

Chapter 2

Vocationalization of secondary and higher education: pathways to the world of work

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1 Introduction

This paper examines the changing nature of vocationalization within the human resource development (HRD) agenda that came to the fore several decades ago. Although originally it included a broader interpretation (education and training, health, standards of living), gradually, over time, a narrower definition has come to prevail (Kelly, 2001). Therefore, the economic aspect of HRD, that is the development of employability skills, is currently the main emphasis within policy development. This employability focus has changed the nature of vocationalization from 'educational' to 'functional'. However, in many cases this brings general and vocational education together at both secondary and higher education¹ levels. This paper also reveals that vocationalization depends on the level of economic development and cultural specificities. Analysis of vocationalization at secondary level is followed by a brief examination of post-secondary technical and vocational education and training (TVET) that through articulation pathways are linked to higher education and lastly, vocationalization of higher education.

2 Vocationalization of secondary schooling and higher education

Internationally, a major and persistent overall trend in education has been the massification of both secondary schooling and higher education. This is also the case, albeit on a more limited basis, in those developing countries that have achieved major progress in the universalization of primary education, with more students going on to secondary-level education.

¹ The terms 'higher education' and tertiary education' are used throughout the paper since they are both used in different contexts internationally.

In the past it was widely accepted that secondary schooling and higher education were for a relatively small number and proportion of students who were mainly concerned with receiving an academic-type education and (in the case of universities) obtaining entry to the higher-status professions. With an increasing proportion of the relevant age groups wanting to complete a full cycle of secondary schooling, before then going on to university, both schools and universities have had to modify their curriculum and entrance procedures to become more comprehensive by providing a more diverse range of courses in order to accommodate the more diverse study interests and range of capabilities of students. These courses are both academic and (increasingly) vocational in nature.

There is now more emphasis on economic productivity, with secondary schools and many universities increasingly stressing skills development for employability, and so preparing graduates more directly to meet labour force requirements. There are some, such as Professor Steven Schwartz, vice-chancellor of Macquarie University in Australia, who lament this trend, and argue that the programmes offered in secondary schools and universities are 'being reduced to vocational training' (Schwartz, 2010). This is a view that is shared by Professor Martha Nussbaum at the University of Chicago (Nussbaum, 2010). However, others (including ourselves) disagree, and argue that it is both desirable and appropriate that secondary schools and universities are more accountable to meeting the economic and labour force needs of society through placing a greater emphasis on skills development for employability (Fien, Maclean and Park, 2008; Maclean and Wilson, 2009; Rauner and Maclean, 2008). These are matters that are examined in greater detail in the main body of this paper.

3 Vocationalization of secondary schooling

3.1 Historical development

Traditionally, vocational skills have been developed through apprenticeship structures. Secondary schools in medieval and Renaissance Europe focused on intellectual

training in its narrow sense, educating an elite group of men in the liberal arts.² The industrial revolution put a new emphasis on science and technology, and as a result a number of technical schools (which were less prestigious) appeared in the nineteenth century. Gradually the whole of secondary education became less elitist and its curriculum more diverse. Three overlapping categories of general/academic, TVET³ and diversified/comprehensive curriculum could be identified. Academic and TVET schools are single-purpose institutions. Diversified schools lie in the middle of the continuum, and are multi-purpose, combining elements of both ends of the spectrum into their programmes so they combine the objectives of an academic course of study with one or more vocational fields, to make schools more responsive to labour market needs and to serve a more diverse student clientele. Typically, these schools allow academic students to take some vocational coursework and vocational students to continue some academic coursework. In many cases all types of schools include 'preparing students for the world of work' among their objectives. To determine the nature of secondary schooling a number of priorities have to be considered by educational planners: for example, to prepare youth to fill wage-sector jobs, to raise the quality of university entrants, to reinforce nation building, and to increase enrolments of a particular group or in a particular region. Therefore to 'position' secondary education within a country's educational system, many dimensions need to be taken into account including the degree of vocationalization of the curriculum. The share of curriculum devoted to vocational subjects reflects the degree of vocationalization.

Most countries divide the secondary level of education into lower (LSE) and upper (USE) segments. The division between lower and upper levels of secondary education coincides with the divide between general, universal 'basic' education (LSE) and

² For an elaboration on the development of TVET over the centuries see chapter 1 in Maclean and Wilson (2009).

³ TVET refers to a broad range of preparation at different levels of the education and training system. 'Vocational' refers to middle-level, or traditional trade occupations for semi-skilled and skilled workers. 'Technical' refers to occupations in the technician category that are usually prepared for at the postsecondary level. Vocational and technical 'education' refers to exposure to the world of work and to preparation for entry into further studies in vocational and technical education. Technical-vocational 'training' means preparation for direct entry into, or upgrading in, specific (or clusters of) occupations in the labour market (ADB, 2009b; Maclean and Wilson, 2009).

selective, specialized, differentiated more occupation-oriented education (USE) designed to prepare students directly for the labour market, or for tertiary studies. Within the formal education system, TVET occurs at different levels. The International Standard Classification of Education (ISCED), developed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1997, specifies four levels of education and training pertinent to TVET: levels 2 (lower secondary), 3 (upper secondary), 4 (non-tertiary postsecondary) and 5 (first stage tertiary, non-degree.) Within these levels there are three types of programme orientation – type A (general), type B (pre-vocational), and type C (vocational or technical) – for direct entry into specific occupations.

The process of 'vocationalization' of secondary education began in the 1970s with the aims of promoting the social inclusion of less privileged groups in education and training, narrowing educational gaps and avoiding social fragmentation (Lauglo, 2005; Lauglo and Maclean, 2005). Vocational skills were viewed as a coherent part of the overall education system.

For example, the Technical and Vocational Education Initiative (TVEI) in the United Kingdom was designed to help produce a 'more highly skilled, competent, effective and enterprising workforce for the 1990s' by investing in the skills of all young people aged 14–19 in full-time education and equipping them for the demands of working life in a rapidly changing society. Work experience placements proposed through this framework contributed to General Certificate of Secondary Education (GCSE) results, and 71 per cent of teachers believed that TVEI had increased students' abilities to solve problems. Evaluation of the initiative revealed that ex-TVEI students were more likely to continue into jobs with training than non-TVEI students (74 per cent compared with 65 per cent) (TVEI Training Agency information letter, 1988).

The diversification of secondary education and the expansion of access to TVET have helped to retain more students in school. This social function of vocationalization led some youths to stay in school longer than they might have if they only had the choice of an academic curriculum. Studies in Organisation for Economic Co-Operation and Development (OECD) countries provide evidence of this trend. They report that a 10 per cent increase in the share of upper secondary students in vocational and pre-vocational programmes is associated with a 2.6 per cent increase in the secondary

school graduation rate and a 1.9 per cent increase in the proportion of 15–19-year-olds in school (Bishop and Ferran, 2005).

Social relevance and the equity aspect of vocationalization can be illustrated by the case of Indonesia. Upper secondary vocational schools in Indonesia cater more to the poor than general secondary schools, drawing 21 per cent of their students from the lowest income quintile, compared with only 13 per cent for general secondary schools (ADB, 2007a, p. 30).

At that time, the vocationalization of secondary education referred to the process of including practical skills in the educational process. Vocationalization is designed to prepare students for the world of work better than does just 'academic' education. Traditionally it was interpreted as not being oriented towards a specific class of occupations or trades, and it does not lead to a qualification that is relevant to the labour market (Lauglo, 2005). The difference between the vocationalization of general education and a vocational stream in secondary education refers to the degree of institutional integration of vocational training into education.

The OECD (2010, p. 300) makes the following distinction between secondary-level programmes:

- General education programmes are not designed explicitly to prepare participants for specific occupations or trades, or for entry to further vocational or technical education programmes (less than 25 per cent of programme content is vocational or technical).
- Pre-vocational or pre-technical education programmes are mainly designed to introduce participants to the world of work and to prepare them for entry into further vocational or technical education programmes. Successful completion of such programmes does not lead to a vocational or technical qualification that is directly relevant to the labour market (at least 25 per cent of programme content is vocational or technical).
- Vocational or technical education programmes prepare participants for direct entry into specific occupations without further training. Successful completion of such programmes leads to a vocational or technical qualification that is relevant to the labour market.

Vocational and pre-vocational programmes are further divided into two categories (school-based, and combined school-based and work-based programmes) on the basis of the amount of training provided in school as opposed to the workplace. Programmes are classified as school-based if at least 75 per cent of the programme curriculum is presented in the school environment, a proportion which may include distance education. In combined school- and work-based programmes, less than 75 per cent of the curriculum is presented in the school environment or through distance education (OECD, 2010).

Statistics show a very close number of enrolments in general and vocational programmes at the upper secondary level in European Union (EU) and OECD countries (Table 1). Among countries for which data are available, in thirteen OECD countries and in the partner country Slovenia, the majority of upper secondary students pursue pre-vocational or vocational programmes. In most OECD countries with dual-system apprenticeship programmes (Austria, Germany, Luxembourg, the Netherlands and Switzerland) and in Australia, Belgium, the Czech Republic, Finland, Italy, Norway, the Slovak Republic, Sweden and the partner country Slovenia, 55 per cent or more of upper secondary students are enrolled in pre-vocational or vocational programmes. However, in Canada, Chile, Greece, Hungary, Iceland, Ireland, Japan, Korea, Mexico, Portugal, Turkey, the United Kingdom and the partner countries Brazil, Estonia and Israel, 60 per cent or more of upper secondary students are enrolled in general programmes even though pre-vocational and/or vocational programmes are offered (OECD, 2010).

Enrolment in the pre-vocational options remains the smallest among the three available options. On the basis of the 'old' interpretation of the vocationalization process, only academic and pre-vocational strands could be considered as constituting the vocationalization process. UNESCO Institute for Statistics (UIS) revealed that globally, the gross enrolment ratio in TVET programmes at the upper secondary school level increased between 1999 and 2009. However, enrolment in TVET as a percentage of total enrolment decreased in many countries, including Western Europe, as this statistic does not show distribution by programme orientation.

Table 1. Upper secondary enrolment patterns

Upper secondary enrolment patterns (2008)
Enrolment in upper secondary programmes in public and private institutions, by programme destination and programme orientation

	Upper secondary education							
	Distribution of enrolment by programme destination			Distribution of enrolment by programme orientation				
	ISCED 3A	ISCED 3B	ISCED 3C	General	Pre-vocational	Vocational	Combined school and work-based	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
OECD countries	Australia	38.9	a	61.1	38.9	a	61.1	m
	Austria	45.0	46.6	8.4	22.9	6.3	70.8	35.0
	Belgium	44.1	a	55.9	27.1	a	72.9	3.2
	Canada ¹	94.7	a	5.3	94.7	x(6)	5.3	a
	Chile	100.0	a	a	65.4	a	34.6	a
	Czech Republic	73.9	0.5	25.6	25.8	n	74.2	33.1
	Denmark	52.0	a	48.0	52.0	a	48.0	47.5
	Finland	100.0	a	a	32.1	a	67.9	13.4
	France	55.8	11.9	32.3	55.8	a	44.2	12.4
	Germany	42.5	57.2	0.3	42.5	a	57.5	42.8
	Greece	69.1	a	30.9	69.1	a	30.9	a
	Hungary	26.3	a	23.7	75.6	10.5	13.9	13.9
	Iceland	51.0	0.6	48.4	65.9	1.6	32.5	15.5
	Ireland	70.6	a	29.4	66.1	31.8	2.1	2.1
	Italy	81.5	1.3	17.2	40.6	32.7	26.7	a
	Japan	76.0	0.9	23.1	76.0	0.9	23.1	a
	Korea	74.5	a	25.5	74.5	a	25.5	a
	Luxembourg	60.9	15.1	23.9	37.9	a	62.1	14.3
	Mexico	90.6	a	9.4	90.6	a	9.4	a
	Netherlands	63.0	a	37.0	32.9	a	67.1	20.2
	New Zealand	m	m	m	m	m	m	m
	Norway	44.8	a	55.2	44.8	a	55.2	15.9
	Poland	87.1	a	12.9	53.8	a	46.2	5.5
	Portugal	100.0	x(1)	x(1)	69.3	8.5	22.2	m
	Slovak Republic	84.0	a	16.0	27.7	a	72.3	28.6
	Spain	56.2	n	43.8	56.2	n	43.8	1.8
	Sweden	93.5	n	6.5	43.2	1.0	55.7	n
	Switzerland	30.2	66.4	3.3	35.2	n	64.8	n
Turkey ²	100.0	a	m	61.0	a	39.0	n	
United Kingdom ³	82.9	x(1)	17.1	68.6	x(4)	31.4	m	
United States	100.0	x(1)	x(1)	100.0	x(4)	x(4)	x(4)	
OECD average	71.3	7.4	24.5	54.9	3.5	43.5	11.7	
EU19 average	70.5	7.8	23.8	47.3	5.0	47.9	16.1	
Partner countries	Brazil	89.4	10.6	a	89.4	a	10.6	a
	China	53.3	x(1)	49.9	52.5	50.7	x(5)	a
	Estonia	68.0	31.3	0.7	68.0	a	32.0	0.4
	India ³	98.2	a	1.8	98.2	a	1.8	m
	Indonesia	64.0	38.0	a	64.0	a	38.0	m
	Israel	96.2	a	3.8	65.5	a	34.5	3.8
	Russian Federation	53.0	16.2	30.8	53.0	16.2	30.8	m
	Slovenia	35.5	45.9	18.6	35.5	a	64.5	n

1. Year of reference 2007.

2. Excludes ISCED 3C.

3. Includes post secondary non tertiary education.

Source: OECD, China, India, Indonesia: UNESCO Institute for Statistics (World Education Indicators Programme). See Annex 3 for notes (www.oecd.org/edu/ieg2010/).

Please refer to the Reader's Guide for information concerning the symbols replacing missing data.

StatLink  <http://dx.doi.org/10.1787/888932310415>

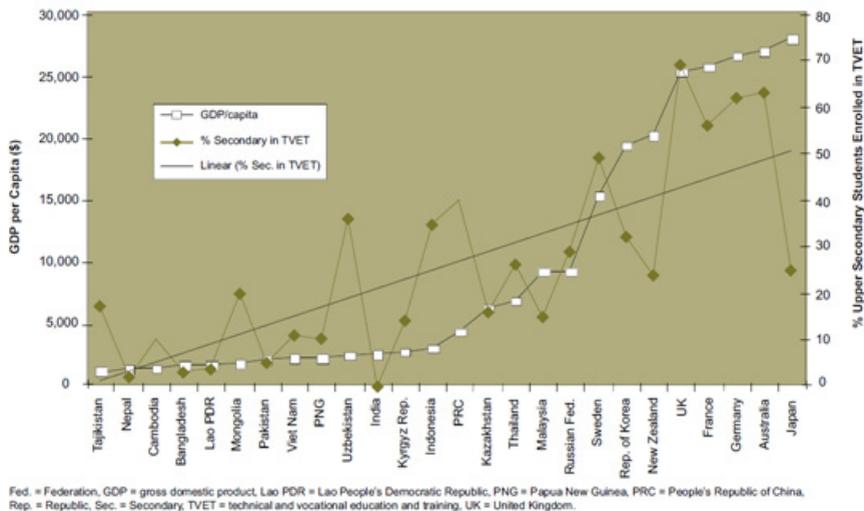
Source: OECD, 2010, p.305

3.2 'New' vocationalization

The human capital/HRD debate generates a more functional (not pure educational) approach to skills development that impacts on general, pre-vocational and vocational education, and changes the nature of secondary TVET. The demand to enhance productivity and the employability of individuals through the development of work-related competences brings the vocational strand at the secondary school level under the umbrella of 'vocationalization', together with general and pre-vocational options. The main reason for this is that in some contexts TVET development at the level of secondary education can have a maximum effect in increasing the employability of graduates. Functional aspects of this training relevant to labour market needs (such as technological knowledge, flexibility and better productivity) become increasingly more important than do educational achievements. However, many countries are still driven by social demand, focusing on educational objectives alone for instance in Egypt 55 per cent of all secondary students participate in school-based vocational education and training (VET) (Arab Republic of Egypt MOE, 2008) which is of little relevance to the labour market (Wallenborn, 2010). Therefore, a call by the Asian Development Bank (ADB, 2008, p. 126) for a 'mental shift' from traditional VET approaches to context-related world-of-work competences could be interpreted as a request to broaden the notion of vocationalization by including secondary VET under its umbrella.

So the change is from education-driven to a functional model of skills development within secondary schooling. Governments commonly establish high targets for the proportion of secondary students they want to enrol in vocational programmes, as they see a strong correlation between the proportion of students enrolled in TVET subjects and per capita income. Figure 1 shows 2002 enrolment in upper-secondary TVET for selected countries, and targets for secondary vocational programme enrolment for Indonesia and the People's Republic of (PR) China, which were 70 per cent and 60 per cent respectively (Copenhagen Development Consult A/S, 2005, p. 7).

Figure 1. Percentage of Upper Secondary Students Enrolled in TVET Programmes in Selected Countries, 2002



Source ADB, 2009 (Calculated from enrolment data in International Centre for Technical and Vocational Education and Training (UNEVOC, 2006).

India targeted 25 per cent (World Bank, 2006b, p. ii) and Bangladesh 20 per cent (World Bank, 2007, p. 12) of all secondary students to be enrolled in the vocational/technical secondary stream. Pakistan planned to add technical/vocational streams in secondary education, and aimed for half of all secondary students to enter those streams (World Bank, 2006a). Considering the very low enrolments in 2002, these targets could provide implementation challenges for these governments.

In terms of TVET levels, UIS data (Table 2) reveals that lower secondary (ISCED 2) is the least frequent option: 125 countries do not report enrolment in such programmes, while 49 countries do. Some countries regard this level as being too early a stage to offer TVET; other countries, however, offer vocational programmes within compulsory education ages, to provide some skills for children who may not continue further studies. In developed countries, pre-vocational programmes may be widespread at this level, but since they are included within general programmes, they are not included in the international statistics.

More countries provide TVET at the upper secondary level (ISCED 3). In 2005, 136 countries reported enrolments in vocational programmes at this level, as it is regarded as a suitable point for curriculum diversification. This is aimed to meet the needs of a larger and more differentiated group of participants who require a wider range of educational provision. Enrolment in vocational programmes in post-secondary non-tertiary education (ISCED 4) was reported upon in eighty countries.

Table 2. TVET provision by level and ISCED 5B programmes (number and percentage of countries)

		No	Yes	Data not available	Total
Vocational enrolment at lower secondary (ISCED 2)	N	125	49	33	207
	%	60.4%	23.7%	15.9%	100.0%
Vocational enrolment at upper secondary (ISCED 3)	N	29	136	42	207
	%	14.0%	65.7%	20.3%	100.0%
Vocational enrolment at post-secondary non-tertiary (ISCED 4)	N	79	80	48	207
	%	38.2%	38.6%	23.2%	100.0%
Enrolment at tertiary ISCED 5B	N	43	104	60	207
	%	20.8%	50.2%	29.0%	100.0%

Source: UNESCO Institute for Statistics database, 2005.

Another move is from specific job-skills training (reflecting a 'career for life' reality, with immediate and long-term relevance to occupational requirements) to flexible training (reflecting a 'no lifetime job security' reality, and a requirement for a rapidly redeployable labour force). The slow change of available technologies in the 1960s and 1970s favoured specialized skills development and more or less guaranteed a career for life. The more rapid pace of technological change in recent years, particularly in developed countries, has contributed to the increasing importance of general education that helps workers to perform within the high-productivity sectors. Therefore, vocationalization of general education became more and more important for these economies, and the role of general human capital is increasing. The distinction between general and specific training and knowledge closely relates to technologies, and could be described in terms of general human capital (GHC) and specific human capital (SHC). The distinction is made on the basis of whether the individuals can operate only one specific technology (SHC) or whether their GHC

helps them to operate any technology (Kim and Terada-Hagiwara, 2010). Depending on the stage of development, countries should balance the development of GHC and SHC properly to ensure the adaptation and diffusion of new technologies.

In Latin America where the model of academic secondary education has been traditionally strong, a movement can be observed from exclusive emphasis on development of general competencies through academic secondary education, towards inclusion of general job skills and even specific competencies training (for instance, in Colombia and Mexico) (Jacinto, 2010). In Brazil, the government has introduced a programme, 'Brasil Profissionalizante', which aims to develop a new model of secondary education to include general, scientific, cultural education and vocational training with the allocation of \$120 million in 2008 (Jacinto, 2010).

Advanced countries are making upper secondary vocational education more general so that vocational students receive more academic content to broaden their occupational focus, while general students are given more opportunity to apply academic principles to practical problems. Previous analysis by UIS- UNEVOC (2006) demonstrates a trend towards the creation of broad vocational tracks due to changing technologies and work organization that require workers with multiple skills and flexibility to adapt to a changing labour market. In response to this, many countries readjust some of their Level 3 vocational programmes to contain a larger element of general education and more generic forms of vocational preparation.

Broader forms of initial vocational training, to lay the foundation for further learning, have been introduced. In such programmes as the baccalauréat professionnel in France, and the MBO (secondary vocational education) programmes in the Netherlands, which were created during the 1980s, general education content was enhanced (up to one-half of the course is based on general education).

To support the broadness of vocational education, the General National Vocational Qualification (GNVQ) programmes, set up in England in the 1990s, were divided into only twelve broad fields. Engineering, health and social care, and leisure and tourism were among the main areas of study. Currently OCR Nationals (established, instead of GNVQs, in nine broad areas: art and design; business; health and social care; information and communications technology (ICT); leisure, travel and tourism;

media; public service; science and sport) have enabled students from across the ability range to obtain qualifications. They help learners to acquire relevant, work-based skills and knowledge, to prepare them for employment, or to go on to further education. Alternatively, Applied GCSEs are ideal qualifications for learners who want to gain valuable insights into a range of broad vocational areas, and enable learners to progress to further education, training or employment (<http://www.ocrnationals.com/index.asp>). German and Austrian apprenticeships have also enhanced general content within occupational training (UIS-UNEVOC, 2006). Thus, a shift towards broader initial vocational training programmes can be observed in Europe.

Tech-Prep programmes in the United States of America (USA) are another example of how this 'blending' approach is used to help students make connections between school and the world of work. In Year 9, programmes in broad occupational fields (such as the health professions, automotive technology and computer systems networking) are offered within the sequence of general technology studies. The programme continues for at least two years after the end of secondary school, through a tertiary education or an apprenticeship programme, with students getting an associate degree or certificate by the end of the programme. This progression from general to specific technologies provides students with more flexible and informed choices of career pathways. By helping students to complete high school, and encouraging them to enrol in two-year colleges, these Tech-Prep programmes increase the educational attainment of students and improve their readiness for employment (Cellini, 2006).

In the Republic of Korea, about 40 per cent of secondary students are currently enrolled in TVET. In some schools, academic and vocational students share almost 75 per cent of the curriculum. By doing this the government is opening up new pathways for TVET students to higher education (UNESCO, 2005).

This increasing convergence between academic and vocational education at the upper-secondary level works well for countries located at the innovation-driven stage of economic development.

3.3 Costs

A large body of empirical literature has developed over the past 25 years which argues strongly, on cost–benefit grounds, against vocational schooling at the secondary level.

TVET is generally more expensive than general education because of factors such as smaller classes and the cost of equipment and supplies. In the People's Republic of China, for example, specialized secondary schools and vocational schools cost \$660 and \$350 per student respectively, compared with \$240 per student in regular secondary schools (Copenhagen Development Consult A/S, 2005, p. 41). In Indonesia, vocational secondary schools cost 25 per cent more per student than general secondary schools (ADB, 2009b). The unit costs of vocational education in India are about 60 per cent higher than those of general secondary education (Government of India, 2010).

Despite these higher costs, in some countries TVET graduates do not receive higher wages than general education graduates. The results of a World Bank tracer study in Bangladesh indicated that overall only 10 per cent of TVET graduates were employed, while in the case of female graduates the proportion was just 5 per cent. About 45 per cent of graduates were unemployed and 45 per cent were pursuing further education (World Bank, 2007, p. 29). In addition, those with vocational qualifications who were employed received lower wages than did graduates of the general education system (World Bank, 2007, p. 33), suggesting low returns on investment in TVET that is supply-driven. Bangladesh is at the factor-driven stage of economic development.

However, evidence from Tajikistan (Table 3), which is at the same stage of economic development as Bangladesh, demonstrates that in 2009 more secondary TVET graduates were employed at the level of 'mid-level specialists' than were graduates from general secondary education (45.8 per cent and 17.3 per cent respectively). A majority of general education graduates were employed as unskilled workers. Therefore a wage difference associated with vocational or general secondary education can be observed. It is important to note that traditionally a sizeable proportion of the TVET curriculum comprises general studies.

Table 3. The level of education by occupation

Total	In percentage to population								Total
	14.9	0.7	6.3	7.9	51.8	14.7	2.9	0.7	
	High education	Incomplete high education	Secondary vocational education	Primary vocational education	Senior secondary education	Basic education	Elementary general education	Zero elementary general education	
Managers of all levels	73.4	0.5	9.2	4.6	11.2	1.2	-	-	100.0
High level specialists	86.3	0.4	8.8	0.6	3.5	0.5	-	-	100.0
Mid-level specialists	27.1	2.6	45.8	6.3	17.3	0.8	-	-	100.0
Employees, involved in preparation of information	33.7	-	19.5	5.7	38.5	-	2.6	-	100.0
Service providers, employees of housing and public utilities	15.9	1.3	8.2	8.3	56.5	7.8	1.7	0.3	100.0
Qualified workers of agricultural sector	5.3	-	4.2	6.4	47.5	30.1	4.5	2.1	100.0
Qualified workers at the industrial enterprises	5.8	0.5	6.0	18.8	58.2	10.0	0.5	0.2	100.0
Operators, mechanics	8.5	0.4	3.6	38.7	39.8	6.9	1.2	0.8	100.0
Unskilled workers	3.5	0.6	2.5	5.2	63.0	20.7	4.2	1.0	100.0

Source: Labor market situation in the Republic of Tajikistan (According to findings of the Labour Force Survey June- July 2009), The World Bank.

Some evidence indicates that returns on investment in vocational education may differ according to the stage of development of a country. An ADB Report (2009b) argues that in low-income countries primary education is the best investment, while the expansion of secondary education would yield the highest social returns for middle-income countries, and in high-income countries the returns may be greatest in tertiary education.

Regionalization is an additional factor to be considered. Another ADB report (2009a) suggests that considering costs and the difficulty of implementation, vocationalization may be considered advantageous only in several cases in the Asia-Pacific region:

- Training in the use of computers (which is applicable across a variety of occupations and across subjects within general education);
- Low-cost programmes that are not gender specific such as agriculture, accounting and business studies (they are useful for broad occupational segments);
- Entrepreneurship training to enable school graduates to plan, start and run a business to boost self-employment.

It is important to add that the nature of secondary TVET (for example, its proportion of general studies) is equally important for increasing returns on the vocationalization of secondary education. As was suggested in the Introduction to this paper, the development of human capital/HRD contributes significantly to economic growth at each stage of economic development, and TVET is an important factor in this process, particularly considering its changing nature at the level of secondary education within 'new' vocationalization.

A well-cited study by Psacharopolos and Loxley (1985) evaluated the economic soundness of curricular diversification. They concluded that:

Based on comparisons of costs and achievement gains in academic and vocational knowledge between INEM [schools with some pre-vocational courses] and control schools [in Colombia], INEM industrial, social service, and agricultural streams are substantially less expensive than their control counterparts. Combined with the fact that these programs substantially boost achievement scores, they are unquestionably successful. Although the INEM academic and commercial programmes cost more than their control counterparts, they also substantially boost achievement.

(Psacharopolos and Loxley, 1985, p. 93)

Similar results were found for Tanzania, where it was found that although diversified schools cost more, there was a substantial increase in both academic and vocational knowledge over that of the academic control group (Psacharopolos and Loxley, 1985, p.179). Therefore, the investment in diversified schooling did boost learning in both vocational subjects, explicitly targeted, and general academic subjects.

Considering the diversity of vocationalization pathways at the secondary education level, and the variety of contexts, there is a danger of overgeneralization. However, it is clear that investments in vocational and technical skills at the level of secondary school can be an important factor in economic development and growth. To increase returns on investment, demand-driven approaches to vocationalization need to be developed relevant to the stage of economic development, the type of the economy and regional specificities.

3.4 Implementation initiatives

Traditionally, countries around the globe have placed varying emphases on general and vocational education within secondary schooling. These were dependent on various historical, social, technological, economic and political considerations. Vocationalization of secondary education is taking a new form now, and aims at increasing students' employability through developing their personal characteristics, general competencies and specific vocational skills. The emphasis on the particular components depends mainly on the level of economic development, which predetermines the required skills.

Vocationalization occurs at both lower and upper secondary levels, through both embedded and distinct deliveries. At the upper-secondary level most countries have both technical/vocational schools and diversified secondary schools with general academic and vocational courses. Sections 3.5, 3.6 and 3.7 illustrate current practices and policy plans across a number of countries.

3.5 Vocationalization of the lower-secondary curriculum

Malaysia

Vocationalization at this level is not widespread. Only 49 out of 207 countries (23.7 per cent) reported students' enrolment at this level (Figure 6). Many programmes that are included in the UIS statistics are distinguished in nature, and aim to deal with drop-outs by providing an alternative option for low academic achievers at the lower secondary level.

In Malaysia the government is currently reviewing a curriculum to introduce vocational subjects at the lower-secondary level. This programme will target 13–15-year-old students, and is designed to prepare them to enter upper-secondary technical schools, which train students towards the Malaysian skills certificate. This preparatory programme consists of three blocks (taster electives, general/instructional subjects and a character-building programme) (Kasih, 2010).

Scotland, Germany and Poland

A quite different rationale can be found among developed countries vocationalizing lower secondary education. Berger and colleagues (2011) examined pre-vocational models in three European countries aimed at achieving a better understanding of the world of work and providing students with experiences and learning in 'near-work' environments. A pre-vocational curriculum was identified as a range of competences covering the broad economic and business environment, firm-specific knowledge and a range of core competencies and general skills. The curriculum was either offered as a separate subject area in schools (Scotland) or integrated into existing subject areas (social sciences and geography–economics–politics in Germany, and civic education in Poland).

The study identified a match between different types of economies (the liberal market economy of Scotland, the coordinated market economy of Germany, and the mixed market economy of Poland) and the structure of the syllabus and the competitive core competences identified for each of the countries. In the case of Scotland, the emphasis of the pre-vocational curriculum was on general and transferable personal skills following a core competencies model. Such self and social competencies as internal locus of control, risk-taking, communication ability and team ability were most important. In Germany, the wider economic and market environment and social and collective competencies prevailed over competencies in business. These competencies were knowledge-based in the field of trade and globalization, teamwork abilities and communication competencies (the role of enterprises in the debate on economic restructuring and globalization, and the development of new technologies). In Poland, priority was given to the wider market economy, including aspects of the labour market and industrial relations. The most dominant competencies were labour market, communication ability, monetary system, government policies, income, and

economic indicators. Self-competencies and competencies related to the level of individual firms gained very little attention in Poland.

In each country there was a very weak link between the prescribed curriculum and what was taught in the schools. The study concluded:

In the case of Scotland and Germany, this was because teachers had decided to prioritise certain aspects of the curriculum and exclude others. In the case of Poland, the teachers were not trained adequately enough to teach the subject area and/or had insufficient resources to do so within an already overcrowded curriculum. What transpired, in effect, was a teacher driven curriculum that, by and large, emphasized the wider educational components of the subject area and the civic and social aspects of the curriculum. In Poland, pre-vocational education was primarily associated with Civic Education. While in Germany, the teachers were much more concerned with the wider social dimensions of citizenship rather than the broader economic and market structures highlighted within the core curriculum. Finally, in Scotland the teachers tended to teach the subject as a part of a broader occupational framework that tended to emphasise the educational aspects of the curriculum.

(Berger et al., 2011)

There was a gap between the prescribed and enacted curriculum in all three countries. This study supported the notion of the importance of the cultural and economic contexts that influence the nature of pre-vocational education.

3.6 Vocationalization of the general secondary curriculum across all levels

Russia

According to Pavlova (2005), a new spin for the vocationalization of secondary schooling in Russia was introduced within the framework of general educational reform, guided by the Strategy of Modernization, Ministry of Education (MOE) of the Russian Federation, National Fund for Personal Training, in 2001. This restructured

the rationale behind schooling from academic subjects and content delivery to the development of general competencies and activity-based learning.

Vocationalization in Russia relates to the introduction of what is called profile education [profil'noe obuchenie] at the upper-secondary level (the last two years of schooling, grade 10 and 11) and the process of preparation for profile selection. Profile education provides students with the opportunity to study in depth a chosen area, usually one that is related to their planned further study (TVET or academic). Schools can design their own profiles, such as science, socio-economics, humanity or technology profiles, or keep a general orientation to their curriculum. This meant that specializations were established at the level of upper-secondary education.

In preparation for the upper-secondary specialization a 'pre- profiling' programme was introduced in grade 9 (comprising 100 study hours or three hours per week) to help students to make their choices in grade 10. The structure of this programme was identified as follows: two hours per week to be used for two types of courses: subject courses (to deepen knowledge and understanding in particular subjects depending on the student's interests) and orientation courses (to help students choose an educational profile for upper-secondary school); one hour per week to be used for information courses about the local educational institution, rules of enrolment and other practical details (Russian Federation, 2003). There is current debate on the value of starting the 'pre- profiling' programme earlier, perhaps in Year 7 or 8.

Pavlova (2005) identified three components of vocationalization: learning for work (work-related knowledge, practices), learning about work (settings and conditions), and understanding the nature of work (sociocultural, economic and political forces that influence work). This 'pre-profiling' programme focuses on the learning for work component. It was integrated into the academic curriculum (1–11) through general competencies in the sphere of socio-working activities (such as the ability to analyse the situation in the labour market, evaluate personal professional abilities, and orientation to the norms and ethics of labour relationships). Competencies in the sphere of socio-working activities are positioned among other general key competencies in the spheres of cognitive activities, civil-social activities, household activities, and culture-leisure activities that provide a framework for curriculum development in general education.

Therefore, the process of vocationalization consist of three parts: general work-related competencies integrated into the academic curriculum, specialized studies at the level of upper-secondary school, and the pre-profiling programme at the lower secondary level that guides students in making important decisions related to their further studies at the upper-secondary level and future employment. The introduction of 'pre- profiling' programmes and profile education developed a vision of how education for the world of work could be included in school curricula, and set up a firm opportunity to develop a modern system of lifelong vocational education.

At the upper-secondary level students can enrol in technical and vocational colleges where traditionally general education has played a significant part.

India

According to the Government of India (Gol) (2010), India is making a distinction between work-centred education, which is known as 'vocalized education', and 'vocational education' at the upper-secondary level. Currently, there are no relationships between these two components. Work education is included in the primary standards (grades 1–8) to make the students aware of the concept of work. At the lower secondary level (grades 9 –10) pre-vocational education does exist, and aims to increase students' familiarity with the world of work.

Vocational education is a distinct stream in upper-secondary education (grades 11–12). It was introduced in the year 1976/77 and then revisited in 1992/93 as a way to diversify educational opportunities, enhance individual employability, and reduce the mismatch between supply and demand of a skilled labour force. It was also aimed at diverting a substantial portion of students away from the 'academic' stream.

The need to bring together vocational and academic education at the level of policy plans was recognized by the Indian government. On the one hand, it identified a need to reconstruct the entire school curriculum (from pre-primary to senior secondary) around a common core curriculum that will incorporate work-based pedagogy initially until grade 10 and then up to grade 12 for all children. A set of work-related generic competencies (basic, interpersonal and systemic) is planned to be addressed at all stages of education and be included in assessment. Among others, such generic competencies as 'critical thinking, transfer of learning, creativity, communication

skills, aesthetics, work motivation, work ethics of collaboration, entrepreneurship and social accountability' are to be included.

On the other hand, strengthening the general education component of vocational education has been recognized as an important development. Vocational programmes are to provide sound basic knowledge in the humanities and sciences, preparing students to work in various occupations, teaching students to be problem-solvers and encouraging them to continue learning.

Currently, vocational education in schools at upper secondary level is mainly offered by government schools, although in some states private schools are also offering these courses. As of 2007 9,583 schools were offering about 150 educational courses of two years' duration in the broad areas of agriculture, business and commerce, engineering and technology, health and paramedical, home science and science and technology (Planning Commission, 2008, cited in Gol, 2010). Only 3 per cent of secondary school children are enrolled in the vocational stream.

Despite the fact that the 11th Five Year Plan aimed to double the number of schools offering TVET (from 9,583 to 20,000, so that the intake capacity would increase from 1 million to 2.5 million), there has been very slow change. The report (Gol, 2010) questioned the quality and relevance of TVET provided at the upper secondary level for equipping schoolchildren for the requirements of the world of work. Most of the courses are school-based. However, some of these have been perceived on a collaborative model with industry. The theory part and some basic skills are developed in schools, and there is further refinement of skills in industry.

India is among the countries with the lowest proportion of trained youth: 80 per cent of new entrants to the workforce have no opportunity for skill training. The existing training capacity is 3.1 million per annum compared with 12.8 million new entrants to the workforce annually. The government has taken due recognition of the skill gaps and plans to take new initiatives for bridging them. In this regard, the National Policy on Skill Development (Gol, 2009) provides a direction for skill development in the country.

3.7 Vocationalization of the upper-secondary curriculum

Malaysia

(This section draws on Minghat et al., 2010.) The MOE recognizes the importance of HRD in achieving the country's development aspirations. The introduction of vocational subjects (VS) at the upper-secondary academic school level is an important measure stated in the Education Development Master Plan (EDMP) 2006–2010 by the MOE. Twenty-two elective vocational subjects were approved to be included in the secondary school curriculum (Table 4).

Table 4. Vocational Subjects in secondary schools

Field	Vocational Subjects
Engineering Services	<ol style="list-style-type: none"> 1. Domestic Electrical Equipment Servicing 2. Domestic Wiring 3. Repair Refrigeration and Air-Conditioning Equipment 4. Gas and Arc Welding 5. Motorcycle Servicing 6. Basic Gerontology and Services
Construction	<ol style="list-style-type: none"> 1. Domestic Construction 2. Furniture Making 3. Domestic Plumbing 4. Architectural Signs 5. Interior Design Basis
Home Economics	<ol style="list-style-type: none"> 1. Clothing Design and Sewing 2. Catering and Serving 3. Food Processing 4. Home Hair Care and Toiletries 5. Care and Early Childhood Education 6. Basic Gerontology and Services
Agriculture	<ol style="list-style-type: none"> 1. Landscape and Nursery 2. Food Crops 3. Aquaculture and Animal Entertainment
Computer Applications	<ol style="list-style-type: none"> 1. Domestic Computer Graphics 2. Multimedia Production

Source: Concept Paper Vocational Subjects, Curriculum Development Centre, MOE (2001).

The MOE has set up National Key Performance Indicators (NKPI) to expand access to quality and affordable education. In the Fifth NKPI, TVET gained a very significant role in the Malaysian development agenda, with a target of 100 per cent student participation in both vocational education and skills development by the end of 2015. According to Jab (2009), VS in secondary schools were the ones specifically targeted in NKPI-5. Figure 2 illustrates one of the NKPI planned by the MOE to increase the number of students in both academic and technical schools at the upper secondary level over the five years from 2010 to 2015 to 100 per cent.

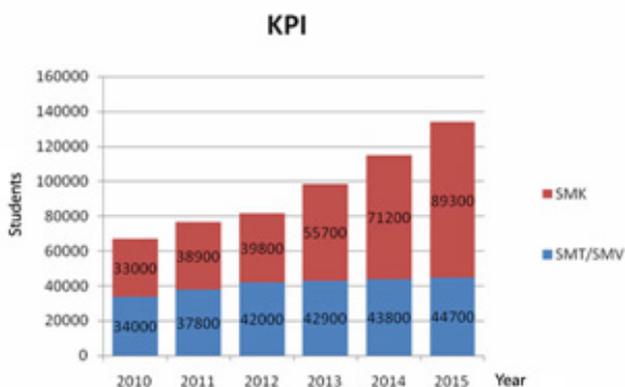
However, participation in TVET does not lead to further employment in the area of training. A case study conducted by the Johor State Education Department in 2004 analysed destinations of the students who graduated with the VS Malaysian Certificate of Education (MCE) from three schools. The results are presented in Table 5. Only 15 people (14.29 per cent) of the 105 students who sat for the exam pursued education in the same area in both public and private institutes of higher education. Only 8.57 per cent of students, nine people, pursued careers in the field of their training. A much higher percentage of students, 45.7 per cent, were not engaged in careers relevant to their VS studies at school.

Inadequate career counselling arrangements, provision of only work-related knowledge through VS, and failure to build motivation lead to a lack of interest in pursuing further studies in TVET. Other problems are the poor quality of many courses, the need for them to be updated, and the need to improve teachers' qualifications.

Therefore, students' VS studies have not resulted in career paths. This is cause for economic concern for the government. The introduction of VS at the secondary school level was aimed at increasing the level of training of the national workforce to enhance economic growth. However, the results of the above study demonstrated that this was not the case. Another tracer study of secondary TVET graduates in Malaysia by the ADB indicated that 90 per cent of technical graduates moved on to polytechnics, while the remaining 10 per cent (mostly secondary vocational school graduates) proceeded to specialized vocational institutes. A telephone survey in 2006 by the Malaysian Employers Federation indicated satisfaction with graduates' technical knowledge, but employers wished to see more emphasis placed on soft

skills, such as problem-solving, communication and work ethics (ADB, 2007a, pp. 16–17).

Figure 2: The planned number of students in both VS (academic schools) and skills development subjects (technical schools) at the upper-secondary level.



Source: Technical & Vocational Education Department, MOE, 2009

Table 5. The paths chosen by the MCE VS Leavers in 2004 (across three secondary academic schools in Johor, Malaysia).

Item	Subject	No. of Students	%
1.	Continued education to Form 6	6	5.71
2.	Continued education to Public/Private Institutes in the same field of study	15	14.29
3.	Continued education to Public/Private Institutes in different fields of study	7	6.67
4.	Pursued careers related to VS	9	8.57
5.	Pursued careers not related to VS	48	45.70
6.	Worked independently	3	2.86
7.	Did not work	17	16.19
	TOTAL	105	100.00

Source: The Technical & Vocational Education Unit, Johor State Education Department (2007) Note: The sample above was based on three schools that offer the VS; the SMK Pekan Baru, Muar, SMK Perling, Johor Bahru and SMK Bandar Tenggara, Kulai.

The examples above illustrate a political will to vocationalize secondary education at both lower-secondary and upper-secondary levels. They reveal several rationales behind these processes:

- A social trend: to keep potential drop-outs in school, to provide greater accessibility of skills development, character building, increase in attainment;
- A technology trend: to develop higher-order thinking skills, and problem-solving skills, as a part of general/flexible work-related competencies to help students to adapt to the fast-changing technological environment;
- An economic trend: to develop employability skills to improve the quality of human resources to meet the needs of globalization.

The first two trends also contribute to economic development goals.

4 Diversifying post-secondary TVET

Many countries have taken steps to improve the articulation of secondary vocational education with higher education to open up more options for students and to meet an increasing demand for skills and qualifications at ISCED Levels 4 (non-tertiary post-secondary) and 5 (first stage of tertiary), which are designed for employment in technical, managerial and professional occupations. As the demand for enrolment at post-secondary and tertiary levels has increased in most countries, pressure has grown for diversification of the types and modes of provision at these levels. In many countries this has led to a proliferation of new vocational programmes at both Levels 4 and 5. For example, many two-year 'colleges' in Japan, which catered exclusively for women, have either closed or been converted to four-year institutions, as the 'glass ceiling' in the labour market changes. In the USA, two-year community colleges with high vocational content are designed to extend students' opportunities to enter the labour market or to continue to a baccalaureate degree. Some countries allow graduates from apprenticeship programmes to enter

tertiary education (such as Austria, Switzerland and the United Kingdom, for selected apprenticeship programmes). Many countries in Latin America, South Africa and Europe have gradually opened up further education to technical education graduates.

'Junior colleges' in the Republic of Korea (jeonmun daehack) offer two- or three-year post-secondary vocational education programmes. They were established in 1979 due to rapid industrialization in Korea and the increasing demand for middle-level technicians with both theoretical understanding and practical skills (Goodman, Hatakemada and Kim, 2009). Specialized courses offered at junior colleges are grouped into broad areas such as engineering, agriculture, fishery, nursing, health, home economics, social work and arts (with two- or three-year programmes). Programmes for such majors as nursing, kindergarten teacher training, mechanics courses, and fisheries are three years (Korean Culture and Information Service, 2009 cited in Goodman et al., 2009). To increase the employability and career opportunities of their graduates, some colleges include additional practical courses in their programmes such as ICT, computer software, internet business, cosmetic science and physiotherapy.

Due to a thorough curriculum, strong school–industry cooperation including internships, industry-based training for faculty members, education for mid-career industry employees, joint college/industry research programmes, information exchange, the active work of industry/college cooperation committees, and curriculum development at the industries' request, college graduates are highly valued in the Republic of Korea. The employment rate of college graduates in 2004 was 18.1–21.5 per cent higher than that of four-year university graduates (Korean Council for College Education, 2005, p. 41). Out of 329 higher educational institutions in the Republic of Korea, 158 are colleges (of which 6 are national, 9 public and 143 private). Of the 80 per cent of high school graduates who pursued further studies, 45 per cent enrolled in colleges.

The definition of programmes at Level 4 is extremely broad, and there is a wide range of programme types which may be classified here, ranging from short pre-employment courses to longer courses oriented towards higher-level education and training. One area where there has been a marked rate of growth in participation across regions is in the provision of skills training programmes for lower- and middle-

ranking administrative and technical occupations, and particularly those involving business, administrative and ICT skills. Polytechnics in many countries, industrial training institutes in India and technical colleges in Sri Lanka belong to the post-secondary non-tertiary level.

A comparable diversification has occurred in vocational tertiary programmes. As demand for tertiary education has increased, many countries have substantially extended the range of short- and medium-length vocational programmes available at ISCED 5B⁴ (see Table 2 for country provision). These have included developing skills for a large number of occupations which previously did not exist or for which there was previously no higher-level qualification. In some cases these new programmes have been offered in traditional university environments, but for the most part they have been developed in polytechnic-type tertiary vocational institutions. Community and technical colleges in the USA have developed post-diploma programmes to deliver such 'newer' skills to those both with and without first degrees, as well as those wishing to upgrade their skills.

At the same time, as the range of types of programme has increased in terms of content and intended labour market utility, so have the ranges of provider institutions and modes of delivery. Many countries, notably Malaysia and the Republic of Korea, have developed very extensive systems of open university distance education provision both in general areas and TVET, although the latter is largely limited to what can be learned without highly specialized and expensive equipment. The USA has also developed 'open college' TVET programmes. It is interesting to note that many of the new programmes are delivered by private providers, especially in Asia. These are often licensed and subsidized by the state, but increasingly they also include entirely independent providers, particularly at Level 4.

⁴ Tertiary-type B programmes (ISCED 5B) are typically shorter than tertiary-type A programmes, and focus on practical, technical or occupational skills for direct entry into the labour market, although some theoretical foundations may be covered. They have a minimum duration of two years full-time equivalent at the tertiary level (OECD, 2002).

5 Vocationalization of higher education

Historically, vocational education and higher education emerged from opposing traditions, with universities producing systematic scientific knowledge, and vocational education providing training for specific occupations. As a result, university outputs were evaluated on the basis of their contributions to scientific disciplines (Klüver, 1995) while vocational education outputs were concerned with the ability to undertake useful work. Those relationships have been established over time, with socio-economic development influencing the process. Mass higher education, elite higher education, polytechnics and different levels of vocational institutions, including higher vocational education establishments to train doctors, teachers and lawyers, have been developing complex relationships in countries around the globe. Even countries in the European Union, such as Germany and the United Kingdom, with market economies, have different approaches to higher and vocational education. As stated by Hoelscher (2005), in Germany higher education is more vocationally oriented than in the United Kingdom, and vocationalization is more related to the development of specific skills that are tied closely to a particular occupation. In the United Kingdom particular higher degrees typically do not lead into specific occupational fields, as it is considered reasonable for individuals to invest in the development of general and transferable skills. At the same time there is a wide range of extremely specialized short-term programmes offering vocational qualifications.

Due to the changing nature of the state, the role of the university in the current economic situation is the topic of wide-ranging discussions, particularly in terms of the usefulness of the model that can be characterized as 'humanitarian university education'. The major point of criticism of this model is that it does not serve the demand for instrumental knowledge and specialization, formulated by the so-called 'knowledge society'.

5.1 Levels of debate

Current discourses on vocation and higher education relationships can be viewed at a number of levels – political/economic, epistemological and individual.

At the political level, the debate relates to HRD issues and the need to increase employability (as discussed in the Introduction). Currently the speed of transformation is far more intense than in the past. As it was put in a report on Life Based Learning:

The knowledge Era is characterised by impermanence, turbulence, multiple and competing agendas and priorities, diversity in ideologies, ambiguity, multiple roles, irritations, uncertainty and contradictions and a great amount of energy and creativity The knowledge Era is an era of rapid movement. There is so much going on that we need new and meaningful ways to make sense of how to best work, learn and live effectively in these times.

(Staron, Jasinski and Weatherley, 2006, p.23)

At the political level, the ideology of detachment of university degrees and their academic curricula from the labour markets can be regarded as a negative trend in university development. It overlooks one of the important elements composing a university: its students. Academically detached education is regarded as providing insufficient skills for the appropriate employability of university graduates. Thus, at the political level there is a basis for establishing close links between higher and vocational education.

At the epistemological level, the discourse on what is knowledge, and what is worthwhile knowledge, has its influence on the concept of university knowledge. Some of the dichotomies presented in this discourse, such as the universal versus the particular, formal versus experience-based, the search for truth versus utilitarianism, context-free versus context-dependent, position university knowledge much closer to the individual than the discipline, depending on a person's subjectivity, needs and experiences. Additionally, TVET is seen as 'a knowledge-based industry, where knowledge is its core business' (Staron et al., 2006, p. 24). Recent research on TVET (Staron et al., 2006, p. 24) argues that life-based learning is required for vocational education focusing on capability development and considering the learner as a whole person. 'The emphasis is on personal responsibility for learning through the provision

of rich learning environments with the learning benefits both the individual and the organisation' (Staron et al., 2006, p. 49). This model suggests using methods that are diverse, adaptive, self-facilitated, and based on reflexive practice strategies to achieve the goals and aspirations of the individual. This broad interpretation of TVET training positions it closer to higher education. Thus, on the epistemological level there is the basis for developing close relationships between higher and vocational education.

At the individual level, the personal needs of the student should be met through education. As stated by Nikolaou and Papadakis (2003), the ongoing revision of the relationship between education in general, university education and the labour market requires a 'balanced holism between the economy-oriented view – OECD, E.U. – and the human-oriented approach – UNESCO – of the Knowledge Society and the role of Higher Education in it' (p. 5). To achieve this, regulatory mechanisms and frameworks that could shape particular policies need to be developed. Structural changes, requirements of the globalized economy and interpretation of knowledge, and the repositioning of individuals and their actions in the centre of the educational process, need to be considered to harmonize higher education within countries' economies. An Australian study on learning pathways within and between TVET and higher education (Harris, Rainey and Sumner, 2006) identified five pathways within the overall framework of lifelong learning:

- Interest chasers: when describing this pattern of movement, the terms used might be 'multi-directional', 'searching', or 'yo-yo': that is, bouncing between different fields of interest.
- Career developers: some participants showed consistent interest, even though they may have made several sectoral moves. Sometimes this looked like a domino pattern, where an element of one learning experience led to a sectoral move to further develop this as a career. This pattern was more linear, being less of a 'jump' than a 'flow' into another course of study.
- Career mergers: having explored interests in other areas, some participants then drew different experiences together to move into a more focused course of study. This was different from the 'career developer' pattern, in that it was usually non-linear.

- Forced learners: sometimes participants undertook what appeared to be a completely different course of study for professional development reasons. Sometimes this change was the result of some practical factor which obliged them to undertake a particular course, such as affordability, location or entry requirements. This might appear like a detour or sidestep.
- Two-trackers: some more experienced respondents attempted to develop an alternative career as insurance for a time when their current career was no longer possible. This pattern also occurred when students were trying to improve their chances of earning an income while studying. (Harris et al., 2006, p. 10).

The results highlight the role of personal choices where an individual has autonomy to choose their pathway. The study also revealed that approximately 40 per cent of all sectoral moves were within the same field of education. There was more movement within TVET, both for the same and for different fields of education, than there was within the higher education sector. Students' interests as well as vocational reasons were behind their choices. Thus, at the individual level, in the countries where articulation between TVET and higher education is in place, there is freedom of movement between two sectors that are beneficial for students.

5.2 Issues with statistics

Currently, it is difficult to capture TVET-related enrolments at the tertiary level. The UIS focuses primarily on public provision, and distinguishes two categories in tertiary education: programmes that lead students to further levels of education and are normally general education, and programmes that lead to the labour market and out of formal education.

Conservative estimates of tertiary education that is labour market-oriented hover around 25 per cent (Ellis, 2005). At the top end of the range are countries like Belgium (51.4 per cent), Kenya (49.9 per cent), Malaysia (47.3 per cent), Mauritius (55 per cent), and Slovenia (48.8 per cent). At the low end are countries such as Finland (5.6 per cent), Germany (15.2 per cent), Italy (2.4 per cent), Mexico (2.9 per cent), the Netherlands (1.5 per cent), and South Africa (14.3 per cent).

5.3 Challenges and issues

The challenge is to link higher education with the constantly changing needs and opportunities of contemporary society and economy, and this is seen as an increasingly important issue by universities and politicians (European Commission 1995, p. 21; Neave and van Vught, 1991). Creating a fruitful and dynamic partnership between higher education and society at large has become one of the basic missions (together with teaching and research) of universities (e.g. Dewar, 2005; Griffith University, 2002). At the level of structural change the following three trends can be seen as important in that respect:

- The distinction between top universities (highly selective admission) and mass universities (open to all school leavers) might influence the scope of their responses to the trends discussed above.
- Improvement of the reputation of TVET through developing it within the university sector is seen as one way of establishing close relationships between higher and vocational education. Higher vocational institutes in PR China are an example of this approach. They have been developed as an independent branch of the university sector.
- A common qualification framework for vocational and higher education that reflects the interrelationships between the structure of educational qualifications and the occupational structure of the labour force, and between education and social change, could provide possible synergies between higher education and vocational education.

Some trends that are related to the challenge of the knowledge economy are:

- Development of interdisciplinary links across traditional academic disciplines, blurring the boundaries and developing new approaches towards knowledge production.
- Development of employability skills required for all sectors of the economy can be seen as a priority for both vocational and higher education. In Germany, for example, it is quite common that graduates with a bachelor's degree undergo an apprenticeship in order to improve their employment opportunities (Rauner, 2005).

- Life-long learning as a way of responding to rapid knowledge development and market change is considered as essential for both sectors.

In terms of human-oriented approaches and personal development, life-based learning can contribute towards the development of policies and practices. This learning should be personalized in the following ways: self-directed; context based; work/life integration; holistic; learner as designer; adaptable and sustainable (Staron, Jasinski and Weatherley, 2006, p. 50).

A number of concerns have been expressed by both TVET and higher education practitioners:⁵

- Change in the nature of societies, which relates to global economic competition and a request for graduates relevant to the economies.
- Quality and standards. The distinction should be considered between short and medium-term orientation in qualification demands that are met through vocational training, and long-term educational profiles for university qualifications. Thus, the goal of tertiary education must be sustainable and provide long-term usable professional education (Schulte, 2005).
- Vocational qualifications should provide access to university education.
- University education for vocation education teachers is required which should include occupational domains and pedagogical qualifications.
- There is no one model approach that fits all because frameworks for the vocationalization of higher education will be different in different contexts.

5.4 Implementation modes

Different ways of implementing vocationalization include:

- At the higher education level, programmes have been redesigned to incorporate a more vocationally-oriented content, such as workplace problems being used as learning resources, professional placements (internships, work placement schemes, innovative provision of work-based learning/work experience through

⁵ As discussed at a Bonn seminar on the vocationalization of higher education, 2005.

opportunities within, or external to, programmes of study), negotiated learning contracts for individual students, and the development of complementary ICT, language and management skills to equip graduates for future careers.

- Cross-faculty courses and interdisciplinary research centres have been established by the universities to overcome a segmented approach to knowledge development and acquisition.
- Higher education institutions are marketing new programmes more oriented to market needs, such as programmes related to business, commerce and the human professions.
- Employability-enhancing activities that are not related to content teaching, such as enhanced support (usually via career services) for undergraduates and graduates in their search for work; enabled reflection on and recording of experience, attribute development and achievement, alongside academic abilities; the appointment of specialist staff such as skills advisors and pathway officers.
- Embedded attribute development within programmes of study to make skills explicit, or to accommodate employer inputs by securing involvement of the industry representatives in higher education policy-making, strategies and implementation (as is done for example in PR China's vocational institutes).
- Postgraduate, on-the-job training and experience both as a compulsory part of educational programmes (for instance, for the medical professions) or as a non-compulsory part of the programme required by professional associations as a prerequisite for joining the profession (for instance, for lawyers).
- Recognition of prior learning for both vocational and higher education programmes particularly as part of an increasing stress on the importance of life-long learning; arrangements for articulation, provision of enabling or bridging courses for those lacking knowledge and skills for the higher education programme.
- Inter-institutional collaborative arrangements (for example some technical colleges in Tajikistan have the same first two-year programmes as their 'linked'

universities, so high achievers from colleges can transfer to the third year of study at the university; institution from both sectors use same campuses and deliver joint courses).

Trends, concerns and examples of the vocationalization of higher education represent the ways education is adjusting to changes in the socio-economic environment. These processes can be viewed as a way of self-organization where economic, vocational and higher education systems exchange information by interpreting the actors' understanding of approaches and issues. This dynamic is viewed as a way of achieving harmonization of universities with the country's economy.

6 Conclusions

The rapid transformation of societies in their social, political, economic, technological, and education spheres has changed perspectives on the need for and nature of vocational skills. A historical change of views on vocationalization from more educational to more functional (where the development of employability skills became the main focus) has broadened the nature of vocationalization and included separate technical courses under its umbrella. This pattern is due to the gradual blending of general and vocational programmes, which sometimes share up to 75 per cent of their content.

Within general secondary education there is a diverse pattern of provision of TVET. This includes at least two levels, lower secondary and upper secondary, and is delivered within two modes, as embedded learning and as separate course/programmes. Many versions of post-secondary and tertiary delivery are in place. The degree to which vocationalization occurs and its nature depends on the level of economic development and on cultural traditions. Social, economic and technology rationales are used by governments to decide on their particular vocationalization policy.

Acronyms and abbreviations

ADB	Asian Development Bank
EU	European Union
GCSE	General Certificate of Secondary Education
GHC	general human capital
GNVQ	General National Vocational Qualification
GoI	Government of India
HRD	human resource development
ICT	information and communications technology
ISCED	International Standard Classification of Education
LSE	lower secondary education
MOE	Ministry of Education
MCE	Malaysian Certificate of Education
NKPI	National Key Performance Indicators
OECD	Organisation for Economic Co-Operation and Development
SHC	specific human capital
TVEI	Technical and Vocational Education Initiative
TVET	technical and vocational education and training
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
USE	upper secondary education
VET	vocational education and training
VS	vocational subjects

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