sector and level of programme, Australia, 2009

Programme	Vocational Education		Higher Education		Tertiary education	
	('000)	%	('000)	%	('000)	%
Doctorate by research or coursework	0	0	32.7	('000)	32.7	2.3
Master degree by research or coursework	0	0	103.8	32.7	103.8	7.3
Graduate diploma and certificate	0.5	0.1	34.0	103.8	34.5	2.4
Bachelor degree (honours, entry, pass)	1.4	0.2	598.2	34.5	599.6	42.1
Associate degree	0.1	0.0	5.2	599.6	5.3	0.4
Advanced diploma	25.4	4.2	3.2	5.3	28.6	2.0
Diploma	96.4	15.8	16.7	28.6	113.1	7.9
Certificate IV	100.5	16.5	0	113.1	100.5	7.1
Certificate III	214.3	35.2	0	100.5	214.3	15.1
Certificate I or II	107.8	17.7	0	214.3	107.8	7.6
Other recognised programmes	47.3	7.8	8.9	107.8	56.2	3.9
Non-award programmes	5.1	0.8	8.8	56.2	13.9	1.0
Subject only – no qualification	10.7	1.8	0	13.9	10.7	0.8
Cross provider programme	0	0	1.6	10.7	1.6	0.1
Total	**609.6**	**100.0**	**813.0**	**1.6**	**1422.6**	**100.0**

Source: NCVER (2011b) Table 2: Equivalent full-time students by sector of education and selected course characteristics, 2009.

Management and commerce is an extensive and broad field of education in both Australian vocational education (where it is 20.1% of all vocational enrolments) and higher education (27.3%). However, otherwise the sectors emphasise different fields. Engineering and related technologies (16.6%) is the second biggest field in vocational education but is relatively modest in higher education (7.4%). Society and culture, which are the humanities and social sciences, is sizeable in vocational education (14.4%) but bigger in higher education (18.3%). Food, hospitality and personal services (7.3%), is significant in vocational education but has only a small share of enrolments (0.1%) in higher education. Conversely, health (14.2%) has the third biggest shares of enrolments in higher education but is less important in vocational education (4.5%), (Table 4.3).

Table 4.3. Equivalent full-time students by sector and broad field of education, Australia, 2009

Broad field of education	Vocational Education		Higher Education		Tertiary education	
Field of education	('000)	%	('000)	%	('000)	%
Natural and physical sciences	3.8	0.6	57.2	7.0	61.0	4.3
Information technology	18.2	3.0	33.5	4.1	51.7	3.6
Engineering and related technologies	101.4	16.6	60.5	7.4	162.0	11.4
Architecture and building	43.2	7.1	20.2	2.5	63.4	4.5
Agriculture, environmental and related studies	27.9	4.6	11.7	1.4	39.7	2.8
Health	27.2	4.5	115.7	14.2	142.9	10.0
Education	14.5	2.4	71.2	8.8	85.7	6.0
Management and commerce	122.7	20.1	222.0	27.3	344.8	24.2
Society and culture	88.1	14.4	148.6	18.3	236.7	16.6
Creative arts	29.9	4.9	59.0	7.3	88.9	6.3
Food, hospitality and personal services	44.4	7.3	0.8	0.1	45.2	3.2
Mixed field programmes	77.6	12.7	3.6	0.4	81.2	5.7
Not applicable	10.7	1.8	8.8	1.1	19.5	1.4
Total	**609.6**	**100.0**	**813.0**	**100.0**	**1422.6**	**100.0**

Source: NCVER (2011b) Table 2: Equivalent full-time students by sector of education and selected course characteristics, 2009.

Almost half of Australia's population of 15 to 24 year olds participate in tertiary education which is therefore universal or open entry in Trow's (1974) terms. Over 15% of people aged 15 to 24 participate in either vocational or higher education, which are therefore mass systems. The participation rate in vocational education is highest for 15 to 19 year olds and in higher education it is highest for 20 to 24 year olds. Australian vocational education enrols many students from 25 to 44 years old (643 872) and still a substantial number from 45 to 64 (340 303). In contrast higher education's enrolment of older students is much smaller, which may need to be increased as the population ages (Table 4.4).

Table 4.4. Participation rates (%) by sector and age group, Australia, 2010

Age group	Population	Vocational Education		Higher education		Tertiary education	
		Students	Rate	Students	Rate	Students	Rate
15 to 19	1 501 010	462 017	30.8	279 639	18.6	741 656	49.4
20 to 24	1 649 659	306 981	18.6	476 367	28.9	783 348	47.5
25 to 44	6 368 023	643 872	10.1	398 742	6.3	1 042 614	16.4
45 to 64	5 583 979	340 303	6.1	31 166	0.6	371 469	6.7
>64	3 009 114	25 139	0.8	6 743	0.2	31 882	1.1
15 to 64	15 102 671	1 753 173	11.6	1 185 914	7.9	2 939 087	19.5

Source: NCVER (2011a) Table 3: student characteristics, Australia, 2006–10; DEEWR (2011) Table 2.1: all students by age group and broad level of course, full year 2010; ABS (2010).

Dual sector universities

Internationally many universities have humble origins, some starting as trade schools. In the UK, part of the University of Manchester originated as the Mechanics' Institute established in 1824 while the University of Sheffield was formed from the amalgamation of 3 institutions, 1 of which was Sheffield Technical School founded in 1884. In the US, Georgia Institute of Technology originated as the Georgia School of Technology in 1888 and the California Institute of Technology originated as Throop College of Technology in 1891. There are several other examples of institutions in the UK, US, Australia and elsewhere that started as trade schools and discarded their vocational programmes as they developed higher level programmes and then research.

In contrast in the Australian state of Victoria, some institutions were established as trade schools did not discard their trade origins as they started offering higher level programmes and conducting research. For example Royal Melbourne Institute of Technology, RMIT, was founded as the Workingman's College of Melbourne in 1887 and its first classes were in the trades: architectural and mechanical drawing, theoretical and applied mechanics, plumbing, carpentry, bookkeeping, shorthand, painting and photography. RMIT started offering higher education programmes in engineering and applied science in 1899, it started conducting industrial research in the 1970s and it became a university in 1992. RMIT now has 48 000 equivalent full time students, 25% in vocational education and training and 75% in higher education. RMIT has just over 1 000 equivalent full time doctoral candidates, the 12th biggest of 39 Australian universities.

Other institutions were established as vocational or higher education institutions but more recently started offering programmes from the other sector as part of what seems to be a trend of vertical integration in tertiary education institutions offering programmes that feed into or take graduates from their initial and core programmes. Some vocational colleges are offering associate or bachelor degrees that may be studied by the graduates of their certificates and diplomas. Thus, degrees are now offered by community colleges in the US states of Florida, Texas, Washington and elsewhere; in the Canadian province of British Columbia, Alberta and Ontario (Jones, 2009); by further education colleges in England; by vocational education colleges in Australia; and by polytechnics in Aotearoa New Zealand.

Conversely, some universities in Australia and the UK have recently started offering foundation programmes which are the equivalent of senior secondary education and short cycle pathways programmes, both of which prepare students for admission to their core baccalaureate programmes. Some universities offer preparatory and pathways programmes in their own right while others offer these programmes through subsidiaries such as university colleges.

Some institutions offer programmes in another sector but such a small proportion that they are effectively single sector institutions. Other institutions offer more programmes in their minority sector but remain dominated by their majority sector. These mixed sector institutions have programme approvals, quality assurance, student services, budgets and other processes dedicated to serving their majority sector and the minority sector is handled as an exception to the main structure, system and processes. In other institutions the minority sector is so big that it requires its own structure, system and processes. These institutions thus have to establish dual structures, systems and processes.

Three types of institutions offer both vocational and higher education (Moodie, Wheelahan, Billett and Kelly, 2009):

- single-sector institutions: those with more than 97% of their student load enrolled in one sector;
- mixed-sector institutions: those with at least 3% but no more than 20% of their student load enrolled in their minority sector; and
- dual-sector institutions: those with at least 20% but less than 80% of their student load enrolled in each sector.

Transfer from vocational to higher education

Australia has five well established dual-sector universities and there are currently proposals to establish two more dual-sector universities. This section presents data to establish that Australian dual-sector universities support transfer from vocational to higher education more than other universities.

Entry to higher education in Australia is mainly based on school results and previous higher education studies, while the entry rate on the basis of VET remains small. In 2008, Australian higher education institutions admitted 235 433 domestic students into bachelor programmes based on different criteria: 45% on the basis of their school results and 23% on the basis of previous higher education studies. About half of these students were transferring from one incomplete programme to another, for example, from arts to law; and the rest were starting a new programme after completing a first degree previously. About 8% of bachelor students were admitted on the basis of previous vocational studies, 6% by special entry provisions and 17% on some other basis.

Australian institutions admit markedly different proportions of domestic students to bachelor programmes on the basis of previous studies in vocational education and training. While "dual sector institutions" admit the largest proportion of VET students, there is considerable variation in the proportion of students between these institutions. In 2008, the dual sector universities admitted 20% of their domestic bachelor students on the basis of vocational studies, which was a marked increase on the 5% they admitted in 2000 (Moodie, 2007). The dual sector Swinburne University of Technology and Victoria University admitted 24% or more of their domestic bachelor students on the basis of previous vocational studies, more than double the proportion reported by the dual sector Charles Darwin University and the University of Ballarat. (The vice chancellor of the University of Ballarat (Battersby, 2008) reports that the low rate reported by his university is due to the way the data were collected and that the correct rate is about 17%).

While all other universities admitted only 8% of their students on the basis of vocational studies, some institutions such as Charles Sturt University (20%), the University of Western Sydney (15%) and the Australian Catholic University (15%) admitted higher proportions of students on the basis of vocational studies than some dual sector universities despite being single sector universities offering little vocational education. Three TAFE institutes reported enrolling domestic students in bachelor programmes in 2008 and they also reported admitting very different proportions of students on the basis of vocational studies (Table 4.5).

Table 4.5. Domestic students admitted to a bachelor programme on the basis of a vocational education and training (VET) programme, Australia, 2008

Institution	VET basis	All students	% VET basis
Swinburne University of Technology	840	3 173	26
Victoria University	1 076	4 441	24
RMIT University	1 197	5 954	20
Charles Darwin University	316	2 638	12
University of Ballarat	130	1 694	8
Sub-total dual sector universities	*446*	*2915*	*20*
Other universities	15 688	205 474	8
Northern Melbourne Institute of Tafe	18	76	24
Box Hill Institute of Tafe	36	187	19
Gordon Institute of Tafe	0	21	0
Sub-total Tafe institutes	*54*	*284*	*19*
Other institutions (mostly private)	300	11 775	2.5
All institutions	**19 601**	**235 433**	**8**

Source: analysis of data supplied by Doherty (2009).

Conclusions

Australia's dual sector universities have higher proportions of transfers from vocational to higher education than single sector universities. However, not all dual sector universities have strong student transfer and not all universities with strong transfer are dual sector. This suggests that institutional structures are a significant, but not overwhelming factor in student pathways (Moodie and Wheelahan, 2009). Experience with California community college transfers (Laurente and Pailthorp, 2002; Hayward and colleagues, 2004) and pathways for international students in Australia suggest that pathways are strongest when the sending and receiving institutions are close academically and geographically. Since close academic relations are time-consuming to build and maintain, it is better to concentrate on maintaining the few pathways that are used by big numbers of students and spend less time on the big number of pathways that are used by few students.

Strengthened student pathways from vocational to higher education, is one reason for establishing dual sector universities. But since strong student pathways can be built between single-sector institutions it is rarely sufficient by its own to justify the difficulty of establishing and the complexity of

maintaining dual sector universities. Another reason is to provide both vocational and higher education in communities which are big enough to sustain one integrated tertiary institution but not big enough to justify separate vocational and higher education institutions. This seems to be a strong reason for establishing dual sector universities in the future, and indeed is the rationale for establishing two new dual sector universities in Australia.

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Chapter 5.

College-university links and impact on participation in higher education in Scotland

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The role of short cycle higher education qualifications in vocational education and training has been increasingly recognised in many countries around the world including Scotland. This chapter examines the role that the short cycle higher education qualifications have in Scotland in developing vocational skills, enabling students to progress to bachelor degree programmes and widening access to higher education. The chapter examines the policy initiatives from the Scottish Funding Council for Further and Higher Education (SFC) and the Scottish Government which facilitate more seamless transfer between different qualifications and improve the linkages between colleges and universities. The policy initiatives include the establishment of the Scottish Credit and Qualifications Framework, the launch of "articulation hubs" and efforts to enhance the linkages between short cycle higher education qualifications and bachelor degrees through legislation.

The role of colleges and universities in Scottish higher education

The main form of undergraduate education in Scotland has been the bachelor degree programmes provided by the Scottish universities and other similar higher education institutions. Scotland has 16 universities (including the Open University), one art college, one conservatoire, and one agricultural college[1]. In 2009-10 there were 150 075 undergraduates in these institutions.

Alongside this university-based higher education, Scotland's Colleges are now also important providers of higher education. This is provided through Higher National Certificates (HNCs) and Higher National Diplomas (HNDs) which are developed and validated under the auspices of the Scottish Qualifications Authority (SQA). In 2009-10, 37 330 higher education students were enrolled in these colleges. This amounted to 20% of all undergraduates (Scottish Government, 2011).

The colleges have traditionally been providers of education and training for a wide range of employees, particularly at craft or technician level in many industries, and were known as further education colleges. Many of these courses were provided on a part-time basis, and led to a range of vocational qualifications. However, as many of the traditional industries diminished in size, and in some cases completely disappeared, the provision of training for employees in these industries became less important. As a result colleges had to seek new markets.

While many colleges increasingly took on the role of community colleges, providing opportunities for a wide range of adult returners and young school leavers, they were also encouraged by government policy to continue to see working with employers, and meeting skills needs, as an important part of their role. In pursuing the skills agenda many colleges saw important opportunities in the development of vocationally relevant higher education, as well as a wide range of provision at further education level. This contributed to a significant growth of HE level provision, particularly through full-time Higher National Diplomas (HNDs). As a result higher education provision now accounts for about 10% of the work of these colleges overall, although in the case of some more specialised colleges it can be in excess of 25%. They are now no longer known as further education colleges, but as Scotland's Colleges, reflecting their role in providing higher as well as further education.

Higher National Certificate (HNC) and Higher National Diploma (HND)

With the changing nature of the colleges and the growth in the number of full-time higher education programmes, these Higher National Certificate (HNC) and Higher National Diploma (HND) programmes are now expected to address three main tasks: to develop skills, to provide pathways to higher education and to widen access to higher education.

Since 2003, the higher national "modernisation" programme has re-emphasised the traditional central function for these qualifications: skills development and training, This modernisation programme was designed to review Higher National Certificate and Diploma programmes and "ensure that these key qualifications remain fit for purpose and provide the Scottish economy with relevant labour market skills" (SQA, 2007). As part of the review and modernisation programme the Scottish Qualifications Authority developed "design principles" which referred to the role of Higher National Certificate and Higher National Diploma programmes in supporting "... technician, technologist and first line manager occupations for over 75 years, including progression in professional qualifications and other HE awards". The design principles were developed to ensure that the new or revised programmes would "continue serving these occupations" (SQA, 2005).

A second set of objectives is that these qualifications should provide opportunities for students to progress to bachelor degree level study. The possibility of enabling progression to degrees is noted in the introduction to the SQA design principles, and it is recognised that progression within a particular subject area could be a specific aim for a programme (SQA, 2003). While the role of HNC/D as vocational qualifications continues to be emphasised, many students are now using these qualifications for progression to bachelor degree programmes. This has been particularly associated with the growth of full-time HNC/D programmes over the last 15 years. As a result the Scottish Funding Council has now established five regional articulation "hubs". These hubs are based on universities which are given funding to enable them to strengthen links between universities and colleges, and provide more, and better structured, articulation routes from HNC/Ds to bachelor degrees. The Open University is being funded in a similar way (SFC, 2007).

The third set of objectives is that HNC/Ds should contribute to greater flexibility and widening access to higher education. While this objective has been acknowledge in the Scottish Funding Council strategies, challenges remain. The Scottish Funding Council recognises the role of these

programmes in widening access, particularly through the establishment of the "articulation hubs." Many of these programmes now provide second chance routes into higher education for students who do not have the qualifications needed for direct entry to university degrees, a number of whom are also adult returners, and live in areas of social and economic deprivation. (Gallacher, 2009) At the same time, however, there is no explicit recognition of this objective in the Scottish Qualifications Authority guidelines for the development of these qualifications, and while many HNCs were developed as part-time programmes to provide more flexible education and training for people who were already in employment, there has been a significant decline in the numbers of students registered on these part-time programmes over the past ten years (Gallacher, 2011).

While a number of policy agendas exist with respect to these qualifications, there is a need to recognise them and reconcile any potential conflicts between them. There is an increasing emphasis on the role of these qualifications in enabling people to progress to bachelor degree programmes through articulation, but given the emphasis which there has been on the vocational nature of these qualifications, they have not really been designed with this progression as a key objective. As a result there can be important differences in approaches to curriculum development, learning and teaching and assessment in the college and university based programmes. The third objective – increasing flexibility and widening access – is not one which necessarily fits well with either of the other two, although, given the fact that these courses are often second chance routes to qualifications for people who have less success through traditional academic routes, they do often make an important contribution in this respect. Programmes which have their primary objective as vocational preparation cannot have widening access to higher education as an objective of equal strength.

How do students use these qualifications?

Given the different agendas to which these qualifications are now expected to respond, it is important to ask to what extent students actually use them. Research undertaken in the Centre for Research in Lifelong Learning (CRLL) in Glasgow Caledonian University has explored this issue (Ingram and Gallacher, 2011). This research gathered data from students on a wide range of programmes, and included both full-time and part-time students. The full-time/part-time distinction is important for students on these programmes as many part-time students are already working in occupations relevant to their field of study.

The data reported in Table 5.1 was gathered from respondents a few months after they had completed their HNC/D qualification. From this it can be seen that the majority of all respondents (57%) proceed to some form of further study, while only about one third proceed to, or continue in, employment with no further study involved.

Table 5.1. Destinations of full-time and part-time students

Destinations	Full-time %	Part-time %	Total %
Employment only	30	58	33
Further study only	33	6	29
Further study & Employment	28	29	28
Unemployed	7	5	7
Other	2	3	2
	N = 375	N = 66	N = 457

Source: Ingram and Gallacher (2011).

There are important differences between the former full-time and part-time students in terms of the likelihood to pursue further study and employment outcomes. Part-time students were much less likely to proceed to further study (35%) when compared with full-time students (61%). Data gathered on occupations in which respondents were engaged also showed that, while part-time students were more likely to be in occupations which were relevant to the subjects they had studied for their HNC/Ds, many full-time students were working in jobs such as retail, bar work or call centres, to earn money to support their studies.

Many students, particularly full-time students use HNC/Ds primarily as "transitional" qualifications, which enable them to progress to further study. Most of these students (77%) progress to bachelor degrees. By contrast for the majority of part-time students these qualifications are still part of a process of occupational education and training.

This research also enables to distinguish between the role of these qualifications in different subject areas. Data was gathered from students in 11 subject areas to be inclusive of many of the most popular HNC/D programmes validated by Scottish Qualifications Authority (SQA, 2011) (See Table 5.2). In some discipline areas a relatively large number of students were intending to enter "employment only". This is the case particularly in relation to Beauty Therapy but also with regards to Social Care and Hospitality/Travel and Tourism. In contrast, in a number of discipline areas, particularly Social Sciences and Computing, the data suggests that many of the HN students were intending to progress to further

study and only a relatively small percentage of students were intending to enter or continue into "employment only" after completion of their HNC/D[2]. Other disciplines appear to be situated between these two ends. What appears therefore to be emerging from the data is the idea of a continuum. At one end of this continuum there are programmes clearly focused on vocational preparation but at the other end vocational preparation is a much weaker objective and transition/progression into degree level study is increasingly recognised as a key objective by many of these students.

Table 5.2. Destinations of HN completers by subject area of HN programme

HN Subject Area	Employment Only %	Further Study Only %	Further Study and Employment %	Unemployed %	Other %	N
Beauty Therapy	71	0	12	12	6	17
Built Environment[1]	30	27	34	9	0	64
Business	23	35	33	6	2	48
Computing	15	52	18	12	3	33
Creative Studies	24	12	56	8	0	25
Engineering	55	21	16	7	1	87
Health Care	13	51	26	0	9	53
Hospitality/Travel and Tourism	53	21	16	11	0	19
Social Care	56	13	18	8	5	39
Social Sciences	14	46	36	4	0	28
Sport and Fitness	21	17	55	7	0	29
Total	**34**	**29**	**28**	**7**	**2**	**442**

Note: Includes Quantity Surveying, Architectural Technology and Construction.

Source: Ingram and Gallacher (2011).

When the differing destinations of full-time and part-time HNC/D students, and those in different subject areas is considered, there is now evidence that these qualifications cannot be considered as a homogeneous group. Some (such as beauty therapy, engineering and social care) continue to have vocational education and training as their main function, while others (such as business studies, computing and social sciences) can be seen as primarily transitional qualifications which enable students to progress to bachelor level study.

While many students are now using the HNC/D qualifications as transitional ones, it is important to consider how these qualifications are perceived within the universities to which students progress, and the level of

credit they receive for them. The Scottish Credit and Qualification Framework (SCQF) was established in 2001 to facilitate credit transfer between different types of qualifications. Within this framework an HNC is at level 7, the same level as the first year of a bachelor degree, while an HND and the second year of a bachelor degree are both on level 8. The SFC, which funds all colleges and universities in Scotland, has used the term "articulation" to refer to opportunities for students to progress to bachelor level study with full credit (SFC 2007). However evidence from the HN Tracking study, and national evidence (SFC 2007) would indicate that a substantial number of students do not "articulate" in this way, and do not receive full credit when they progress to bachelor degree level study. The most detailed evidence for this comes from the HN Tracking Study (Table 5.3).

The Tracking Study, while confirming the national data, also enables to make a distinction between the entry levels achieved by HNC and HND students: those with an HND qualification were more likely than HNC students to enter with advanced standing. Three quarters of the HND group entered degree study with full credit, while just over two-fifths of those who entered with an HNC received the full credit[3].

Table 5.3. Relationship between level of HN study and level of entry to degree programmes

Level of HN Study	Level of entry to bachelor degree courses				Totals	
	Level 1 (SCQF L7)	Level 2 (SCQF L8)	Level 3 (SCQF L9)	Did not answer		
	%	%	%	%	%	N
HNC	47	42	8	4	100	79
HND	8	16	75	1	100	118

Source: Ingram and Gallacher 2011.

These data also show that about a third of our students did not receive full credit when progressing. Reasons for this outcome appear that for around 50% of respondents this was the entry level offered by the universities, and they had no choice but to enter at that level, while around 25% indicated they had chosen this entry point, or had decided to progress to another course. The remaining responses were unclear. These findings suggest that a significant number of students do not receive full credit for their HNC/Ds, and have little control over this decision.

A further issue regarding the role of these qualifications as transitional ones is the extent to which they enable students to gain access to all sectors within the higher education system. From Table 5.4 it can be seen that

HNC/D students who progress to bachelor degree programmes are very unequally spread across the Scottish universities.

Table 5.4. Percentage of HCN/D students entering different university sectors and year of entry

	1st Year %	2nd Year %	3rd Year %
Post 92 Universities	57	71	88
1960s Universities	21	15	2
Ancients	14	4	0.5
Art/music colleges	8	9	10
Total	100	100	100

Source: SFC, 2007.

The opportunities for articulation are heavily concentrated in the post 92 universities. These are former "polytechnic" institutions which were established as universities following the 1992 Further and Higher Education Act. By contrast there are much more limited opportunities for articulation into the four "ancient" universities. These are the original Scottish universities which were established in the 15th and 16th centuries. They are still seen as the elite institutions in Scotland, and attract high levels of applications from young, well qualified, and more socially privileged students. These students are seen as the first choice candidates in many faculties or departments, and admissions tutors in these "selecting" universities see themselves as having limited opportunities to admit students with HNC/Ds. By contrast, for a number of discipline areas in the post 92 institutions, college students with HNC/Ds are a major and important source of applicants, particularly where universities find it difficult to attract suitably qualified students directly from school. This has led to the identification of some of these universities or departments as 'recruiting' rather than 'selecting' institutions (Maclennan *et al*, 2000).

The ancient and 1960s universities[4], provide more opportunities to use an HNC/D for the purposes of access rather than articulation, but even here there are more opportunities in the post 92 institutions.

As a result of these factors articulating students represented 15.6% of all entrants in the post 92 universities in 2005-06, but only 1.7% of entrants to the 1960s universities, and a mere 0.4% of entrants to the "ancient" universities (SFC, 2007).

While these qualifications do enable a substantial number of students to articulate to degree programmes and in this way open up new opportunities for progression, they are not viewed as having equal status with bachelor

degrees by many university admissions staff, particularly within the more elite institutions. This has raised concerns that policies designed to encourage articulation are only providing access to a limited range of institutions (Field, 2004).

This issue is linked to the one of the role of these qualifications in widening access to higher education. The data in Table 5.5 has been constructed on the basis of post code analysis of the residences of students undertaking undergraduate level study in colleges and higher education institutions. Area of residence are divided into quintiles ranging from the most socially and economically deprived to the least deprived. It can be seen that there is actually an over-representation of students from the most deprived quintile in higher education programmes in colleges, whereas students from the most deprived fourth and fifth quintiles are under-represented in the universities.

Table 5.5. Scottish domiciled students' participation in colleges and HEIs be level and deprivation quintile, 2009-10

	College Higher Education Level %	Higher Education institutions %
Least deprived quintile	17	30
2nd quintile	19	24
Middle quintile	20	20
4th quintile	21	15
Most deprived quintile	23	11

Source: SFC 2011.

Colleges are clearly much more successful than universities in recruiting students from the more socially and economically deprived communities, many of whom are returners to education who lacked the qualifications for entry to university at the time of leaving school. In this respect they are successful in meeting the widening access agenda. However, if articulating students find it difficult to access the most prestigious institutions this is an important limitation on the success of this agenda.

Policy initiatives to enhance links between colleges and universities

HNC/Ds are an important part of the higher education system in Scotland, and articulation arrangements provide important routes for many students to progress from these programmes on to bachelor degree programmes.

At the same time challenges remain in articulation. Many students do not gain full credit for their HNC/D qualifications. Furthermore, opportunities for articulation are spread unevenly across the university sector in Scotland. More than 40% of articulating students felt they were "not very well prepared" or "not at all prepared" for university, and a similar proportion (46%) found the transition from college to university "quite difficult" or "very difficult" (Howieson and Croxford, 2011).

A number of policy initiatives have been established to facilitate more seamless transfer between different qualifications, and to improve the linkages between colleges and universities, such as the establishment of the Scottish Credit and Qualifications Framework (SCQF), the launch of "articulation hubs", and efforts to enhance the linkages between HNs and bachelor degrees through legislation.

The Scottish Credit and Qualifications Framework (SCQF) has been established as a national unified framework through which learning of all types can be recognised and the relationships between qualifications can be clarified. One of the aims is to build more credit links between the different types of qualifications and through this to enhance flexibility and enable the accumulation and transfer of credit from different routes (SCQF, 2003). This framework has been developed on a partnership basis between the main stakeholder groups, and the universities have agreed to co-operate in the implementation of this framework. While SCQF was not established with the main aim of improving linkages between HNC/Ds and degrees, and it has always had a much wider remit, it has been hoped that it would facilitate progression between these qualifications. However, there is no clear evidence regarding its impact on increasing the numbers of articulation links between colleges and universities, and staff in a number of further education colleges have expressed disappointment in this respect. It has been suggested that SCQF is a tool which can facilitate change, but this requires the commitment of staff within institutions to use it in this way (Gallacher *et al*, 2005).

A second major initiative launched in 2008 was the establishment of "articulation hubs" which was designed to encourage and support more effective articulation. This involves the allocation of GBP 3 million per year, for a five year period, to enable colleges and universities to build better and deeper collaboration. The funding is being allocated to six hub universities to act as five regional hubs (one hub consists of two universities). All of these are post 92 institutions, reflecting the pattern of involvement in articulation outlined above. The Open University has also been given funding to work at a national level, with a particular emphasis on part-time students. The role of the hubs is to encourage a wide range of colleges and universities to work together to enhance articulation links, and

improve the opportunities for successful transition for HN students into degree programmes. The SFC Access and Inclusion Committee oversees and monitors both this initiative.

The most recent policy development which has emerged is a "pre-legislative" paper published by the Scottish Government in September 2011. In this they suggest that, given the inconsistency in arrangements for progression across Scottish institutions, it may be appropriate to legislate to ensure that there is no unnecessary repetition of study at SCQF levels 7 & 8. Associated with this they also suggest that it may be appropriate to "consider whether the HN qualifications need to be refreshed to improve their ability to prepare students for university…" (Scottish Government 2011, p19). The consultation period for this paper ended in December 2011, and firm proposals, and possible legislation, will emerge in 2012. However the terms of this consultation paper make clear the Scottish Government's determination to further enhance these linkages between HNs and bachelor degrees.

Conclusions

The short cycle higher education programmes which are provided by Scotland's Colleges can no longer be considered a homogeneous category of qualifications. Some continue to have education and training for clearly identified occupations as their primary purpose, while others can now be seen as primarily transitional qualifications which are used by students to enable them to progress to bachelor degree programmes.

This diversity raises important issues for the development of curriculum, learning and teaching and assessment within these programmes. Traditionally, the approaches adopted in vocational programmes like HNC/Ds have been quite different from that associated with university-based bachelor degrees. Is there now a need to bring these into closer alignment for these "transitional" qualifications, and if so what are the consequences for the HNC/Ds and for the degrees? These are issues which are increasingly being recognised by staff working within the articulation hubs which the Scottish Funding Council has established, however, the process of bringing about change in programmes with quite different histories, and in which differing agendas can still exist, is a complex and often difficult one.

While the short cycle programmes have had considerable success in widening access to higher education, the extent to which they are recognised for progression with credit to bachelor degree programmes differs considerably across the Scottish university system, and in particular there are only limited opportunities for these students to gain access to the more

prestigious institutions in Scotland. While the Scottish Government has indicated a desire to address this issue, there is little evidence that this pattern will change radically within the foreseeable future. It must therefore be recognised that articulation programmes of this kind can only be one aspect of a widening access strategy within higher education.

Notes

1. The term university will be used in this paper to refer to all of these higher education institutions.
2. HN programmes in Health Care may appear to be part of this group, but the existence of a number of endorsed programmes facilitates progression to level two of degree study, which is clearly part of progression towards a professional qualification.)
3. An additional 8% of HNC students progressed to Level 3. From checking through the data it would be appear that this anomaly can be explained by the fact that all of those who articulated to level 3 undertook their HNC part-time, doing the same course in the same college, so we presume that a local agreement enabled this small group to enter at level 3.
4. Four universities were established in the 1960s following the recommendations in the Robbins Report for the expansion of the higher education system in the UK. While they have not established the elite status of the ancients, they still place considerable emphasis on recruiting younger traditionally qualified applicants and provide relatively limited opportunities for entrants with HNC/Ds.

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Chapter 6.

Bridging the divide in Norway's tertiary education: the impacts of the policy mix

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This chapter describes the core characteristics and dynamics of Norway's tertiary education system and its sub-sectors: the vocational school sector, the college sector and the university sector. It highlights the recent policy initiatives that have aimed at bridging the divide among the various institutions, with focus on policies supporting articulation and student transition. Finally, it discusses the unintended impacts of the policies to drive integration that have led to increasing homogeneity and reduced diversity between the tertiary education sectors and institutions.

Introduction

Since the mid-1960s the Norwegian tertiary education system has experienced a string of reforms, driven by growing student numbers (Pinheiro and Maassen in press). As in many other countries, questions have been raised about how the system should be organised in order to maintain diversity. There is an overwhelming consensus that mass tertiary systems must be more differentiated than elite ones (c.f. Trow, 2007) since the mass systems tend to: *i)* enroll a more heterogeneous student population; *ii)* respond to emerging demands from the labour market; and *iii)* cover a wider range of disciplinary and professional fields (Clark, 1978; Van Vught, 2007). As a result, system level diversification and the introduction of binary models have become the guiding principle for higher education policy across the OECD area (Furth, 1992). In Norway, recent reforms have aimed to establish distinct educational sectors with bridges that link them through articulation arrangements that facilitate transition through the system. In practice, the boundaries between the various sectors of the tertiary educational system remain blurred which has resulted in some unintended outcomes.

System level dynamics and characteristics

In Norway, the tertiary educational attainment among the adult population (16 years and older) more than doubled during the period 1985-2005 (SSB). Particularly the proportion of those with short-term education rose, increasing from 10% to 20% within two decades. This trend was followed by a sharp decline, from 45% to 31%, in attainments below upper secondary education. The last five years have been characterised by a moderate increase in tertiary educational attainments.

The Norwegian post-secondary education system consists of three sectors: the vocational school sector, the college sector and the university sector. Colleges and universities are part of higher education. Despite clear legal boundaries between the sectors, close links combine them.

The vocational school sector

Vocational education at the post-secondary level is regulated by a separate Act. The system is based on tripartite co-operation at national and regional levels, involving employers' and workers' unions. At the national level the Council for Vocational Education and Training, appointed by the Ministry of Education, gives advice and takes initiatives in vocational

education and training (VET). At the regional level, 19 counties each have vocational training boards with specific advisory tasks. VET is delivered by schools and enterprises which are approved as training enterprises by the respective county authorities. There are about 200 vocational schools, both public and private. Public upper secondary schools offer both general education and VET. Most (95%) upper secondary students attend public schools, while the private sector caters mainly those enrolled in a general programme (OECD, 2008). In 2006-2007, out of 187 000 students enrolled in upper secondary education, half applied to a VET programme (UD, 2009). The first stage of vocational education is the lower secondary level where elective subjects enable 13-15 years olds (8-10th graders) to try out different upper secondary level programmes. Having successfully completed lower secondary education, students can then choose to enter one of the nine existing vocational education programmes.[2] After the first year at upper secondary level (in one of the above programmes), students have to opt among several specialisations in year 12, leading to a further specialisation in year 13 when a specific profession is chosen. Within VET, subjects are divided into common core subjects, common programme subjects and in-depth study project. Technical schools rank highest in popularity and number (about 50), offering 2-year vocational training courses to students who have either completed upper-secondary schooling or possess a minimum of five years of working experience within a given trade. The schools are under the supervision of the county authorities. A student who wishes to transfer to a general studies programme is required to complete a year of supplementary studies qualifying for entry into higher education at either colleges or universities. A recent review identified student choice, dropouts, quality assurance mechanisms and the recruitment of trainers as key challenges (OECD, 2008).

The college sector

The college sector in Norway emerged in the early 1970s when district colleges providing vocationally oriented studies and some basic university courses were established across the country. In the mid-1990s, the college sector experienced a major reorganisation when 98 professional colleges were merged into 26 state university colleges. This mandatory (policy) effort aimed at: improving administrative processes and academic quality through the creation of larger units; facilitating interaction and co-operation across different study programmes; Improving conditions to develop new types of study programmes; and making the college sector more cost efficient through economies of scale (Kyvik, 2002). Currently, the college sector offers study programmes primarily at the Bachelor's level, but to an increasing extent also Master's as well as doctoral programmes in selected

areas. In 2010, the university college sector enrolled about 105 000 students, 44% of total higher education enrolments (SSB).

The university sector

The university sector in Norway consists of eight public universities and nine specialised university institutions (sports, music, architecture etc.), two of which are private. Up to 2004, Norway had only four universities, but the Ministry of Education then decided that colleges and specialised university institutions fulfilling certain requirements could apply for accreditation to full university status (c.f. Stensaker *et al.,* 2005). Since then, three university colleges and one specialised university institution have become fully-fledged public (run/funded) universities. In 2010, about 122 000 students enrolled in the university sector, of which close to 21 000 attended a private, not-for-profit educational institution (SSB).

Links between the vocational school sector and the college sector

Over the years, the issue of whether post-secondary vocational education should be offered within separate schools or within university colleges has caused disagreements among various stakeholders. In the late 1990s, as a direct response to an OECD (1998) report on tertiary education, the government appointed a commission (The Berg Committee) to evaluate Norway's vocational school sector and to explore the opportunities to strengthen its legal framework. The final recommendations highlighted the need for: a separate Act for vocational education, a quality assurance mechanism, criteria for the public recognition of vocational schools and clear roles and responsibilities for administrative and financial oversight (Norges Offentlige Utredninger, 2000). The Ministry of Education proposed a white paper to Parliament which stressed that instead of formalising the vocational school sector, technical schools should remain under the responsibility of the county authorities. In addition, the university college sector should take a greater degree of responsibility for shorter vocational courses as an integral part of formal study offerings.

The discussions of the proposal in the parliamentary committee for educational affairs highlight the political disagreements about the status of vocational education in Norway. The left wing of the committee, composed of Labour Party representatives, argued that short, vocational courses should be the responsibility of the university colleges, which had the capacity and competence to do this. In contrast, the conservative right wing majority stressed the need for a vocational education sector to become an alternative for higher education. They argued that more practical and vocationally

oriented provision would allow vocational schools a natural and permanent place in the educational system, and result in innovations, for example in critical fields of health and social care. Furthermore, a separate vocational sector would improve the status of VET with a distinct identity in the tertiary education system, making it a viable alternative to higher education.

One of the reasons for establishing a separate VET sector in Norway is the perception that the labour market requirements are more appropriately met outside rather than within the university colleges. In order to maintain and further develop the variety of educational courses beyond upper secondary schooling, the committee argued that a formal three-level education system should be developed to meet diverse goals and purposes. As a result of the discussions in the Parliament, and despite the initial reluctance of the government to formalise the vocational school sector, the Act on Vocational Education was passed in 2003. This Act establishes vocational education as a short and work-related alternative to higher education courses offered at universities and university colleges. The legal framework ensured a sector-wide demarcation between vocational education at vocational schools and professionally-oriented higher education programmes at the university colleges. In tandem with the legal framework, Norway's national accreditation agency (NOKUT) has accredited and ensured the quality assurance of practical courses at the vocational schools, which has contributed to the public legitimacy of the vocational schools sector, enabling it a more prominent role in the tertiary education system.

Despite positive developments, problems remain in the integration between the three sectors of the tertiary system, particularly in terms of transition from vocational schools to higher education. The structural barriers to transition to higher levels of education have not been entirely removed. The Ministry of Education has acknowledged the need to clarify the links between vocational schools and higher education institutions. When entering higher education, those with vocational school qualifications must undergo an individual assessment of skills acquired if part of their competence and skills is to be recognised as equivalent to higher education. Part of the problem is due to the lack of a system of credits at the vocational schools, which makes it difficult to assess the scope and depth of education taken, making comparability with higher education a difficult task (Ministry of Education and Research, 2005). The OECD review of tertiary education in Norway stated that: "there would be merit in linking or combining some vocational colleges [schools] with university colleges – so as to promote co-operation between vocational subjects and business studies or engineering and to facilitate the movement of students in either direction." (OECD, 2006)

The integration between the college and the university sub-sectors

A key aspect of the relationship between Norway's university colleges and its universities has been the possibility for the transfer of students, a process traced back to the mid-1960s (Bleiklie, *et al*., 2000). The national observers at the time argued that the post-secondary education system should be closely integrated to allow the mobility of students from district colleges and professional schools into universities. The mission of the university colleges was therefore not only to provide practical, short-term education for the labour market, but also to train (and qualify) students for undertaking higher level studies at universities. Despite doubts about the feasibility of accomplishing vocational and theoretical training within the college sector expressed by Parliament, the Ministry of Education supported the strategy of close integration (Kyvik, 1981).

To meet the formal requirements for transferability and recognition by universities, the university-college curricula had to be adapted. In the 1970s, about 15% of college graduates enrolled in a university programme in the following semester (*ibid*.). By the early 1980s, with one exception, all 2- to 3-year degree programmes at the district colleges had been accepted by universities as the equivalent of 1.5 years of university studies. The increasing adaptation of curricular structures led to a decline in innovative efforts and regional orientation of Norway's public colleges. Ironically, this process was driven by the colleges themselves who lobbied the ministry and the universities about the need for credit transfer system between the two sub-sectors.

Student transfers have become an integral part of the Norwegian tertiary education system. In the early 1980s, the new Act on Examinations and Course Grades extended the provision of university preparation to the colleges and ensured that the colleges were legally entitled to award a first-degree qualification corresponding to those offered by universities, enhancing student transition. A flexible credit transfer system was adopted in 1981, allowing college graduates to further their education at the university level. These developments affected particularly engineering and economics/business administration. For example, vertical integration schemes between 3-year college engineering programmes and 5-year university civil engineering programmes were enhanced. By the early 1990s, about one quarter of all students with 3-year college degrees in engineering enrolled in civil engineering programmes in universities (Aamodt, 2001). In economics and business studies, the 2-year college courses gradually became regarded as the first stage of the 4-year degree programmes in economics and business administration at the specialised university institutions (Rønhovde, 2002). According to the Ministry of Education in the

recent OECD report: "The higher education sector is well integrated, with extensive and mandatory recognition of study programmes and degrees across institutional types and through student mobility between institutions" (OECD, 2006).

In the mid-1990s, mandatory mergers of professional colleges and district colleges in each region (Kyvik, 2002) and the common Act for Universities and Colleges led to the further consolidation of a binary higher education system in Norway (Kyvik, 2009). As a part of this reform, the notion of "Network Norway" was introduced with the aim to link the institutions within and across the binary divide and to sustain national steering of the future development of higher education. The concept presupposed that the various institutions would be further developed within an integrated national higher education system. The basic idea was that expansion was to go hand in hand with specialisation, so that every public university college would be able to set national standards in at least one given programme, which should become a node in a national network. This brought a more clear division of labour, roles and responsibilities between the various institutions, while, at the same time it enhanced the co-operation among the sectors (Kyvik, 2002).

Contrary to the initial intentions by policy makers, the Network Norway sustained the demarcations across the binary system and facilitated the co-ordination between the university and college sectors, which reduced structural and cultural differences of the two sectors. The passing of the common Act set in motion a process of rule harmonisation of organisation/management principles, funding structures, personnel policies etc. The division of labour was further undermined as a result of the implementation of a common academic career system (Kyvik, 2008). The 2003/04 "Quality Reform" which culminated in the introduction of a common two-tier degree structure, following the Bologna reform also contributed to the further dissipation of the boundaries across the binary system.

Concurrently to "academic drift" (Pratt and Burgess, 1974) in the college sector linked to ambitions of attaining full university status (Kyvik, 2009), there have been clear signs of "vocational drift" (Gellert and Rau, 1992) across Norway's university sector (Pinheiro, forthcoming). This is driven by two main processes. Firstly, the transformation of universities from elite to mass higher education institutions (Trow, 2007) has altered policy imperatives regarding the role and purpose of universities in the production of qualified labour force in the context of a predominant knowledge-based society/economy (c.f. Paul, 2006). While continuing to pursue their traditional academic programmes, Norwegian universities are also expected to introduce work-

related courses focusing on the needs of society and the labour market (Gulbrandsen and Nerdrum, 2009) and the demands of new student populations (Pinheiro and Maassen, forthcoming). Secondly, recent data reveal that about 25% of first-year students enrolled at universities transfer to university colleges at a later stage (Hovdhaugen, 2009). Due to intensified competition for students, partly caused by the introduction of a new funding system (Stensaker *et al.,* 2005) cased by the expected decline in the student population after 2015 (Norges Offentlige Utredninger, 2008), Norway's universities have started to establish professionally related courses to both retain and attract students who would otherwise opt for a vocationally-oriented programme at the college level.

The recent (2005-2011) attainment of full university status of three university colleges and one specialised university institution has resulted in a further blurring of the binary divide. The majority of the remaining public colleges want to follow in their footsteps, by obtaining full university status themselves or by merging with an existing university within their geographic vicinity. The Ministry is not entirely comfortable with this development, which will result in the creation of a large number of universities in a country with a population of less than five million people, given the general tendency among neighbouring Nordic countries for a reduction in the number of institutions (Maassen, 2009). A recent committee report (*Stjernø*) suggested that the binary system should be abolished and a unified higher education system should be built (Norges Offentlige Utredninger, 2008). The Ministry should take active steps to limit the number of future universities to no more than 10-12 establishments. From an institutional diversity perspective (see Van Vught, 2009), the question in Norway and elsewhere is not that of whether to become a university or not, but of what type (Maassen and Olsen, 2007), *i.e.* with a distinct institutional profile and mission. The new universities have indicated that their aim is to be different from the traditional comprehensive research-led universities by focusing on professionally-related university level education and the needs of regional populations. Yet, past experiences in Norway and beyond suggest that there is a natural tendency for gravitating towards the most prestigious "flag-ship" university model at the system level (Huisman *et al.,* 2002; Morphew, 2009; Pinheiro, 2011).

Policy implications and conclusions

In light of recent developments, it is worth enquiring to what extent the policies to integrate the various sectors of Norway's tertiary education sector have affected the status and missions of the various providers, and the scope

and nature of the relationship between them? In Norway, the policy of continuing demarcation of institutional boundaries across tertiary education, combined with the adoption of student transfer mechanisms has led to a set of unintended consequences. Two of the most prevalent effects include the changes in curricular structures and a new dynamic that characterises structural relations among institutions.

The adaptation of study offerings at the vocational schools to the requirements of the university college sector as well as similar patterns across the university college sector in terms of facilitating the integration (student mobility, work co-ordination, careers, etc.) with universities have led to the academisation (Kyvik, 2009) of what was supposed to be a more practically-oriented type of instruction at both the vocational schools and the professionally oriented colleges. Rather than strengthening the position of vocational institutions, the adoption of policy instruments such as student/credit transfers etc., and the consequent curriculum adjustments that these have implied have contributed to weakening the distinctive profile and mission of vocationally- and professionally-oriented education in the tertiary education sector.

This academisation has led to both positive and negative responses. Students wishing to transfer into university programmes have welcomed the developments, while their peers who prefer vocational education as an alternative path to traditional higher education have become disillusioned about the increasing academisation of study offers. Among the teaching staff, those trained at the doctoral level at the universities have drived the academisation processes, while others have faced difficulties in conceiving themselves (professional identity) as part of the academic profession (Enders, 2001) and have not had adequate training to engage in theoretically-driven instruction. Finally, some labour market representatives have been dissatisfied about the lack of practical skills among graduates, while others have welcomed the stronger theoretical and conceptual knowledge of graduates.

Integration across the tertiary education system In Norway has led to increasing homogeneity and reduced diversity between the sectors and institutions. Guy Neave (1983) noted close to three decades ago that all systems of higher education, irrespective of size, display a dynamic towards integration even if/when policy aims at sustaining the binary divide. Developments in the Nordic countries have confirmed such assumptions (Fägerlind and Stömqvist, 2004; Kyvik, 2009). Increasing integration across the tertiary system via student transfers, curriculum adjustments, the harmonisation of rules and regulations has contributed to "mimetic isomorphism" (Powell and DiMaggio, 1991; Greenwood *et al.,* 2008), the copying of features among organisations operating in the same field or

sector. The result is increasing homogeneity and declining diversity. In the case of Norway, this process has led to a much closer relationship among the various sectors of the tertiary education system, as institutions gradually became more interdependent and the structural arrangements become more similar. The isomorphic pressures have also caused new tensions, both between and within institutions, as they struggle to redefine their institutional profiles and cultural identities (Stensaker and Norgård, 2001; Huisman *et al.*, 2002), core tasks (mission) and relationships with society (Pinheiro, 2011; Pinheiro *et al.,* 2012).

Ongoing debates on possible further integration in higher education via mergers or network arrangements may exacerbate isomorphic tendencies. Some signs indicate that universities are slowly but steadily becoming more involved in short term educational courses geared towards the needs of the labour market targeting non-traditional student populations (Pinheiro, 2011, forthcoming). Such a process could affect the dynamics of the vocational school sector if the current policy of student transfers across the tertiary sector will be pursued.

In view of the recently adopted legal framework regulating vocational education, three scenarios are plausible. First, the Act may contribute to a renewed sense of identity amongst vocational institutions, resulting in a stronger demarcation of boundaries between vocational schools and the higher education sector as a whole. Second, the legal framework is likely to increase the regulative power of the state via accreditation, thus potentially curtaining the autonomy of the institutions when it comes to defining or refining the scope and the nature of their study offers. Third, as a result of the gradual decline of the student population from 2015 onwards (Norges Offentlige Utredninger, 2008), various types of post-secondary vocational school courses can be integrated as part of the programme offering of higher education institutions to target new untapped markets and revenue streams (Clark, 2001). If a higher education model based on differentiation rather than tighter integration is adopted, it is likely that a stronger focus will be placed on the traditional distinction between university and non-university education, reversing current tendencies.

In conclusion, policy makers should be made aware of the potential unintended effects of the policy mix (c.f. Gornitzka *et al.,* 2005), particularly when hybrid approaches are used (Gornitzka and Maassen, 2000) to combine a distinct, and potentially contradictory policy logics (Maassen and Stensaker 2001), and their respective implications for the future development of tertiary educational systems.

Notes

1. An earlier version of this paper was published as Pinheiro, R. and Kyvik, S. (2009). "Norway: Separate but connected", in Garrod, N. and Macfarlane, B. (eds.), *Challenging boundaries: managing the integration of post-secondary education*, Routledge, 47-58, New York.

2. The (nine) programme areas consist of: Technical and Industrial Production; Electricity and Electronics; Building and Construction; Restaurant and Food Processing; Health and Social Care; Media and Communication; Agriculture, Fishing and Forestry; Service and Transport; and Design, Arts and Crafts.

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Chapter 7.

Non-university higher education and regional development in Italy

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In a global economy, the concept of learning region explains the significant disparities in regional development and growth. In this paradigm, local territory is considered as a dynamic interactive space that should be enriched with learning opportunities for individuals, firms and local community. This chapter outlines how the new non-university higher education system, developed during the last decade, was designed to meet the needs of the labour market and local communities. Poli formativi and ITS represent assets for regional development through closer connections between education and labour markets. Key to success and a virtuous circle of human capital development and regional economic growth are: the active role of public authorities, the capacity of enterprises to build networks, the absorption capacity of SMEs for skilled graduates and the presence of centres for research and innovation. These factors contribute to the transition from Poli formativi to ITS. The chapter presents the main characteristics of the non-university higher education system, by highlighting three diverse case studies from Lombardy, Friuli-Venezia Giulia and the Autonomous Province of Trento. An evaluation of preliminary outcomes of the non-university higher education in Italy suggests that there are positive developments where regional governments have higher degree of political stability or continuity in policy goals.

Introduction

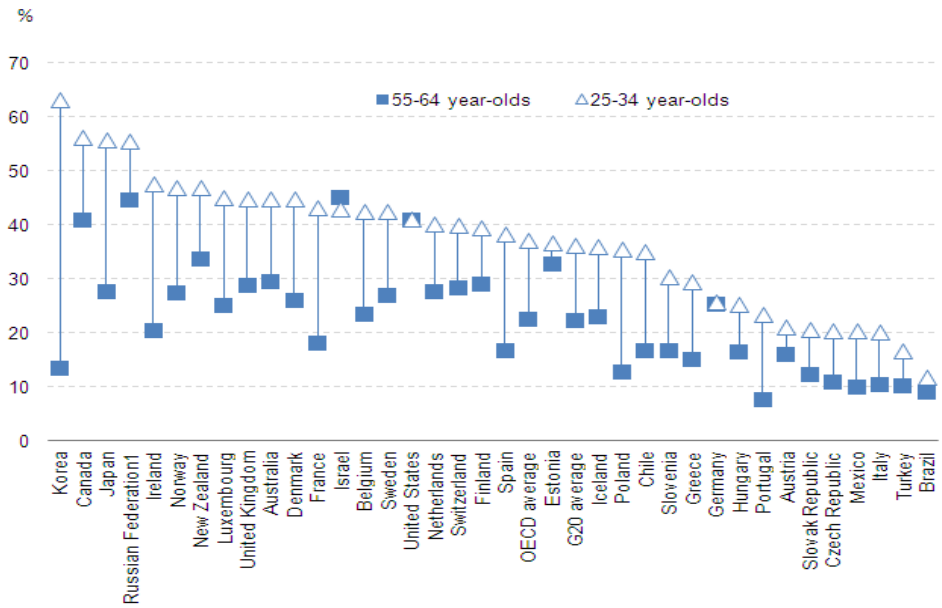
Key features of the Italian economy are the prevalence of small and medium-sized enterprises (SMEs) and industrial districts that refer to local areas with a high concentration of small firms, sharing a common production specialisation. SMEs of non-financial business economy dominate the Italian economy. In 2008, they employed 80.9% of workforce, compared to 67.4% in Euro-27 area (European Commission, 2009). In international comparisons, Italian industrial districts have been identified as good practice models in local economic development, but appear to have limited capacity to address the new challenges posed by globalisation, and the growing importance of research and technological innovation in production processes.

To adapt to the new global knowledge economy, the industrial districts have been reorganised and are increasingly connected with the centres that produce codified and tacit knowledge, such as universities, research and transfer of innovation centres. Educational systems have also transformed to meet the demands, caused by changes in the production system and the labour market.

Reforming education is particularly important as OECD data (Education at a Glance, 2011) shows that the Italian population lags behind the OECD countries in terms of educational attainment. In Italy, about 20% of the 25-34 year olds and roughly 10% of the 54-64 year olds have completed tertiary education, compared with 37% and 22% respectively for the OECD average.

This percentage for 25-64 is 15.0%, whereas OECD average was 30.0% in 2009 (OECD, 2011b). A worrying trend is the annual average growth rate of educational attainment. This percentage fell 0.9% from 5.5% in the period 1997-2007 to 4.6% in 1999-2009. In addition, the limited number of graduates and post-graduates undermines the capacity of the economy to grow because on this issue.

Figure 7.1. Percentage of population that has attained tertiary education by age group 2009



Year of reference 2002

Countries are ranked in descending order of the percentage of the 25-34 year-olds who have attained tertiary education.

Source: OECD Table A1.3a See Annex 3 for note (www.oecd.org/edu/eag2011).

The new non-university higher education system aims to address the low levels of continuous training in Italy, emphasised by the fact that workers in Italy invest less than half as much time in non-formal education during their working live as the OECD average.

Development of non-university higher education in Italy

This section presents the three steps that have developed the non-university higher education system in Italy: Higher Technical Education and Training IFTS established in 1999, Poli formative in 2004 and ITS (Higher Technical Institutes ITS in 2008).

IFTS (Istruzione e Formazione Tecnica Superiore - Higher Technical Education and Training)

The first step towards the creation of a non-university higher education system that responds to the labour market needs was the establishment of IFTS (Istruzione e Formazione Tecnica Superiore - Higher Technical Educational and Training) in 1999. This system aimed at training high-skilled professionals and improving and expanding the provision of training to young people and adults, both employed and unemployed. The system was developed to meet the demand from public and private sectors, in particular from the services sector, as well as local authorities and in general economic sectors that were affected by technological innovation and the internationalisation of markets – responding to the priorities of regional economic strategies. Research on regional training policies in Italy has confirmed that training provision at the regional level has a positive effect on individual training (Brunello *et al,* 2010).

The IFTS model had many innovations in the Italian education system but also some weaknesses. The innovation of the model were the following: *i)* The IFTS model promoted courses designed and managed in an integrated way, bringing together actors who traditionally have operated separately from each other: the schools, vocational training, the universities, industry and research centres; *ii)*. The paths of progression through the new system were defined in co-operation with social partners and are open to a variety of learners. Typically they were offered to graduates, but also to non graduates, upon accreditation of skills acquired in previous experiences of study and work; *iii)* The model aimed at preparing professionals who until then had received limited attention from the vocational training institutions. The weaknesses of the system were the temporary nature of partnerships that end after the delivery of the planned biennial activities and the fact that the partnerships were not linked into a stable structure.

Table 7.1. Proportion (%) of population aged 16 to 65 at each skill level in different countries, 2003

	Level 1	Level 2	Level 3	Level 4/5
A. Prose Literacy scale				
Canada	14.6	27.3	38.6	19.5
ITALY	47.0	32.5	17.0	3.5
Norway	7.9	26.2	45.3	20.6
Switzerland	15.9	36.3	35.7	12.1
United States	20.0	32.6	34.6	12.8
B. Document literacy scale				
Canada	15.6	27.0	36.9	20.5
ITALY	49.2	31.4	15.8	3.6
Norway	8.9	23.5	39.7	27.9
Switzerland	14.5	34.5	35.8	15.1
United States	20.2	32.3	32.6	15.0
C. Numeracy scale				
Canada	19.5	30.3	33.4	16.9
ITALY	43.5	36.7	16.8	3.0
Norway	10.6	29.6	41.5	18.4
Switzerland	8.6	30.7	37.8	22.9
United States	26.8	31.8	28.8	12.7
D. Problem solving scale				
Canada	29.7	38.8	26.2	5.4
ITALY	67.8	22.8	8.1	1.2
Norway	23.3	37.5	32.0	7.2
Switzerland	28.8	37.3	26.5	7.3

Source: OECD and Statistics Canada (2005), Learning a Living. First Results of the Adult Literacy and Life Skills Survey, OECD and Statistics Canada, Ottawa and Paris.

Poli formativi (Formative poles)

The initial experiments in a number of Italian regions in the period 1999-2004 were crucial to the implementation phase of the IFTS system and its subsequent evolution into *Poli formativi* (*Formative poles*). The *Poli formative* initiative, led by the State-Regions Commission aimed to progressively overcome the instability and fragmentation of training systems promoted by different regional authorities. The initiative aims to integrate schools, accredited training centres, research institutes and companies within a stable institutional framework to implement projects for knowledge transfer and training for innovation methodologies (scientific, technological and organisational) in SMEs. In 2004, *Poli formativi* were established with a

focus on specific regional productive capacities, on the potential for technological innovation and research, and on local stakeholders who are interested in collaborating and sharing skills and competences in training and research.

Poli formativi assist in promoting job creation and generating the conditions for sustainable regional economic growth by focusing on human capital and skills development that meet the needs of the regional labour market. *Poli formativi* have developed their functions in two directions: *i)* The poles are designed as tools for the development of a region's productive sectors, as they develop skilled human resources and widen access to training in co-operation between economic, educational and scientific actors; *ii)* The poles help overcoming the inertia and stagnation of the industrial districts.

The *Poli formativi* approach is based on the concept of learning region which places learning and innovation at the core of regional development (Larsen, 1999). The training centres: *i)* contribute to support, in terms of training, promotion and repositioning, of the *made in Italy* in the industrial districts affected by strong processes of global competition; *ii)* identify, define and respond to the local skills needs; *iii)* identify the emergence of new innovative industries and sectors and allow for a more frequent and faster technology transfer to SMEs and this way fulfil two important aims of education in the global knowledge economy, to anticipate and teach the expected skills and competencies and to co-ordinate this activity with the policies for growth of the regional economy (OECD, 2011c; OECD, 2012 *forthcoming)*.

After the initial phase of implementation, there has been a partial slowdown in the development of the non-university higher education system, partly due to a series of internal constraints and delays in establishing a system of national qualification framework that would allow to use the skills acquired in *Poli formative* not only within the region but throughout Italy.

Istituti tecnici superiori - ITS (Higher Technical Institutes)

The progressive strengthening of regional networks, which formed the base of the training centres system, has lead to further evolution of the model, the *Istituti tecnici superiori - ITS* (*Higher Technical Institutes*). These institutions, established in 2008, are distinct from *Poli formativi* in a number of ways: *i)* The technical diploma, corresponding to the European Qualifications Framework (EQF) level 5, is valid in the entire country and has a common framework agreed among regional governments and the

national government; *ii)* ITS programmes are promoted by foundations with legal personality and developed by educational and vocational training institutions, universities, firms, research centres and local administrations. Regional and local actors run the institutions and are co-responsible for the non-university higher education on offer, which has allowed for a direct, co-ordinated and effective involvement of education and training systems in regional development; *iii)*. The foundations, that constitute the core element of the ITS model, are private legal entities. Their establishment is conditional to specific financial requirements based on their own capital assets. Each foundation must have a capital of EUR 100 000.

Currently, 59 ITS Foundation are in operation in Italy, most of them in the Northern and Central regions. The law that created ITS also introduces Territorial Plans, to be adopted every three years by regional governments as part of the planning of training programmes. Plans, that identify professional profiles required for regional development and contents of the training on offer, are delivered in co-operation with social and institutional actors.

Good practices in developing non-university HE at local level to support regional development

This section presents three case studies from Italy, each reflecting regional development processes. The first model from Lombardy has a focus on region-wide networks of local actors and bodies that provide alternative training paths with flexibility and modularity. The second model from the Friuli-Venezia Giulia region focuses on collaborative partnerships with firms and strong linkages between the planning of training, the analysis of the local skills needs and regional development policies. The third model from the Autonomous Province of Trento has a focus on a dense network of ITS-related centres and aims to build an integrated system of education and training where tertiary non-academic education is linked to upper secondary vocational and academic education, research institutions, technology transfer and innovation centres.

Lombardy Region – Technological Poli Formativi promoted by Assolombarda

Assolombarda is the association of industrial and service enterprises in the Milan area and the largest enterprise association in Italy. The organisation's membership consists of 6 000 enterprises of all sizes, in all productive sectors, active at national and international levels. These enteprises have more than 300 000 workers in the province of Milan.

In the experimental phase of the *Poli formativi* launched in Lombardy, Assolombarda developed a model for the organisation and governance of such poles to encourage technology transfer to local firms. The first pole *Polo formativo* was developed for the training of technicians in the chemical industry technology and involves technical upper secondary schools, the University of Milan, the University of Milan-Bicocca, Federchimica and the Politecnico di Milano Foundation. The second *Polo formative,* devoted to the development and support of instrumental mechanics, involves the universities of Bergamo, Brescia and Pavia, a number of technical upper secondary schools, medium and large-sized enterprises like Robert Bosh Spa and Sandvik Italian, the Foundation of Politecnico di Milano and some vocational training institutions (see Table 7.3). *Poli formativi* have a network of hundreds of firms for hosting work-based learning activities.

Table 7.2. Partners in Technological Poli Formativi - Assombarda

Companies and Associations	Training Centres	Universities and Research Centres
Pole of Industrial Chemistry		
Federchimica Lombardia	ITIS Molinari	University of Milan
		University of Milan-Bicocca
		Politecnico di Milano Foundation
Pole of Instrumental Mechanics		
UCIMU	LIUC Carlo Cattaneo	University of Bergamo
FESTO	CNOS-FAP	University of Brescia
Robert Bosh Spa		University of Pavia
Sandvik Italian		Politecnico di Milano Foundation

Source: Gentili C. (2007), Umanesimo tecnologico e istruzione tecnica, Armando Editore, Roma.

The model developed by Assolombarda, and based on the research and experience of the Education National Confindustria, represents a first type of *technological Poli formativi*. It constitutes a networked local educational system, in which individuals can transfer between alternative paths, characterised by flexibility and modularity. The model ensures vertical integration between the training, the productive and the research systems and horizontal integration so that a set of tools and networks for the delivery of goals are shared by various training institutions working in the local area. The creation of networks among the training institutions allows for progression through alternative pathways or for a faster transition to the higher levels of the education system, thanks to the recognition of

previously acquired skills and competences. The universities provide both teachers and infrastructures.

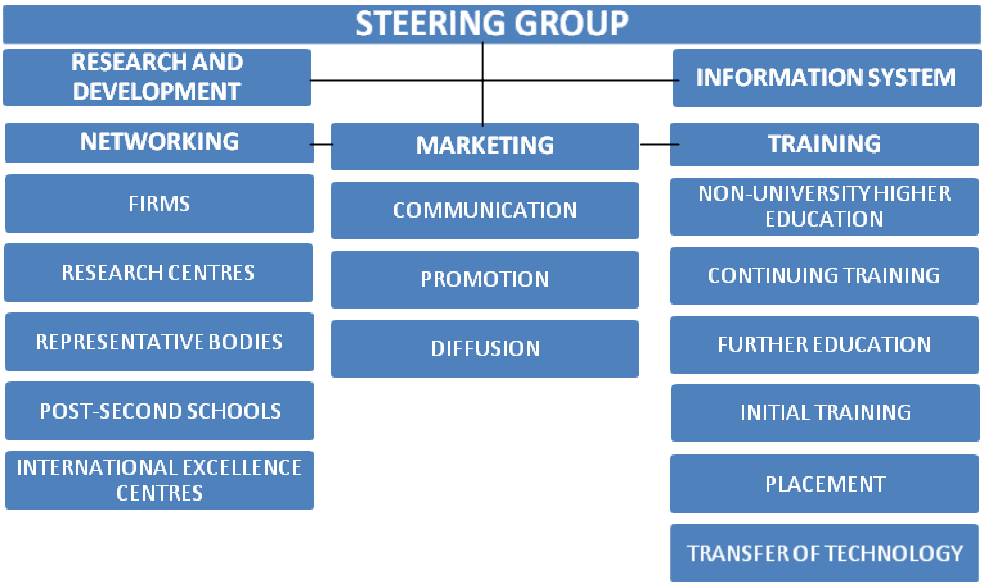
The model integrates a number of training opportunities: technical and vocational schools, vocational training institutions, non-university higher education, academic courses, master programmes and centres for life-long learning. The model promotes strong connections between training and work, with focus classroom and work-based learning. In some cases, training systems can include initial vocational training, apprenticeship and support for placement in private companies and the public administration. The horizontal and vertical integration of the system creates synergies between the general education and vocational training systems, the productive system and research centres. The model meets the specific skills required by enterprises to restructure the local productive system, since the model focuses on the teaching and practicing of technological and organisational innovation in sectors as mechanics, chemistry, industrial automation, ICT and multimedia. This allows local enterprises to take advantage of new opportunities offered by the internationalisation and globalisation of production and markets. Furthermore, the integration facilitates access to a complex and fragmented labour market that requires flexibility, cross-cutting and interdisciplinary competences and capacity for networking as well strong interpersonal, learning and entrepreneurial skills.

A key element of the model promoted by Assolombarda is the capacity to support knowledge and technology transfer from scientific research to local enterprises through a number of mechanisms: *i)* Formal learning and research activities in university and research centres that are linked to the *Poli formativi* play an important role in knowledge transfer; *ii)* Courses have strong linkages between educational, vocational training, university and research; *iii)* Postgraduate, further education and long-life learning courses are also provided to link the training system to the economic sector to which the centre is dedicated to; *iv)* Work-based learning activities facilitate people-based knowledge transfer to support technological innovation processes in firms; and *v)* Training pathways facilitate the transfer of know-how in different productive sectors (see Figure 7.2).

The *technological Poli formativi* model has a focus on three main activities: networking, marketing and training. Networking refers to the set of activities aiming at the creation and development of relationships between the *technological Poli formativi* and other national and international actors. The creation of connections between research, transfer of technology and innovation aims to increase the productivity, effectiveness and efficiency of regional stakeholders. Networking activities also provide training in technological transfer services to enterprises and other interested actors that are aligned with their business needs and requirements. Marketing is the set

of activities that aim at promoting and also make available integrated training services. Training is the planning and delivery of training and transfer of technology services linked to the activities promoted by the centre.

Figure 7.2. Structure of Poli formativi Assindustria Lombardia



The system is supported by quality assurance and research that continuously improve the provision of services. The Information System monitors and evaluates on-going activities. This information is delivered to the Research and Study area that has the task to identify, define and continuously improve models and methods for the development, management and implementation of activities.

Friuli Venezia Giulia – Istituto Tecnico Superiore Malignani (Udine)

The regional government of Friuli-Venezia Giulia has special autonomous policy competences in many policy sectors, including education and economic development. The regional economy is characterised by the presence of many large mechanical industries and a dense network of SMEs.

The model of *Polo formativo* developed by the ITS Malignani has a focus on mechanics and mechatronics and is a good practice example

because of two distinguishing characteristics: *i)* the composition of the local partnership and *ii)* the strong linkages between the planning of training on offer, the analysis of the training needs expressed by local enterprises and regional development policies. The provincial government of Udine and a number of social partners that encompass the private, training and research sectors are responsible for the foundation that oversees the running of the ITS Malignani (see Table 6.4). The universities of Udine and Trieste provide both teachers and infrastructure. The composition of the partnership also includes large multinational enterprises active in the mechanical and steel sectors as well as some regional SMEs in the field of new technologies. The presence of both large firms and SMEs in the partnership is crucial since often SMEs are reluctant to directly engage in the planning of non-university higher education.

In the Friuli-Venezia Giulia case, some local factors have favoured the engagement of SMEs in the development of the non-university higher education: *i)* The ITS Malignani, which is among the largest European educational institutions for technical and vocational training, has strong collaborative relationships with local enterprises; *ii)* Large local enterprises have significant knowledge and experience in the field of higher education, both academic and non-academic due to the creation of internal centres for training. These are characterised by the high level of specialisation and by the adoption of European standards of quality assurance of the educational system, their transparency, mobility and transfer of qualifications and competences (European Qualification Framework, ECVET, recognition of non formal learning, etc).

Recently, the partnership has developed a model of curriculum based on a matrix of competencies for training design arising from a research funded by European Union. Another model consisting of alternating periods at the workplace and at a school has been developed and targets upper secondary school students. This approach allows for the experimentation of the role of companies and entrepreneurs in the education and training system. The large enterprises intend to cover most of the costs of the courses promoted for their specific skills needs.

Table 7.3. Partners of the foundation of ITS Malignani

Companies and associations	Training centres	Universities and research centres
Confindustria Udine	Officina Pittini per la Formazione	University of Udine*
Danieli Group	ENAIP Friuli - Venezia Giulia	University of Trieste*
Pittini Steel Group	Consorzio Friuli Formazione	Consorzio Keymec srl
SMEs Association Udine	Enfap Friuli-Venezia Giulia	IRES Friuli - Venezia Giulia
Superjet International spa	I.A.L. Friuli - Venezia Giulia	
Almatec Srl		

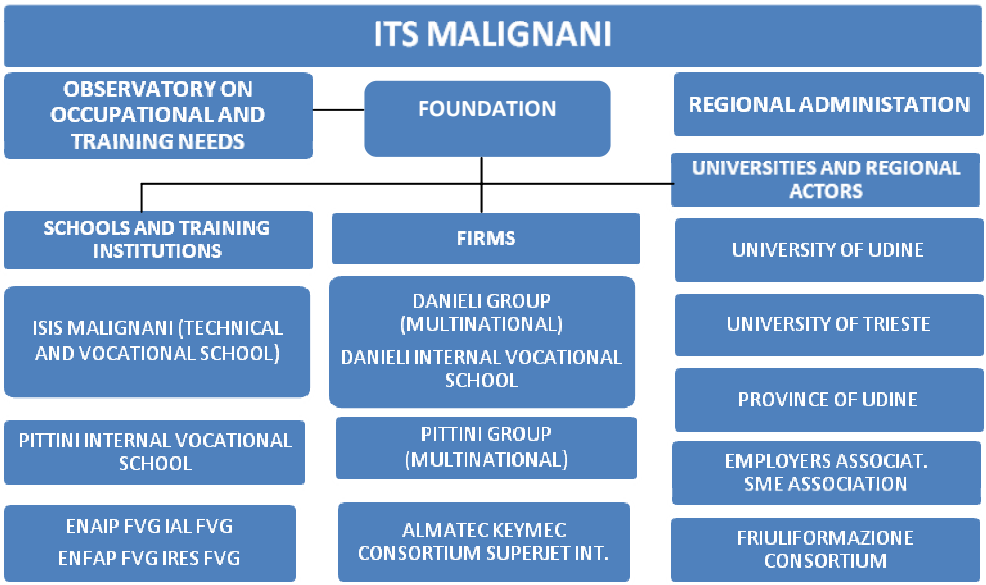
*Universities of Udine and Trieste planned to join the Foundation within December 2011.

Source: MIUR (2011), Istituti Tecnici Superiori: Direzione generale per l'Istruzione e Formazione Tecnica Superiore per i rapporti con i sistemi formativi delle Regioni, Conferenza dei Servizi, 30 May 2011.

The composition of partnership involved in the training centre ensures a strong connection between the training offer and innovative process of technological transfer: *i)* They foster close relationships with local enterprises to promote new and efficient forms of co-operation and overcome the limited capacity of SMEs to undertake training initiatives; *ii)* The partnership of highly skilled stakeholders allows for the development of new and efficient training models that link formal, non formal and informal learning and is also congruent to European policy framework for educational and vocational training. More specifically, the centre has experience in mechanisms for the acquisition, evaluation and recognition of competences in workplace to guarantee that both the regional economy and individuals can capitalise on these skills and competences; *iii)* In addition to partner firms, ITS has a network of hundreds of local enterprises where training activities can take place; *iv)*. The model developed in Friuli-Venezia Giulia also benefits from strong links between the planning of training on offer, the analysis of the skills required by local enterprises and regional development policies.

To increase the competitiveness of the entire region, all the public and private actors have a shared goal to improve the knowledge and skills. Following this perspective, the model of *Polo formativo* established in Friuli-Venezia Giulia brings together a network of strategic actors, connecting education, training and the wider economy. This model assigns a relevant and specific role to the social partners and encourages collaborative behaviour between them (see Figure 7.3).

Figure 7.3. Structure of ITS Malignani



The ITS Malignani has an observatory on the regional mechanics and mechatronics sectors that analyses the workforce demand and skills in the region, including the effects of the current global crisis. In co-operation with the Regional Agency for labour market research, the research results from the observatory are fed into the planning of training services and into the development of regional policies to mitigate the negative effects of the global crises. The outcome of this is an integrated system of education, training and labour market policies, connected to the regional framework for economic development.

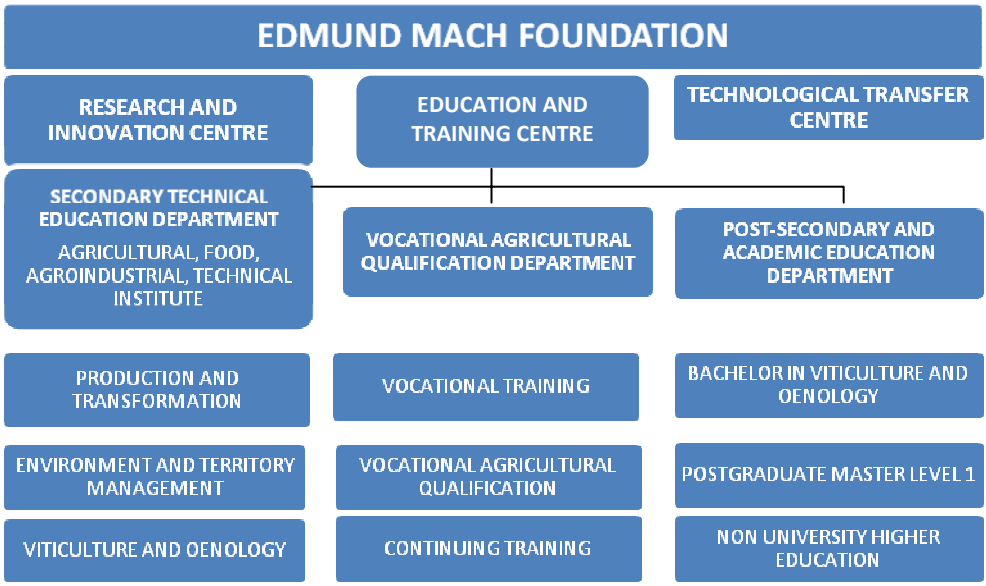
The Autonomous Province of Trento – Fondazione Mach

The Autonomous Province of Trento has around 530 000 citizens, of which 230 000 are employed. The Province has an SME-based economy with 49 000 companies. The main activities are in the tertiary sector and agriculture, in particular fruit and wine production, for example 60% of total national apple production and 2% of the world's production is located in Trentino-Alto Adige.

The Fondazione Edmud Mach, founded in January 2008, is *Poli formativi* with close links to regional development. First, from an education system perspective, it represents a concrete example of an integrated training chain in the agricultural and environmental development

sectors. The foundation, located in Istituto Agrario di S. Michele all'Adige, is able to improve both the quantity and quality of non-university higher education, as it is linked vertically to the preceding and subsequent levels of the educational system, i.e. with initial professional qualifications and with continuing training. More specifically, the foundation has created a training system that ranges from technical and vocational education to tertiary education (see Figure 7.4). The integrative training centre model responds to the need for regional training systems that support individuals' intellectual and professional development. This model allows for system flexibility, as it offers flexible, parallel and personalised alternative learning paths based on modules. Learners can organise their training based on the personal needs and circumstances and build their learning outcomes step by step.

Figure 7.4. Structure of Edmund Mach Foundation



The Edmund Mach Foundation consists of three centres: *i)* The Education and Training Centre offers education, continuing training and lifelong learning opportunities in the agricultural, environmental and forestry sectors; *ii)* The Research and Innovation Centre undertakes research on agricultural and environmental systems with the aim to promote innovation and agricultural production, biodiversity, human health and the quality of life. Research activities focus on three main areas: agriculture (structural and functional genomic, molecular applied genetics, environmental interactions), nutrition and food research, and environment

and the ecosystem (climate change, biodiversity); *iii)* The Centre for Transfer of Technology engages in agricultural and livestock sectors, forestry and the environment. The centre also focuses on the development, experimentation and transfer of sustainable and environmentally friendly technologies to Trento-based firms. Finally, the Fondazione Mach has an active farm which supports research and experimentation, educational training and technical assistance to farmers in the fruit and wine sectors.

The Education and Training Centre is structured into three departments: *i)* Secondary technical education with a school based on three different programmes; *ii)* Vocational and agricultural education, that provides vocational training courses and post-secondary non-tertiary pathways; and *iii)* Post-secondary and academic education, that offers a bachelor degree in Viticulture and Oenology, a master programme at level 1 and non-university higher education pathways. They are all delivered by the Inter-university consortium including the University of Trento (Engineering), the University of Udine (Agrarian Sciences), and the Fachhochschule in Wiesbaden. More than 400 enterprises provide workplace training activities in Trentino, Toscana and Friuli Venezia Giulia. The model for the integration of vocational training and tertiary non-academic education has been supported by IPRASE Trentino, the education research centre promoted by the Autonomous Province of Trento.

The advanced training system developed by the Fondazione Mach is linked to the regional development of the Autonomous Province of Trento in 3 ways: *i)* The training system aims to develop highly skilled professionals that have the skills needed in the local economy and are able to anticipate and respond to changes in the productive system, *ii)*. The training system promotes interaction and co-operation between schools, vocational training institutions, the University of Trento, and professional and productive sectors to improve the attractiveness and relevance of vocational training; and *iii)* Responding to the needs of students and to the labour market, the training system responds to the demand for specialised and highly skilled professional development. The initiative set up by the foundation is framed in the context of the education policy promoted by the Autonomous Province of Trento. In recent years, the policy has developed a regional training sector, characterised by vertical integration from technical to academic training and by the capacity to deliver diplomas recognised by the academic system at both national and European levels.

The Autonomous Province of Trento has created a consultative body to guarantee long-term and sustained co-ordination between the planning of non-university higher education and the skills and competencies required by the local economy. The consultative body analyses and monitors trends in professional requirements, defines professional profiles for the training

system, and plans new initiatives to be developed by educational and vocational training institutions. The consultative body brings together representatives of the Province, educational and vocational training institutions, the University of Trento, professional organisations, non-profit and co-operative sectors as well as other social actors.

The impact of good practices on regional development

While the non-university higher education system in Italy is still in the early stages of development and its impact on regional development are difficult to evaluation, some conclusions can be drawn based on the level of integration of the various component of the system: the general education system, vocational training, higher education and the regional productive and innovation systems. Traditionally, these elements had a low degree of collaboration and co-ordination. Some emerging trends indicate that a significant transformation is taking place that will in the future have direct effects on regional economic systems, by providing highly skilled professions that meet the skills needs of socio-economic actors in the region and by offering training opportunities to individuals coming from both the educational system and the labour market.

Concrete outcomes include the following: *i)* Regional planning in the field of non-university higher education is now closely connected with planning of local development policies. The triennial Territorial Plans are incorporated into the planning of ITS in terms of the skills needs (identified professional profiles required) for regional development as well as the contents of the training on offer; *ii)* The new system requires that ITS, in co-operation with universities and specialised research centres, systematically analyse the workforce demand and training needs of the local enterprises to link training activities to current and expected skills, particularly learning skills to prepare students for new and emerging jobs and technologies; *iii)* The system has facilitated the involvement of enterprises in the foundations, in the governance of the new system at the local level. This innovation increases the overall attractiveness and salience of professional learning, both in the formal system of education and at work, since it creates a stable interrelationship between schools and enterprises. In addition, the new role played by enterprises requires them to improve their capacity to offer training activities and to absorb the new skills and competencies. In this model, enterprises become learning places staffed with specialised personnel who can effectively support individual learning processes and apply methodologies and techniques coherent with recent developments in pedagogy and andragogy fields; and, *iv)* The non-university higher education sector has stimulated the creation of systems for the recognition

and certification of qualifications and skills acquired in formal, non formal and informal learning, which are included and integrated in the new training programmes. A strong emphasis is given to system of recognition of prior learning (APL), connected to recognition of non-formal and informal learning outcomes (Werquin, OECD, 2010).

The non-university tertiary system can develop virtuous feedback effects between human capital development and economic growth due to the strong co-ordination of recently decentralised regional policy competences in vocational training and strategies for regional development. An evaluation of preliminary outcomes of the non-university higher education in Italy suggests that there are positive developments where regional governments have higher degree of political stability or continuity in policy goals. Continuity is the key factor in the success of development of the system.

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Chapter 8.

Vocational education and training in Spain

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This chapter is based on commentary to the Spanish authorities that is one of a series of country reports on postsecondary vocational education and training (VET) in OECD countries, prepared as part of an OECD study Skills beyond School. It outlines the main features of the Spanish VET system, and compares its main features with those of other countries. It also sets out a number of key statistical indicators comparing Spain with other OECD countries. These cover both the education system and the labour market. It provides a brief assessment of the main strengths of the system, and the policy challenges which need to be addressed by Spain in the future.

A snapshot of the vocational education and training system

The Spanish initial vocational education and training system is organised at "intermediate" (upper secondary) and "higher" (tertiary) levels. In addition, there are some programmes at lower secondary level. The arrangements for intermediate and higher level VET are very similar in many respects, other than being different in level, and often take place in the same institutions.

Compulsory education in Spain is comprehensive, and finishes at around the age of 16 with the compulsory secondary education certificate, signifying the successful completion of compulsory education. In the final year of compulsory education the students choose between: (a) two general programmes (either science and technology, or humanities and social science) leading towards upper secondary academic education and the *Bachillerato*; or (b) pre-vocational studies, leading to an upper secondary vocational programme. In all cases the compulsory secondary education certificate provides them with the right of entry into the upper secondary programmes.

Around 30% of the cohort do not receive this certificate because of weaknesses in their academic performance. As a means of addressing this problem, and reintegrating these students, since the 2007/8 academic year, those students who reach the age of 16 and have not obtained the certificate enter vocational initiation programmes. These "VIP" programmes provide a range of special modules including vocational modules. The aim of the VIP programmes is that all students should achieve competences at least equivalent to a level one professional qualification and have a chance of entering the labour market and/or continuing their studies by pursuing an intermediate vocational programme. First evaluation evidence has been is apparently favourable.

Just over half of those who obtain the compulsory secondary school certificate opt to continue with academic programmes in a school leading to the *Bachillerato*. The remainder – just under half (or around one third of the entire cohort) – enter intermediate vocational programmes. These programmes involve 2 000 hours of study over two years leading to a technical diploma. Intermediate programmes are delivered either in a dedicated vocational school – typically with a specialisation in particular fields of study – or in a school which undertakes both academic *Bachillerato* studies and vocational programmes.

Students apply for places in the intermediate programmes and schools indicating first and second preferences for both programme and school. When a school is oversubscribed, a selection typically takes place on the basis of academic performance. There are some particularly attractive specialisations where there is often excess demand. The number of places available in different specialities is determined by the autonomous communities on the basis of labour market information. The vocational programmes include a mix of theoretical education in the chosen vocational field, and practical training using school equipment and workshops.

Possession of the technical diploma gives graduates the right to enter higher vocational programmes, subject to an entrance examination. Technical diploma graduates may also pursue a baccalaureate. Until recently this required two additional years of study, but a recent reform has reduced this period to one year. Following recent reforms, students who have obtained the higher technical diploma (*Tecnico Superior)* also have access to university studies.

All vocational diplomas, at both intermediate and higher levels are grouped in 26 professional families, including families such as "agriculture", "computing and communications", and "health".

In both intermediate and higher vocational programmes, workplace training takes place through a compulsory three month module right at the end of the programmes (except for those who can accredit previous work experience and may therefore be exempt). Apparently there are few difficulties in finding training firms willing to take students, (although when the scheme was first introduced in the early 1990s firms took some time to get used to taking trainees). The firms receive a nominal payment of around EUR 5 per day per student for their expenses from the education authorities. From the firm's point of view the trainees are attractive for two reasons: firstly because they represent almost free labour provided by fully trained students (as they are at the end of their programmes); secondly because they offer a recruitment device: many trainees are offered jobs by the training firm at the end of the training period (when their programmes are completed and they are therefore immediately available for work).

Curricula for intermediate and higher vocational programmes are nationally determined, with a small element of discretion for the autonomous communities to make local additions.

The vast majority of teachers and trainers of vocational programmes at both intermediate and higher levels are required to have a university degree in an appropriate subject and pedagogical training. (In a small number of fields, such as for restaurant management there is a dispensation because there have not been, at least until recently, appropriate university degree

programmes). Teachers and trainers have to pass a test in their field of speciality but there is no requirement that they should have worked as practitioners in their field of speciality.

Graduates from the intermediate and higher level programmes are awarded a technical or higher technical diploma in the relevant speciality, which is national and recognised in the labour market. This is supported by the Ministry of Education. In addition, they will, once new reforms are fully implemented, obtain one or more "certificates of professionalism" issued by the Ministry of Labour – linked to competence standards. Certificates can be issued at level 1, 2 or 3 corresponding to three levels of competence.

Careers guidance in schools – which should help to orient young people in their choice of a vocational or academic track in upper secondary education, and to choose an appropriate vocational track is closely linked to the counselling profession. National legislation requires the provision of career guidance throughout the Spanish school and adult education systems. One class hour per week of guidance is included in compulsory primary and secondary education and in the two years of baccalaureate upper secondary education. Both lower and upper secondary vocational education students take a "vocational training and guidance" module for 65 class hours per year. Those involved do not necessarily have a lot of knowledge of the labour market. However there are attempts under way to merge or coordinate more closely the career orientation provided by the employment service (particularly for the unemployed) and schools-based careers guidance.

Policy reform is led by the national government but involves extensive consensus-building with all the autonomous communities as well as employers and trade unions. The "general council on VET" groups all of these bodies and meets roughly once every quarter. The main recent policy reforms have been introduced with the support of all these parties.

In international comparison

The Spanish VET system at intermediate (upper secondary) level is similar to that found in a number of European countries, with separate vocational schools, and a separate vocational track at upper secondary level. It therefore differs from the approach of some English-speaking countries, such as the United States or the United Kingdom, where there is very limited vocational education (outside apprenticeship systems) at upper secondary level. It also differs from dual system vocational training in the Germanophone and some other countries, where the vocational track

involves apprenticeship with part-time vocational school occupying no more than one or two days per week.

The higher (postsecondary) VET system in Spain is rather more distinctive by international standards. In many countries, postsecondary VET involves a distinctive set of institutions articulated with and linked to other institutions and programmes in the postsecondary sector including universities. In the case of Spain, higher VET programmes are aligned to the upper secondary vocational programmes and the institutions providing them (often the same institution).

Comparing Spain with other countries: key indicators

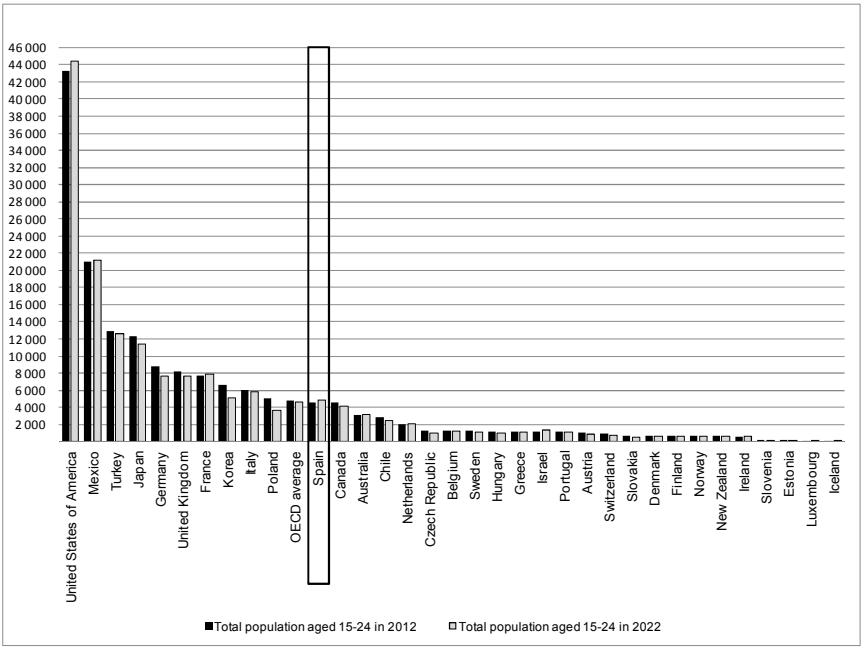
This section looks at some indicators comparing the Spanish VET system, and its labour market context, with the pattern found in other countries. Comparisons of a statistical indicator for any one country with the OECD average are useful, but must always be interpreted with caution. Few indicators are unequivocally positive in one direction, and, there can be no presumption that convergence with the average is desirable.

The demographic context

In Spain, declining fertility rates mean that the numbers of students of all ages over 15 is set for a modest decline (assuming constant age participation rates). See Figure 8.1.

Figure 8.1. Total population aged 15-24 in 2012 compared to projected population in 2022

In thousands



Source: Author's calculations based on United Nations Department of Economic and Social Affairs Population Division (2011), *World Population Prospects: the 2010 Revision*, CD-ROM Edition.[1]

Indicators of education and training

The development of higher vocational training programmes has led to rising graduation rates from tertiary type B programmes in Spain over the past 15 years. While in 1995 less than 2% of the cohort graduated from this type of programme, in 2009 this figure rose to 15%, above the OECD average of 9% (OECD, 2011a, 2011b). Over the same period graduation rates from tertiary type A programmes rose modestly from 24% to 27%, well below the OECD average of 38% in 2009.

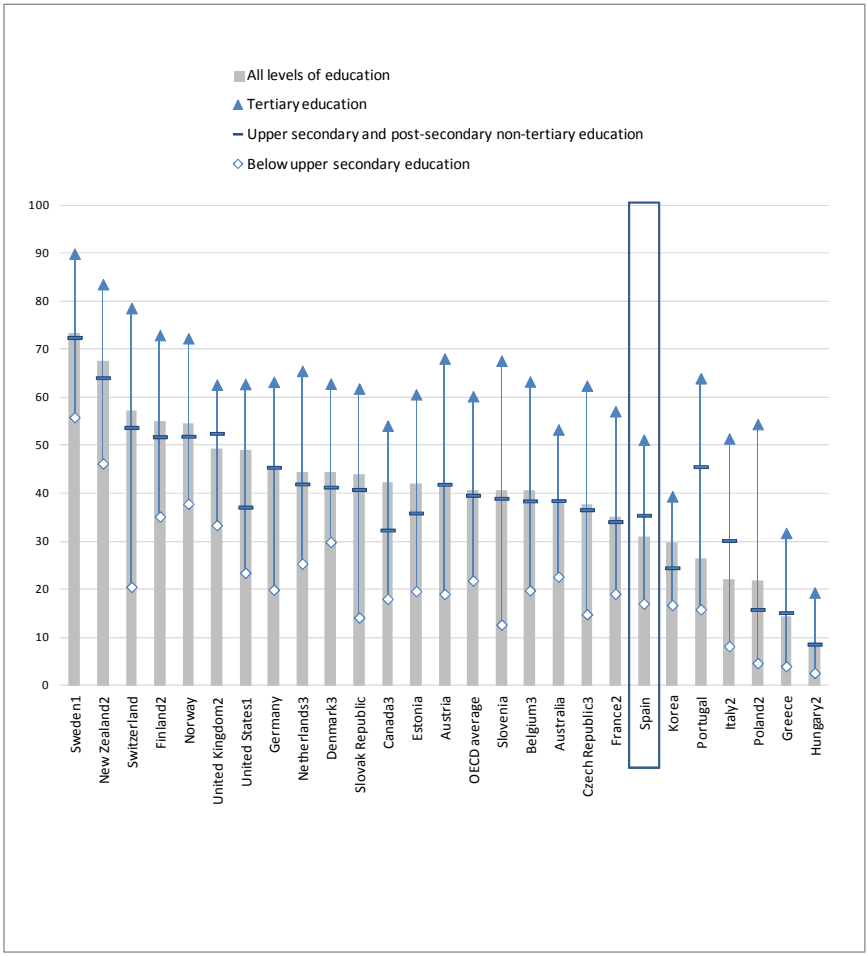
Adult participation in education and training is an important contextual indicator for initial vocational programmes, because it reveals the extent to which later on in life, adults can catch up in response to missed opportunities in initial education, augment basic skills with additional

qualifications, and attain higher level qualifications. Participation of adults in formal or non-formal education in Spain is below the OECD average for all levels of education. In 2007 overall 31% of 25-64 year-olds participated in formal and/or non-formal training, while the OECD average was 41%. Participation rates by education attainment are shown in Figure 8.2. Patterns of participation in formal and non-formal training in Spain resemble international patterns as employed persons, particularly those working full-time, and those with higher level qualifications are much more likely to participate. In 2007, 36% of employed adults and 19% of those not employed took part in formal and/or non-formal education.

Postsecondary VET in Spain is relatively costly, reflecting the costs of well equipped vocational schools. In relation to per capita GDP, annual expenditure by educational institutions per student is one of the highest in tertiary type B education among OECD countries (32% compared to the OECD average of 23%). Expenditure in tertiary type A institutions and advanced research programmes is identical to the OECD average (42%) (see Figure 8.3).

Figure 8.2. Participation in formal and/or non-formal education, by educational attainment

Participation rate of the 25-64-year-old population, 2007



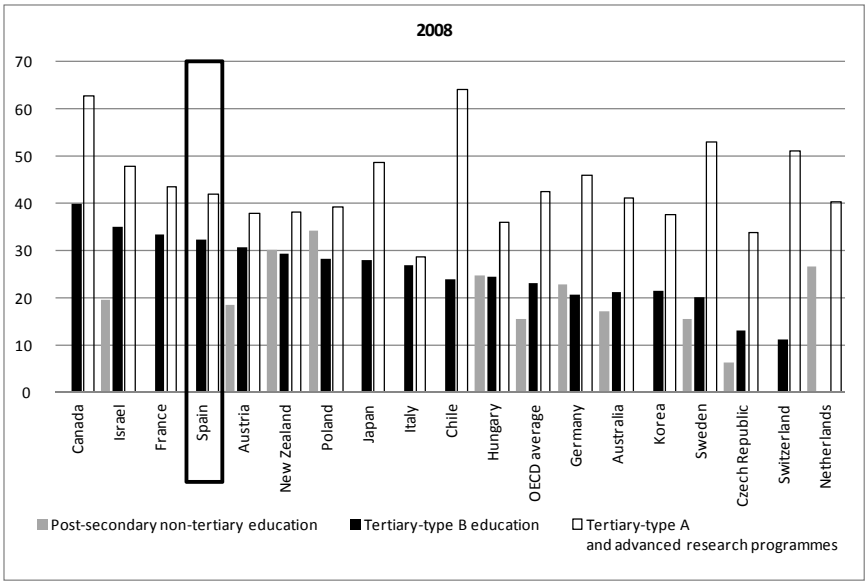
Notes: 1. reference year 2005; 2. reference year 2006; 3. reference year 2008.

Countries are ranked in descending order of participation in formal and/or non-formal education, for all levels of education.

Source: OECD (2010a), *Education at a Glance 2010*: *OECD Indicators*, Table A5.1b, OECD Publishing. doi: *10.1787/eag-2010-en*.(*www.oecd.org/edu/eag2010*).

Figure 8.3. Annual expenditure by educational institutions per student for all services relative to GDP per capita (2008)

By level of education, based on full-time equivalents



Source: OECD (2011a), *Education at a Glance 2011: OECD Indicators*, OECD Publishing.

Labour market indicators

Table 8.1. The Spanish labour market

	Unit	2000	2009	2010	2010 OECD-Total
Unemployment rate	% of labour force	13.9	18.1	20.2	8.5
Youth unemployment rate	% of youth labour force (15-24)	25.3	37.9	41.6	16.7
Long-term unemployment (12 months and over)	% of total unemployment	47.6	30.2	45.1	32.4
Employment rate of women	% of female population (15-64)	42.0	53.5	53.0	56.7
Temporary employment	% of dependent employment	32.1	25.4	24.9	12.4
Part-time employment	% of total employment	7.7	11.9	12.4	16.6
Growth of real GDP	% change from previous year	5.1	-3.7	-0.1	2.9

Source: OECD (2011c), *OECD Employment Outlook 2011*, OECD Publishing.

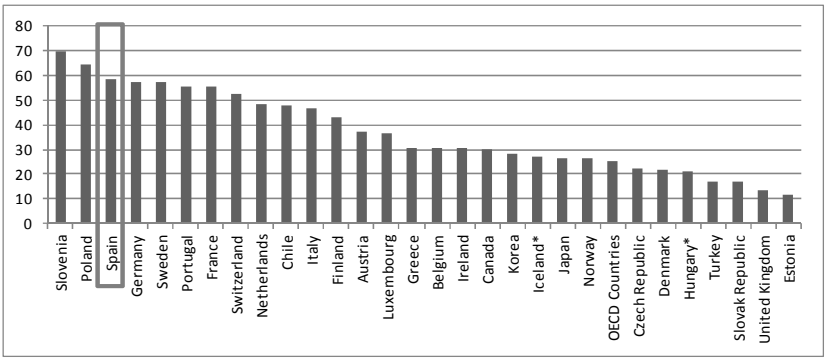
Note: The youth unemployment rate of 15 to 24 year-olds, at 41.6% in 2010 was the highest of all OECD countries (the OECD average was 16.7%) (OECD Labour Force Statistics, OECD, 2011d).

According to a survey undertaken prior to the economic crisis, transition from school to work was easiest for graduates of vocational secondary education. Young people with an intermediate level vocational qualification needed the least time to find their first job (4.8 months). Tertiary graduates and those with general upper secondary education needed about the same time (6.2 and 6.3 months respectively), which is surprisingly very close to the time needed for secondary school drop-outs (6.7 months) (OECD, 2007). Training contracts (*contratos en prácticas* for graduates of tertiary programmes, and *contratos para formación* available for 16-21 year-olds who are not eligible for *contratos en prácticas* and for some specific target groups) had low take-up, in 2005 only 4% of total youth in employment were hired on training contracts (OECD, 2007).

Reforms of employment protection legislation since the 1980s have facilitated the use of temporary contracts. Although this may have reduced youth unemployment, it does also risk trapping young people in jobs with limited chances of career advancement (OECD, 2007). While the incidence of temporary employment among young people has decreased from 68.6% in 2000 to 58.6% in 2010, it remains one of the highest among OECD countries (see Figure 8.4). Similarly to other OECD countries, many young people enter the labour market with a temporary contract. But in Spain, unlike most OECD countries, they tend to remain on such contracts for a long period of time and face frequent unemployment spells between one contract and another (OECD, 2007).

Figure 8.4. Incidence of temporary employment

15 to 24 year-olds, 2010



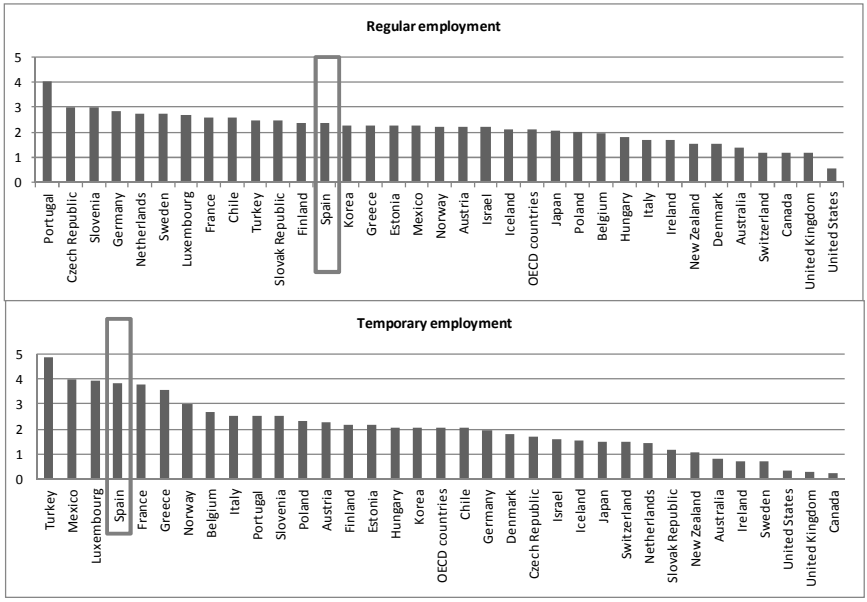
1. * Reference year 2009.

Source: OECD (2012b), OECD.Stat website, *http://stats.oecd.org*, accessed January 2012.

Employment protection in Spain is relatively strong for regular workers but very weak for temporary workers (see Figure 8.5).

Figure 8.5. Strictness of employment protection

2008

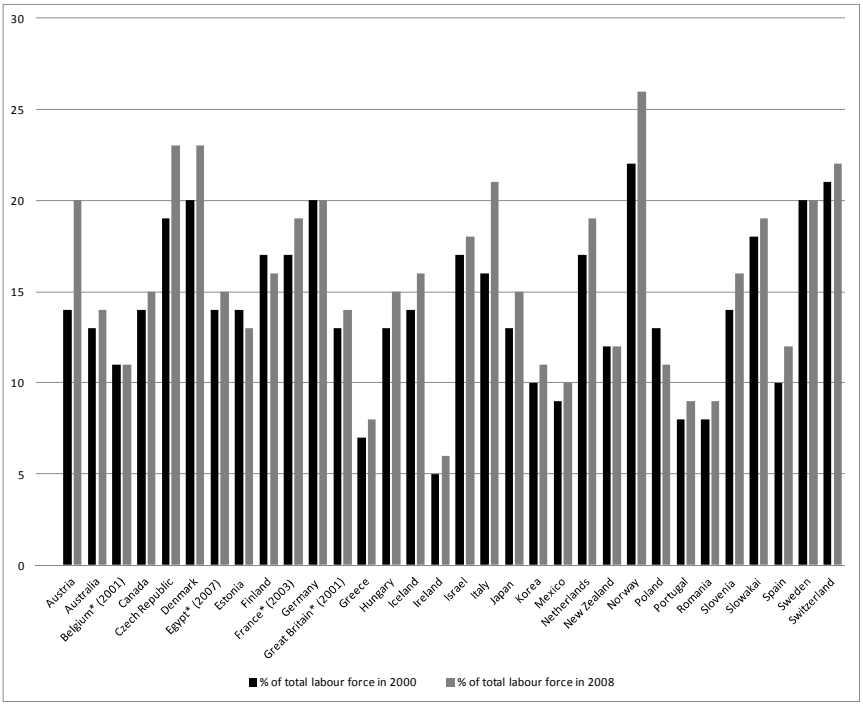


Source: OECD (2011d), OECD data browser, *dotstat.oecd.org,* accessed August 2011.

Figures 8.6 and 8.7 illustrate current and historic trends in the occupational mix in Spain, and an extrapolation into the future. The category of "technicians and associate professionals" used in internationally comparable data is most strongly associated with postsecondary VET as it includes a wide range of occupations not requiring a full bachelors qualification or higher. The separate category of "professionals" is primarily university graduates. People with postsecondary VET qualifications are also found in nearly all the other categories, for example in managerial occupations. Compared with many other OECD countries, Spain has relatively few people in these categories, although the proportion is growing somewhat.

Figure 8.6. Percentage of technicians and associate professionals in the labour force

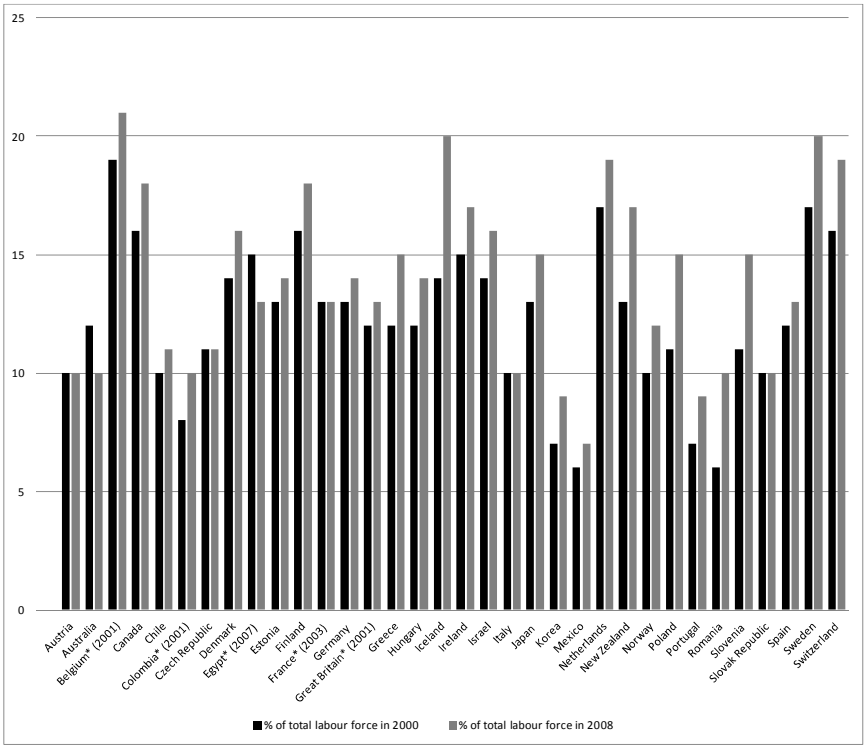
In 2000 and 2008



Source: International Labour Organization (2011), ILO Department of Statistics, Laborsta Internet, *http://laborsta.ilo.org,* accessed August 2011.

Figure 8.7. Percentage of professionals in the labour force

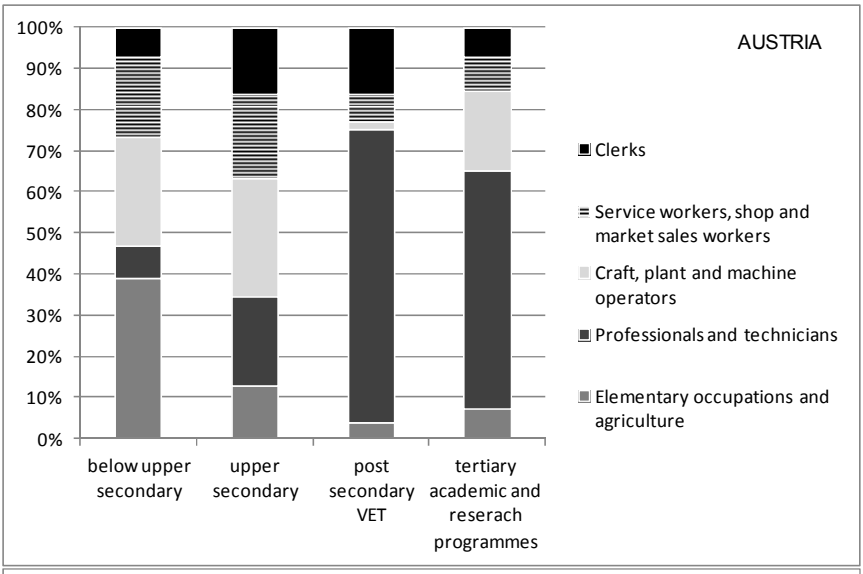
In 2000 and 2008



Source: International Labour Organization (2011), ILO Department of Statistics, Laborsta Internet, *http://laborsta.ilo.org*, accessed August 2011.

Figure 8.8. Distribution of workers (25-34 year-olds) by type of education across occupations

2009



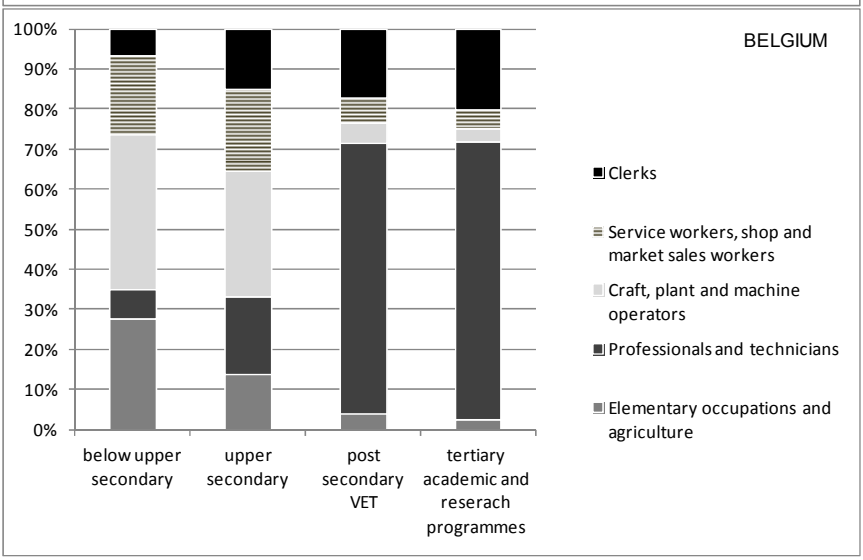


Figure 8.8. Distribution of workers (25-34 year-olds) by type of education across occupations (continued)

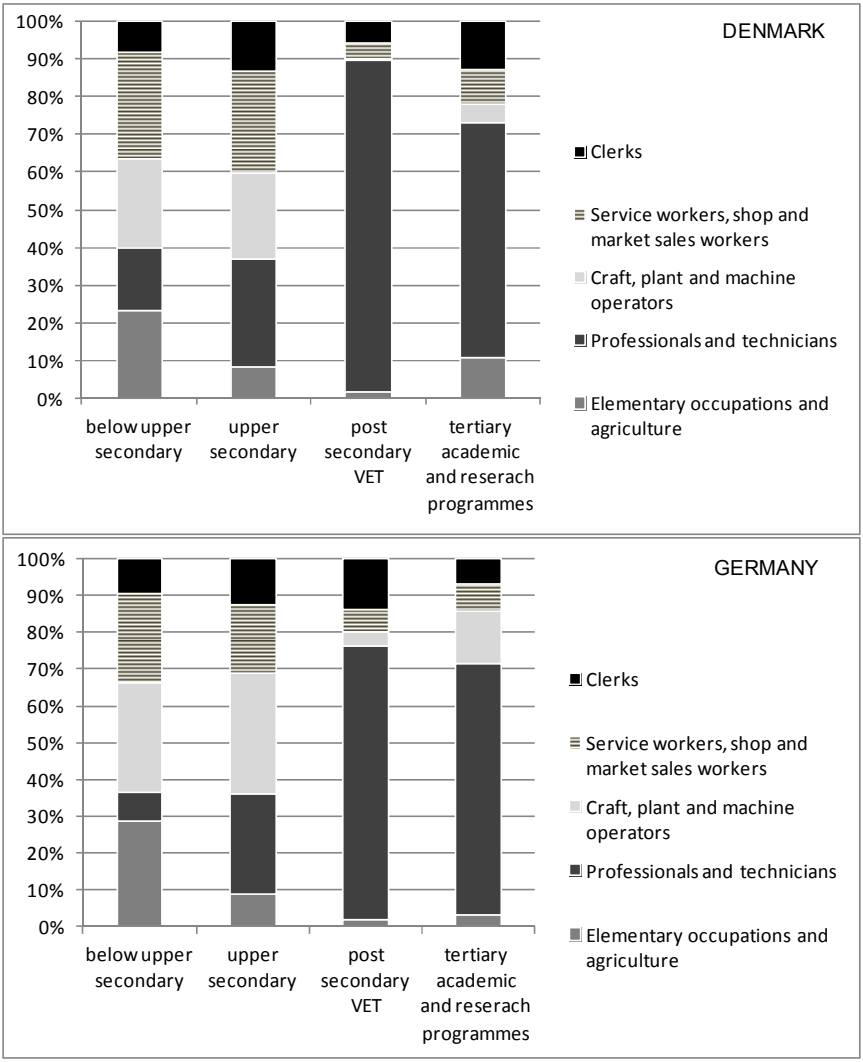
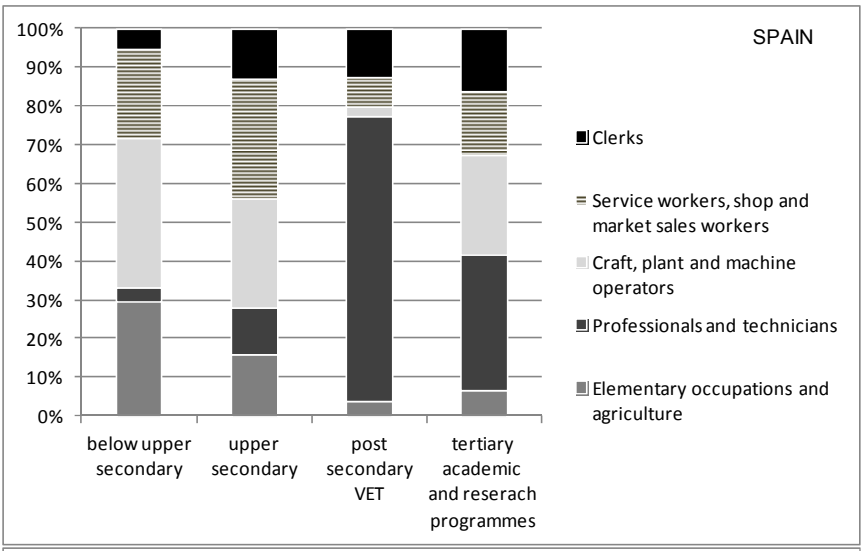
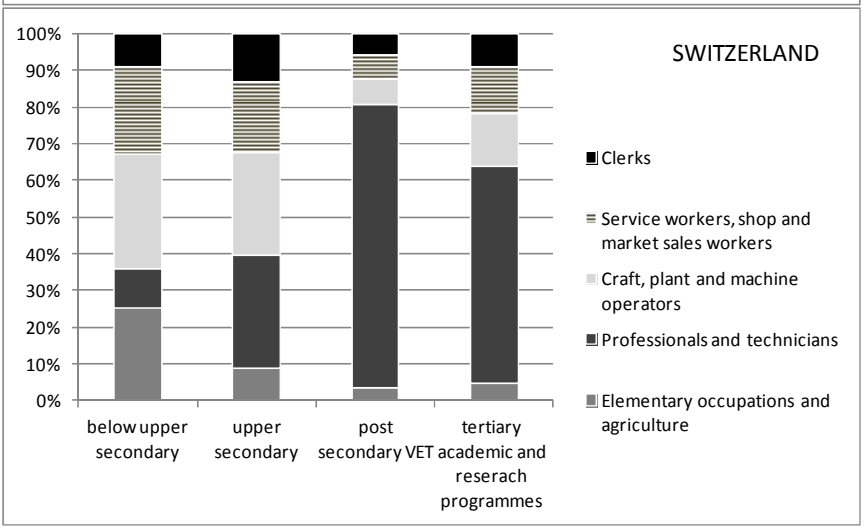


Figure 8.8. Distribution of workers (25-34 year-olds) by type of education across occupations (continued)





Notes: Figures above show distribution of young adults with specific education across five ISCO occupation types
(see: *www.ilo.org/public/english/bureau/stat/isco/isco88/publ4.htm).* The professionals and technicians group includes jobs of professionals, technicians and associated professionals.

If NIej is the number of individuals with education e, employed in occupation j, the share of those in occupation j in the total population (25-34 year-olds) with a specific education e can be calculated as $NIej = NIej / \sum_{j=1}^{J} NIej$

Source: Author's calculations based on Eurostat, EU Labour Force Survey, 2009.

The Eurostat EU Labour Force Survey 2009 data allows an estimation of the occupational profile of post secondary VET graduates (ISCED 5B, higher VET in Spain) and its comparison with outcomes of other educational groups (see Figure 8.8). It shows that in Austria, Belgium, Denmark, Germany, Switzerland and Spain workers (25-34 age group) with postsecondary VET qualifications (ISCED 5B) are more likely to work in high skill occupations of professionals, technicians and associate professionals than people with upper-secondary education and below. In Austria, Denmark, Germany, Switzerland and Spain employees with post secondary VET are also more often employed in jobs of professionals than those with tertiary studies (ISCED 5A), with the contrary being true for occupations of technicians and associate professionals, except in Austria. Regarding low and middle skill occupations, workers with post secondary VET are less likely to work in elementary jobs, services and craft jobs than individuals with a lower education level. Surprisingly in many countries post secondary VET graduates are also less often employed in these occupations than those with tertiary academic studies, with the gap being the most striking in Spain.

Previous OECD analysis and recommendations

Recent OECD work on Spain, bearing on VET, includes a 2004 review of career guidance, a 2006 review of equity in education, a 2007 review of the youth labour market, the 2008 and 2010 economic surveys, a 2009 review of tertiary education, and a 2010 regional review of higher education. Some of the recommendations for reform in these reports have therefore already been addressed.

The OECD's review of career guidance (OECD, 2004) noted that Spain, in common with many other OECD countries, requires only general psychological or pedagogical qualifications from school and career counsellors, and makes no requirement for specific training in career guidance which might include knowledge of the labour market.

A number of OECD reports have urged Spain to take more action to retain potential drop-outs in upper secondary school, making particular use of vocational routes. The OECD review of equity in education (Teese *et. al*., 2006) recommended that in Spain more use should be made of vocational modules to promote student engagement in lower secondary education. It also recommended solutions "…which are more supportive of students 'at risk' aiming to extend to all young people a statutory right to two years of

upper secondary education (academic or vocational) by creating a platform of successful learning permitting all to advance."

A review of the youth labour market in Spain (OECD, 2007) showed that compared to other OECD countries, a relatively small share of secondary students opt for a vocational programme, despite relatively good labour market outcomes. Although there are vocational programmes for drop-outs from compulsory education ("social guarantee programmes"), their take-up is low and they do not offer direct access to upper secondary programmes – those who want to pursue an upper secondary vocational programme have to take a qualifying exam and there are no routes back to general education. Similarly, vocational programmes targeted at those unskilled 16-24 year-olds (apprenticeship schools, *Escuelas Taller* and craft schools, *Casas de Oficios*) do not provide a bridge back to mainstream education.

Given the benefits of work experience for those entering the labour market, the report argues that barriers to students' work should be removed to facilitate school-to-work transition. The limited use of part-time employment makes it hard for young people to combine employment with studying. Internships (*prácticas becadas bajo convenio*, typically available for tertiary students) can facilitate labour market insertion, but should be monitored to ensure quality. Employers should be engaged in the design of programmes that combine education and work. The report identified as a challenge the fact that short-cycle university courses and professional tertiary education – more relevant to labour market needs – are still not as developed as in other European countries.

The 2008 OECD economic survey (OECD, 2008) made a number of relevant recommendations:

- Returning to the issue of how best to tackle drop-outs, it argued that the options offered at the final stage of compulsory schooling be diversified and include vocational subjects. Conditions for grade advancement and access to upper secondary education should focus on the core competences required for any type of upper secondary education and allow for the inclusion of vocational subjects.
- VET programmes should be evaluated according to the transition of graduates to qualified jobs, and the results of this evaluation should be published.
- Barriers to the access of professional practitioners to VET teaching should be reduced, given that employers appreciate their role.

- Weaknesses in basic academic competences should be tackled to improve VET graduates' employability throughout their careers.
- Measures should be taken to ensure that schools can adapt the curriculum in vocational programmes to local labour market needs.
- Improving access from upper secondary VET to tertiary education would make vocational pathways more attractive.

The report also argued that at tertiary level, students' incentives are biased towards vocational programmes, but returns from these programmes are lower than from university education. The report proposes the introduction of income-contingent loans for all tertiary students, including those in vocational programmes.

The OECD review of tertiary education in Spain (OECD, 2009) offers a large number of recommendations for the tertiary system as a whole, and for higher vocational education. These include:

- A strategic review designed to ensure that tertiary education effectively integrates higher vocational education, and gives it a distinct and valued role.
- Responsiveness to labour market needs as a key factor in the accreditation of higher vocational institutions and institutions should have strong links with external stakeholders.
- Better pathways from vocational upper secondary education and tertiary education and between vocational and academic tertiary programmes (including remedial and bridging programmes).
- Development of a funding framework, with a balanced mix of input and output indicators, for higher vocational education. Such a framework should be based on three principles: cost-sharing, using relevance as a basis for allocation, and providing a comprehensive student support system (based on means-tested grants and a universal income-contingent loan scheme).
- The establishment of a comprehensive and coherent framework of quality assurance, with fewer and better co-ordinated evaluation activities. The report welcomes the proposed co-ordination plan between relevant regional authorities and argues that higher vocational institutions should be also be in the scope of evaluations by existing agencies (*e.g.* ANECA).
- Development of an equity framework, which uses an empirical performance indicator system to monitor access, participation, retention

and success of disadvantaged people. Policies should intervene at earlier stages of education to reduce inequalities in access to tertiary education. While means-tested grants complemented with income-contingent loans can provide financial support. The supply of programmes should be further diversified to cater for a diversity of student backgrounds.

- The expansion of tertiary enrolment should be accompanied by a rebalancing in favour of vocational programmes, in particular first-cycle professional programmes and short-cycle vocational programmes should expand in size.
- Teaching staff in higher vocational education should have their own career structure and be trained for their distinctive role. The framework regulating their careers (*e.g.* academic ranks, performance expectations) should be aligned with the mission of such institutions (*e.g.* instead of basic research, applied research and consultancy should be encouraged).
- The promotion of internationalisation in higher vocational education.
- Strengthened links to the labour market, allowing students to respond to labour market signals and institutions to respond to student preferences. This would involve:
  - Better data collection on labour market outcomes and ensuring that students are aware of these through career guidance.
  - The involvement of labour market actors in the development of relevant policies at institutional level (*e.g.* in the design of programmes, assessment of students, approval of new or existing programmes).
  - Stronger partnerships between institutions and the business sector. Institutions should have enough autonomy to flexibly respond to labour market needs.
  - Flexible, work-oriented study options should be promoted with adequate support for low-income workers. Raising the profile of higher vocational education should be a priority, these programmes should no longer be viewed as an extension of secondary education, but as an integral part of tertiary education.

The 2010 economic survey (OECD, 2010b) offers further recommendations and reviews action taken on previous recommendations. Actions taken in the area of VET policy include plans for the introduction of separate vocational and academic streams in the last year of compulsory schooling and new curricula for support programmes (*formación profesional*

inicial or VIP) for poor performers. With the aim of increasing the attractiveness of VET, as of 2010/11 information is being collected on student acquisition of professional competences and their transition to the labour market. Since 2008 vocational programmes offer more generic skills (*e.g.* foreign language, communication), and legislation promotes mobility between upper secondary vocational and university education and opens more room for the participation of companies in the design and implementation of vocational programmes.

The 2010 report reiterates the recommendation to focus criteria for grade progression on the core competences required for upper secondary education. It recommends closer cooperation between schools and public employment services (*e.g.* early career counselling in secondary schools) to target support at those at risk of unemployment. It recommends that continuing training should be made more accessible for firms, in particular SMEs and adults (*e.g.* through training grants in the form of vouchers or training allowances), while ensuring that training is of high quality.

A recent OECD report on higher education in regional and city development in Andalusia (OECD, 2010c) reiterates a number of recommendations presented earlier, including: the need to strengthen VET for the benefit of regional industry; to ensure better pathways between different levels of education and between vocational and general programmes; to collect data for evidence-based policy making; and to adapt VET curricula to labour market needs. It also argues that vocational higher education can support improvements in secondary education, by reaching out to secondary schools and raising aspirations.

A brief assessment of the Spanish vocational education and training system

Strengths

Engagement of the social partners and other stakeholders

In all countries, engagement of employers and unions in the vocational education and training system is very important. Nationally and regionally, this helps to ensure that the overall design of the system, the content of programmes, and the mix of training provision meet labour market needs. Local partnerships between employers and education and training institutions support workplace learning. In Spain, the social partners are well engaged in the VET system. Nationally, this takes place through the

National Commission on VET, which aims to build consensus among the national and autonomous community governments, and employers and unions, on VET policy. Locally, employers are engaged in the system particularly through the provision of workplace training.

Effective policy development

Across countries, VET policy development offers particular challenges because of the wide range of different stakeholders involved, and this is further complicated in countries such as Spain where there is an extensive devolution of government to the regions. (For a discussion of how this issue is tackled in Australia, see Hoeckel *et. al*., 2008). Some consensus among the different stakeholders is important, but needs to be balanced by effective leadership to ensure that consensus does not become a formula for inertia. In Spain, reform has been pursued systematically in recent years, while a substantial degree of consensus has been maintained through consultation with different levels of government and the social partners. This is a real strength, and there remains a need to sustain and develop this consensus between national government, autonomous communities in the regions of Spain, employers and unions on VET policy.

Sustaining lifelong learning through permeability and transitions

Most VET systems face the challenge of "permeability", meaning the need to ensure that graduates of the VET system have access to further learning opportunities. Such permeability is desirable because growing technological complexity is increasing the demand for higher level skills, because students themselves are aspiring to higher level qualifications and because the absence of permeability tends to stigmatise VET pathways as low status dead ends. For an OECD analysis of how this issue is being addressed in Germany, see Hoeckel and Schwartz (2010). In Spain, the need to enhance such permeability was, as explained above, underlined in previous OECD reports (OECD, 2008, 2009). Recent reforms have been designed to improve permeability in the VET system and access to post secondary education. Graduates of upper secondary VET (with VET diplomas) were previously required to restart upper secondary academic programmes in order to spend another two years studying before obtaining the Spanish Baccalaureate – this has now been reduced to one year.

A coherent system of qualifications

The function of a well-designed vocational qualification is to be an information tool, providing a clear signal to potential employers of the skills

and knowledge of a person with the qualification. Countries therefore often face challenges when their qualifications systems are undermined by confusion and complexity, clouding the signalling function of qualifications to employers (and therefore the value of the qualifications to the individuals). One particular difficulty arises when qualifications delivered by the education system and recognised by ministries of education are inconsistent with skills standards and associated qualifications recognised by ministries of labour. (For OECD analysis of this issue in Chile and Korea, see Kuczera, Kis and Wurzburg, 2009, and Kis and Field, 2009.) In Spain, the VET system as a whole, and the pathways through it, are reasonably clear and comprehensible to participants. A recent reform, which has yet to be fully implemented, has aligned the VET diplomas (accredited by the Ministry of Education) with the individual competences (certified by the Ministry of Labour), so that typically completion of any diploma will include the acquisition of certain certified competences. This is a welcome and positive development.

Using vocational programmes to reduce dropout

A number of countries use vocational programmes at compulsory level to engage or re-engage adolescents at risk of dropping out of school, and a number of previous OECD reviews of Spain, as indicated above, have urged this approach. In Spain, at lower secondary level, the VIP (vocational initial programme) has now adopted this approach as it aims to reintegrate some young people in school through vocational programmes.

Effective workplace learning

All VET programmes need to make effective use of workplace learning. Workplaces provide a strong learning environment, allowing the development of hard skills on modern equipment, and soft skills through real-world experience of teamwork, communication and negotiation. Workplace training facilitates recruitment by allowing employers and potential employees to get to know each other, while trainees contribute to the output of the training firm. Workplace learning opportunities are also a direct expression of employer needs, as employers will be keenest to offer opportunities in areas of skills shortage. The benefits of workplace learning depend on its quality. In the absence of quality control, workplace training opportunities for young people can degenerate into cheap labour, or involve very narrow and firm-specific skills. Quality control may involve contractual arrangements setting out the rights and obligations of trainee and employer, inspections, self-evaluation and effective assessment of the skills acquired through training. Workplace learning also requires adequate

support and interest from both industry and students because of its advantages as a learning environment for students, its direct value to employers through the productive work of trainees and their potential as recruits and because it signals labour market demand for the skills being acquired in the VET programme. For OECD analysis of the value of workplace training in the context of China, see Kuczera and Field (2010). In Spain, workplace training is required for the final three months of any intermediate or higher vocational programme. We heard that this works well in terms of integrating graduates into the labour market, as training firms often offer the trainees jobs, and there are normally sufficient workplace training places. Mandatory workplace training, as in Spain, is desirable not only because of the value of the workplace as a learning environment, but also because it binds provision more closely to the needs of employers.

Challenges

Keeping vocational schools and their staff up-to-date

In countries where vocational schools provide practical training, the training provided should reflect the needs of modern industry. This requires up-to-date equipment and arrangements to ensure that teachers and trainers remain continuously abreast of changing workplace practices and technologies. This could involve requirements on teachers and trainers to have industry experience before entering the profession, to regularly update such experience, and arrangements to encourage teachers and trainers to continue to work part-time in industry. In Spain, there is no requirement for VET teachers and trainers to have worked in their vocational field – although they do need to be qualified in that field, and they often spend time training in companies. This is a particular challenge in a system which relies extensively on school-based workshops to develop practical vocational skills. OECD (2008), as explained above, has already urged measures to address this challenge. Current budgetary pressures are putting particular strain on Spain's school-based model of vocational training. Retiring teachers are not being replaced – ageing the workforce and perhaps distancing it further from industry, while postponing the replacement of out-of-date training equipment.

Ensuring students sustain and develop core academic skills

Among general academic skills, advancing technology means that numeracy and literacy are of increasing importance in the labour market, and in many countries, weaknesses in these fields are common among those

in vocational programmes. Such problems (often unrecognised) may increase the risk of drop-out, and reduce the prospect of further career development and lifelong learning. Vocational programmes need to give sufficient weight to these skills, and students should be systematically assessed at the point of entry to vocational programmes so as to ensure a basic minimum of skills and identify those in need of targeted support. For OECD analysis of this issue in the context of Belgium Flanders see Kis (2010). In Spain, students enter intermediate VET programmes with school certificates which should ensure a minimum level of basic skills as the certificate is similar to that required to enter the general stream of *Bachillerato*. Students entering higher VET programmes need to have the *Bachiller* certificate, the same award required to enter university, but some weaknesses in academic skills may remain. The intermediate and higher level curricula include practical training and teaching of the theory associated with the vocational field, but little direct teaching in maths, literacy, or other academic subjects. This means that there is no direct test of numeracy and literacy although these skills may continue to be developed in the context of the theoretical part of the vocational programme. OECD (2008) has already argued that in Spain more attention to basic academic skills in vocational programmes is required. This is a challenge, given the evidence that good numeracy and literacy is not only important for successful completion of vocational programmes, but also for further education and career development.

Modernising career guidance

More complex careers, with more options in both work and learning, are opening up new opportunities for many people. But they are also making decisions harder as young people face a sequence of complex choices over a lifetime of learning and work. Helping young people to make these decisions is the task of career guidance. But in many countries career guidance faces a number of challenges: too often those offering guidance are inadequately acquainted with labour market issues, with career guidance sometimes playing a subsidiary role to psychological counselling; guidance services can be fragmented, under-resourced and reactive, so that those who need guidance most may fail to obtain it; advice sometimes lacks objectivity because guidance personnel are based in education institutions with a pro-academic bias; relevant labour market information is not always available or readily digestible and comprehensible; and the evidence base on "what works" in careers guidance is too weak. For OECD analysis of this issue in the context of the Czech Republic see Kuczera, (2010). In Spain, career guidance in schools needs reform, as it is delivered by teachers trained in psychological counselling but usually with limited labour market

knowledge or experience. Current attempts to reform guidance include measures designed to integrate school-based guidance with employment advice for the unemployed.

Furthering the development of workplace learning

The many advantages of workplace training in general and how it works in Spain have been set out above under the heading of "strengths". In Spain, while mandatory workplace training serves well at the end of VET cycles as a means of transition to the labour market (since training employers often offer jobs to trainees), it is a very much less substantial element of the training element of vocational programmes than would be found in apprenticeship systems for example. So an issue remains of whether there might be scope for further development of workplace training in the system.

Summary assessment of Spain: strengths and challenges of the system

Strengths

- The social partners are well engaged in the VET system. Nationally, this takes place through the National Commission on VET, which aims to build consensus among the national and autonomous community governments, and employers and unions, on VET policy. Locally, employers are engaged in the system particularly through the provision of workplace training.
- Reform has been pursued systematically in recent years, while a substantial degree of consensus has been maintained through consultation with different levels of government and the social partners. This is a real strength, and there remains a need to sustain and develop this consensus between national government, autonomous communities in the regions of Spain, employers and unions on VET policy.
- Recent reforms have been designed to improve permeability in the VET system and access to post secondary education. Graduates of upper secondary VET (with VET diplomas) were previously required to restart upper secondary academic programmes in order to spend another two years studying before obtaining the Spanish Baccalaureate – this has now been reduced to one year.
- The VET system as a whole, and the pathways through it, are generally clear and comprehensible to participants. A recent reform, which has yet to be fully implemented, has aligned the VET diplomas (accredited by

the Ministry of Education) with the individual competences (certified by the Ministry of Labour), so that typically completion of any diploma will include the acquisition of certain certified competences. This is a welcome and positive development.

- A number of countries use vocational programmes at compulsory level to engage or re-engage adolescents at risk of dropping out of school, and a number of previous OECD reviews of Spain have urged this approach. In Spain, at lower secondary level, the VIP (vocational initial programme) has now adopted this approach as it aims to reintegrate some young people in school through vocational programmes. Workplace training is required for the final three months of any intermediate or higher vocational programme. We heard that this works well in terms of integrating graduates into the labour market, as training firms often offer the trainees jobs, and there are normally sufficient workplace training places. Mandatory workplace training, as in Spain, is desirable not only because of the value of the workplace as a learning environment, but also because it binds provision more closely to the needs of employers.

Challenges

- There is no requirement for VET teachers and trainers to have worked in their vocational field – although they do need to be qualified in that field and often spend periods of training in companies. This is a particular challenge in a system which relies extensively on school-based workshops to develop practical vocational skills. Current budgetary pressures are putting particular strain on Spain's school-based model of vocational training. Retiring teachers are not being replaced – ageing the workforce and perhaps distancing it further from industry, while postponing the replacement of out-of-date training equipment.
- Students enter intermediate VET programmes with school certificates which should ensure some minimum level of basic skills as the certificate is similar to that required to enter the general stream of *Bachillerato*. Students entering higher VET programmes need to have the *Bachiller* certificate, the same award required to enter university, but some weaknesses in academic skills may remain. The intermediate and higher level curricula include practical training and teaching of the theory associated with the vocational field, but little direct teaching in maths, literacy, or other academic subjects. This means that there is no direct test of numeracy and literacy although these skills may continue to be developed in the context of the theoretical part of the vocational programme. This is a challenge, given the evidence that good numeracy

and literacy is not only important for successful completion of vocational programmes, but also for further education and career development.

- Career guidance in schools needs reform, as it is delivered by teachers trained in psychological counselling but usually with limited labour market knowledge or experience. Current attempts to reform guidance include measures designed to integrate school-based guidance with employment advice for the unemployed.
- While mandatory workplace training serves well at the end of VET cycles as a means of transition to the labour market (since training employers often offer jobs to trainees), it is a very much less substantial element of the training element of vocational programmes than would be found in apprenticeship systems for example. So an issue remains of whether there might be scope for further development of workplace training in the system.

Notes

1. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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Annex A. Contributors

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Simon Field has worked since 2001 in the Directorate for Education, OECD on issues including vocational education and training, equity in education, and human capital. His previous career in the UK civil service included a period heading the division for higher education, evaluation and international issues in the Department for Education and Skills. While in the Home Office he was responsible for creating and leading an Economics Unit, bringing the tools of economic analysis to bear on criminal justice issues. He holds a Ph.D. in philosophy and social policy from the University of Cambridge and an M.Sc. in Economics from Birkbeck College London. He was born and brought up in Belfast and holds joint British/Irish citizenship.

Jim Gallacher is Emeritus Professor of Lifelong Learning, Centre for Research in Lifelong Learning, Glasgow Caledonian University, and an Honorary Professor in the University of the Highlands and islands and the University of Stirling. He established the Centre for Research in Lifelong Learning (CRLL) in 1999, and was Co-director until 2008. He was a member of the Scottish Funding Council for Further and Higher Education (2005-10), where he chaired the Access and Inclusion Committee. He is a member of the Board of Management of the City of Glasgow College, where he chairs the Learning & Teaching Committee. He now Chairs the Scottish Universities Association for Lifelong Learning, and was an adviser to the Scottish Parliament's Enterprise and Lifelong Learning Committee for their Inquiry into Lifelong Learning. Research interests include widening

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Małgorzata Kuczera joined the OECD in 2005 and is currently part of the team working on Skills beyond School the Review of post-secondary vocational education and training (PSV). She is a co-author of "Learning for Jobs" the OECD's recent review of VET at secondary level. As part of this exercise she reviewed VET systems throughout the world, and is the lead author of reviews in 6 countries. Prior to this project she worked on the review of equity in education at the OECD. She is a co-author of the OECD book "No more Failures: Ten Steps to Equity in Education". Before joining the OECD she worked at the European Commission on the issue of efficiency and equity in education. She holds an MSc in Economics from Birkbeck College London, a Master degree in international administration from Paris I Sorbonne in France and a Master degree in political science from Jagiellonian University is Krakow.

Gavin Moodie is principal policy adviser at RMIT, a university based in Melbourne, Australia. He has published over 40 refereed articles, chapters and encyclopaedia entries on tertiary education policy and his book "From vocational to higher education: an international perspective" is published by McGraw-Hill.

Rómulo Pinheiro, is a senior researcher at the Centre for Advanced Studies in Regional Innovation Strategies (RIS) based in the South of Norway. He is also an assistant professor at the Faculty of Education, University of Oslo, and a research associate with HEDDA, a consortium of European research centers with expertise in the field of higher education studies. Pinheiro's professional and academic interests range from issues pertaining to the role of university in society/economy, university change and adaptation, system-level governance, organisational theory, and territorial development and regional innovation systems. Prior to embracing research and teaching as professional roles, Pinheiro worked with leading companies across the telecom and ICT/new media sectors, including household names like Nokia and Microsoft. In addition to a PhD in higher education studies, he possesses undergraduate and graduate degrees in the fields of marketing, international management/business administration, and higher education studies from five different European universities.

Jaana Puukka joined the OECD in 2005 to lead the work on Higher Education in Regional and City Development. Since 2005, this has involved

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Arduino Salatin is the director of IPRASE Trentino, an education research centre promoted by the Autonomous Province of Trento, and a visiting professor at Padua University. He gained a degree in philosophy in 1978 and a Ph.D. in educational sciences in 1987, both from the University of Venice. From 1987 to 1992 he was training manager at Olivetti Group. From 1995 he was a researcher at ISRE (International Salesian Institute for Educational Research) in Venice and from 1998 he was director of the master in training management. He was consultant for Afett (Brussels), Isfol (Italy) and for many private companies. His main current research interest is in training design and evaluation, training of trainer's models.

Michael Young (BA Cantab), BSc (Lond), MA (Essex), PhD (Hon Caus (Joensuu), FCGLI) is Emeritus Professor of Education at the Institute of Education, University of London. He is a sociologist and currently teaches courses on professional knowledge and education. His is major research interests are on the related themes of knowledge, the curriculum and qualifications. He has recently been a Consultant on the role of NQFs for the ILO, the World Bank and GTZ both in developed and developing countries. His recent publications include "Bringing Knowledge Back: From social constructivism to social realism in the sociology of education".

Annex B. OECD Seminar "*Collaboration between Vocational and University Education: Building Partnerships for Regional Development*"

Donostia-San Sebastián, Spain, 17-18 October 2011

Monday 17 October, 2011	
12:00 Welcome session	• Màrius RUBIRALTA, General Secretary for Universities, Ministry of Education, ES • Iñaki GOIRIZELAIA, Rector of the University of the Basque Country, ES • Isabel CELAÁ, Basque Minister of Education, Universities and Research, Basque Country • Bernard HUGONNIER, Deputy-Director for Education, OECD
14:30 Keynote Speech: **Collaboration for what?**	The divisions between vocational and university education are unlikely to disappear, but there is international evidence of increased blurring of the boundaries. Tertiary education does not require more barriers; it needs the collaboration between the vocational and the university sectors for social and economic development. What type of collaboration between the two sectors will be more productive for regional development? What are the main challenges to this collaboration? • Chair: Miguel SOLER, General Director of Vocational Education, ES • Keynote speaker: Michael YOUNG, Institute of Education of London, UK

Monday 17 October 2011	
15:30 Plenary session I: **Widening access to tertiary education**	Mass tertiary education systems must be more differentiated than elite ones because they enroll a more heterogeneous student body, respond to new demands from the labor market, and attempt to cover a wider range of knowledge. Diversification occurs between tertiary education institutions (universities of applied sciences) and within them (dual sector universities). Can diversification widen access to those who were traditionally excluded from tertiary education? What are the strengths and weaknesses of the new tertiary education programmes? Are new divides emerging among tertiary education institutions? • Chair**:** Carlos CRESPO, Basque Deputy Minister for Vocational Training and Lifelong Learning, ES • Viktoria KIS, Education and Training Policy, OECD • John Jairo ARBOLEDA, University of Antioquia, CO • Angelo CORTELAZZO, Sao Paulo Council for Higher Education, BR • Thandwa MTHEMBU, Central University of Technology, SA
17:15 Plenary session II: **Pathways across the educational system**	Governments have established distinct educational sectors with different aims and purposes, while at the same time they have built bridges across these sectors, in particular to enhance possibilities for student transfer from one to the other. Despite the existence of some formal connections between and within the educational sectors, the level of students' mobility and recognition of prior learning is still low. What are the best strategies to enhance learning pathways across tertiary education systems? Are the good practices of collaboration in this field scalable to the regional or national level? Panel discussion chaired by Isabelle LE MOUILLOUR, CEDEFOP, EU Gavin MOODIE, Royal Melbourne Institute of Technology, AU Romulo PINHEIRO, University of Agder, NO Jim GALLACHER, Glasgow Caledonian University, UK Laureano GONZALEZ, National Agency of Evaluation and Accreditation of Quality, ES

Tuesday 18 October 2011	
09:30 Keynote speech: **Tertiary education for lifelong learning**	Trends in the global economy mean there is pressure for more flexibility in the provision of education and training and for a more prominent role of lifelong learning in tertiary education institutions. However, the principle of lifelong learning does not fit well with a system based on barriers and divisions even when they are pragmatic and blurred. How well prepared are our tertiary education institutions for providing continuing education? What are the necessary institutional changes they need to face in order to adapt to the new scenario? • Chair: Eduard PALLEJÀ i SEDÓ, AGBAR (Barcelona Water Board) representative, ES • Keynote speaker: Sten TIEDEMANN, Danish University Extension in Aarhus, DK
11:00 Plenary session III: **Industry-driven skills development**	Tertiary education institutions, if they collaborate with each other and with the industrial sector, can make a significant contribution to human capital development in their cities and regions. The vocational and the university sectors can collaborate through updating and upgrading workers' skills in firms, sharing business links for apprenticeships and internships, establishing dual programmes with the business sector, etc. Is the business sector asking for more collaboration between vocational and university education? What are the most productive areas of collaboration of these two sectors for human capital development? Panel discussion chaired by Cristina URIARTE, University of the Basque Country, ES • Attila PAUSITS, Danube University Krems, AT • Maciej LITWIN, Wroclaw City Hall, PL • Aylin GEZGÜÇ, Koç Holding, TR • Ixaka EGURBIDE, IMH-ES, Group Cesi, FR

Tuesday 18 October 2011	
14:00 Plenary session IV: **Vocational and university partnerships to boost innovation**	The regional dimension of innovation is crucial to promote economic growth and competitiveness. All tertiary education institutions can help improve the capacity of their cities and regions to adapt knowledge and to foster innovation. Collaboration among tertiary education institutions can result in a better contribution of the educational sector to regional innovation system. What kind of economic sectors would benefit the most from the collaboration between vocational and university institutions? What are the gains in terms of economic efficiency of this collaboration? Panel discussion chaired by Josep Miquel PIQUE, 22@Barcelona Managing Director, ES • Gerrit de JAGER, Association of Universities of Applied Sciences, NL • Mary MCNAMARA, Dublin Institute of Technology, IE • Vicente ATXA, Mondragon University, ES • Miguel TITO MALONE, Biomechanical Institute of the Polytechnic University of Valencia, ES
16:00 Roundtable: **Making the reform happen: the case of the Campus of International Excellence in Spain**	Chair: Amaia MASEDA, University of the Basque Country, ES Lead speaker: Joan MAJO, Former Minister of Industry, ES 17:30 Closing of the seminar • Mercedes CHACÓN, General Direction of Universities, ES • Cristina URIARTE, University of the Basque Country, ES • Pedro Luis ARIAS, Basque Vice-Minister of Universities and Research, ES • Oscar VALIENTE, OECD-IMHE

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Higher Education in Regional and City Development

Post-Secondary Vocational Education and Training: Pathways and Partnerships

Rapid growth of tertiary education is partly due to the expansion of post-secondary vocational education and training (PSV). A well developed post-secondary PSV system and links between universities and VET institutions improve skills and employment opportunities. What is post-secondary PSV and how does it relate to other components of the education system? How do the labour market and globalisation trends impact post-secondary PSV? How do OECD countries address the issues of transition, pathways and collaboration in tertiary education?

This report is part of the OECD work on Higher Education in Regional and City Development. In the course of the reviews of more than 30 cities and regions, this work identified VET-university linkages as one of the common issues that impact the engagement of tertiary education in socio-economic development across countries.

CONTENTS:

Part I. Overview of post-secondary vocational education and training; major trends and challenges
Chapter 1. Post-secondary vocational education and training
Chapter 2. Delivering high level training in a changing world – Post-secondary vocational education and training in context
Chapter 3. Differentiation, de-differentiation and collaboration between vocational education and universities

Part II. Post-secondary vocational education and training: country case studies
Chapter 4. Australia's dual sector universities and transfer from vocational to higher education
Chapter 5. College-university links and impact on participation in higher education in Scotland
Chapter 6. Bridging the divide in Norway's tertiary education: the impacts of the policy mix
Chapter 7. Non-university higher education and regional development in Italy
Chapter 8. Vocational education and training in Spain

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ISBN 978-92-64-09755-1
892012061E