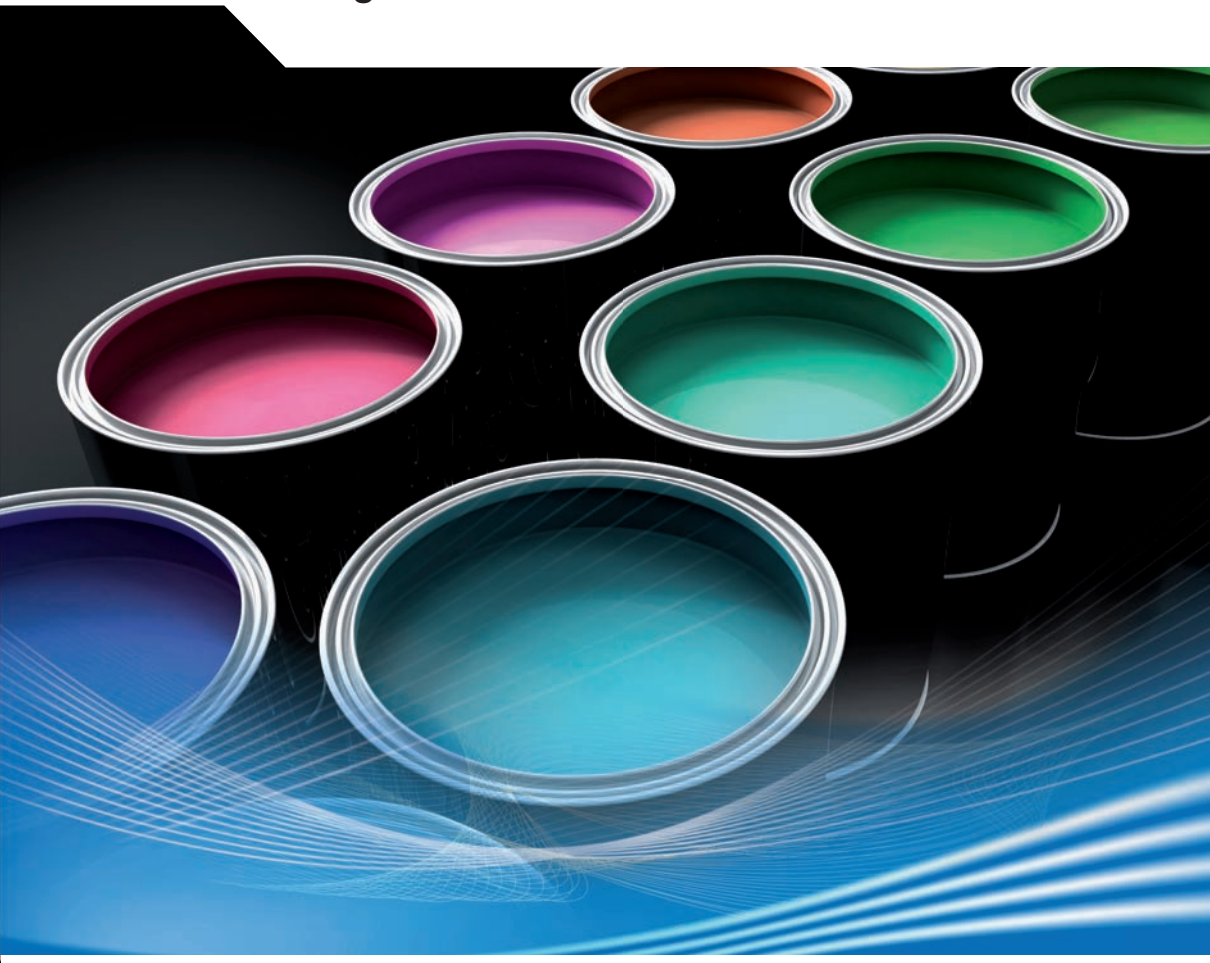
OECD Reviews of Vocational Education and Training

A Skills beyond School Review of Denmark

Simon Field, José-Luis Álvarez-Galván, Fabrice Hénard, Viktória Kis, Małgorzata Kuczera and Pauline Musset



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Summary: strengths, challenges and recommendations

Strengths

- Workplace training is mandatory, well-structured and has clear learning goals.
- Effective measures guide students to programmes, and support them in seeking to update their skills.
- A parallel adult education system provides access to skills upgrading.
- The social partners are fully engaged in the system, though robust institutional structures.
- The "taximeter" funding system provides effective incentives for institutions to minimise dropout and seek efficiencies in delivering outcomes.

Challenges

- The planned reorganisation of the postsecondary sector, envisaged for 2015, has few immediate benefits and is opposed by the social partners.
- There is uncertainty over the role of research in postsecondary VET institutions in Denmark, with pressure from some quarters for a more active research role, particularly in university colleges.
- Despite the development of a framework for recognition of prior learning, it seems to be insufficiently used, particularly to realise course exemptions.
- There is a challenge in ensuring that postsecondary vocational teachers and trainers maintain and develop their experience and knowledge of modern industry, in the face of rapid technological change.

Recommendations

1. The transfer of responsibility for professional bachelor's degrees from academies to university colleges, planned for 1 January 2015, should not go ahead. Instead, in co-ordination with the social partners, alternative plans should be developed for consolidation in the sector designed to sustain its role in meeting labour market needs. The evaluation of academies, planned for 2013, should be extended to look also at the university colleges, and be designed so as to support the development of these alternative plans.
2. Danish government policy in the funding of Research and Development (R&D) should ensure: *i)* that the primary vocational training mission of university colleges and academies is sustained; *ii)* that the vocational training delivered is effectively informed by knowledge and research; and *iii)* that the benefits of R&D are maximised through the encouragement of collaboration among universities, university colleges and academies and with the private sector.
3. Following the development of an effective structure for recognising prior learning, further measures are necessary to realise its potential. There is a need to strengthen incentives for RPL through adjustment of the funding system, stronger quality control and better information. In addition, following the example of other OECD countries, Denmark should consider encouraging the development of an industry-led professional examination system.
4. Ensure that the vocational knowledge and skills of postsecondary VET teachers remains up-to-date by: *i)* providing incentives for teachers to regularly update their vocational skills; and *ii)* establishing a framework that allows teachers to regularly spend time in a company or institution within their professional field.

Chapter 1

Introduction and initial assessment

This chapter describes the OECD policy study of postsecondary vocational education and training (VET), the review of Denmark, summarises the main features of the country system and sets out an assessment of its strengths and challenges.

The policy review of Denmark and its place in the wider OECD study

This review 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 (see Box 1.1). The series includes *reviews*, (such as this one) involving an in-depth analysis of a country system leading to a set of policy recommendations backed by analysis. In addition there are *commentaries*. These simpler exercises are largely descriptive but also include an assessment of strengths and challenges in the country system. The commentaries are designed to be of value as free-standing reports, but are also prepared so that they can become the first phase of a full review, should a country so wish.

Box 1.1 Skills beyond School: the OECD study of postsecondary vocational education and training

Increasingly countries 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 study, *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 study will build on the success of the previous OECD study of vocational education and training *Learning for Jobs* which examined policy through 17 country reviews and a comparative report. The study also forms part of the horizontal OECD *Skills Strategy* (OECD, 2012a).

Full country policy reviews are being conducted in Austria, Denmark, Egypt, Germany, Israel, Korea, the Netherlands, Switzerland, the United Kingdom (England), and the United States (with case studies of Florida, Maryland and Washington State). Shorter exercises leading to an OECD country commentary will be undertaken in Belgium (Flanders), Canada, Iceland, Romania, Spain, Sweden and in Northern Ireland and Scotland in the United Kingdom. Background reports will be prepared in all these countries, and in France, Hungary and Mexico.

The exercise as a whole will therefore yield a wide range of published country reports and working papers and conclude with a comparative report.

See: *www.oecd.org/edu/vet*.

This review follows a standard methodology. Denmark initially prepared a country background report. An OECD team then made two visits to Denmark on 21 -25 November 2011 and 9 - 13 January 2012 where they discussed the issues arising with a very wide range of stakeholders.

The structure of the report

This first chapter places the review of Denmark in the context of the OECD policy study of postsecondary VET, presents the structure of the report, describes the main features of postsecondary VET system in Denmark, compares its main features with other systems internationally, explores some key international indicators bearing on the system and examines its strengths and challenges.

The following chapters propose policy recommendations. Each policy recommendation is set out as:

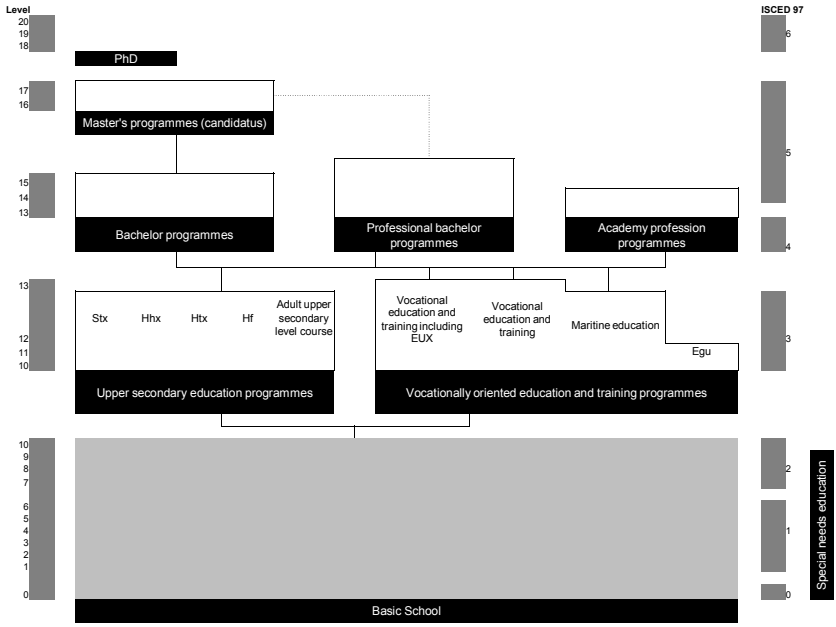
- *The challenge* – the problem that gives rise to the recommendation.
- *The recommendation* – the text of the recommendation.
- *The supporting arguments* – the evidence that supports the recommendation.

A snapshot of the postsecondary vocational education and training system

In Denmark, postsecondary VET assumes two main forms: academy profession programmes and professional bachelor programmes (Figure 1.1). Each type of programme is undertaken by different institutions: *i)* academies of professional higher education (primarily for academy profession programmes); and *ii)* university colleges (primarily for professional bachelor programmes). Three other educational institutions - the two colleges of engineering and the Danish School of Media and Journalism – have a slightly different form (Danish Agency for Higher Education and Educational Support, 2012).

There is also an option for adult higher education with qualifications available at levels corresponding to those of the ordinary (regular) higher education system. These are the VVU (*Videregående voksenuddannelse*) degree (corresponding to an academy profession degree) and diploma programmes (corresponding to a professional bachelor's degree) (Danish Agency for Higher Education and Educational Support, 2012).

Figure 1.1 The Danish Education System[1]



Source: The Ministry of Children and Education (2012a), "Overview of the Danish Education System", *www.eng.uvm.dk/Education/Overview-of-the-Danish-Education-System.*

Two types of programmes and institutions

The academy profession programmes and academies of professional higher education

Academy profession programmes are higher education programmes of 90-150 ECTS[2] oriented towards specific professions or job functions (Table 1.1). Most programmes are awarded after 120 ECTS. In the summer of 2011 there were 25 vocational academy profession programmes (*e.g.* business and economics, information technology, design, health care). Additionally, some programmes have optional study programmes of which students have to choose one. Most of the academy profession programmes are offered at the academies of professional higher education. In 2009, 18 787 students were registered in these programmes, a substantial increase from 2000 when 12 691 were enrolled (Danish Agency for Higher Education and Educational Support, 2012).

Table 1.1 Danish qualifications levels - higher education

Danish qualification levels	Ordinary higher education degrees	Adult/ Continuing higher education degrees	Qualifications Framework for the European Higher Education Area – Bologna Framework	European/National Qualifications Framework for Lifelong Learning – EQF/NQF
Academy Profession level	Academy Profession degree (90-150 ECTS)	VVU-degree (60 ECTS)	Short cycle	Level 5
Bachelor's level	Professional Bachelor's degree (180-240 ECTS)*	Diploma degree (60 ECTS)	First cycle	Level 6
	Bachelor's degree within fine arts (180-240 ECTS)			
	Bachelor's degree (180 ECTS)			
Master's level	Master's degree (within fine arts)	Master degree (60-90 ECTS)	Second cycle	Level 7
	Master's degree (120 ECTS)**			
PhD level	PhD degree (180 CTS)		Third cycle	Level 8

Notes:* Can be obtained through a full regular bachelor programme (180-240 ECTS) or a top up bachelor programme (90 ECTS) following an Academy Profession degree. ** A few master's programmes are up to 180 ECTS.

Source: Danish Agency for Higher Education and Educational Support (2012), *Skills beyond School: OECD Review of Post-Secondary Vocational Education and Training – National Background Report for Denmark*, *http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf*.

Academy programmes are intended to provide graduates with sufficient knowledge and understanding of practice to independently analyse problems, undertake functions and to qualify a student for relevant further education. They combine theoretical studies with a practically oriented approach in the form of a mandatory minimum three month work placement.

All programmes require the submission of a project paper (Danish Agency for Higher Education and Educational Support, 2012).

Admission to the academy profession programmes is possible on the basis of either general upper secondary education or relevant vocational education and training, supplemented by adequate general secondary courses (*e.g.* mathematics, physics, English) (Danish Agency for Higher Education and Educational Support, 2012).

The nine academies of professional higher education in Denmark are independent organisations. (The main difference between an independent and a self-governing organisation is the composition of the members of the institutional board.) Academies have a management board with strategic responsibility for the quality and development of programmes at the institution, and board members are expected to have experience and knowledge of academy institutions. The board also includes members with insight into labour markets needs and with experience in management and business. Day to day management is the responsibility of the rector (president), subject to the directives laid down by the board. The rector participates in the board meetings but has no voting rights (Danish Agency for Higher Education and Educational Support, 2012).

In 2013 it is planned that the academies should be subject to an external evaluation that will examine their role in developing technical and commerce programmes, and contribute to further longer term objectives, including the target that, by 2020, 60% of all young people should enter higher education. The evaluation could assist co-operation between short and first-cycle education programmes and the technical and commerce programmes (Danish Agency for Higher Education and Educational Support, 2012).

Box 1.2 The classic and light models of academy organisation

In 2010, the Ministry of Education inspected the nine academies and reported that not all of them were established according to the full intentions of the law under which they should be organised on a "classic" or a "light" model. These two models refer to the relationship between the academies and the vocational schools from which they were formed.

The classic model involves full separation, so that the vocational schools hand over all of their activities, assets and liabilities related to academy education and the supplementary training to the academy. As a consequence the academy has its own teachers, class rooms and administration, and the teaching is conducted by teachers employed by the academy.

In the light model the vocational schools maintain their assets and liabilities, and conduct teaching in academy programmes or provide in-service training on behalf of the academy. The teaching takes place in the vocational schools' class rooms and is conducted by teachers employed by the vocational schools. The students enrolled in these education programmes are, however, enrolled at the academy and not at the vocational schools. Administrative tasks related to the teaching are conducted by the academy. As a consequence the academy pays some of its taximeter funding received from the State to the vocational schools that provide the teaching.

Source: Danish Agency for Higher Education and Educational Support (2012), *Skills beyond School: OECD Review of Post-Secondary Vocational Education and Training – National Background Report for Denmark*, *http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf*.

According to the legislation, prior to 1 January 2015 each academy of professional higher education should decide if it is going to remain independent, in which case the academy will have to hand over its bachelor programmes to a university college. Alternatively, the academy can decide to merge with a university college prior to 1 January 2015 (Danish Agency for Higher Education and Educational Support, 2012).

Professional bachelor programmes and university colleges

Professional bachelor programmes normally require three to four and a half years of study (180-240 ECTS points) and are at a level corresponding to that of university bachelor programmes, but with a stronger focus on professional practice. The greater part of the professional bachelor programmes takes place at the university colleges. Most programmes give access to further studies within the same field, typically a Master's programme within adult education and continuing training or, under certain

conditions, specific master level programmes (Danish Agency for Higher Education and Educational Support, 2012). The professional bachelor programmes cover topics such as health care, pedagogy, social sciences, business and economics and information technology (Danish Agency for Higher Education and Educational Support, 2012). In 2009, 65 491 students were registered in these programmes, a figure little changed from 2000 (Danish Agency for Higher Education and Educational Support, 2012).

Professional bachelor programmes are also offered as top-up programmes following an academy profession qualification, with a duration of at least a year and a half (180 ECTS).

Professional bachelor programmes are designed to provide students with theoretical knowledge and its application and include a mandatory minimum six month work placement and the submission of a project paper (Danish Agency for Higher Education and Educational Support, 2012).

Admission to a professional bachelor programme normally requires a general upper secondary school leaving examination, or comparable qualifications. In addition, there may be specific requirements such as a particular subject combination in upper secondary school or minimum grades. An entrance examination is also sometimes required. The Ministry of Science, Innovation and Higher Education may set a maximum number of student admissions within certain fields of study. Individual institutions may restrict admission for certain fields of study (Danish Agency for Higher Education and Educational Support, 2012).

Most graduates of professional bachelors programmes find employment in the public sector, as teachers, nurses and social workers; 73% of new graduates find employment within the field of public administration, education and health. But, many of the newer programmes in fields such as engineering, information technology, business and media and communication are aimed at the private sector (Danish Agency for Higher Education and Educational Support, 2012).

There are seven university colleges in Denmark. University colleges are self-governing organisations with a board, having strategic responsibility for the quality and development of education and the institution. The everyday operation of the university college is the responsibility of the rector (president), subject to the strategic direction of the board (Danish Agency for Higher Education and Educational Support, 2012). The board has 10-15 members – typically representatives of local and regional government, students and teachers - including members who have experience of university college education, insight into labour market needs, or have experience with management and business.

Comparing Denmark with other countries: key indicators

This section looks at some indicators comparing the Danish VET system, and its labour market context, with the pattern found in other countries. Comparisons of a statistical indicator for any 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.

Length of study

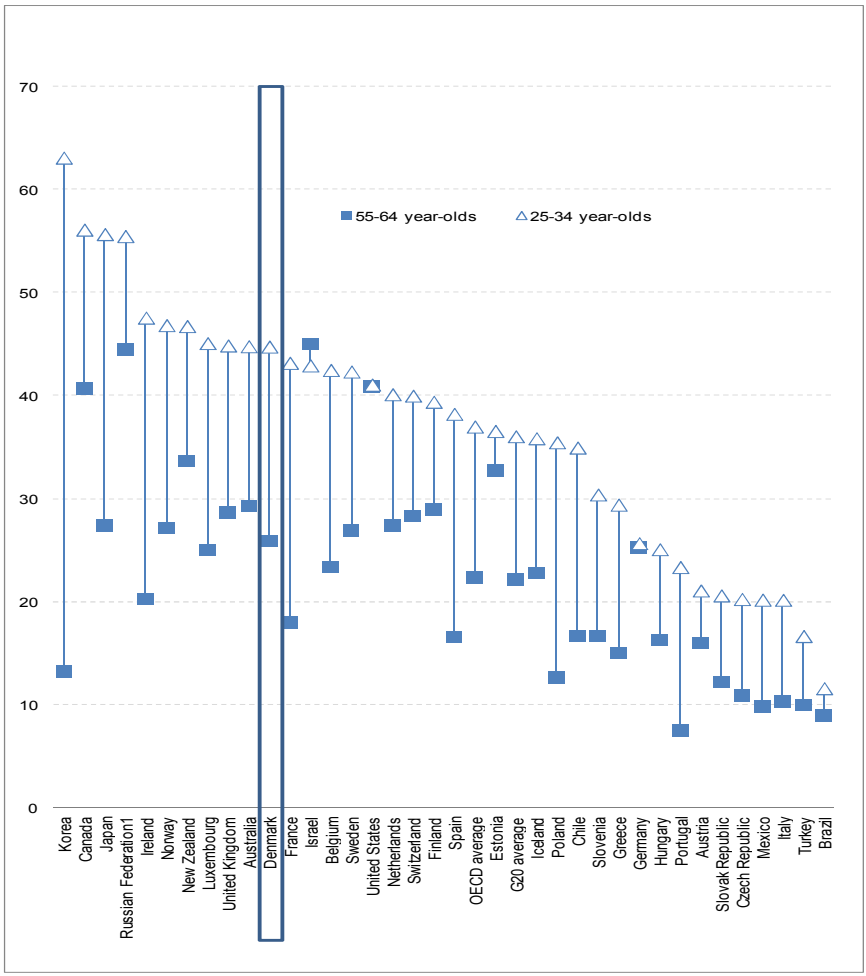
Danes are among the oldest students and graduates in the OECD, Some argue that older students in Denmark have accumulated significant labour market experience as many of them hold student jobs, helping them to have a smoother and faster transition into stable employment. Indeed, in 2008, about 70% of students aged 23-24 were working. Yet, even more Australian students (78%), for example, work at the same age but still manage on average to graduate at a much younger age. Students very often take the voluntary 10th grade in the compulsory school system, even if they are academically ready for further education. There are thus long waits between the lower secondary and the upper secondary cycles. A similar phenomenon is observed at the articulation between upper secondary and tertiary education (OECD, 2010a).

Indicators of education and training

In Denmark, tertiary attainment is high. In 2009, about 45% of Danish people aged 25-34 years had attained tertiary education while the OECD average was about 22%. For those aged 55-64 years, 26% had tertiary education (OECD average 22%, Figure 1.2).

Figure 1.2 Percentage of population that has attained tertiary education, by age group

2009



Notes: 1. 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 (2011a), *Education at a Glance 2011*: *OECD Indicators*, Chart A1.1, OECD Publishing. doi: *10.1787/eag-2011-en.*

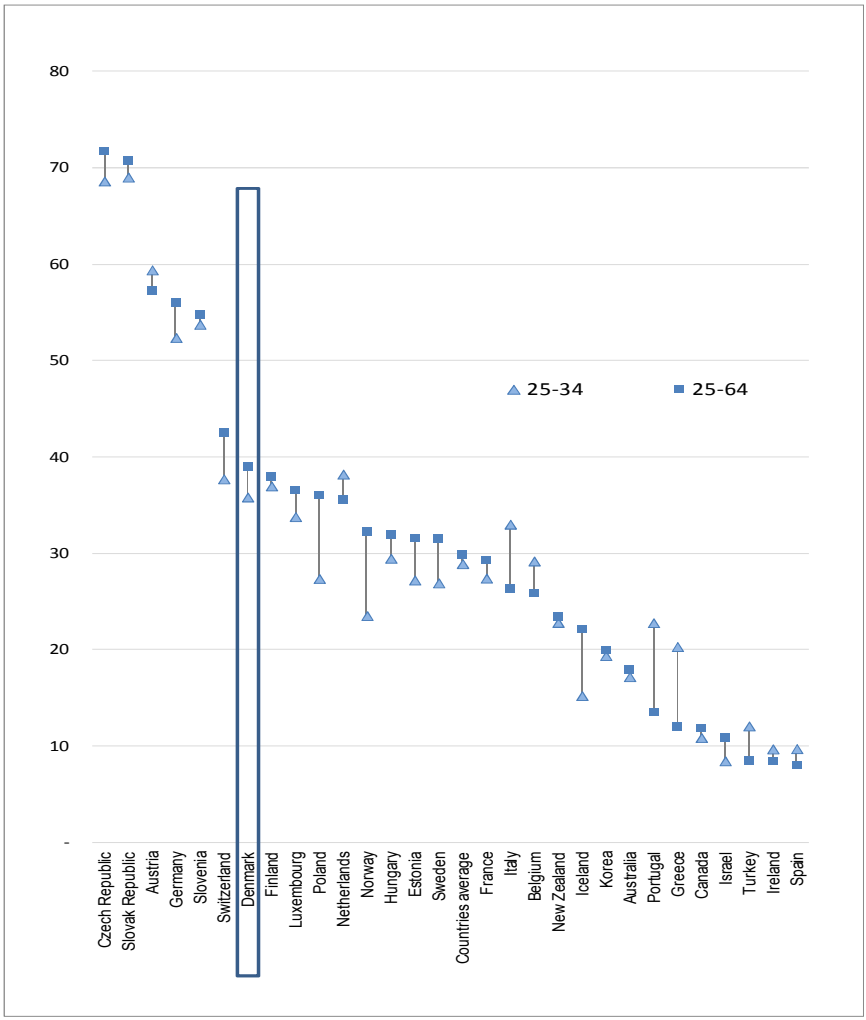
Denmark has a relatively high proportion of people whose highest level of education is non-tertiary VET – including those with upper secondary

VET qualifications and in Denmark those with academy diplomas. As shown in Figure 1.3 (including 29 countries), in Denmark, the proportion of those aged 25-34 years holding some kind of VET diploma (but not at tertiary level) was 36% in 2009, well above the average for the other 29 countries (29%).

Adult participation in education and training 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. In 2008, 45% of the population aged 25-64 years participated in formal and/or non-formal training, above the OECD average of 41% (Figure 1.4). As in other countries, those working full-time, and those with higher level qualifications are much more likely to participate. In 2008, 48% of employed adults and 27% of those not employed took part in formal and/or non-formal education.

Figure 1.3 Population with non-tertiary VET qualifications

Percentage of 25-64 year-olds and 25-34 year-olds whose highest level of education is vocational upper secondary and postsecondary non-tertiary, ISCED 3/4 (2009)

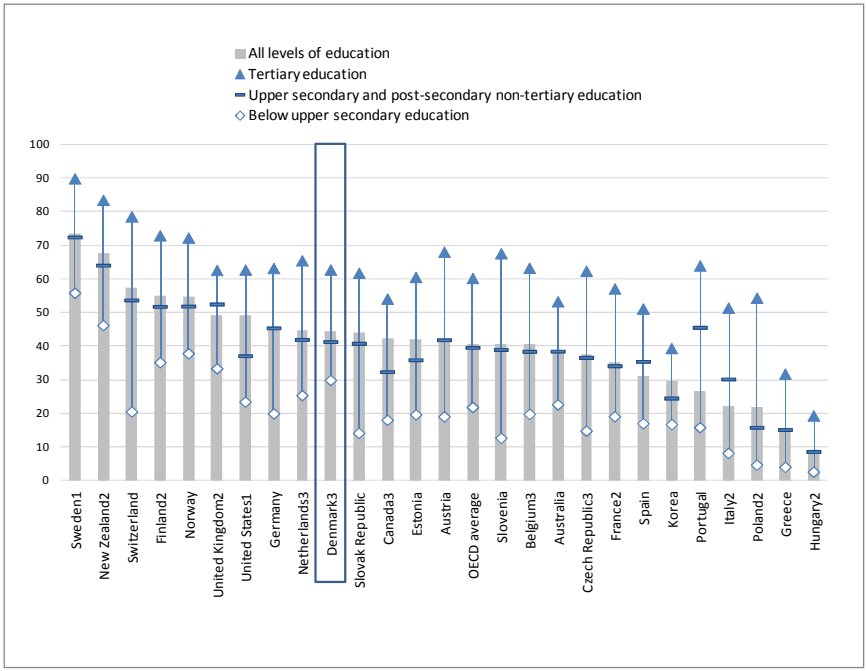


Notes: Countries are ranked in descending order of the percentage of 25-64 year-olds whose highest level of education is vocational upper secondary and postsecondary non-tertiary, ISCED 3/4.

Source: OECD (2011a), *Education at a Glance 2011: OECD Indicators* Chart Box A1.1, OECD Publishing. doi: *10.1787/eag-2011-en.*

Figure 1.4 Participation in formal and/or non-formal education, by educational attainment

Aged 25-64 (2007)



Notes: 1. Year of reference 2005; 2. Year of reference 2006; 3. Year of reference 2008.

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

Source: OECD (2010b*), Education at a Glance 2010: OECD Indicators*, Chart A5.2, OECD Publishing. doi: *10.1787/eag-2010-en*.(*www.oecd.org/edu/eag2010*).

Labour market indicators

Table 1.2 displays some relevant labour market indicators for Denmark. The youth unemployment rate (people aged 15-24 years) in Denmark at 14% and the long-term unemployment rate (12 months and over) at 19%, were both below OECD averages for 2010. At the same time, the employment rate of women in Denmark was considerably higher (71%) than the OECD average (57%). Conversely, in Denmark the proportion of part-time employment at 20% was above the OECD average of 17% (Table 1.2). Denmark has generally strong employment protection (Figure 1.8).

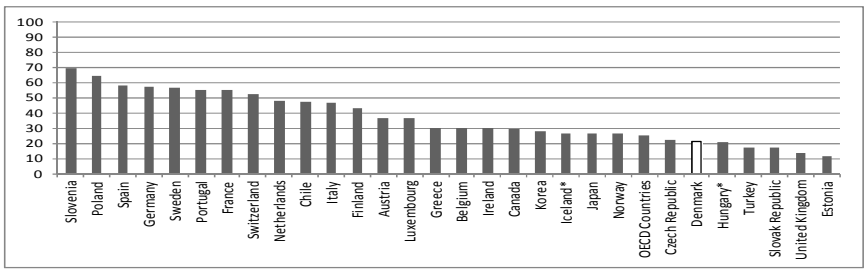
Table 1.2 The Danish labour market

	Unit	1994	2009	2010	2010 OECD Total
Unemployment rate	% of labour force	8.0	6.0	7.4	8.5
Youth unemployment rate	% of youth labour force (15-24)	10.2	11.2	13.8	16.7
Long-term unemployment (12 months and over)	% of total unemployment	32.1	9.1	19.1	32.4
Employment rate of women	% of female population (15-64)	67.1	73.1	71.1	56.7
Temporary employment	% of total employment	12.0	8.9	8.6	12.4
Part-time employment	% of total employment	17.3	18.9	19.5	16.6
Growth of real GDP	% change from previous year	5.5	-5.2	1.7	3.1

Source: OECD (2011b), *OECD Employment Outlook 2011*, OECD Publishing. doi: *10.1787/empl_outlook-2011-en*.

Figure 1.5 Incidence of temporary employment

15 to 24 year-olds, 2010

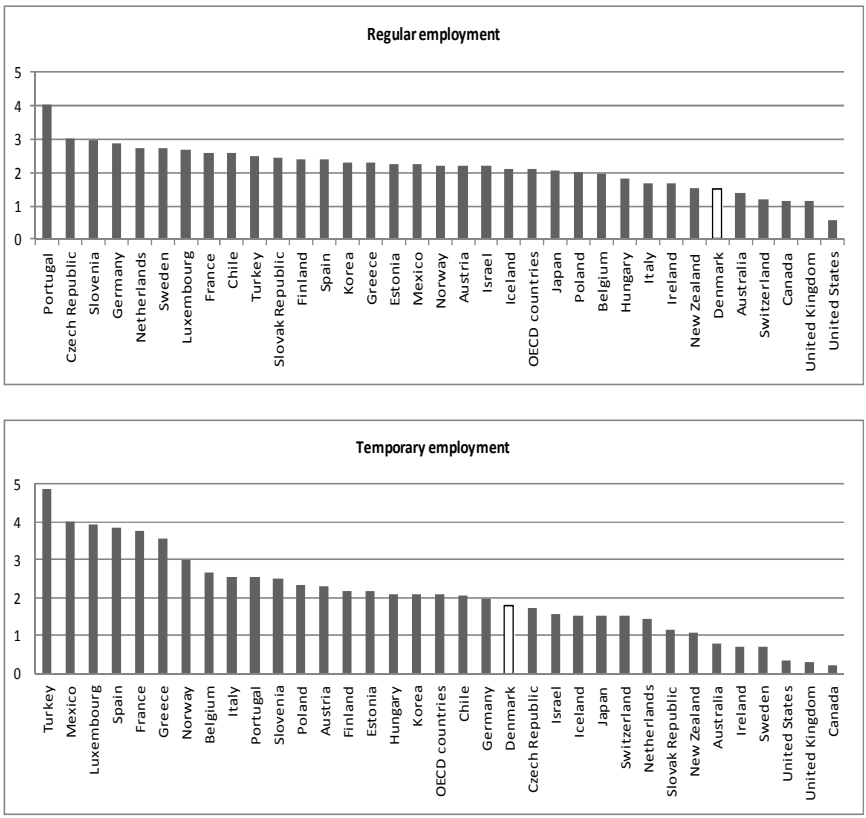


* Reference year 2009.

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

Figure 1.6 Strictness of employment protection

2008

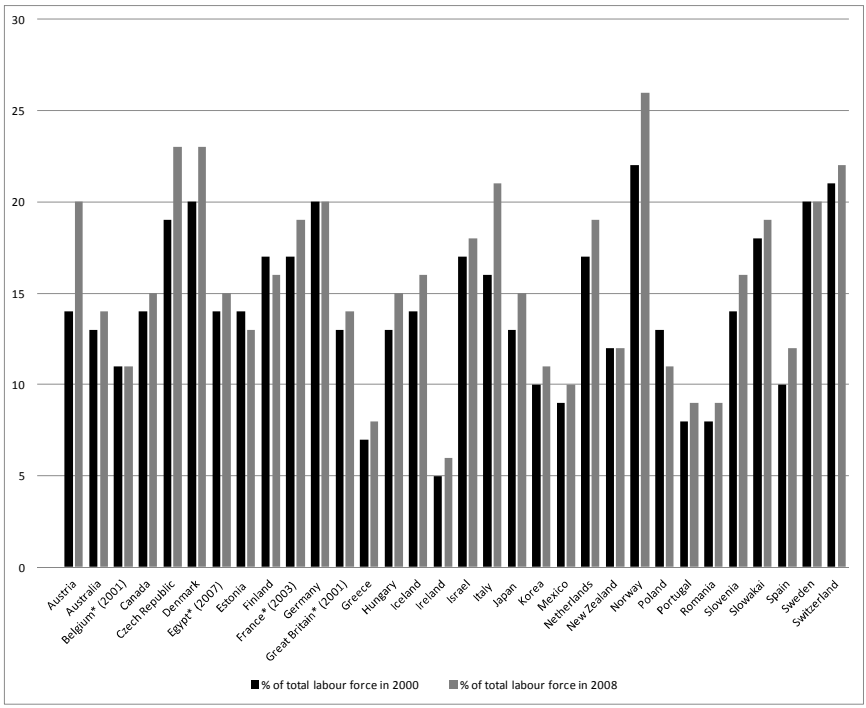


Source: OECD (2011c), OECD data browser, *dotstat.oecd.org*, accessed August 2011.

In comparison with other countries, Denmark has a relatively high proportion of its labour force in the types of jobs which often require postsecondary education and training. These are jobs of technicians, associated professionals and professionals (figures 1.7 and 1.8). This certainly reflects some specific features of the Danish economy and its labour market, but it may also reflect a supply-side effect – in other words, a well-developed postsecondary VET sector very capable of providing this type of training – and therefore helping to foster those types of industry which require postsecondary VET.

Figure 1.7 Percentage of technicians and associate professionals in the labour force

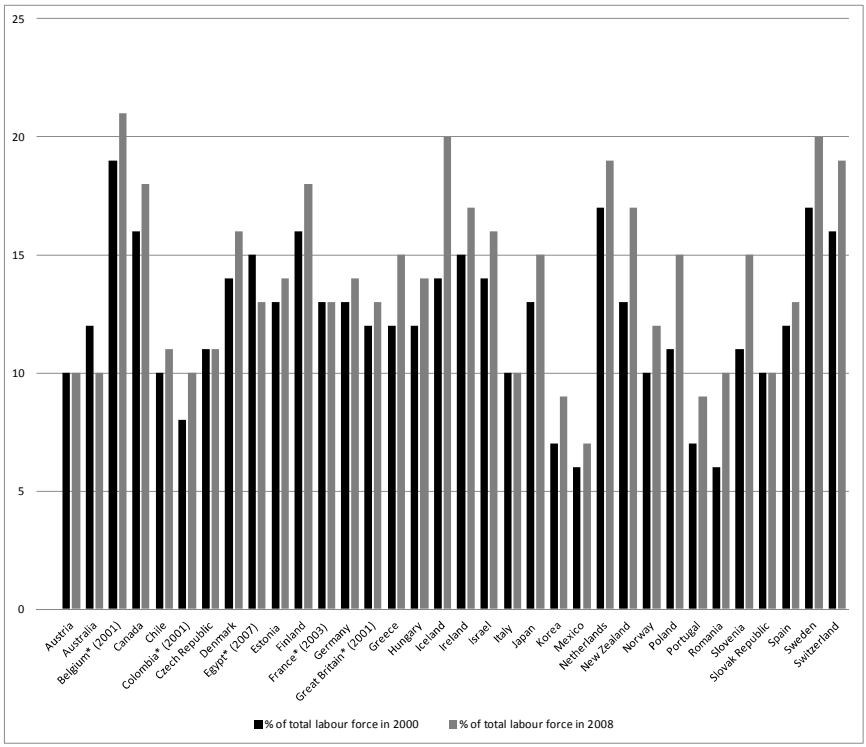
In 2000 and 2008



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

Figure 1.8 Percentage of professionals in the labour force

In 2000 and 2008



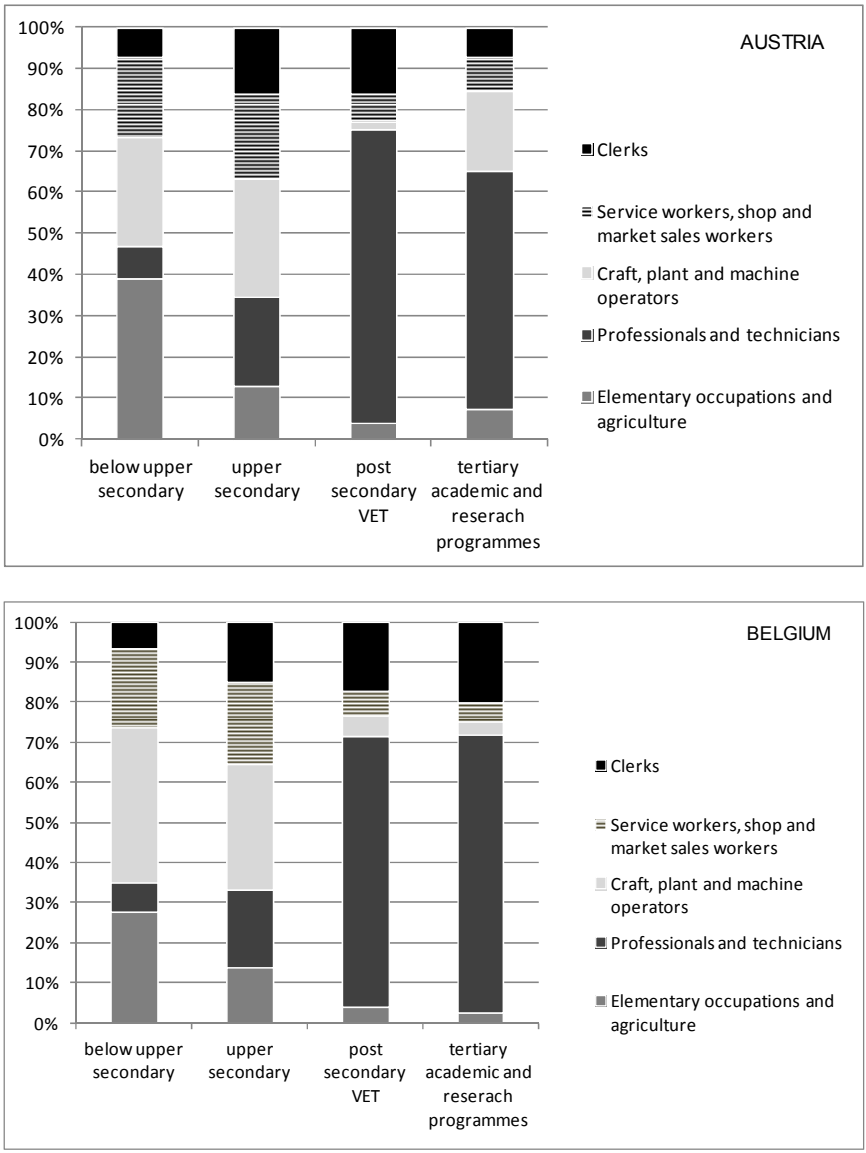
Source: International Labour Organization (2011), ILO Department of Statistics, Laborsta Internet, *http://laborsta.ilo.org/*, accessed August 2011.

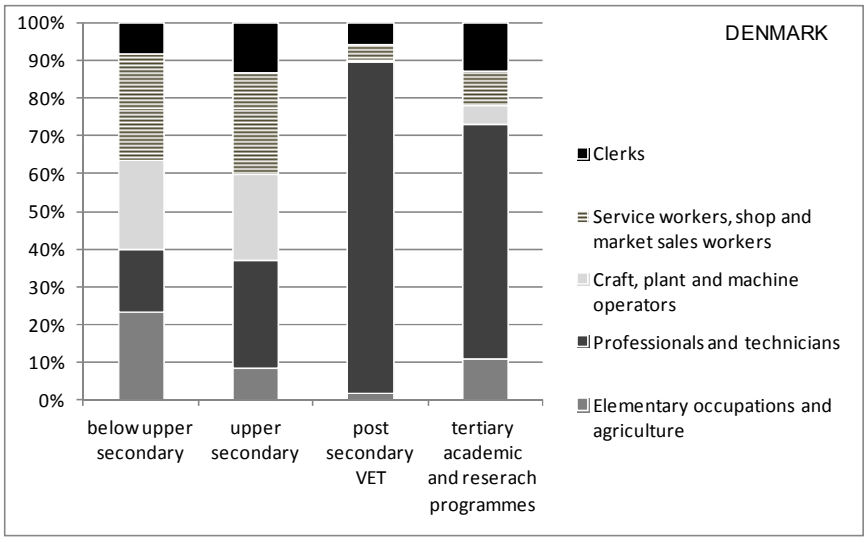
A Eurostat Labour Force Survey dataset (2009) allows an estimation of the occupational profile of postsecondary VET graduates in comparison with those with other qualifications (see Figure 1.9). In this dataset postsecondary VET in Denmark refers to academy profession programmes only. Professional bachelor programmes are classified as tertiary academic programmes. In Austria, Belgium, Denmark, Germany, Spain and Switzerland young workers (25-34 year-olds) with postsecondary VET qualifications are more likely to work in the high skill occupations of professionals and technicians than people with upper-secondary education and below (in Denmark this tendency is particularly salient). Regarding low and middle skill occupations, workers with postsecondary VET qualifications, in the six countries presented (Denmark included), are less likely to work in elementary jobs, services and craft jobs than individuals

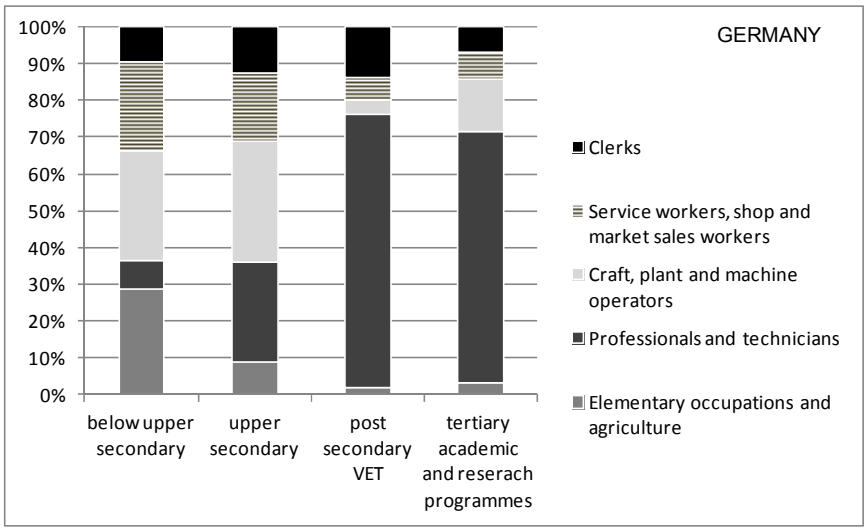
with lower education levels. Surprisingly, in all the six countries presented (Denmark included), postsecondary VET graduates are also less often employed in these occupations than those with tertiary academic studies.

Figure 1.9 Distribution of workers (25-34 year-olds) by type of education across occupations

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
Clerks
Service workers, shop and market sales workers
Craft, plant and machine operators
Professionals and technicians
Elementary occupations and agriculture


GERMANY
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below upper secondary
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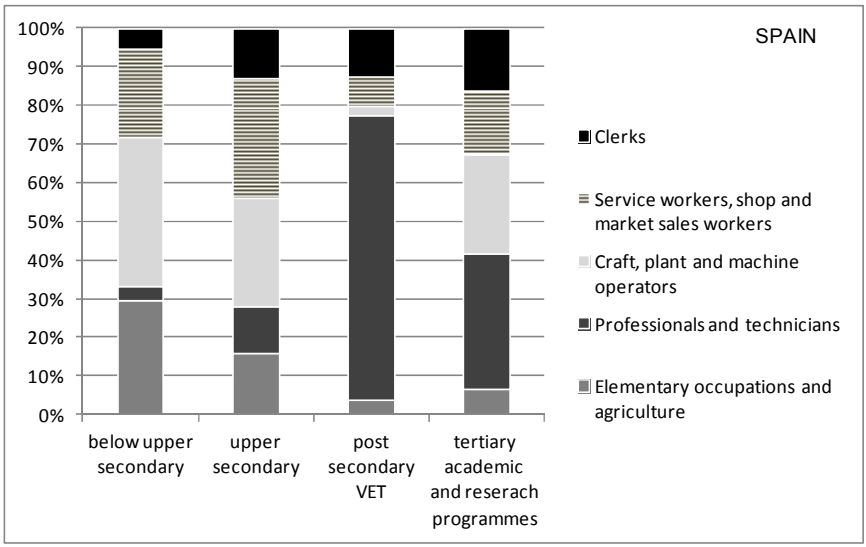
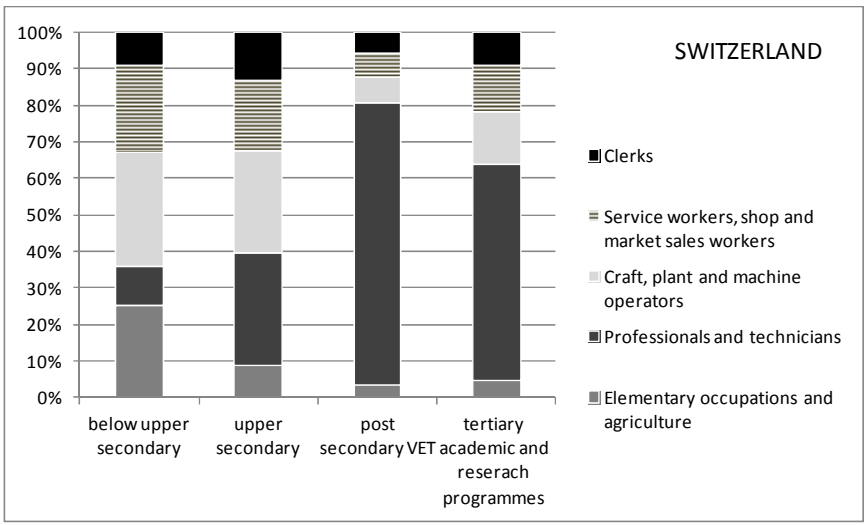
tertiary academic and reserach programmes
Clerks
Service workers, shop and market sales workers
Craft, plant and machine operators
Professionals and technicians
Elementary occupations and agriculture





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 $SIej = NIej / \sum_{j=1}^{n} NIej$

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

Previous OECD analysis and recommendations

Recent OECD work on Denmark bearing on VET includes a *Jobs for Youth* review (OECD, 2010a) and a review of migrant education (Nusche, Wurzburg and Naughton, 2010). Some of the recommendations for reform in these reviews may have already been addressed.

The OECD *Jobs for Youth* review (OECD, 2010a), praises Denmark's VET system because of its good quality and demanding standards, but highlights two challenges: *i)* that VET programmes start late;[3] and *ii)* that the dropout rate in VET is high, in particular among immigrant youth of non-western origin (OECD, 2010a).

According to this review, entering the apprenticeship component of an upper secondary VET programme can present obstacles since the would-be apprentice must have found a contract with a firm to apply for it. When they do not find an apprenticeship contract in a specific VET programme, many of them are able to find one in another VET programme or continue in general upper secondary education programmes. Nonetheless, 40% of all VET dropouts are estimated not to continue any education or training programme (OECD, 2011a). In view of this, the review recommends that teenagers should be better prepared before starting the basic course of a VET programme. Offering more opportunities to participate in practical work in workshops could be a possibility as well as better individual monitoring in primary and lower secondary education. Youth guidance centres should better assist young people when they apply for the main course and are seeking for an apprenticeship in a firm (OECD, 2010a).

This review also indicates that policy makers in Denmark, rightly concerned by the dropout rate, are trying to improve the quality of VET (*e.g.* through mandatory action plans within VET schools and mentoring) and are reforming VET in order to accommodate the needs of those with low skills (shorter programmes leading to partial qualifications, or less school-based education implying fewer weeks sitting in school before starting apprenticeships in firms) (OECD, 2011a).

The OECD review of migrant education in Denmark (Nusche, Wurzburg and Naughton, 2010), indicates that a major challenge for the VET system is the high dropout rate of migrants. Research shows that difficulties with academic requirements are often related to language barriers, especially in academic and pre-technical schools (Danish Ministry of Education, 2008). The review recommends language support for all immigrant students across Denmark; and measures to ensure that all students develop the higher level language skills needed to succeed in more

demanding jobs and education programmes. Mother tongue proficiency should also be valued.

This review argues that guidance services need to pay special attention to transition phases. The *Folkeskole* and the VET providers, in collaboration with parents, guidance counsellors and local enterprises need to interact with potential students when they are in year nine and, in particular, if they choose to participate in year ten.

Lack of apprenticeship places for immigrants may reflect a broader issue of unequal access to the Danish labour market, requiring a labour market policy response. What education policy can do is to co-ordinate with labour market policy, promote dialogue with social partners and encourage diversity in the apprenticeship market. This might be done by proactively working with potential training employers, and perhaps also by taking more apprentices from diverse backgrounds in the public sector, which accounts for a large part of employment in Denmark.

Finally, the review also indicates that an appreciative approach must be adopted towards diversity and the immigrant population within the VET sector, as well as in society more broadly. If the achievements of those who do successfully attend and graduate from VET are not acknowledged, it will be hard to motivate others to follow. The VET colleges should try to employ teachers with immigrant backgrounds and the main immigrant languages should be core subjects in the VET programme.

Strengths of the Danish approach to postsecondary VET

Workplace training is mandatory and has clear learning goals

Across OECD countries

Workplace training is a very important part of effective vocational programmes. It provides a strong learning environment, improves transition from school to work by allowing employers and potential employees to get to know each other. It contributes to the output of the training firm, and it links training provision to a direct expression of employer needs. To reap these benefits, the placement has to be of quality, and this is not always the case. 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 (OECD, 2010c).

In Denmark

All academy profession programmes now include a minimum three months of workplace training, while professional bachelors' programmes include at least six month workplace training (Danish Agency for Higher Education and Educational Support, 2012). These programmes are mandatory.

Quality assurance mechanisms for workplace training in Denmark have three key features:

- The quality assurance process is built into the work placement arrangements: work placement arrangements are a decisive factor for the accreditation of new programmes by the Danish Evaluation Institute (EVA) (Rambøll, 20104).
- Attention is given to making these placements as useful as possible for both VET programmes and employers, and the analysis of those links forms part of the accreditation process by EVA (Danish Agency for Higher Education and Educational Support, 2012; Rambøll, 2010).
- The work placement arrangements are designed to be closely linked to learning outcomes. Students apply concepts learned in the study programme at the workplace, linking theory to practice. This link is basic to effective learning and its absence can contribute to dropout (Jensen et al, 2008).[5] Subsequently to their placement, students report back to their institution and they are assessed to see if they have met their learning objectives. To ensure that the workplace effectively contributes to these objectives, each individual student has a teacher or a supervisor for guidance (Danish Agency for Higher Education and Educational Support, 2012). Supervisors need to have a solid knowledge of the theoretical content of the student's course and have sufficient time and resources to offer guidance (Hjelmar *et al*, 2009).

Although the engagement of social partners in VET is widely recognised as fundamental, the level and forms of this involvement varies across countries (CEDEFOP, 2011;[6] OECD, 2010c). In Denmark, the level and quality of employer and trade union engagement was identified as high in a comparative study looking at 13 European countries (CEDEFOP, 2011) and this has been attributed to the way in which work placement arrangements can engage employers in postsecondary VET (Danish Agency for Higher Education and Educational Support, 2012; Rambøll, 2010).

Effective measures guide students to programmes, and support them in seeking to update their skills

Across OECD countries

Many countries have sought to widen access to postsecondary education in response both to rising student aspirations and attainment and labour market demand for higher level skills. But widening access needs to be linked to support measures to ensure that students whose preparation for postsecondary programmes may be weak can successfully complete their studies (OECD, 2008).

Some students become disengaged from their vocational training programme because they find they have made a wrong career choice, or because they are not receiving sufficient support. Wrong choices can lead to loss of motivation, self-confidence and resources, and ultimately, dropout[7] (OECD, 2012c). While growth in postsecondary programmes is expanding opportunities, it is also increasing the complexity and difficulty of choices that young people need to make (OECD, 2010a). Providing students with information and advice on different options can help students to decide on whether or not to enrol in postsecondary programmes: thanks to good career guidance, students' enrolment decisions and choices of subjects can reflect their needs, expectations and abilities (OECD, 2004; OECD, 2008). Therefore, good quality career guidance and effective support to assist students are fundamental (OECD, 2012c).

In Denmark

Denmark effectively combines measures to widen access[8] with support for students. Almost eight out of ten students successfully completed their programme in 2009 in both academies and university colleges (Danish Agency for Higher Education and Educational Support, 2012). Funding incentives help to reduce dropout; the "taximeter" system funds institutions according to programme completion (Danish Agency for Higher Education and Educational Support, 2012). The stakeholders that the OECD team interviewed said that the tutoring programmes and study groups, underpinned by the funding strategy, were helpful in sustaining students through to completion.

Education institutions must, by law, refer students that wish to drop out or change programmes to regional guidance centres (Danish Agency for Higher Education and Educational Support, 2012). Municipalities are legally obliged to make contact with, and offer guidance to, young people that are not working and not enrolled in education at least twice a year up to the age of 19; some municipalities extend the system beyond this (OECD, 2004).

Career guidance is widely available for young people, through a range of services, many of them within the education system. Denmark is unusual among OECD countries in having specific legislation on educational and vocational guidance[9] (OECD, 2002). The Ministry of Science, Innovation and Higher Education is responsible for the seven regional guidance centres and other services including a national guidance portal and a call centre.

The service aims primarily to assist the transition of young people between secondary and postsecondary education, offering information both about available programmes and the careers associated with them. In co-operation with the different stakeholders – in particular social partners and local municipalities, different workshops, seminars, career fairs, individual and group guidance sessions are developed and organised. The centres provide their services in different settings, *e.g.* schools, public libraries (Danish Agency for Higher Education and Educational Support, 2012).

The quality of guidance is underpinned by linkages between guidance services and all relevant stakeholders, making it relevant for both education institutions and the labour market (Danish Agency for Higher Education and Educational Support, 2012; OECD, 2004). A decentralised and flexible structure produced a diversity of practice and exchange of experiences, knowledge and best practice, with strong local ownership by the different stakeholders – including youth education and higher education institutions, and the social partners in industry and commerce (Danish Ministry of Education, 2004).

A parallel adult education system provides access to skills upgrading

Across OECD countries

In many OECD countries a demographic downturn means that fewer young people will be entering the labour market. This means that the relative importance of adult learning in skilling the labour force is increasing. Good quality adult learning can have a strong positive impact on productivity, innovation and employment chances of individuals. Adult learning systems can in principle also ensure a more equitable distribution of skills by providing additional skills to those who missed out first time round (OECD, 2005).

In Denmark

In Denmark, a separate adult education system runs in "parallel" to the ordinary initial education system, allowing access to adult higher education qualifications at levels corresponding to those of the ordinary education

system. Both systems form a coherent whole linked to both professional qualification and academic studies. More than 40% of adults participate in formal and/or non-formal education in a given year and an individual can expect to receive 1 794 hours of instruction during his or her working life, one of the highest levels across OECD countries (OECD, 2011a).

Robust institutional structures engage the social partners

Across OECD countries

Evidence shows that the engagement of social partners – both employers and unions is necessary to ensure that the organisation and the content of vocational programmes meet the needs of employers, the wider economy and students. At the national level social partner engagement in policy development is seen as essential if policy is to be successfully implemented (OECD, 2010c). However, the level of engagement in VET policy varies markedly among countries.

In Denmark

Both the employers' and the employees' sides are very engaged in the planning, design and the steering of the system. Denmark has a deeply rooted tradition of consensus-building in politics and industrial relations (CEDEFOP, 1998), linked to the so-called "Danish model", which seeks to reduce the level of labour market conflict without unnecessary government interference. It depends on the representation of both labour and employers by centralised bodies (LO and DA) that have the right to enter binding agreements on behalf of their member organisations[10] (Juul and Jørgensen, 2011).

At secondary level, the State sets out the legal framework for the VET system and controls the funding for these activities as well as the quality of the activities. It also encourages the supply of training placements by means of financial incentives (CEDEFOP, 1999; Juul and Jørgensen, 2011).

At postsecondary level, the social partners play an active role in defining new courses and programmes and in advising on existing programmes. The involvement of social partners and other stakeholders at the national level is reflected in a special Council that was set up by the Minister for Education in April 2008 (see Box 1.3).

At the institution level, the social partners may be represented in the educational advisory committees which the institutions set up within the various disciplines of their programmes. The committees advise on the quality and relevance of existing and future programmes of study. The social

partners may also sit on the board of the university colleges and academies of professional education (Danish Agency for Higher Education and Educational Support, 2012).

Local employer engagement can help to improve the links and partnerships between the workplace and individual VET institutions. A recent survey of workplace training (Ramboll Management Consulting, 2010) shows that there is extensive and rewarding co-operation between educational institutions and relevant companies. Companies also contribute to the content of the study programmes, for example by providing case studies, as visiting lecturers or participating in joint vocational-oriented developmental work.

This local involvement helps to ensure that the content of individual VET programmes meets the demands of the labour market and that qualifications are recognised in business and industry (Juul and Jørgensen, 2011).

Box 1.3 The Council of Academy Profession Programmes and Professional Bachelor Programmes

The Council may advise the Minister of Science, Innovation and Higher Education on the development of postsecondary VET programmes, qualification needs, the mix of provision, work placements, adult education and quality assurance. The Council meets six times a year. It sets out new initiatives for academy profession programmes, professional bachelor programmes and the adult education in yearly reports. The board has a maximum of 21 members including members nominated by:

- The Danish Construction Association, The Danish Chamber of Commerce, Confederation of Danish Industry, HTS and TEKNIQ: Danish Mechanical and Electrical Contractors' Association (two members).
- The Danish Employers' Association for the Financial Sector.
- The Danish Association of Managers and Executives.
- The Danish Regions.
- Local Government (LGDK).
- FTF - Confederation of Professionals in Denmark (3 members).
- LO, The Danish Confederation of Trade Unions (2 members).

Box 1.3 The Council of Academy Profession Programmes and Professional Bachelor Programmes (*continued*)

- The Danish Society of Engineers, IDA.
- The students' organisations (2 members).
- The University Colleges.
- The Academies of Professional Higher Education.

Source: Danish Agency for Higher Education and Educational Support (2012), Skills beyond School: OECD Review of Postsecondary Vocational Education and Training – National Background Report for Denmark, *http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf.*

The taximeter funding system provides incentives for institutions

Across OECD countries

Methods of funding education institutions are increasingly under scrutiny in OECD countries: there is an increasing demand for new types of audit, evaluation and reporting systems to examine the outcomes and performance of the public sector, and postsecondary VET institutions are no exception.

In Denmark

In Denmark, institutions receive public funding according to the number of students enrolled. The "taximeter" system was introduced gradually (OECD, 2000), first in universities, upper secondary technical colleges and business colleges in 1991, private primary and lower secondary schools in 1992, higher education in 1994, adult vocational training centres in 1995 and folk high schools and production schools in 1996 (OECD, 2010d).

Today, 92% of government support to educational institutions is allocated as taximeter grants[11] according to the number of students who successfully pass their exams (The Ministry of Children and Education, 2012b; Strehl, Reisinger and Kalatschan, 2007). Taximeter rates per student are determined through the annual Appropriations Acts, independent of the expenses of individual institutions. A system of grants complements the taximeter, to meet other needs (*e.g.* to ensure provision across the country, or to support research[12]).

Alongside the introduction of taximeter funding, institutions gained significant autonomy in respect of financial and administrative management, including decisions on: *i)* the intake of students to specific education programmes and/or courses; *ii)* the planning and organisation of teaching activities; and *iii)* the planning and organisation of work (OECD, 2010d).

Taximeter funding gives institutions an incentive to adjust capacity to fit demand and to pursue efficiencies. These incentives have also triggered changes in behaviour and the quality of the education services have been improved (Strehl, Reisinger and Kalatschan, 2007).

Frølich *et al*. (2010) conducted a qualitative survey in Denmark of more than 2 500 stakeholders from all the Danish higher education institutions (in particular faculty members). The taximeter principle as such is seen by the majority of stakeholders as fairly well-functioning. According to the interviewees, the taximeter has clear advantages because it stipulates direct requirements for quantity and indirect requirements for quality.[13] The OECD has described the system as simple, fair and transparent; resulting in an increased focus on value for money and an improvement in the management of higher education (Rikke Ginnerup, *et al*., 2008; OECD, 2010d).

The taximeter system establishes a direct link between the number of students who pass exams and the amount of money received by the institutions. This system encourages successful and timely completion. The Danish Evaluation Institute (EVA) has found that the system has resulted in more focus on student needs and a more open minded attitude towards students.

Challenges

Alongside these strengths, the review identified the following challenges. These challenges, and the policy measures necessary to address them, are the subject of the following chapters.

- The planned reorganisation of the postsecondary sector, envisaged for 2015, has few immediate benefits and is opposed by the social partners.
- There is uncertainty over the role of research in postsecondary VET institutions in Denmark, with pressure from some quarters for a more active research role, particularly in university colleges.
- Despite the development of a framework for recognition of prior learning, it seems to be insufficiently used, particularly to realise course exemptions.

- There is a challenge in ensuring that postsecondary VET teachers and trainers maintain and develop their experience and knowledge of modern industry, in the face of rapid technological change.

Notes

1. There are four different upper secondary education programmes in Denmark: STX (the Gymnasium), HHX (the Higher Commercial Examination Programme), HTX (the Higher Technical Examination Programme) and HF (the Higher Prepatory Examination). STX, HHX and HTX take three years to complete and admit young people who have completed nine years of basic school. HF takes two years and admits persons who have completed ten years of basic school. The STX and HF programmes consist of a broad range of subjects in the fields of the humanities, natural science and social science. The HHX programme focuses on business and socio-economic disciplines in combination with foreign languages and other general subjects. The HTX programme has its focus on technological and scientific subjects in combination with general subjects (Source: Danish Ministry of Children and Education: *www.eng.uvm.dk/Education/Upper-Secondary-Education/Four-Upper-Secondary-Education-Programmes-in-Denmark*).

   EGU (Basic Vocational Education and Training) is an alternating or sandwich-type training programme where practical training is combined with a subject-relevant school-based part in an overall one and a half - three year programme in which the school-based part lasts between 20 to 40 weeks (Source: Danish Ministry of Children and Education: *www.eng.uvm.dk/Education/Upper-Secondary-Education/Basic-Vocational-Education-and-Training-(egu)*).

   EUX is a programme that started in 2010 and designed to combine a qualification at general upper secondary level with an IVET qualification (*Source:* Danish Ministry of Children and Education: *www.eng.uvm.dk/Service/~/media/UVM/Filer/English/PDF/120312%20Education%20and%20training%20in%20DK.ashx*).

2. Danish higher education institutions use the European Credit System (ECTS) for measuring study activities. 60 ECTS correspond to one year of full-time study. The ECTS is mandatory for all first and second cycle higher education programmes and is used both as a credit transfer and as

an accumulation system (Danish Agency for Higher Education and Educational Support, 2012).

3. Typically after the end of compulsory education (16 years of age) and the traditional gap years that young Danes grant themselves before undertaking an upper secondary qualification. The latter explains in great part why in 2005 the average age of all students starting VET was almost 21 (OECD, 2010).

4. This report was commissioned by the Ministry of Education to the Rambøll Management Consulting firm to study work placements of students in academies and in professional bachelors' programme. Available only in Danish.

5. In 2008, the Danish Institute of Governmental research (APF) surveyed 2 245 students in the second semester of professional bachelor programmes (all programmes with the exception of students on the IT and nursing programmes), in parallel with the analysis of registry data of intake, drop-out rates, completion times and patterns of education after dropping out of programmes, etc. Interviews with rectors/those responsible for the programmes, supervisors, teachers and students were also conducted. They report that students that have had successful work placements are more successful in linking theory and practice, and that these students are at lesser risk of dropping out (after controlling for other personal background characteristics of students, such as previous grades and education, socio-economic background, etc).

6. This paper addresses the development of postsecondary vocational education and training in 13 European countries (the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, the Netherlands Norway, Poland, Portugal, Romania, and England).

7. This risk is particularly high for students from more disadvantaged backgrounds that cannot rely on their parents for advice (OECD, 2012c).

8. In recent years, various initiatives have been taken to strengthen the possibilities for students from vocational programmes to enter higher education. 16% of students in academy profession programmes and in professional bachelor programmes come from vocational secondary education (as opposed to 53 % and 63 % that come from upper secondary education (Danish Agency for Higher Education and Educational Support, 2012).

9. An Act on Vocational Guidance was passed in the mid-1950s. It was replaced in 1981 by an Act on Educational and Vocational Guidance, which was revised in 1996. From 2004 a new Act on Educational and Vocational Guidance was implemented.

10. Another important condition behind the success of the Danish model is the high organisational membership rates among both employers and employees.

11. Educational institutions have two sources of revenue for financing their educational programmes: state grants and their own income from income-generating activities, state grants amounting to approximately 80% of the total funding.

12. Research funding in the form of block grants is allocated to the institutions, and is primarily calculated on an incremental basis. The basic research grants enable long-term planning at the HEIs, allowing them to initiate research which cannot be financed in other ways (Schmidt *et al.* 2007). The basic research grants lack direct incentives for efficiency, relevance and societal impact, and there are no mechanisms in place to ensure funding for the highest quality research.

13. Still, the majority of stakeholders admit that there is room for improvement. It seems that the precise rates can be a particular problem. The system has been criticised for lack of balance and clear rationale in the allocation of resources among institutions, in particular the universities and educational areas. They emphasise that the lack of performance parameters weakens incentive mechanisms and quality assurance.

References

CEDEFOP (European Centre for the Development of Vocational Training) (1999), *Social Dialogue on VET: Denmark*, Human Resources Development.

CEDEFOP (2011), "Vocational Education and Training at Higher Qualification Levels", *Research Paper No 15*, Publications Office of the European Union.

Danish Agency for Higher Education and Educational Support (2012), *Skills beyond School: OECD Review of Post-Secondary Vocational Education and Training – National Background Report for Denmark, http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf* .

Danish Ministry of Education (2004), "Guidance in Education - A New Guidance System in Denmark", *http://pub.uvm.dk/2004/guidance/hel.pdf.*

Danish Ministry of Education (2008), "Country Background Report for Denmark", prepared for the *Thematic Review on Migrant Education*, The Danish Ministry of Education, Denmark, w*ww.oecd.org/dataoecd/8/24/42485270.pdf.*

Eurostat (2009), EU Labour Force Survey, 2009.

Frølich N., *et al.* (2010), "Funding Systems for Higher Education and Their Impacts on Institutional Strategies and Academia: A Comparative Perspective", *International Journal of Educational Management*, Vol. 24 No. 1.

Hjelmar, U., *et al*. (2009), "Praktikvejledning på professionsbachelor-uddannelserne"**,** AKF Report, Copenhagen.

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

Jensen, T.P., A.K. Kamstrup and S. Haselmann (2008), "Professi-onsbacheloruddannelserne – De studerendes vurdering af studiemiljø, studieformer og motivation for at gennemføre*",* AKF Report, Copenhagen.

Juul, I. and C. H. Jørgensen (2011), "Challenges for the Dual System and Occupational Self-governance in Denmark", *Journal of Vocational Education & Training*, Vol. 63, No. 3, pp. 289-303.

Kyvik, S. (2004), "Structural Changes in Higher Education Systems in Western Europe", *Higher Education in Europe*, Vol. 29, N° 3.

Nusche, D., G. Wurzburg and B. Naughton (2010), *OECD Reviews of Migrant Education: Denmark 2010*, OECD Reviews of Migrant Education, OECD Publishing. doi: *10.1787/9789264086197-en*

OECD (2002), "Denmark: Country Note", *OECD Review of Career Guidance Policies*, OECD Publishing.

OECD (2004), *Career Guidance and Public Policy: Bridging the Gap*, OECD Publishing. doi: *10.1787/9789264105669-en*

OECD (2005), *Promoting Adult Learning*, Education and Training Policy, OECD Publishing. doi: *10.1787/9789264010932-en*

OECD (2008), *Tertiary Education for the Knowledge Society: Volume 1 and Volume 2*, OECD Publishing. doi: *10.1787/9789264046535-en*

OECD (2010a), *Jobs for Youth/Des emplois pour les jeunes: Denmark 2010*, OECD Publishing. doi: *10.1787/9789264075160-en*

OECD (2010b), *Education at a Glance 2010: OECD Indicators*, OECD Publishing. doi: *10.1787/eag-2010-en.*

OECD (2010c), *Learning for Jobs*, OECD Reviews of Vocational Education and Training, OECD Publishing. doi: *10.1787/9789264087460-en*

OECD (2010d), *Off to a Good Start? Jobs for Youth*, OECD Publishing. doi: *10.1787/9789264096127-en*

OECD (2011a), *Education at a Glance 2011: OECD Indicators*, OECD Publishing. doi: *10.1787/eag-2011-en*

OECD (2011b), *OECD Employment Outlook 2011*, OECD Publishing. doi: *10.1787/empl_outlook-2011-en*

OECD (2011c), OECD data browser, *dotstat.oecd.org*, accessed August 2011.

OECD (2012a), *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies,* OECD Publishing.

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

OECD (2012c), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, OECD Publishing. doi: *10.1787/9789264130852-en*

Office for National Statistics. Social Survey Division and Northern Ireland Statistics and Research Agency. Central Survey Unit, Labour Force Survey Annual Eurostat Dataset, 2009 [computer file]. Colchester, Essex: UK Data Archive [distributor], June 2011 SN: 6769, *http://dx.doi.org/10.5255/UKDA-SN-6769-1*

Osborne, M. (2005), "Introduction" in Gallacher J. and M. Osborne (Eds.), *A Contested Landscape: International Perspective on Diversity in Mass Higher Education,* National Institute of Adult Continuing Education, London.

Ramboll Management Consulting (2010): *Praktik i erhvervsakademi- og professionsbacheloruddannelser*. (Report about work placement in the academy profession programmes and professional bachelor programmes) (In Danish), *www.uc-dk.dk/da/images/stories/pdf/rapporter/praktik_endelig_rapport.pdf*

Rikke Ginnerup, *et al*. (2008), "Performance Budgeting in Denmark", *OECD Journal on Budgeting*, Vol. 7/4. doi: *10.1787/budget-v7-art20-en*

Strehl, F., S. Reisinger and M. Kalatschan (2007), "Funding Systems and their Effects on Higher Education Systems", *OECD Education Working Papers*, No. 6, OECD, Paris.

Teichler, U. (2002), "Diversification of Higher Education and the Profile of the Individual Institutions", *Higher Education Management and Policy*, Vol. 14, No. 3.

The Ministry of Children and Education (2012a), "Overview of the Danish Education System" *www.eng.uvm.dk/Education/Overview-of-the-Danish-Education-System,* accessed April 2012.

The Ministry of Children and Education (2012b), "The Taximeter System", *www.eng.uvm.dk/Education/General/The-Taximeter-System,* accessed April 2012.

Chapter 2

Restructuring the postsecondary vocational education and training sector

The planned reorganisation of the postsecondary sector, envisaged for 2015, appears to have few immediate benefits and is opposed by the social partners. This chapter argues that it should not be implemented as planned. Instead, consideration should be given to alternative strategies to sustain a strong postsecondary vocational education and training sector linked to the requirements of the labour market. Three options are identified.

Challenge: planned changes may not be wise

As described in Chapter 1, recent years have witnessed substantial consolidation in the Danish postsecondary VET sector, with many schools and training institutions merging into a much smaller number of university colleges and academies. According to an agreement between all the main Danish political parties in 2007, written into legislation, there will be a further phase of consolidation from 1 January 2015, when university colleges will take over responsibility for all professional bachelor programmes, including those currently provided by the academies. Academies will either have to merge into university colleges, or remain in existence without their professional bachelor component and continue to run the short cycle programmes.

Academies are relatively small institutions, so it is open to question whether all academies could survive if deprived of the professional bachelor programmes. From what the visiting OECD team were told, university colleges would in most cases be keen to take over the short cycle programmes currently offered by academies. In effect therefore, the effect of implementing the legislation might be for academies to be merged into university colleges and disappear as separate institutions.

There are a number of potential problems with this plan:

- First, if mergers take place as envisaged, the merged institutions would unquestionably be dominated by the university college "culture" since the colleges are much bigger than the academies. Currently, academies are the main repository of a vocational training culture oriented towards the private sector and technical skills. Academic drift is a powerful force in all countries, and in Denmark there is evidence of this in the university colleges, with talk of mergers with universities – such drift could well undermine the need for effective vocational training institutions to remain highly responsive to the needs of labour markets.

- Second, for these reasons the social partners appear to be opposed to any merger, and are setting out an alternative plan to retain independent academies. As indicated in Chapter 1, international experience shows that social partner engagement in provision is not only precious, but in fact essential to the effective management of vocational education and training systems (see for example Bosch and Charest, 2010). Proceeding with the plan in the face of opposition from the social partners therefore risks the serious

damage which would flow from disengagement of the social partners.

- Third, the postsecondary VET system as a whole has scope to further widen participation and meet the needs of the labour market. Numerically, the current system is dominated by public sector career training – often for women – in university colleges. This is a striking contrast to the function of postsecondary VET in comparable countries with strong upper secondary VET systems, such as the Germanophone countries, where the system plays a more important part in upskilling graduate apprentices. Even in the academies most students have a background in academic upper secondary education rather than upper secondary VET. Recognition of prior learning – which should serve as an avenue to upskill many of those with practical experience - exists on paper but has limited impact on the ground. The "parallel" adult learning system is apparently only fully exploited in the business and commerce area. It is questionable whether merged institutions, dominated by the university college culture and focused on public sector provision would be best placed to address these challenges.
- Fourth, among the other stakeholders interviewed by the OECD team, most academies seem to be opposed to mergers; some but not all university colleges are in favour, while others are sceptical of the value of a merger. Forced mergers may not lead to happy outcomes.

Recommendation: pause and reflect

The transfer of responsibility for professional bachelor's degrees from academies to university colleges, planned for 1 January 2015, should not go ahead. Instead, in co-ordination with the social partners, alternative plans should be developed for consolidation in the sector designed to sustain its role in meeting labour market needs. The evaluation of academies, planned for 2013, should be extended to look also at the university colleges, and be designed so as to support the development of these alternative plans.

Supporting arguments: choosing the right option

Five related arguments support this recommendation. First, the immediate benefits from the planned transfer of responsibility are not clear. Second, the risk of undesirable academic drift is significant, and safeguards would be necessary to sustain the vocational training mission. Third, there are viable and preferable alternative options for restructuring the sector.

Fourth, international experience offers a range of examples to inform the choice of option. Fifth, the planned evaluation of the academies could, by extending its remit, be used to inform the choice of option.

The risk of academic drift

"Academic drift" describes the tendency, observed across a wide range of countries, for postsecondary institutions which are not universities to aspire to the academic status, recognition and rights associated with university institutions (Neave, 1979; Kyvik 2007). Such drift can be positive, for example where it corresponds to higher standards of academic rigour and effective use of evidence and research. But the risk is that it may skew recruitment criteria, and the career incentives on institution staff towards higher university degrees and publications at the expense of teaching skills and practical experience with industry (Kyvik, 2004). This could be good for some academic and research outputs but bad for the quality of practical training. (The research issue is further discussed in Chapter 3).

As explained earlier, most of the programmes now offered in academies and university colleges were previously taught in smaller training institutions.[1] International evidence suggests that as these programmes change there will be a drift towards academic values and practices in relation to the curriculum, degree structure and research (Kyvik, 2007). When institutions merge, the culture of the higher status institution seems to take over, so merged institutions in Denmark could therefore be dominated by a more academic culture.

There are preferable alternatives

Since the reorganisation of the sector planned for 1 January 2015 is written into legislation, a decision not to proceed requires careful consideration. To justify such a decision, it should at least be clear that there are options available which appear preferable to the planned reorganisation.

- *Option 1*. Reflecting the preference of the social partners, academies would retain their independence. This has the advantage of retaining the distinctive working culture of the academies (inherited from their component institutions) in terms of technical fields of competence, and relationships with local social partners. Current arrangements for professional bachelor degrees whereby academies can deliver the initial short cycle element in liaison with a university college, would also be retained. As many academies are currently relatively small institutions, they may therefore need to be consolidated into a smaller number of larger institutions. This could

either involve 3-4 regional institutions, or a single nationwide institution. Such an organisational decision would be independent of the location of delivery sites.

- *Option 2*. This would be a modification of option 1, whereby in addition, the grouped academies would be given the status of university colleges. These enhanced academies would then be able to deliver the full bachelor qualifications themselves, without having to collaborate with university colleges. The rationale for this approach is that academies, rather than university colleges, hold the expertise in the fields of study for which they are responsible, so it would make limited sense on a continued basis to separate responsibilities for the professional bachelor qualifications between the two types of institution. The enhanced status granted to the academies would also be logical since there can be no reason in principle why institutions (such as the academies) which primarily serve the private sector should have a lesser status than those which serve the public sector.

- *Option 3* would be to go ahead with the planned hand over of academy bachelor programmes to university colleges as envisaged in the legislation and allow and encourage full mergers of academies into university colleges. This would need to be balanced by a substantially enhanced vocational training mission for the university colleges, underpinned by appropriate incentives, with the aim being to ensure that the social partners gain sufficient confidence in university colleges to support the new arrangements. To achieve this objective it would be necessary to further reinforce the missions of university colleges as institutions designed to respond to the needs of the labour market in both the public and the private sector. This might involve strengthening the role of both the social partners and public sector employers and professional associations and unions in the governance of university colleges. The dividing line between university colleges and universities might also need to be made firmer, to rule out any aspiration (and associated academic mission drift) for "promotion" to university status. The advantage of this approach over the other options is that it would probably result in larger institutions overall, more capable of realising economies of scale and internal synergies. The disadvantage is that it would be less protected against the risk of mission drift towards academic rather than vocational priorities.

We would encourage Denmark to undertake its own assessment of these three options, informed by evaluation, as discussed below.

International experience should inform the strategy

In deciding on these options, and planning the future of the postsecondary VET sector, account needs to be taken of a number of issues illuminated by international experience. Four points are particularly salient:

- *The need to balance simplicity and diversity.* By international standards, Denmark has a relatively simple system of postsecondary VET in the two sectors of academies and university colleges. The great advantage of simplicity is transparency, but there may also be a risk of missing needs, particularly for the private sector, which plays a quantitatively small part. Across countries, the postsecondary VET landscape is exceptionally diverse. It is also relatively new: there is no commonly accepted framework for the system in terms of the division of functions and tasks among different institutions and programmes in a national system (see Box 2.1).

- *The need to widen participation*. Denmark aspires to higher levels of postsecondary qualifications in the labour market with a target of at least 60% of each youth cohort completing higher education by 2020. This reflects a recognition of the increasing importance of higher level technical, professional and managerial skills in a modern economy and implies that more young people from poorer backgrounds and from vocational upper secondary tracks need to enter postsecondary VET (as well as academic tertiary education). The contrast between Denmark and other countries with substantial apprenticeship systems is that Denmark's postsecondary VET system caters primarily for those from an academic background in upper secondary education – both in the university colleges and the academies. Widening participation, to address this and other issues, will continue to be important in Denmark.

- *The need for effective articulation and transitions between programmes.* For postsecondary VET programmes to have high status, they need at least potentially to be stepping stones to higher professional and academic qualifications. Yet many countries struggle to deliver that objective in the face of reluctance by academic institutions to recognise the value of postsecondary VET qualifications. The effect is self-fulfilling; if postsecondary VET programmes are not recognised as high quality by academic institutions it will be difficult for students to see them as good status programmes, so only students that have few other options will pursue such programmes. But while pathways to higher qualifications are important, they are not a panacea. A study from

Australia shows that educational pathways between institutes of technical and further education and universities deepen participation in education by existing social groups but do not effectively widen participation for currently underrepresented groups (Wheelahan, 2009).

- *The need to make effective use of short programmes*. Postsecondary training requirements do not naturally fall in the form of three or four year bachelor programmes, but instead emerge in all kinds of lengths. Many countries make effective use of one and two year programmes, catering for those with secondary education that are not interested in enrolling in longer programmes. Such programmes are important to encourage upper secondary VET graduates to continue their education and training. They may also allow the costs involved to be reduced with the provision of tertiary education (Kirsch Beernaert and Nørgaard, 2003; Kyvik, 2004). Prospective students would be more willing to engage in shorter VET programmes if they know that such programmes provide an effective basis for more advanced studies (Dunkel and Le Mouillour, 2009).

Box 2.1 Diversity in postsecondary VET

Many postsecondary VET institutions were created in reaction to the doubts that arose concerning the capacity of traditional universities to handle rapid growth, the demands of individuals and a gradually more knowledge-based economy. While these institutions are enormously varied, they are commonly employer-oriented and responsive to local labour market needs. Therefore, postsecondary VET institutions are deeply embedded in the various national production, labour market, industrial relations and status systems (Grubb, 2003; OECD, 2008; Bosch and Charest, 2010).

The new types of institution were sometimes also part of regional development strategies, as they were seen as more responsive to the needs of local communities and as more accommodating of the growing diversity of individual qualifications, and career plans of students. They have some significant benefits compared to university – greater flexibility, greater access and equity, and more overtly occupational and economic goals (Grubb, 2003).

Box 2.1 Diversity in postsecondary VET (*continued*)

Sometimes, even when the institutions have a relatively simple identity, the programmes on offer are diverse. For example, community colleges in the United States offer everything from a two-year associate degree to short courses of a few weeks in demand among local employers. Often, the expansion of postsecondary VET has involved diversification of institutions and institutional missions. In Japan for example, the tertiary sector now includes in addition to universities themselves: *Junior colleges* typically offering two-year sub-degree qualifications within a baccalaureate four-year bachelor's degree framework; *Colleges of Technology*, or *kosen*, offering high-level vocational qualifications through teaching and related research; *Professional training colleges* offering practical vocational and specialised technical education aiming to foster abilities required for vocational or daily life, or provide general education; *Graduate schools* conducting academic research, in particular basic research, and training researchers and professionals with advanced skills; and *Professional graduate schools* oriented towards high-level graduate entry to key professions – for example, law, business studies, etc. The cultivation of diversity is now a stated policy aim (OECD, 2008).

The planned evaluation of the academies should extend its remit

The evaluation of academies planned for 2013 makes little sense if academies cease to exist or are radically reduced in scope from 2015. But if our primary recommendation is accepted then we would recommend that the evaluation be retained, that its scope be extended to the university colleges, and that it look at the challenges we have listed, among others, and indeed the strategic objectives mentioned. The evaluation and further deliberation might then lead to a revised route map for the postsecondary VET sector. The dilemma for policy here is that an early decision on the future of the sector would calm down the sector and allow for clear planning, but at the same time it is very early to have a full evaluation of the academies – some of them have only very recently come into existence.

While this review recommends reopening a decision over strategic objectives for the sector, the aim should be to make a further decision in the light of the evaluation as soon as possible. Continued uncertainty makes planning hard for the institutions.

Notes

1. In various European countries, these institutions translate their national names into "universities for professional education", "university colleges", or "universities of applied sciences" (Kyvik, 2007).

References

Bosch, G. and J. Charest (2010), "Vocational Training: International Perspectives" in Bosch G. and J. Charest (Eds.), *Vocational Training: International Perspectives*, Routledge, New York.

Christensen, S. and E. Erno-Kjolhede (2011), "Academic Drift in Danish Professional Engineering Education: Myth or Reality? Opportunity or Threat?", *European Journal of Engineering Education*, Vol. 36, Issue 3.

Danish Agency for Higher Education and Educational Support (2012), *Skills beyond School: OECD Review of Post-Secondary Vocational Education and Training – National Background Report for Denmark, http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf*

Dunkel, T. and I. Le Mouillour (2009), "Through the Looking Glass: Diversification and Differentiation in Vocational and Training and Higher Education" in CEDEFOP, *Modernising Vocational Education and Training, Fourth Report on Vocational Training Research in Europe, Vol. 2.*

Gallacher, J. and M. Osborne (2005), *A Contested Landscape: International Perspective on Diversity in Mass Higher Education,* National Institute of Adult Continuing Education, London.

Grubb, N. (2003), "The Roles of Tertiary Colleges and Institutes: Trade-offs in Restructuring Postsecondary Education", Directorate for Education, OECD, *http://www.oecd.org/dataoecd/50/55/35971977.pdf.*

Kirsch, M., Y. Beernaert and S. Nørgaard (2003), *Tertiary Short Cycle Education in Europe: A Comparative Study*, EURASHE, Brussels.

Kyvik, S. (2002), "The Merger of Non-university Colleges in Norway", *Higher Education*, Vol. 44, No. 1.

Kyvik, S. (2004), "Structural Changes in Higher Education Systems in Western Europe", *Higher Education in Europe,* Vol. 29, No. 3.

Kyvik, S. (2007), "Academic Drift – A Reinterpretation", in Enders J. and F.A. van Vught (eds). *Towards a Cartography of Higher Education*

Policy Change: A Festschrift in Honour of Guy Neave. Enschede: Center for Higher Education Policy Studies, pp. 333–338.

Neave, G. (1979), "Academic Drift: Some Views from Europe", *Studies in Higher Education*, Vol. 4.

OECD (2008), *Tertiary Education for the Knowledge Society: Volume 1 and Volume 2*, OECD Publishing. doi: *10.1787/9789264046535-en*

Osborne M. (2005), "Introduction" in Gallacher J. and M. Osborne (Eds.), *A Contested Landscape: International Perspective on Diversity in Mass Higher Education,* National Institute of Adult Continuing Education, London.

Policy Research Institute (2007), "Collaborations and Mergers: Rapid Review of Research on Collaborations and Mergers Between Further Education Providers", Leeds Metropolitan University.

Ursin J., H. Aittola, C. Henderson and J. Välimaa (2010), "Is Education Getting Lost in University Mergers?", *Tertiary Education and Management*, Vol. 16, No. 4.

Wheelahan L. (2009), "Do Educational Pathways Contribute to Equity in Tertiary Education in Australia?", *Critical Studies in Education*, Vol. 50, No. 3.

Chapter 3

The role of research and development in postsecondary vocational education and training

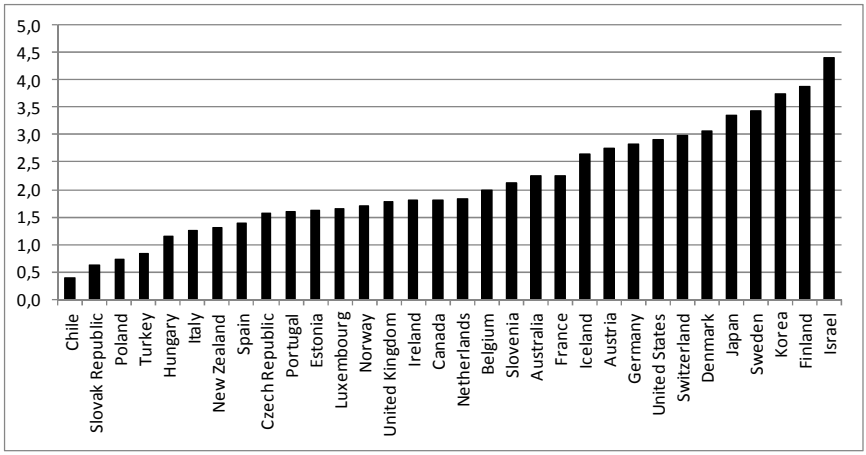
There is uncertainty over the role of research in postsecondary VET institutions in Denmark, with pressure from some quarters for a more active research role, particularly in university colleges. This chapter looks at the evidence on research in vocational training institutions, and recommends that research and development (R&D) funding in Denmark should take account both of the requirements for effective R&D and the need for such R&D to assist the central training objectives of vocational training institutions.

Challenge: what is the place of R&D?

International indicators show Denmark has many strengths in research and development (R&D). Gross domestic expenditure on R&D as a percentage of GDP rose from 1% at the beginning of the eighties to 3% in 2010, placing Denmark in 6th position among OECD countries (see Figure 3.1). Denmark is in the top three OECD countries in terms of scientific publications per head of population, and ranks 8th in terms of submitted patent applications per head of population (Ministry of Science Technology and Innovation, 2009).

Figure 3.1 Gross domestic expenditure on R&D as a percentage of GDP

2010



Notes: 2008 year of reference: Australia, Chile and Switzerland.

2009 year of reference: Japan, New Zealand and the United States.

Source: OECD (2010), "Main Science and Technology Indicators", *OECD Science, Technology and R&D Statistics* (database), doi: *10.1787/data-00182-en.*

At present, with university colleges providing higher level qualifications than professional academies, the issue of research is more relevant to university colleges than professional academies. For this reason, this chapter refers mainly to university colleges. Nevertheless, many of the challenges and arguments presented below could equally apply to professional academies.

Unlike universities, university colleges have no research mission independent from their other objectives. Yet, university colleges are

required to integrate research and development into their programmes to fulfil their mission of meeting labour market needs, and contributing to regional development (Danish Agency for Higher Education and Educational Support, 2012). Drawing on the Frascati Manual (OECD, 2002), R&D activities can be divided first into those leading to the acquisition of new knowledge, with or without any particular application in view (applied and basic research), and second those drawing on knowledge gained from research and practical experience to produce new or improved materials, products and devices, processes, systems and services (experimental development). University colleges are more likely to carry out experimental development than other forms of R&D as they are required to inform education and training with relevant research evidence, regardless of where this evidence was produced. The emphasis is thus on the application of new knowledge and not on its production. In 2005/2006 70% of R&D taking place in university colleges was designed to yield improvements through application of research evidence (MSIHE, n.d.).

The amount of research carried out by an institution tends to depend, among other things, on available funding, collaboration with other institutions and its prestige, and student enrolment (Anselin *et al.*, 1997). According to one study (MSIHE, n.d.), university colleges expenditure on R&D in 2005/2006 accounted for only 1% of the total expenditure of all public institutions on R&D, while that of universities was 72%. In 2011 the Danish government channelled 55% of central funds for R&D to universities[1], more than to any other sector, although this varied by field (Statistics Denmark, 2012). Consequently, boosting R&D in university colleges might require more funds for R&D to be channelled to university colleges. This could be achieved by an increase in statutory funding, through competitive grants, or through higher company contributions.

A comparison with Finland is instructive. Postsecondary VET institutions (polytechnics) in Finland have a mandate to undertake research. But despite an increase in R&D activities in polytechnics universities have maintained their leading position and universities are more likely to win competitive grants than polytechnics (Marttila *et al.*, 2008). In 2009 as in 2005, universities spent ten times more on research than polytechnics (FSTIS, 2012). While the private sector contribution to R&D in polytechnics has risen over time, the increase in the polytechnic R&D budget was mainly due to a steep growth in public and EU funds (Ministry of Education Finland, 2009).

R&D, when it takes place in a vocational training institution, can have different functions. It has a direct benefit in yielding R&D outputs of value (outputs whose value does not depend on where the R&D is conducted). But in addition, it is sometimes argued that it has an indirect benefit, by helping

to support the quality of education and training that takes place in the same institutions.

During the OECD visit Danish stakeholders made three points:

- First, they said that there was insufficient research in the area of nursing and teacher education. In 2009, 19% of students in university colleges studied to become a teacher and 15% prepared for jobs as nurses and midwives. If there is not enough research evidence to underpin practice, this will undermine the quality of training (and ensuing practice) in the relevant fields. Some stakeholders also complained about weak connections between existing research and training in some areas. (Skolerådet, n.d.) identifies a lack of systematic exchange of knowledge between research institutions and schools as a major challenge in the school system).
- Second, it was suggested that the quality of postsecondary VET could be enhanced if the institutions in which it is delivered undertook more research, and if the teachers and trainers involved themselves undertook more research. Teaching in academies and university colleges needs to be effectively informed by research, development and evidence particularly in fields undergoing rapid technology-driven change. Postsecondary programmes that are not regularly updated with recent innovations become quickly obsolete.
- Third, stakeholders from the university sector argued that if the limited pot of government research funding were to be spread more thinly so as to more fully include the university college sector the result would be a damaging loss, in terms of the concentration of research excellence in university research.

Recommendation: R&D should support, not displace training

Danish government policy in the funding of R&D should ensure: (a) that the primary vocational training mission of university colleges and academies is sustained; (b) that the vocational training delivered is effectively informed by knowledge and research; and (c) that the benefits of R&D are maximised through the encouragement of collaboration among universities, university colleges and academies and with the private sector.

Supporting arguments: a mixed evidence base

Four arguments support this recommendation. First, while teaching in academies and university colleges needs to be effectively informed by research and development, it remains an open question whether that research and development needs to be conducted on the same site, or in the same institution as the teaching it informs. Second, the evidence that research and development in tertiary institutions helps to support local companies is mixed. Third, unless carefully handled, research and development in a tertiary institution can distort the mission of a postsecondary VET institution away from that of providing skills needed by the labour market. Fourth, there is strong evidence that R&D which involves the collaboration of different institutions is particularly valuable.

Supporting teaching with R&D

If fields of study offered at university colleges are not adequately informed by the latest knowledge they may convey obsolete skills. At the same time, familiarity with modern technology and working methods in turn means more than academic knowledge of R&D – it also involves practical awareness of, and experience with new technologies and their application. Delivering an up-to-the minute VET programme therefore may require some knowledge of latest research, but as one element of a wider range of continuously updated elements in the curriculum.

One widely maintained proposition, which might argue for more research being conducted by university colleges is that teaching and research, when they coincide in the same institution or the same individuals, mutually reinforce each other. There are three arguments supporting this statement. First, teaching informed by research provides students with richer and more nuanced source information in their specific field. Second, it exposes students to research methods. Third, teachers who undertake research can support theoretical knowledge with real examples which makes teaching more interesting to students. On the other side, a faculty member who is responsible both for teaching and research can devote less time to teaching than a full-time teacher; a teacher who is also a researcher might narrow the content of the programme to issues related to her or his research at the expense of broader knowledge.

Studies that examine the relationship between research productivity and teaching quality reach varying conclusions, and are often afflicted by methodological limitations. Robertson and Bond (2010) observe that typically quantitative studies find no or weak association between teaching and research, while "academics across the globe continue to argue that such

a relationship exist". Drawing on the most reliable studies Zaman (2004) concludes that research and teaching are not contradictory and that their relationship can be modestly positive, though it is likely to be stronger for postgraduate than undergraduate levels. The implication is that firm assertions in this area should be treated with scepticism (Zaman, 2004). Sometimes the link between research and teaching quality is illusory. In the UK research and teaching quality assessments were found to be only weakly correlated at institutional level, once other factors such as resources and reputations were accounted for (Zaman, 2004; Jenkins, 2004).

Jenkins (2004) shows that combining research and teaching in practice is challenging for institutions in many countries. In Finland R&D in polytechnics is carried out by teachers in addition to their regular teaching workload which might potentially undermine the quality of teaching. Jenkins (2004) notes that in some countries there is a structural separation between research and teaching in many institutions, which makes synergies difficult to realise.

In conclusion, it is clear that effective teaching of an occupational skill should be informed by familiarity with the latest techniques, knowledge and research. Some understanding of research, methods used and their pitfalls might also reasonably be part of the curriculum for most sorts of postsecondary vocational programmes, since the use of research is now common in many professions. That said, it is far from clear that in order to achieve this, it is necessary for teachers also to be researchers, or that research should be conducted by the institutions with the responsibility for teaching.

Does R&D support local enterprise?

Different studies have assessed the impact of R&D in tertiary institutions on innovation in local companies. Most evidence refers to the university sector as in many countries postsecondary VET institutions are not involved in R&D, or only to a limited extent (OECD, 2008). Studies have, in particular, sought to identify the specific effect of postsecondary VET institutions on local industry in the example of Germany and Finland. This is possible since in Germany (as in Austria and Switzerland) a sub-sector of postsecondary VET (*Fachhochschule*) is engaged in R&D, and in Finland postsecondary VET institutions (polytechnics) are formally responsible for R&D.

A local geographic spillover effect is observed if companies located closer to a research centre are more innovative and more engaged in R&D than those situated further away. Conversely, the impact of research units on local development will be weak if companies use remote rather than local

research partners. Evidence on such knowledge spillovers is mixed and differs across countries (see Box 3.1).

Box 3.1 R&D and local spillover effects

In the United States one study reports that R&D in companies typically depends on R&D activities in local universities, but not vice versa. More innovation[1] occurs in localities with more research activities in private companies (employment in high technology research sector is a proxy for private R&D) and at universities. Areas close to other areas with a high level of R&D were also found to be more innovative (Anselin *et al*., 1997). An analysis of university research spillovers by industry sector shows that the geographic proximity of research institutions makes companies more innovative but only in specific industry sectors. However, firms in all sectors innovate more if they are located in an area with a high concentration of R&D in private companies (Anselin *et al.*, 2000).

A German study comes to rather different conclusions. It examines the impact of publicly funded research on industrial innovation (Beise and Stahl, 1998) and argues that the distance between public research institutions and firms seems to matter less for high-technology firms in Germany than in the U.S., (with the exception of firms collaborating with *Fachhochschulen*) possibly because the areal unit of analysis was larger for the US study, and because Germany has a dense transport infrastructure decreasing the cost of co-operation (Beise and Stahl, 1998). Similar arguments might apply to Denmark given the size of the country and its transport network.

The German study is of particular interest in the Danish context since it distinguishes between knowledge spillovers produced by tertiary VET institutions (*Fachhochschulen)* and spillovers created by universities. *Fachhochschulen* often specialise in the same technical fields as local business, and their key objective is to provide skilled labour to local businesses. They therefore have similar missions to university colleges and professional academies in Denmark. *Fachhochschulen* also conduct research, although on a lesser scale than universities (Biese and Stahl, 1998); faculty in *Fachhochschulen* devote 95 % of their work time to teaching, compared to 40% for universities. Despite a relatively small scale of R&D activities in *Fachhochschulen* one in five companies that used public research-based innovations collaborated with these institutions. *Fachhochschulen* tend to support smaller companies while universities and other research laboratories are more likely to work with big companies with no regional preference (Biese and Stahl, 1998). This suggests that in Germany knowledge spillovers from postsecondary VET might have more regional reach than spillovers from universities.

Box 3.1 R&D and local spillover effects (*continued*)

A Danish study (Smith, Broberg and Overgaard, 2002) divides regions into: urban centers, other urban regions, rural regions close to centers and rural and peripheral regions. Surprisingly, the authors find that only firms located in "rural regions close to centers" are more likely to engage in research activities. Other locations had no impact on the probability of a company carrying out R&D. These findings might indicate that the link between firm R&D and its distance from research institutions was weak. However, more information is required to determine exactly which features of the locality (location of university or other research institutions, physical proximity of other business partners, information density) influence the results of the analysis.

In Finland a qualitative study (Marttila *et al*., 2008) shows that the collaboration of polytechnics (tertiary VET institutions) with companies mainly involves training of future and current employees, and provision of small tasks and services to companies, often fulfilled by students during their study projects. Contrary to expectations, polytechnics transfer a limited amount of innovation to companies. This is because of their lower prestige in the area of R&D and because some polytechnics reported tensions between teaching and R&D activities.

Co-operation between the Finnish polytechnics and local employers could be improved. A Finnish education and research strategy (Finnish Ministry of Education and Culture, 2012) for R&D in the postsecondary sector up to 2016 aims among other matters to reinforce the role of business in key administrative bodies of polytechnics, so as to link polytechnics more closely to regional development and the local labour market.

Note: 1. Compilation of innovations that were introduced to the U.S. market in 1982, based on an extensive review of new product announcements in trade and technical publications.

Evidence from Germany tends to indicate that postsecondary VET institutions might have a stronger impact on R&D in local companies than universities. But evidence from the Finnish polytechnics is less positive. The evidence on knowledge spillovers of postsecondary VET institutions is therefore scarce and further evaluation would be necessary to estimate the potential impact of R&D activities in university colleges on local industry in Denmark.

R&D and mission drift

As argued in Chapter 2, postsecondary VET institutions are particularly subject to the risk of academic mission drift. One risk is that the encouragement of research, even if it yields useful research outcomes –

could undermine the incentives for faculty and institutions to give sufficient attention to the business of providing skills to meet labour market needs, if, for example, they have the option of pursuing research for high status rewards. Potential solutions within postsecondary VET institutions include separately designated "research" staff, and incentive structures which clarify the role of research as a support rather than an alternative to teaching. But the fundamental incentives are institutional. If postsecondary VET institutions see it as in their interests to pursue research, and/or to seek promotion to university status, then the incentives on staff will follow. This means that there may be advantages in ruling out in advance any possibility of such promotion.

Incentives for more collaborative R&D

Institutions that carry out R&D in collaboration with other institutions are more productive in R&D - they produce more publications, register more patents and are more often cited by others.[2] Collaboration between university colleges and universities should therefore be promoted.

Many studies report a positive relationship between the extent of research collaboration and research productivity of a researcher and an institution (see for example Adams *et. al*., 2005; Defazio *et al*., 2009; Wuchty *et al*., 2007). During 1981-1999 the extent of collaboration among U.S. universities and between universities and private companies doubled, while collaboration with foreign institutions increased five-fold (Adams *et al*., 2005). Wuchty *et al*. (2007) observe that work carried out in teams is more likely to be cited than work of individual authors across all research areas, even after removing self-citations. Adams *et al*., (2005) show that collaboration between institutions has a positive impact on research output measured with fractional[3] citations over five years. Collaboration that involves researchers from top national universities and from abroad tends to further improve research productivity as measured by the citation rate. Similar findings apply to other countries (Defazio *et al*., 2009). The benefits of collaboration tend to increase with its intensity and the size of the team, but at some point diminishing returns set in.

Research collaboration yields positive outcomes since researchers build on each other's work by sharing information and materials. This allows a higher level of specialisation and division of labour among team members. On the other hand collaboration involves cost. So as individuals and institutions co-operate the perceived benefits of this collaboration should outweigh its costs. Typically, the larger the team, the larger the cost of co-ordination and communication between team members. McFadyen and Cannella (2004) suggest that there are decreasing marginal returns to collaboration both in terms of the number of relationships and their

intensity. Individual losses related to information sharing might also decrease the utility to a researcher of collaboration. Haeusseler (2011) observes that information-sharing is sometimes challenged by a scientist's personal interest; researchers are less likely to share information of competitive value.

In Denmark, there are apparently some obstacles to full co-operation between universities and university colleges (Holm, n.d.). This implies that the cost of collaboration exceeds its benefits for at least one of these institutions. This could be for two reasons. First, an imperfect overlap in fields of study offered at universities and university colleges might further increase the cost of collaboration. Universities might be less interested in undertaking research in nursing or teacher education than in fields in which they have existing expertise and knowledge. Second, universities are likely to have a better reputation in the area of R&D due to a long tradition of research. As a result they might be reluctant to co-operate with university colleges unless there are clear incentives for them to do so.

Various factors facilitate collaboration. They include additional funding, staff mobility and an appropriate social framework. Federal funding is associated with stronger co-operation among top U.S. universities. It also boosts the collaboration of U.S. universities with foreign institutions and private companies (Adams *et al*., 2005; Landry and Amara, 1998). Similarly, staff mobility across institutions facilitates co-operation between these institutions. A U.S. study (Adams *et al*., 2005) shows that universities are more likely to collaborate with other institutions if the latter employ their PhD graduates. The social context of co-operation has an impact on the benefits too. Haeussler (2011) shows that researchers are more likely to share information if others do the same and if they expect to receive useful information in exchange. This implies that regular collaboration might be more sustainable than a one-off co-operation.

The Danish government has already launched an initiative to improve co-operation between university colleges and universities in some areas such as primary education. Under this initiative only university colleges and universities that collaborate are eligible for research funding; PhDs from universities are also encouraged to teach in the relevant university college programme (Danish Agency for Higher Education and Educational Support, 2012). The initiative therefore creates financial incentives for institutions to co-operate and enhances staff mobility across institutions. If the initiative turns out to be successful it might be scaled up.

Notes

1. The university sector includes the eight Danish universities and four academies for music, two academies of fine arts, a school for architects, a school for design and a school for librarians. 89,2% of the appropriations to the university sector goes to the eight universities.
2. For example publication productivity of an institution can be evaluated in two ways: first, on the basis of the number of publications produced by the institution over a given period of time; second, as an adjusted/fractional count, so if n institutions contribute to a paper, every institution is assigned a value of 1/n. Total adjusted publication productivity of an institution is a sum of all its fractional contributions.
3. Fractional means the sum of citation fractions within a university-field (Adams, *et al.*, 2005).

References

Adams, J.D., *et al*. (2005), "Scientific Teams and Institutional Collaborations: Evidence from U.S. Universities, 1981-1999", *Research Policy,* Vol. 34, pp. 259-285, Elsevier.

Anselin, L., A. Varga and Z. Acs (1997), "Local Geographical Spillovers between University Research and High Technology Innovations", *Journal of Urban Economics.* Vol. 42, pp. 422-448.

Anselin, L., A. Varga and Z. Acs (2000), "Geographical Spillovers and University Research: A Spatial Economic Perspective", *Growth and Change*, Vol. 31, pp. 501-515, Blackwell Publishers.

Beise, M. and H. Stahl (1998), "Public Research and Industrial Innovations in Germany", *Research Policy*, Vol. 28 (1999), pp. 397-422, Elsevier.

Danish Agency for Higher Education and Educational Support (2012), *Skills beyond School: OECD Review of Post-Secondary Vocational Education and Training – National Background Report for Denmark, http://en.fivu.dk/publications/2012/oecd-review-skills-beyond-school/oecd-review-skills-beyond-school-denmark.pdf*

Defazio, D, A. Locket and M. Wright (2009), "Funding Incentives, Collaborative Dynamics and Scientific Productivity: Evidence from the EU Framework Program", *Research Policy,* Vol. 38, No. 2, pp. 293-305, Elsevier.

Finnish Ministry of Education and Culture (2012), "Education and Research 2011-2016. A Development Plan", *Reports of the Ministry of Education and Culture*.

Finnish Science and Technology Information Service (FSTIS) (2012), Research Expenditure in the Higher Education Sector, *www.research.fi/en/research_environments/polytechnics/Research_expenditure_in_the_higher_education_sector*

Haeussler, C. (2011), "Information-sharing in Academia and the Industry: A Comparative Study", *Research Policy*, Vol. 40, pp. 105-122, Elsevier.

Holms, C. (n.d.), Mobilizing Knowledge in Denmark, Knowledge Mobilization Project for the International Alliance, National Report – Denmark.

Jenkins, A. (2004), *A Guide to the Research Evidence on Teaching-Research Relations*, The Higher Education Academy – December 2004.

Landy, R. and N. Amara (1998), "The Impact of Transaction Costs on the Institutional Structuration of Collaborative Academic Research", *Research Policy*, Vol. 27, pp. 901-913, Elsevier.

Marttila, L., A. Lyytinen and M. Kautonen (2008), "Finnish Polytechnics as Providers of Knowledge- Intensive Services", *The Service Industries Journal*, Vol. 28, No. 3, pp. 415-427, Routledge.

McFadyen, M.A. and A.A. Cannella Jr. (2004), "Social Capital and Knowledge Creation: Diminishing Returns of the Number and Strength of Exchange", *The Academy of Management Journal*, Vol., 47, No. 5 (Oct., 2004), pp. 735-746.

Ministry of Science, Innovation and Higher Education (MSIHE) (n.d.), *Mapping of the Danish Knowledge System with Focus on the Role and Function of the GTS Net*, Ministry of Science, Innovation and Higher Education, København.

Ministry of Science Technology and Innovation (2009), "Research Barometer. Danish Research in an International Perspective", *Research: Analysis and Evaluation 4/2009*, København.

OECD (2002), *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development*, The Measurement of Scientific and Technological Activities, OECD Publishing. doi: *10.1787/9789264199040-en.*

OECD (2008), *Tertiary Education for the Knowledge Society: Volume 1 and Volume 2*, OECD Publishing. doi: *10.1787/9789264046535-en.*

OECD (2010), "Main Science and Technology Indicators", *OECD Science, Technology and R&D Statistics* (database), doi: *10.1787/data-00182-en.*

Robertson, J. and C. Bond (2010), "Experience of the Relation Between Teaching and Research: What do Academics Value", *Higher Education Research and Development*, Vol. 20, No. 1, pp. 5-19, Routledge.

Skolerådet (n.d.), *Folkeskolen 2020*, *www.skoleraadet.dk/~/media/Raadet/VidenOm/Beretninger/2010/Folkeskolen2020.ashx*

Smith, V., A. L. Broberg and J. Overgaard, (2002), "Does Location Matter for Firms' R&D Behaviour? Empirical Evidence for Danish Firms", *Regional Studies*, Vol. 36.8, pp. 825–832, Carfax Publishing.

Statistics Denmark (2012), "Public Finance", StatBank Denmark, *http://www.statbank.dk*

Wuchty, S, B.F. Jones and B. Uzzi (2007), "The Increasing Dominance of Teams in Production of Knowledge", *Science* Vol. 3, 16 May 2007, pp. 1036-1039, American Association for the Advancement of Science.

Zaman, M. Q., (2004), "Review of the Academic Evidence on the Relationship Between Teaching and Research in Higher Education", *Research Report 506*, UK Department for Education and Skills, London. *www.education.gov.uk/publications/eOrderingDownload/RR506.pdf* .

Chapter 4

Recognition of prior learning

Despite the development of a framework of procedures for recognition of prior learning, it seems to be insufficiently used, particularly to realise course exemptions. This chapter recommends the development of more effective incentives for institutions, better information on the process, and that consideration should be given to the development of professional examinations.

The challenge: RPL is insufficiently used

Recognition of prior learning (RPL) is the process of "certifying" pre-existing skills and knowledge, particularly those acquired informally – for example on the job. The purpose of this certification is to make informally acquired knowledge and skills visible to other actors, such as employers and education and training institutions.

Over recent years Denmark has launched many initiatives to encourage and support RPL in adult education and continuing vocational training. In 2007 RPL was extended to new areas including short-cycle postsecondary adult education (VVU) and medium-cycle postsecondary adult education (Diploma programmes). As a result, it is now available at any stage of education, from basic to postsecondary level. Through RPL individuals can achieve the following goals: first, they can be admitted to an education programme without meeting formal requirements; second, obtain a "certificate of competencies" which is less than a full education diploma; and third, obtain a "certificate of education" equivalent to a full education programme (Danmarks Evalueringsinstitut (EVA), 2010). RPL is acquired either through documentary evidence of previous training, or through some form of assessment of competencies acquired informally – sometimes simply through an interview with a co-ordinator or through tests and exams. Assessment methods differ across sectors and institutions. While tests and exams are used in VVU they are not used in the context of the Diploma programmes (Danmarks Evalueringsinstitut (EVA), 2010). The system has been developed and negotiated with the social partners to ensure that RPL is accepted in the labour market. Despite these apparent strengths, the use of RPL appears surprisingly restricted.

The National Knowledge Centre for Validation of Prior Learning, established in 2007, supports RPL staff and institutions by sharing practices and discussions, as well as developing research on RPL, although an initial three-year grant from the Ministry has not been renewed.

Limited use of RPL in the parallel adult system

RPL is much less commonly employed in VVU and Diploma programmes than in basic and upper-secondary adult education (including vocational education and training) (Danmarks Evalueringsinstitut (EVA), 2010). In these postsecondary programmes certificates of competencies and education are rare, except for management and pedagogical Diplomas (Danmarks Evalueringsinstitut (EVA), 2010). RPL is employed in VVU and Diploma programmes primarily to waive admission requirements and only rarely to waive course requirements. This allows the institutions to recruit

more students, while maintaining their full course requirements (and the associated funding).

Variable use of RPL

Individual education institutions retain the main responsibility for RPL. They are responsible for counselling on career and education pathways, assessing and approving RPL within particular fields of study and for quality assurance and evaluation of RPL (Aagard, 2010). Institutions also ensure that staff involved in RPL have the appropriate skills to assess prior learning. But there is a challenge here. Typically, requirements for RPL practitioners are the same as, and no more than, for teachers in the formal education system (Aagard, 2010). But the recognition of informally acquired competences is a very different task from the recognition of those formally acquired - the implication is that teachers involved in the assessment of prior learning may not be sufficiently well prepared for their task, as suggested by a recent Danish study (Aagard, 2010).

Provision of training to RPL staff differs widely across education sectors. In general adult education and upper secondary programmes 80% of institutions train their RPL staff, but this is true of only 40% of institutions providing medium-cycle and 20% of institutions offering short-cycle programmes (Danmarks Evalueringsinstitut (EVA), 2010). The low use of training by postsecondary VET institutions could reflect weak incentives for teachers and institutions to invest in relevant training. EVA (2010) shows that many institutions complain about shortages of training for RPL staff, with institutions offering VVU and Diploma programmes as likely to complain about insufficient training provision as institutions from other education sectors. Participation in training will also be lower if institutions have no incentives to conduct more RPL (as discussed below) and if there are no incentives for teachers to engage in training.

In a decentralised system quality assurance is necessary to guarantee that all institutions meet minimum requirements and underpin the value of a qualification acquired through RPL on the labour market. EVA (2010) points to large differences across institutions in their approach to the quality assurance process. While the study highlights some positive developments - such as co-operation across institutions - the scale of co-operation differs across sectors. While all institutions providing Diploma programmes participate in a network ensuring a common approach to RPL, in VVU one out of three institutions does not co-operate (Danmarks Evalueringsinstitut (EVA), 2010).

Recommendation: need for better incentives

Following the development of an effective structure for recognising prior learning, further measures are necessary to realise its potential. There is a need to strengthen incentives for RPL through adjustment of the funding system, stronger quality control and better information. In addition, following the example of other OECD countries, Denmark should consider encouraging the development of an industry-led professional examination system.

Supporting arguments: practical ways to improve incentives

There are three supporting arguments for this recommendation. First, RPL has many potential benefits. Second, individuals, employers and institutions will only engage in RPL if they perceive it as beneficial. Financial incentives, strong quality control and good information reinforce and make visible the benefits of RPL. Third, professional examinations increase competition in the system and provide alternative routes to RPL.

RPL has many potential benefits

The potential benefits of RPL include:

- Through course exemptions it reduces the direct and opportunity costs of formal learning.
- By making acquired skills transparent, it improves the efficiency of the labour market.
- It helps adults with limited formal education to re-enter education and advance their careers.
- More subtly, it rewards and therefore encourages learning in informal settings.

Stakeholders need to see benefits from RPL

Despite the potential advantages, many countries find it hard to make extensive use of RPL. The incentives on different parties to use it are often limited and it is philosophically very different from typical educational programmes that involve prescribed periods of study and curricula ending in examinations. Thus:

- For individuals, RPL might in principle be attractive if it makes existing competences transparent to employers or to educational institutions – allowing access to education programmes and

exemptions from course requirements, particularly if the cost of a qualification obtained through RPL is below the cost of the same qualification awarded in a formal education system.

- For the teaching profession RPL may be seen as threatening since it involves "recognising" that knowledge and skills commonly imparted by professional teachers and trainers can also be acquired informally. It is no surprise that teachers and trainers may be reluctant to accept this conclusion.
- For an educational institution RPL may be unwelcome if it exempts someone from pursuing a course or programme, and as a result the institution loses out financially.
- For an employer RPL may also be a threat. Workers commonly have informally acquired skills, and often those skills are only visible to their existing employer. From an employer's point of view, the ideal employee is a highly skilled worker with skills visible only to their current employer and who therefore can only command a modest wage. Therefore RPL is unattractive to employers as it may make the skills of their employees more visible to other employers. (In practice it is commonly observed that many employers do support training providing transferable skills – and one of the commonly cited reasons is that the skills acquired through training are only imperfectly observable by other employers – consequently they do not allow wages to be bid up.)

Some of these disincentives can be identified in the Danish RPL system. A full analysis, beyond the scope of this review, would be necessary to explore the kind of issues set out above and identify more precisely how the incentives bear on different groups and different stakeholders in Denmark. This analysis would then provide the foundation for reforms to improve the incentives to use RPL, including potential reforms in the area of funding, quality assurance and access to information as discussed below.

A review of funding arrangements

EVA (2010) identifies financial disincentives for institutions as the major obstacle. In Denmark the funding available to an institution depends on the number of students enrolled in courses and programmes and their examinations. RPL resulting in a shorter study course, or leading to a full exemption from a course and the associated examination, therefore reduces the amount of money received by an institution, potentially discouraging RPL. To compensate, the government provides institutions issuing certificates (and therefore shortening the duration of the programme) with

one-off funding. Despite this, the majority of institutions do not perceive prior learning assessment as profitable (80% of institutions in Diploma programmes and 82% in VVU) (EVA, 2010). This implies that the additional funding is too little to compensate for the financial losses related to a lower enrolment rate and the cost of running RPL.

Stronger financial incentives for institutions could increase the use of RPL. Clearly, such measures should be balanced by strong quality standards in RPL to ensure that individuals receiving course waivers genuinely deserve them. Additional funding for RPL might be provided by the State, by an individual (employer), or both sources. From the point of view of the State the subsidy for RPL should not exceed the cost of education and training in a formal system leading to an equivalent qualification. In Denmark, individuals with upper secondary qualifications and above pay fees for RPL in postsecondary VET (Aagaard, 2010). In an international perspective fees at postsecondary level are not uncommon, though they vary greatly across and even within countries. In Canada, while some postsecondary institutions charge no fee to individuals seeking RPL others collect fees of around CAD 300-400 per application. In Belgium, recognition of competencies acquired outside the formal education costs between EUR 230-770 depending on the initial education level of the candidate and the required qualification (Expert Group on Future Skills Needs, 2011). In Denmark, a more detailed cost-benefit analysis would be required to determine the distribution of cost of RPL among different actors.

High quality in RPL supports its labour market value

RPL has a limited profile with employers. According to one commentator, recipients of RPL make little use of their certificate in the job market. While a few large companies, like Post Denmark and Novo Nordisk Scandinavia, pay attention to RPL, small and medium-sized enterprises are apparently unfamiliar with the system (Aagaard, 2010).

For any given qualification large variations in graduates knowledge and competencies weaken the positive association between that qualification 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 qualification 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 qualification reduces its value as a source of reliable information on worker productivity. The value of a qualification obtained through RPL is

therefore low if the quality of RPL varies across institutions. Poor quality RPL is typically associated by individuals and employers with low expected returns.

So in order to ensure that individuals and employers perceive RPL as a robust and valid pathway to qualifications RPL procedures, in all institutions, need to meet at least minimum requirements. In the context of highly decentralised arrangements with much discretion given to institutions, the quality assurance process might usefully be strengthened.

Better access to data

Better access to data depends on both effective collection and collation of data, and its dissemination to a wider range of stakeholders.

In Denmark, there are few data on RPL collated nationally, making it very hard to monitor the system, identify problems and develop policy responses. Better data on RPL would support the economic analysis of incentives mentioned above; they would enable individual institutions to benchmark their use of RPL against other similar institutions, and nationally, enable progress to be monitored. Most country-wide databases compile information for administrative purposes (Recotillet, Werquin, 2010) while attempting to ascertain the results of system recognition.

Although it cannot measure unmet demand, systematic feedback data from those using RPL, including students and institutions, can provide useful quantitative and qualitative data on the process, satisfaction and impacts of RPL. EVA's report on RPL (2010) examines the failings of RPL evaluation, especially through informal consultation with participants.

The Danish government has sought to raise the profile of RPL, through partnership agreements with the social partners, national information and networking campaigns, through a web-portal, handbooks and on-line advice helping those seeking RPL to document their skills (see *http://minkompetencemappe.dk/Default.aspx; www.ug.dk*). But stakeholders interviewed by the visiting OECD team suggested that RPL remains little known and understood. Some have argued that the potential benefits are unknown or misunderstood particularly in small companies (Aagard, 2011; NVL, 2010). In this context, more and better information about RPL opportunities and its outcomes might potentially increase its use. But better information will only increase the use of RPL if it is linked to effective incentives – so that those who are fully informed can see the likely benefit from their engagement.

Box 4.1 Monitoring RPL in Iceland and France

In Iceland, the Education and Training Service Centre (ETSC) co-ordinates the development of a national strategy. The centre has, through pilot projects, developed an RPL methodology with the main target group being people with poor formal education. The 12 lifelong learning centres around the country and the two centres for certified trades co-operate in carrying out RPL projects. The ETSC is currently implementing a project on RPL in whereby upper secondary schools document the results of RPL returning the data to the ETSC. The information covers age, gender, subjects validated through RPL methods and number of units, hours spent by assessors and guidance personnel. The ETSC track the costs of RPL based on this information.

In France, a 2007 survey was undertaken on those preparing for a level 5 qualification, drawing a sample from applicants for RPL and covering a period ranging from 18 to 24 months, during which the applicants were in the process of accreditation. Outcomes were categorised according to whether accreditation was total or partial, whether applicants were waiting to sit examinations or had abandoned the procedure. A questionnaire compared occupational situations before and after the RPL procedure. In the case of employed workers, RPL was found to have more of a positive effect within the employing organisation than on external mobility, in respect of promotion and increased job satisfaction.

Source: Méhaut, P and A.J Lecourt (2010), "Accreditation of Prior Experiential Learning in France: An Evolving System with National Characteristics" in CEDEFOP (2010), *The European Journal of Vocational Training No. 48, 2009/3, www.cedefop.europa.eu/EN/Files/EJVT48_en.pdf*; Recotillet, I and P. Werquin (2010), "APEL Pathways: A Passport to Employment" in CEDEFOP (2010), *The European Journal of Vocational Training No. 48, 2009/3, www.cedefop.europa.eu/EN/Files/EJVT48_en.pdf.*

Professional examinations – a radical alternative

One radically different approach to RPL is through professional examinations, pursued in one form in the Germanophone countries in the higher level examinations for master craftsman and other qualifications, but also in a quite different way in the common use of industry-driven examinations in the United States, or through occupational examinations, administered by the Ministry of Trade and Labour, in Israel. In these cases professional examinations are typically industry-led tests of competence in a profession. As such, there are typically no or few mandatory requirements for preparatory courses, although many of those involved need and pursue such courses. Typically they are undertaken by those already working in a profession and in many cases experience in the profession is a precondition for pursuing the examination. They therefore represent a mix of recognition

of prior learning with the acquisition of further skills, coalesced into an exam and associated qualification. (See Box 4.2 for a Swiss example).

The attraction of this model is that, rather than bending traditional educational programmes with required curricula and fixed study periods to the needs of RPL, by seeking derogations and exceptions from normal requirements, RPL is built into the assessment philosophy from the outset – since the examinations revolve around the assessment of competencies. Implementation is therefore less of an uphill task.

Box 4.2 Professional examinations in Switzerland

In Switzerland, an industry-led, but federally regulated system of professional education and training (PET) examinations provides a means of upskilling, in most cases for adults who have graduated from the apprenticeship system and are already practicing their chosen profession. In 2011 there were around 240 examinations leading to a Federal PET Diploma, and 160 leading to an Advanced Federal PET Diploma. The Advanced Diploma reflects the classical progression from apprenticeship to Meister level, enabling the examinees to show their capacity to carry out their profession independently, run their own business, and train apprentices.

The number and content of examinations change regularly as labour market organisations adjust the examinations to changing needs; typically 60-100 examination rules are under revision at any point in time. Students typically take part in a preparatory course for a national PET examination even though participation is in principle not mandatory and degrees are awarded exclusively on the basis of exam performance. Preparatory courses can take from a few months to two to three years. Course format reflects student demand, it often means weekend or evening classes and distance learning.

The scope of this examination type has now widened to include non-technical professions in the commercial, manufacturing, agricultural, and service-related sectors. The examinations fulfill the need to certify specific professional competencies needed in legally regulated areas, to act as an entry point to the service sector and can also be used as a human resources development tool.

Source: Fazekas, M. and S. Field (2012), *OECD Reviews of Vocational Education and Training: Skills beyond School Review of Switzerland 2012,* OECD Reviews of Vocational Education and Training, OECD publishing.

References

Aagard, K., (2010). *European Inventory on Validation of Non-formal and Informal Learning 2010, Country Report: Denmark,* European Commission, Brussels, *http://libserver.cedefop.europa.eu/vetelib/2011/77455.pdf*

Danmarks Evalueringsinstitut (EVA) (2010), *Validation of Prior Learning within Adult Education in Denmark. Status Report Regarding Act no. 556 of 6 June 2007*, *http://english.eva.dk/publications/validation-of-prior-learning-within-adult-education-in-denmark.*

Expert Group on Future Skills Needs (2011), Developing Recognition of Prior Learning, the Role of RPL in the Context of the National Skills Strategy Upskilling Objective, April 2011. *www.skillsireland.ie/media/egfsn110411-developing_recognition_of_prior_learning.pdf.*

Fazekas, M., S. Field (2012), *OECD Reviews of Vocational Education and Training: A Skills beyond School Review of Switzerland 2012,* OECD Reviews of Vocational Education and Training, OECD publishing.

Méhaut, P and A.J Lecourt (2010), "Accreditation of Prior Experiential Learning in France: An Evolving System with National Characteristics" in CEDEFOP (2010), *The European Journal of Vocational Training No. 48, 2009/3, http://www.cedefop.europa.eu/EN/Files/EJVT48_en.pdf*

Recotillet, I and P. Werquin (2010), "APEL Pathways: A Passport to Employment" in CEDEFOP (2010), *The European Journal of Vocational Training No. 48, 2009/3, http://www.cedefop.europa.eu/EN/Files/EJVT48_en.pdf*

Chapter 5

Updating the vocational skills of teachers

In the face of rapid technological change, postsecondary vocational teachers and trainers need to maintain and develop their experience and knowledge of modern industry. This is a particular challenge when full-time teachers and trainers have experience in industry dating from some years ago. This chapter recommends the development of an effective framework to ensure that teachers and trainers have the relevant knowledge and experience and the incentives to sustain and develop these competences.

In this chapter the term "teachers" refers to pedagogical staff in postsecondary VET institutions, including teachers, trainers, lecturers, etc.

Challenge: lack of recent industry experience

High quality vocational education and training requires teachers with both good pedagogical and technical vocational skills. Recognising the importance of pedagogical skills, teachers in postsecondary programmes are required to follow some form of pedagogical preparation. In academies, newly appointed teachers receive pedagogical training, which may vary from informal supervision to formal courses. In university colleges teachers (lecturers) are required to enrol in a pedagogical course, which takes four years to complete.

To ensure that entrant teachers have adequate vocational skills and knowledge, there are requirements regarding qualifications and work experience. Postsecondary VET teachers are required to hold a higher level qualification than the level at which they are teaching (*i.e*. those teaching at professional bachelor level need at least a master's degree, those teaching in academy profession programmes need at least a professional bachelor). In addition, they are required to have relevant professional experience (the minimum length of work experience is not specified by law).

A major challenge, shared with other OECD countries, is to ensure that teachers keep their vocational (occupation-specific) skills up-to-date. For most VET systems this is a substantial challenge, given technological advances and associated changes in working practices. For example, an Australian study (Harris *et al*., 2001) found that only 28% of full-time and 55% of part-time trainers rated their technical knowledge as being up-to-date. Working part-time as a teacher and part-time in industry addresses this issue in some cases. In Denmark, some academy teachers maintain a part-time job in industry and there are some special shared posts between hospitals and university colleges (*e.g.* part-time nurse and part-time lecturer), but these arrangements concern a minority of teachers. Some teachers use their contacts with companies when organising work placements for students as an opportunity to maintain familiarity with workplace requirements. These examples illustrate that many teachers recognise the importance of updating their vocational knowledge and skills. But the lack of a supportive framework means that not all teachers benefit from skills updating opportunities.

Stakeholders reported a number of administrative barriers that prevent teachers from working part-time in their professional field or spending time in a company or professional institution to update their skills. For example, it is unclear how the wages of teachers would be covered while they spend

time in industry. For university college lecturers criteria for tenure make part-time work in their profession unattractive.

Recommendation: a framework to update vocational skills

Ensure that the vocational knowledge and skills of postsecondary VET teachers remains up-to-date by: (a) providing incentives for teachers to regularly update their vocational skills; and (b) establishing a framework that allows teachers to regularly spend time in a company or institution within their professional field.

Supporting arguments: practical measures seen in other countries

Three arguments support this recommendation. First, as the requirements of modern workplaces change rapidly, teachers' vocational skills need to be updated at an equivalent pace. Second, sufficient incentives need to be in place to support the updating. Third, a formal framework of expectations on teachers would support that updating.

Teachers' vocational skills need to be regularly updated

As argued above, full-time postsecondary VET teachers may gradually lose familiarity with current working methods and technologies. Teachers should therefore be encouraged to spend time in workplaces, and if possible work there at least occasionally. This may involve part-time teaching combined with part-time employment in industry, or short periods spent in industry for full-time teachers. For example, in Finland the *Telkkä* programme allowed teachers to spend two months on-the-job and brought a wide range of benefits to teachers (see Box 5.1).

Box 5.1 Teacher-worker pairing: co-operation between VET institutions and industry in Finland

The Telkkä programme in Finland was based on close co-operation between teachers and workplace trainers. It aimed to improve the ability of VET to respond to the needs of working life. The programme included a two-month on-the-job period for teachers, during which teacher-worker pairs were formed. This offered an opportunity for teachers to update their professional skills and for workers who also work as workplace trainers to improve their pedagogical skills. The training period was preceded by a seminar and planning (to clarify goals and expectations) and followed by feedback from teachers and workers and dissemination to the broader community.

Box 5.1 Teacher-worker pairing: co-operation between VET institutions and industry in Finland (*continued*)

Teachers reported a wide range of benefits, such as increased familiarity with recent work practices and requirements and the equipment used, easy access to firms for study visits, the contacts necessary to invite people from industry to give lectures at their VET institution, increased confidence, respect from students and motivation. The training period also allowed teachers and workers to discuss issues related to workplace training for students and improve training plans and assessment methods. Participants improved their skills and self esteem, and disseminated knowledge to other colleagues. This exercise was evaluated by the Economic Information Office in Finland as one of the best ways of developing teachers' professionalism.

Source: Cort, P., A. Härkönen and K. Volmari (2004), *PROFF – Professionalization of VET Teachers for the Future*, CEDEFOP, Thessaloniki.

Encouraging participation in skills updating

Given the benefits of updating the vocational skills of teachers, it is important to ensure that as many teachers as possible benefit from such opportunities. This requires teachers willing to participate, postsecondary VET institutions willing to support teachers, and companies (or other institutions, when relevant) willing to employ part-time teachers or to receive teachers for a short period and give them meaningful tasks.

First, it is important to encourage teachers to engage in activities that maintain and update their technical skills. As suggested by interviews conducted during the review visits, some teachers may be reluctant to work part-time or spend a period in industry. In particular those who have been teaching full-time for many years may feel uncomfortable about going back to work in their field. It is important to encourage these teachers to spend some time in industry, as they are the ones who would particularly benefit from updating their vocational skills. Formally recognising and rewarding participation in skills updating is also important. In Australia, for example, a study of secondary level VET (Dalton and Smith, 2004) found that although the benefits of maintaining contact between teachers and companies is widely acknowledged, in the absence of a well-resourced framework and incentives teachers are typically busy with their regular workload and rarely engage in additional professional development activities. Spending time in industry, at least occasionally, may be part of mandatory in-service training requirements. In China, for example, teachers in vocational schools are required to spend one month a year in industry (Kuczera and Field, 2010).

Alternatively, participation in regular skills updating may be optional and encouraged through, for example, including it as a criterion in individual performance evaluation.

Second, it is important to create adequate incentives for postsecondary VET institutions to support and encourage teachers in updating their vocational skills. Otherwise some institutions may not find such options appealing – part-time teachers may be more difficult to handle administratively and it may be complicated to replace teachers during the period they spend in industry. One option is to include arrangements for skills updating in institutional evaluation criteria, or include them in development contracts concluded between each institution and the ministry.

Finally, companies (or other institutions, like schools and hospitals) that receive teachers for a short period need to perceive a benefit in doing so. A major benefit for receiving companies or institutions is that postsecondary VET graduates will be better prepared for their jobs, because their teachers will be familiar with current workplace requirements and teach these in their course. A carefully designed administrative framework (in particular concerning the wages of teachers during their time spent in industry) may also encourage companies or institutions to offer such skills updating opportunities.

A framework of support

A formal framework would facilitate participation in skills updating activities. Establishing such a framework is likely to be particularly beneficial in Denmark, as many other factors required for regular skills updating are already present – postsecondary VET institutions typically have strong links with companies and other institutions (*e.g.* hospitals, schools). During the review visits many teachers expressed interest in some form of skills updating. The framework should be negotiated between relevant stakeholders to ensure that it suits the needs of all involved parties. For short periods spent in a company, the framework might cover issues such as the wages of participating teachers, insurance arrangements and tasks. The tasks performed by teachers might range from working like a regular employee or job shadowing, depending on what is most suitable.

Part-time teaching combined with part-time employment in industry is worth promoting, as it ensures that teachers maintain regular contacts with industry and update their technical skills. In addition, it can alleviate problems of teacher shortage – a challenge in some postsecondary VET institutions and fields in Denmark, especially when the economy prospers. Recruitment and promotion criteria for teachers (especially lecturers in university colleges) might be reviewed to ensure that they do not create

barriers to part-time teaching. Some countries provide a framework in which part-time teachers require pedagogical training, but much less than full-time teaching staff, facilitating the use of part-time staff.

References

Cort, P., A. Härkönen and K. Volmari (2004), *PROFF – Professionalization of VET Teachers for the Future*, CEDEFOP, Thessaloniki.

Dalton, J. and P. Smith (2004), "Vocational Education and Training in Secondary Schools: Challenging Teachers' Work and Identity", *Journal of Vocational Education and Training*, Vol. 56, No. 4, Taylor & Francis Group.

Harris, R. M., *et al.* (2001), *The Changing Role of Staff Development for Teachers and Trainers in Vocational Education and Training*, NCVER, Adelaide.

Kuczera, M. and S. Field (2010), *OECD Reviews of Vocational Education and Training: A Learning for Jobs Review of China 2010*, OECD Reviews of Vocational Education and Training, OECD Publishing. doi: *10.1787/9789264113749-en.*

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Contents

Further reading

OECD (2010), *Learning for Jobs*, OECD Reviews of Vocational Education and Training, OECD Publishing.
See also ***www.oecd.org/education/vet***.
For more information about OECD work on skills, see *skills.oecd.org*.

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