NOVEMBER 2016

GLOBAL TRENDS IN TVET:
a framework for social justice

Education International
Internationale de l'Education
Internacional de la Educación

Suggested citation: Wheelahan, Leesa and Moodie, Gavin (2016) Global Trends in TVET: A framework for social justice, Brussels: Education International.

Toronto: Centre for the Study of Canadian and International Higher Education, Ontario Institute of Studies for Education, University of Toronto.

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Abstract

This report commissioned by Education International provides a conceptual framework to understand how vocational education is positioned in many countries, and the different ways in which the relationship between vocational education and the structures of the labour market mediate the variable outcomes that vocational education graduates achieve. It demonstrates the unequal access to vocational education in low, medium and high income countries. The report uses the capabilities framework as developed by Amartya Sen and Martha Nussbaum to underpin the notion of 'productive capabilities' in developing a conceptual basis for vocational education that supports social justice. It argues that strong public vocational education institutions are the anchor institutions of their communities that can support vocational education teachers in contributing to local social, economic and cultural development. It suggests a program of research for Education International in providing better understandings of vocational education in different contexts, to support Education International in working with social partners to strengthen vocational education's role in developing inclusive and tolerant societies based on socially just and sustainable economic and social development.

Keywords: vocational education; productive capabilities; transition systems; role of qualifications; marketisation and privatisation of vocational education; publicly funded vocational education institutions.

Foreword

Fred van Leeuwen

Education International regards Technical and Vocational Education and Training (TVET) as crucial to quality education for all, not only because we represent teachers and education support personnel in the sector, but because it's good for society in general and students in particular. Students need the link between the theoretical and the practical sides of education. Furthermore, it plays a crucial role in providing opportunities for people from all backgrounds, including those who have been marginalised by the labour market. It is clear from this research that the organisation of TVET across regions is by no means the same. It is also clear that the nature of the transition from general education to the labour market has a significant impact on the shape of TVET and the nature of the overall student experience.

Education International's commitment to this work is growing, as evidenced by the decisions of EI's 7th World Congress held in Ottawa, July 2015. This foundational study teases out some of the nuances and differences between the approaches taken to TVET. It adopts a framework built around the policy context that exists post the adoption of the global 2030 agenda where Sustainable Development Goals have been developed recognising the importance of TVET in providing lifelong learning opportunities for all.

This sector is of critical importance to us, to teachers and students. Young people should be able to make their own choices and should not feel obliged to pursue a certain kind of education. TVET provides critical access to the knowledge and ideas that students require to become productive members of their communities, but also to live fuller lives. The focus in the Sustainable Development Goals on providing access for the vulnerable makes the sector especially important in terms of inclusion as well as participation.

There is a lot more work to be done. TVET has been under-scrutinised, underfunded and under-studied and yet it provides real opportunities and real life pathways for students all over the world. This study provides a foundation for further work to focus on the specifics of transition systems in tertiary education and the capabilities of countries to respond to the challenges these present.

1. Introduction

This paper is a contribution by Education International to discussing the role of vocational education in supporting the achievement of Education 2030, which commits the international community to *"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"* (UNESCO, 2015a: iii). It argues that vocational education is intrinsic to achieving these goals, and to supporting equitable and sustainable economic and social development, contributing to the realisation of human rights; and to developing the productive capacity of people, their societies and their economies. Vocational education's role is all the more important for individuals, groups and societies who suffer the most economic and social disadvantage and are most vulnerable.

The paper's contribution is to analyse the factors that shape the evolution of vocational education, its relation to the labour market, and its contribution to tolerant, inclusive and equitable societies. Vocational education is offered in very different regions, economies and jurisdictions and consequently, it has very different contexts and functions. Accordingly, vocational education in different jurisdictions has very different natures, organisation, strengths and challenges. Jurisdictions structure peoples' transition from education to work very differently, giving vocational education very different positions in the transition system.

Understanding these factors is essential in establishing a framework to support policy learning in developing vocational education in different contexts, rather than policy borrowing and policy lending which reproduces policies from one country to another, with little regard to the differing social, economic and cultural contexts (Allais, Raffe, Strathdee, Wheelahan and Young, 2009). Marope, Chakroun and Holmes (2015) explain that policy borrowing has been a common practice, that it has "undermined the potential development impact of TVET [technical and vocational education and training] systems", and that we need "more balanced and contextually responsive policies and policy measures if TVET systems are to optimally contribute to holistic, humanistic and sustainable development, and if the systems are to meet expectations".

The price that vocational education has paid in many countries for policy borrowing has been a lack of investment in vocational education institutions and teachers, the privatisation and fragmentation of vocational education provision, and cost shifting to students who can least afford to pay (Education International, 2011). In particular, through a narrow emphasis on skills for work, the result has been narrow and instrumental vocational education that focus on specific skills for particular occupations rather than equipping students with the broad ranging knowledge and

skills they need to engage in fulfilling careers, and contribute to their occupations, families and communities (Allais, 2011).

Moreover, while public vocational education institutions and teachers have been undermined by lack of funding, privatisation and deregulation, they have at the same time been blamed for economic underperformance, skills shortages and mismatches between vocational education qualifications and the labour market. For example, while Marope and colleagues (2015: 51) argue for holistic vocational education, they nonetheless argue that a key challenge is to enhance the responsiveness of vocational education to labour market demands as a key way of closing the skills gap. They locate the 'skills gap' problem with the supply side, with vocational education. Keep (2015: 121) explains that in England "the policy makers' cry for the last three decades has been that VQs [vocational qualifications] need to more closely reflect and deliver what employers want". While more recent policy documents may posit a more humanistic and developmental role for vocational education (UNESCO, 2015a), at the same time the emphasis is on ensuring that vocational education qualifications are 'relevant' and prepare people for the labour market (UNESCO, 2016). Moreover, these frameworks are based on two problematic assumptions: first, that employers are prepared to invest in training; and, second that there are effective mechanisms for articulating employer demands for the skills that will be needed for the future, both of which are problematic (Keep, 2012).

Yet, as this paper will argue, countries' broader social and economic levels of development, the structures of their labour markets, and the nature of jobs and employers' workforce development strategies shape outcomes, and the relation between qualifications and labour market outcomes is not direct or linear. In some systems, particularly those with largely deregulated labour markets, trying to tie vocational qualifications more tightly to the specific requirements of the labour market may actually limit the way in which vocational education graduates are able to use their qualifications in the labour market. Yet, on the other hand, too loose a connection to the labour market can lead to declining relevance of vocational education, and result in a "system that is disconnected from the world of work [which] leads to undervalued skills" (EI, 2009: 12). Achieving an appropriate balance requires vocational education to be located within broader social, economic and labour market policies, and an expanded notion of citizenship (Allais, 2011). Vocational education also needs to be understood within the 'transition system' within which it is located to understand the limits of what is possible within different contexts and the ways in which vocational education can contribute to realising the goals of *Education 2030*.

The paper uses the capabilities approach as first developed by the economics Nobel Laureate Amartya Sen (1999a) and the philosopher Martha Nussbaum (2000) to develop a model of vocational education. As will be elaborated later,

a person's capability is their ability to be and do what they have reason to value, which is a combination of the opportunities that are available to them and the choices they make in pursuing those opportunities. The capabilities approach is therefore embedded in peoples' circumstances and thus responds to the very different circumstances in which vocational education is offered. As Tikly (2013: 4) explains: "Rather than being universal in nature, capabilities are defined in relation to context, and can potentially contribute to economic, social, political, environmental and cultural development". He explains that dominant human capital approaches in vocational education lack a normative basis for considering issues such as inequality and marginalization beyond their relationship to productivity and national growth rates. In contrast, the capabilities approach places at the forefront the notion of human flourishing and the importance of ensuring women and others who experience poverty and disadvantage have access to vocational education as a right and entitlement.

In using the capabilities approach within vocational education, the focus here is on productive capabilities, which refers to the way in which vocational education can prepare individuals for their careers within vocational streams which are broad fields of practice rather than specific jobs, and to provide them with the knowledge and skills they need to contribute to their field of practice, and to their families and communities (Buchanan, Yu, Marginson and Wheelahan, 2009; Wheelahan, Buchanan and Yu, 2015; Wheelahan and Moodie, 2011). The notion of productive capabilities can be used to consider the aims of vocational education, its interconnectedness to the labour market and broader social and economic policies, the role of social partners, how it is delivered, and the types of institutions that are needed to support it. A key argument here is that developing strong and responsive vocational education requires strong public vocational education institutions and well-resourced teachers who are regarded as partners in developing and offering vocational education.

The next chapter outlines the aims of *Education 2030*, the policy context shaping vocational education and its relation to the labour market, the status of vocational education, and the impact of privatisation and marketisation policies on vocational education. The third chapter explores the different ways in which vocational education is defined, the volume of vocational education, the level at which it is offered, and its uneven distribution between high, middle and low-income countries. The fourth chapter relates vocational education to different types of transition systems, how this shapes the way in which qualifications are used in the labour market, the different purposes that qualifications serve and the implications for curriculum. The fifth chapter discusses 'productive capabilities' in exploring the way in which the capabilities approach can be used in vocational education through the notion of productive capabilities. The final chapter discusses the future of vocational education.

2. Policy context and challenges

This chapter outlines the goals for vocational education encapsulated in *Education 2030 Framework for Action.* It examines the philosophical premises guiding the *Framework for Action*, and the implications this has for vocational education. It then considers the way in which the *Education 2030's* goals for vocational education have been interpreted by UNESCO's 2015 *Recommendation concerning Technical and Vocational Education* (UNESCO, 2015b) and translated into a *Draft Strategy for Technical and Vocational Education and Training (TVET) (2016 – 2021)* by UNESCO (2016). The chapter then discusses the challenges facing vocational education in achieving these goals. This discussion begins by exploring the relation between vocational education and the labour market, the reasons for vocational education's low status, the impact of privatisation and marketisation on vocational education, the imposition of 'demand-driven' systems, and the way this has led to the marginalisation of the voices of teachers and teacher unions.

2.1 Education 2030

UNESCO's global education agenda (2030) sets out a new vision for education for the next 15 years. It was developed to support the United Nations' 2030 *Agenda for Sustainable Development*, which comprises 17 sustainable development goals. While recognising that education is essential to support all the sustainable development goals, sustainable development goal 4 is a specific commitment to: *"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"* (UNESCO, 2015a: iii). The global education agenda 2030 comprises two components: the first is the 2015 *Incheon Declaration*, which is the agreement of the worldwide education community for this new vision; and, the second is the *Education 2030 Framework for Action*, which outlines how to translate the commitments in the Incheon Declaration into action at global, regional and national levels, and provides guidance on how this can take place (UNESCO, 2015a). *Education 2030* differs from prior strategies which emphasised universal access to basic education, while this strategy emphasises lifelong learning opportunities, including vocational education, higher education and adult learning.

While all the targets specified in *Education 2030* have implications for vocational education, and vocational education will play a role in meeting all these targets, there are two targets specified in the *Framework for Action* that explicitly concern vocational education: "Target 4.3: By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university" (UNESCO, 2015a: 15) and "Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills,

including technical and vocational skills, for employment, decent work and entrepreneurship" (UNESCO, 2015a: 16).

The various strategies and outcomes specified in the *Framework for Action* would significantly improve the position of vocational education and its ability to contribute to social and economic development, social inclusion and human rights. Tikly (2013: 25) argues that while UNESCO and the International Centre for Technical and Vocational Education and Training of the United Nations Educational, Scientific and Cultural Organization (UNESCO-UNEVOC) do not explicitly refer to the capabilities approach, nonetheless this implicitly underpins many existing projects and programs. This is evident in the *Framework for Action* not just in the way it envisages how education can contribute to achieving sustainable and inclusive outcomes, but also in the elaboration of the enabling conditions that education requires to achieve these goals by emphasising the need for cross-sector policies to address "the social, cultural and economic barriers that deprive millions of children, youth and adults of education and quality learning" (UNESCO, 2015a: 10).

However, the means for translating the goals and targets in the Framework for Action are limited. While UNESCO's (2015b) *Recommendation concerning Technical and Vocational Education* adopted in November 2015, presents a vision of the role of vocational education that reflects the aspirations in *Education 2030*, it does not commit governments to invest in vocational education, instead calling for diversified and innovative sources of funding. As EI (2015) argues "This will no doubt lead to privatisation and commercialisation of TVET, thus putting it out of reach to the millions of young people and adults who need it." EI also argues that it did not take sufficient account of the dialogue that is needed between vocational education teachers, their unions and governments, as a precondition for sustaining strong vocational education systems. As will be discussed in Chapter 5 strong, publicly funded institutions and well resourced and well-trained teachers are key enabling conditions for strong TVET systems.

UNESCO's (2016) *Draft Strategy for Technical and Vocational Education and Training (TVET) (2016 – 2021)* is a medium term strategy in working towards *Education 2030.* The strategy has three priorities:

1. "Fostering youth employment and entrepreneurship".
2. Promoting equity and gender equality;
3. Facilitating transition to green economies and sustainable societies".

The first goal positions vocational education as central in addressing rising youth unemployment, and while it concedes that "Attaining decent work is a significant challenge", nonetheless it cites the OECD to argue that "both employers and youth consider that many graduates are ill-prepared for the world of work". It

argues that "TVET can equip youth with the skills required to access the world of work, including skills for self-employment" (UNESCO, 2016: 2). While there is no doubt that vocational education can be strengthened in the way it prepares students for the labour market in many countries and employers should invest in workforce development and staff induction (Brockmann, Clarke and Winch, 2011), as is argued in the next section, the key factor in determining whether people get jobs is the availability of jobs. The 'mismatch' between the outcomes of vocational education (and higher education) and the labour market are in large part a function of the structure of the labour market, and addressing these gaps requires a focus on labour market and industrial policies and economic and social policy as much as on vocational education.

The second and third goals also reflect the aspirations in the *Framework for Action* in overcoming gender discrimination and vocational education's role in transitioning to green economies and sustainable societies, but the realisation of these goals depends also on the structures of and the opportunities in the labour market. The *Draft Strategy* offers cross-cutting interventions to "identify and anticipate skills requirements to inform TVET policies, strategies and programmes" and the importance of creating frameworks to support the engagement of social partners (UNESCO, 2016: 6). However, unless these strategies go beyond a focus on the supply of vocational education to consider also the demand for vocational education and the way this is mediated by the structures of the labour market, it will not address key factors that shape the outcomes of vocational education.

2.2 Challenges confronting vocational education

2.2.1 Growing unemployment

In outlining world employment trends, the ILO (2015b) explains that unemployment in 2014 was higher than before the global financial crisis and that it was expected to continue to grow. Young people, particularly young women, are disproportionately affected, with the youth unemployment rate three times higher than for adults. The ILO explains that the impact of unemployment is uneven; it is improving in advanced economies when taken as a group, but deteriorating in a number of middle-income and developing regions. It explains that income inequalities are widening within all categories of countries and regions, partly as a consequence of a decline in medium-skilled routine jobs, leading to more demand for lower and higher skilled jobs (see

also CEDEFOP, 2014). This is occurring despite improvements in educational attainment. While countries benefit when higher proportions of the population have higher-level qualifications, knowledge and skills, this does not on its own create jobs.

The problem for vocational education is that it has traditionally prepared individuals for jobs in the lower and middle level of the skill spectrum. Consequently, the decline of medium-skilled jobs is a particular challenge. The skills gap arises not because vocational education is not producing graduates with the right attributes and skills, but because jobs at this level are declining. Those with higher level qualifications are more likely to be employed, while those with lower level qualifications are at greater risk of being unemployed (OECD, 2015a: 92). Whilst it can be a factor, vocational education cannot remedy a problem that requires economic and social strategies by governments and social partners.

2.2.2 Status of vocational education

Aligned with this challenge is the relatively low status of vocational education, particularly when compared to academic routes leading to higher education. UNESCO (2015b: 3) calls upon member states to "raise the public profile and attractiveness of TVET among learners, families and all other stakeholders and inform them of the possibilities for progression, work, lifelong learning and self-fulfilment". However, the relatively low status of vocational education cannot be raised principally through political will and information strategies. This is because vocational education's status is associated with the relatively lower status occupations for which it prepares graduates (Bosch and Charest, 2009), and because in many countries, vocational education is "seen as a siding into which weaker pupils can conveniently be shunted" (Bosch and Charest, 2008: 445). As discussed in a later chapter, an analysis of the nature of the transition systems in which vocational education is embedded is crucial for developing effective strategies that could make it a more attractive option.

2.2.3 Privatisation and marketisation

Vocational education straddles public, private and for-profit sectors in many countries and its link to the labour market makes it particularly vulnerable to policies of privatisation, more so than other sectors of education (EI, 2008). Processes of economic globalisation and trade liberalisation expose vocational education to privatisation, funding cuts and deregulation (EI 2008). EI explains that vocational education is the most privatised sector of education

(EI, 2011a). It is the only sector of education where a reduction in the costs of training individual students is regarded as an efficiency, and not as a threat to the quality of provision as would be the case in the schools and higher education sectors.

Australia offers a particularly salutary and sobering example of how fast policies that foster privatisation can lead to the deinstitutionalisation of public vocational education institutes, which in Australia are called technical and further education (TAFE) institutes. Government policies that seek to foster markets through vouchers that can be used at public or private providers and through government backed income- contingent loans for higher level vocational education qualifications have led to the exponential growth of private for profit vocational education providers, particularly in fields of education that can be taught in high volume cheaply. For example, in 2009, TAFE taught about 81% of equivalent fulltime (EFT) publicly funded students in Australia, but this had declined to 56% in 2014. In contrast, in 2009, private providers taught almost 15% of publicly funded EFT students in Australia, but by 2014 this had risen to about 40%, and private providers' overall student numbers grew by almost 286% over five years. TAFE is now the minority provider in several Australian states. In Victoria, the most marketised of Australian states, TAFE taught almost 78% of publicly funded EFT students in 2009, but this declined to about 37% in 2014. Private providers in Victoria taught about 12% of publicly funded EFT students in 2009, and almost 57% in 2014. Overall student numbers in private providers in Victoria rose by almost 755% in that time (Wheelahan, forthcoming).

The Australian vocational education system is wracked by crises and scandals as private-for-profit providers engage in rent-seeking behaviours that skirt the edge of legal behaviour, while some have crossed that line (Bachelard, Cook and Knott, 2015). The vocational education 'market' in Australia has allowed private for profit providers to grow exponentially and make unprecedented and extraordinary profits from the public purse (Yu and Oliver, 2015) accompanied by unprecedented levels of scandal. Student debt from income-contingent loans rose from $26 million in 2009, to over $2.9 billion in 2015 (Department of Education and Training, 2016: 15). Loans are taken disproportionately by students from disadvantaged backgrounds, many of whom will never complete their program and will never be able to repay the loan. The Australian Commonwealth Department of Education and Training reported that "It is estimated that one-third of the growth in equivalent full-time student load is associated with loans not delivering quality educational outcomes" (Bita, 2016). In the state of New South Wales, government funding cutbacks and fee increases have led to steep declines in enrolments in TAFE and one third of the TAFE workforce have lost their jobs over recent years, with more jobs to go (see also ABC, 2016; Manning, 2016).

2.2.4 Human capital policies and vocational education

Government policies based on human capital theories have sought to align vocational education with specific skills required for the labour market, and this makes it vulnerable to powerful stakeholders who act 'upon' the sector. As Tikly (2013: 5) explains, human capital theory was the dominant approach of global financial institutions such as the World Bank, the International Monetary Fund, and the International Labour Organization and national governments in which vocational education was "perceived to have a fundamentally instrumental function in providing the necessary human capital required by industry". Led by Anglophone countries, changes over the last 20 years or so have sought to make vocational education 'demand-led', and this was reflected particularly in policies that sought to impose competency-based training. The focus of curriculum was narrowed to instrumental skills, and learning outcomes were used to achieve other policy purposes linked to human capital objectives and neo-liberal economic policies.

As EI (2008: 1) explains, these processes have affected "what is taught, where it is taught, how it is taught and even who is teaching it" in vocational education. Changes were seen to be needed because educational institutions were putatively not sufficiently responsive to the needs of industry and did not provide industry with the knowledge and skills that were needed. It was argued that educational institutions focus on inputs and are supply driven, so they offer what they think is important and not what is important to users (employers and individuals). As Bjørnåvold and Coles (2007/8: 227) explain, "High on the reform agenda is institutional reform prompted by inflexibility of the education and training system to produce relevant programmes of learning." These changes were designed to elicit competitive and entrepreneurial behaviour from educational institutions in a marketised system to ensure they were responsive to 'customer' needs. The imposition of outcomes-based systems was meant to break the power of institutions, teachers and their unions and ensure education became 'demand-driven'. This was the explicit purpose of competency-based training in which learning outcomes are described as workplace tasks and roles. The broader context of competency-based training was that it was 'about giving industry more say' over the outcomes of qualifications in an industry-led system (Guthrie, 2009).

Teachers and teacher unions were often not consulted or excluded from policy making processes about vocational education and its curriculum (Tikly, 2013: 30), while at the same time, instrumental curriculum was imposed on

them, their institutions were subject to funding cuts, and their sector subjected to marketisation and privatisation. The irony is that vocational education institutions and vocational teachers are blamed for skills mismatches and other deficiencies attributed to vocational education. There are indeed many problems with vocational education, as teacher unions have been explaining for many years. However, these problems can be attributed to government policies of marketisation and privatisation and policies which emphasise narrow human capital objectives which accept goals of social inclusion and equity only in as much as they contribute to economic competitiveness, rather than as intrinsic to human flourishing. This has resulted in narrow interpretations of the mission and purpose of vocational education, reflected in an instrumental curriculum.

2.2.5 Articulating the mission of public vocational education institutions

Addressing these problems requires an understanding of the factors shaping vocational education, and how they differ between regions and nations. It also requires holistic understandings of the purpose and role of vocational education, and the role of public vocational education institutions. Developing and articulating the mission of public vocational education institutions is key to achieving these outcomes. Privatisation and marketisation have led to the fragmentation of vocational education, and the rise of private-for-profit vocational education institutions that focus on short-term and narrow notions of skill. It is not enough to point to shortcomings in private provision and problems with ensuring quality (see, for example, Marope et al., 2015). The problems with the existing system need to be elaborated, and the importance of publicly funded and publicly delivered vocational education needs to be articulated. For example, the recent Sainsbury (2016) review of technical education in England argued for all publicly subsidised technical education to be delivered in not-for-profit educational institutions, where all surpluses are reinvested into education infrastructure.

This needs to be further developed to include an explicit mission of public vocational education institutions as anchor institutions in their local communities, that serve their industries and regions, contribute to sustainable social and economic development, and support individuals to exercise choice in how

they live their lives and contribute to their families and communities. Public vocational education institutions do far more than respond to immediate skill needs in local labour markets; they also build broad ranging capacities that underpin skilled work and contribute to social inclusion; and they anticipate, codify and institutionalise the capabilities, knowledge and skills that are needed for the future.

2.3 Conclusion

Arguably education is important for achieving all 17 of the United Nations' (2015) sustainable development goals, and it is the subject of 'Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'. This applies to vocational education as much as to other forms of education, and vocational education is the explicit subject of two sub goals:

> 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
>
> 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
>
> (United Nations, 2015: 21st page)

The United Nations recognises the importance of qualified teachers in achieving these goals:

> 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States
>
> (United Nations, 2015: 22nd page)

However, this strong support in principle for vocational education becomes attenuated and qualified as more specific policies and actions are proposed in UNESCO's (2015a) Education 2030 policy comprising the Incheon Declaration and the Framework for Action, in UNESCO's (2015b) Recommendation concerning Technical and Vocational Education and in UNESCO's (2016) Draft Strategy for Technical and Vocational Education and Training (TVET) (2016-2021).

In addition, vocational education is confronting several challenges: growing unemployment and the changing structure of the labour market which is reducing the attractiveness of traditional vocational education, lower status, privatisation and marketisation of social services in general and particularly vocational education, and the application of human capital policies which also involves vocational education more than other forms of education.

The chapter argues that these challenges may be met by articulating the mission of public vocational education institutions as anchor institutions in their local communities that serve their industries and regions, contribute to sustainable social and economic development, and support individuals to exercise choice in how they live their lives and contribute to their families and communities.

3. Scope and volume of vocational education

This chapter describes the scope and volume of 'vocational education' considered in the paper. It uses UNESCO's International Standard Classification of Education. It shows that higher levels of participation in higher-level vocational education is associated with upper middle and high-income countries, and that the higher the gender parity in vocational enrolments the higher the proportion of vocational enrolments. These data are important in demonstrating the scale and scope of vocational education, and in demonstrating the disparities between richer and poorer nations in the opportunities available to students to participate in vocational education, particularly in higher-level vocational education.

3.1 'Vocational education'

There is much scholarly debate about the definition of 'vocational education' and its cognates, for example the literature discussed by Moodie (2002: 255) and Education International (2009). This paper adopts the meaning of 'vocational education' used in UNESCO Institute for Statistics' (2012: 14) International Standard Classification of Education ISCED 2011 which defines 'vocational education' for level 2 lower secondary education, level 3 upper secondary education, level 4 post-secondary non-tertiary education and applies it to level 5 short-cycle tertiary education. The Institute leaves open the possibility of defining 'professional education' for level 5 short-cycle tertiary education, 6 bachelor's or equivalent level, 7 master's or equivalent level and 8 doctoral or equivalent level. However, it applies 'vocational' to level 5 short-cycle tertiary education until 'professional education' is defined. The Institute's definition of 'vocational education' is unfortunately somewhat circular, containing 'vocational' in its definition:

> 53. The orientation of a programme is distinguished at ISCED levels 2 to 5, with the possibility of use at ISCED levels 6 to 8. There are two categories of orientation: general and vocational education. At tertiary education levels, the terms 'academic' and 'professional' will be used in place of general and vocational respectively. ISCED 2011 does not yet define academic and professional more precisely for higher ISCED levels, but opens up

the possibility of distinguishing academic and professional orientations in the future based, for example, on fields of education. At ISCED level 5, the definitions of general and vocational education will be used until definitions of academic and professional have been developed.

54. Vocational education is defined as education programmes that are designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation, trade, or class of occupations or trades. Such programmes may have work-based components (e.g. apprenticeships, dual-system education programmes). Successful completion of such programmes leads to labour market-relevant, vocational qualifications acknowledged as occupationally-oriented by the relevant national authorities and/or the labour market.

(UNESCO Institute for Statistics, 2012: 14)

Thus, the Institute defines 'vocational education' by two criteria. First, vocational education is oriented towards an occupation or class of occupations. Secondly, since it does not want to include orientation towards high status occupations the Institute uses educational level to foreshadow a distinction between 'vocational education' for lower level qualifications and 'professional education' for higher level qualifications. Consequently, much of the angst about vocational education's low status misses the point: vocational education is defined as orientation towards lower status occupations.

UNESCO's (2015) recommendation concerning technical and vocational education and training (TVET) understands technical and vocational education and training somewhat differently:

1. For the purpose of this Recommendation, 'technical and vocational education and training' (hereinafter "TVET") is understood as comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods.

2. TVET, as part of lifelong learning, can take place at secondary, post-secondary and tertiary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to national and local contexts. Learning to learn and the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET.

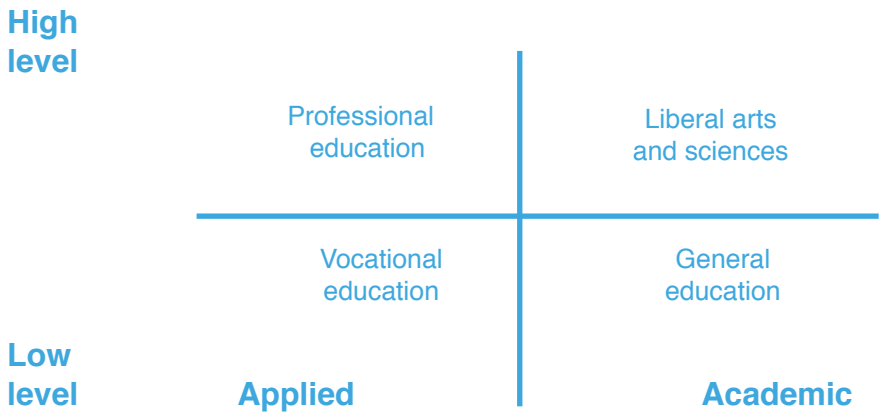
3. The application of the provisions of this Recommendation will depend upon the specific conditions, governing structures, and constitutional provisions existing in a given country.

(UNESCO, 2015)

Here the restriction to lower status occupations is not made explicit, but is clearly implied in the rest of the recommendation and is assumed if not stated explicitly in most discussions of vocational education. UNESCO Institute for Statistics' (2007: 16) initial statistical study noted that initial vocational education and training is 'also provided at a higher level in a range of public and private higher education institutions in most countries'. However, it considered in detail only education up to ISCED level 5, then called the first stage of tertiary education and in ISCED 2011 called short-cycle tertiary education.

These distinctions by orientation to work or to academic discipline and by educational level can be constructed as dichotomies to generate 4 types of education, illustrated in Figure 1. Of course, these distinctions are not so sharp in practice, and UNESCO's recent policy statements such as its recommendation concerning technical and vocational education and training cited above emphasise vocational education's connections with other forms of education. These dimensions are therefore better considered continua along which programs may be differently placed at different times and in different jurisdictions.

Figure 1: types of education on 2 continua



3.2 The world's regions and income levels[1]

This section outlines data on the world's population by region and income group, which is later used to examine the varying levels of participation in vocational education. These data are taken from the World Bank which on 1 July 2016 classified economies by their estimated gross national income per capita in 2015 into four groups (Table 1).

Table 1: World Bank's categorisation of countries by income group, 2016

Income group	Range of gross national income per capita per annum ($US)
High	> $12,475
Upper middle	Between $4,036 and $12,475
Lower middle	Between $1,026 and $4,035
Low	< $1,026

Source: World Bank Data Team (2016).

The population reported for countries in each region and income group is shown in Table 2.

Table 2: population in millions by region and country income group, 2013

Region	Income group				
	Low	Lower middle	Upper middle	High	Total
East Asia & Pacific	25	541	1,475	220	**2,261**
Europe & Central Asia	0	96	313	492	**901**
Latin America & Caribbean	11	47	504	71	**633**
Middle East & North Africa	0	188	175	61	**424**
North America	0	0	0	358	**358**
South Asia	61	1,683	0.4	0	**1,744.4**
Sub-Saharan Africa	541	371	88	0	**1,000**
Total	**638**	**2,926**	**2,555**	**1,202**	**7,321.4**

Source: calculated from UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

1 The primary data for this chapter were extracted on 20 July 2016 from the UNESCO Institute for Statistics' (2016) data centre.

The populations in Table 2 were calculated as a proportion of the total population to find the population share for each region and income level shown in Table 3. Some 8.7% of the total population is in low-income countries by the World Bank's classification. While this is a relatively modest proportion of total population, these countries have the greatest need and therefore should attract a high priority. Of the low income countries, the ones with the greatest need are those affected by armed conflict where only 79% of young people are literate compared with 93% in other low income countries and which have 42% of the world's total of primary school age children out of school (Marope, Chakroun and Holmes, 2015: 64). Armed conflict is mostly confined to countries with low income. Of the 48 armed conflicts recorded between 1999 and 2008 some 43 or 90% were in low income countries (UNESCO, 2011, cited in Marope, Chakroun and Holmes, 2015: 64).

Countries classified as lower middle income have the biggest population share, of 40%. Countries classified as upper middle income also have a substantial share of total population, of 34.9%. The region with the biggest population by this classification is East Asia and Pacific, which has 30.9% of total population. South Asia also has a big share of total population, of 23.8%.

The cells with the biggest shares are South Asian countries with lower middle incomes which have 23% of total population, and East Asian and Pacific countries with upper middle incomes, which have 20.1% of total population. It will be noted that the high income North American and European countries which so dominate data, research and discussion in vocational education as well as many other fields have only 11.6% of total population.

Table 3: share of population by region and income group, 2013 (%)

Region	Income group				
	Low	Lower middle	Upper middle	High	Total
East Asia & Pacific	0.3	7.4	20.1	3.0	**30.9**
Europe & Central Asia	0.0	1.3	4.3	6.7	**12.3**
Latin America & Caribbean	0.2	0.6	6.9	1.0	**8.6**
Middle East & North Africa	0.0	2.6	2.4	0.8	**5.8**
North America	0.0	0.0	0.0	4.9	**4.9**
South Asia	0.8	23.0	0.0	0.0	**23.8**
Sub-Saharan Africa	7.4	5.1	1.2	0.0	**13.7**
Total	**8.7**	**40.0**	**34.9**	**16.4**	**100.0**

Source: calculated from UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

The country with the biggest population in each region and income level is shown in Table 4. It will be noted that there are only high-income countries in North America, which in this classification comprises only Bermuda, Canada and the United States of America. Conversely, South Asian countries, which have 23.8% of total population, have no high-income country. And Europe and Central Asia and Middle East and North Africa have no low-income country.

Table 4: country in each region and income level with the biggest population, 2013

Region	Income group			
	Low	Lower middle	Upper middle	High
East Asia & Pacific	North Korea	Indonesia	China	Japan
Europe & Central Asia		Ukraine	Russian Federation	Germany
Latin America & Caribbean	Haiti	Guatemala	Brazil	Argentina
Middle East & North Africa		Egypt	Iran	Saudi Arabia
North America				USA
South Asia	Afghanistan	India	Maldives	
Sub-Saharan Africa	Ethiopia	Nigeria	South Africa	Seychelles

Source: UN ESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

3. 3 Vocational education students

In its initial statistical study of participation in formal technical and vocational education and training programs worldwide UNESCO's Institute for Statistics (2007: 2-3, 7, 11, 17) notes several limitations with the statistical data then available, many of which unfortunately persist:

1. Many countries are very different from each other so cross country comparisons have to be undertaken carefully and cautiously;
2. Data are available only for the formal economy. The informal economy

falls outside the state's regulation and thus does not provide employment security, work security nor social security. Neither is it taxed nor included in standard statistical collections. Nonetheless, it is significant. The International Labour Organization (2013b: xi-xii) estimates that employment in the informal economy is around 15% in developed economies and from 50% to 70% in developing countries, and around 90% if agriculture is included. Much work in the informal economy is skilled, but most skills are developed in non formal vocational education or informally such as in traditional apprentices (Marope, Chakroun & Holmes, 2015: 75);

3. Data are available only for formal education. Data are not generally available on non-formal education, such as outside structured educational programs. Neither are data available on informal learning which occurs unintentionally or as a by-product of other activities. This is likely to understate much vocational education and vocational learning that occurs in workplaces. It is particularly likely to understate vocational education in African countries which have extensive informal training and apprenticeships (International Labour Organization, 2010: 8);

4. There is particular variation in the way countries treat vocational education for adults re-entering the workforce, transferring occupations, or upgrading in the workforce. In some countries, much continuing vocational education is part of the formal system but in many countries, it is non-formal and probably most countries have substantial informal continuing vocational education;

5. Data collection is likely to be incomplete and inaccurate, particularly in low-income countries which report low levels of vocational education but which have scant resources for statistical collections;

6. The distinctions between general and vocational education upon which the analysis relies is ambiguous, especially at the margins, and in any case is likely to be applied inconsistently; and,

7. All data are of enrolments. In many countries, most students enrol full time, but in some countries, most vocational students enrol part time, which gives a misleadingly high impression of the size of their vocational enrolments.

For these reasons UNESCO's Institute for Statistics (2007: 33) suggests that statistics are likely to understate vocational education enrolments because they don't count non-formal and informal vocational education. Nonetheless, the available data are informative. Table 5 shows the relative share of each ISCED level from levels 2 to 4, and within each level, the percentage of students who are enrolled in vocational education. It shows that in 2013 there were 289.3 million pupils enrolled in ISCED level 2 lower secondary education. Of those, only 1.3% were enrolled in vocational lower secondary education. This is consistent with UNESCO Institute for Statistics' (2007) finding in its initial statistical study of participation in formal technical and vocational education and training programs worldwide. Relatively high proportions of vocational lower secondary enrolments were found for Latin America and Caribbean countries (5.2%), Sub- Saharan Africa (3.1%) and Middle East and North Africa (2.3%).

Some 231.1 million pupils were enrolled in ISCED level 3 upper secondary education. Of those 23.7% were enrolled in upper secondary vocational programs. The regions with high proportions of vocational enrolments in lower secondary education (Latin America and Caribbean, Sub- Saharan Africa, and Middle East and North Africa) have average or lower proportions of upper secondary vocational enrolments. Conversely, particularly high proportions of vocational upper secondary education enrolments were reported for Europe and Central Asia (47.3%) and East Asia and Pacific (41.3%). These regions had about average or lower proportions of vocational enrolments in lower secondary education. This suggests that at least in these regions there may be some substitution between vocational lower and upper secondary programs.

Only 8.3 million students were reported in ISCED level 4 post secondary non-tertiary education. However, 89.2% of these students were enrolled in vocational programs. Post secondary non- tertiary education is thus essentially a vocational level of education.

Table 5: millions of enrolments in ISCED 2 lower secondary education, ISCED 3 upper secondary education and 4 post secondary non tertiary showing % vocational, by region, 2013

Region	ISCED 2: lower secondary	% of ISCED 2 vocational	ISCED 3: upper secondary	% of ISCED 3 vocational	ISCED 4	% ISCED 4 vocational
East Asia & Pacific	83.7	0.3	68.3	41.3	2.5	81.3
Europe & Central Asia	39.5	1.4	22.6	47.3	2.1	91.9
Latin America & Caribbean	38.0	5.2	24.3	12.8	0.9	97.0
Middle East & North Africa	14.9	2.3	12.5	24.4	0.3	92.0
North America	13.6	0	13.2	0.9	1.2	100
South Asia	82.6	0	69.2	3.6	0.9	97.8
Sub-Saharan Africa	16.9	3.1	10.2	18.0	0.5	61.6
Total	**289.3**	**1.3**	**231.3**	**23.7**	**8.3**	**89.2**

Source: UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

UNESCO Institute for Statistics (2011: 53) reports that vocational education's share of upper secondary education fell from 28% in 1999 to 24% in 2009. Proportions fell for all of the Institute's regions except for Sub-Saharan Africa, which continues to increase its proportion of vocational upper secondary enrolments (Table 6). This seems to be because students are deferring their specialisation to postsecondary education (UNESCO Institute for Statistics, 2011: 510) which in turn is leading to an expansion of vocational postsecondary education in many countries (Marope, Chakroun and Holmes, 2015: 41).

Table 6: Proportion of upper secondary enrolments which are vocational by UNESCO Institute for Statistics region, 1999 and 2009

Region	1999	2009
Arab states	34	20
Central and Eastern Europe	50	47
East Asia and the Pacific	43	38
Latin America and the Caribbean	24	21

North America and Western Europe	31	26
South and West Asia	4	4
Sub-Saharan Africa	9	16
World	**28**	**24**

UNESCO Institute for Statistics (2011: 53) Figure 24 To what extent has TVET enrolment decreased over time? Changes in the regional average of upper secondary TVET enrolment as a percentage of total upper secondary enrolment, 1999 and 2009.

Table 7 examines the same data reported by countries' income group. It shows, first, that there is a direct relation between income group and upper secondary enrolments as a proportion of lower secondary enrolments: high 99%, upper middle 83%, lower middle 73% and low 51%. Clearly upper secondary enrolments are related to a country's economic resources and possibly also to its economic structure which has higher demand for upper secondary education.

Table 7 further shows that the proportions of lower and upper secondary education that are vocational are related to income group, with countries with more income having higher proportions of vocational lower and upper secondary enrolments. This is also consistent with UNESCO (2007: 54). Again, there are two possible overlapping explanations. Formal vocational education is more expensive than general education: it needs extra equipment, facilities, materials and maintenance (UNESCO, 2007: 36) and teacher: student ratios have to be modest to protect pupils and equipment if not to conduct practical classes. So, the proportions of vocational school education may reflect countries' capacity to resource this more expensive form of education. As Tikly (2013) explains, it is only in recent years that organisations such as the World Bank and other donor organisations have begun to place greater priority on vocational education in low income countries. He reports that the World Bank had questioned "the cost-effectiveness of vocational education and the rate of return to investments in TVET" arguing that such investments were inefficient compared to investments in basic education (Tikly, 2013: 6). The World Bank's 2011 publication *Learning for All,* signals a shift in orientation towards investment at all levels (World Bank, 2011).

The second explanation for higher levels of vocational education being reported in higher income countries is that higher income countries are more industrialised and need higher proportions of people with vocational education.

Table 7: millions of enrolments in ISCED 2 lower secondary education, ISCED 3 upper secondary education and 4 post secondary non tertiary showing % vocational, by income group, 2013

Income group	ISCED 2: lower secondary	% of ISCED 2 vocational	ISCED 3: upper secondary	% of ISCED 3 vocational	ISCED 4	% ISCED 4 vocational
High	47.2	2.1	47.1	27.5	3.2	93.5
Upper middle	105.4	1.4	87.0	35.4	2.3	79.8
Lower middle	123.3	0.4	90.4	10.9	2.5	97.9
Low	13.5	1.9	6.9	16.2	0.3	47.1
Total	**289.3**	**1.3**	**231.3**	**23.7**	**8.3**	**89.2**

Source: UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

UNESCO (2007: 64) also found that higher proportions of vocational education at lower and upper secondary education are associated with higher proportions of the relevant age group participating in secondary education, and that this was true for upper secondary education even controlling for gross domestic product per capita. It found further that the higher the gender parity in vocational enrolments the higher the proportion of vocational enrolments. UNESCO (2007: 64) cautions that some of these findings may be influenced by the completeness and quality of data, particularly of low-income countries. But if these findings are robust the policy implications are that participation rates in secondary education may be increased by increasing the proportion and gender equity of enrolments in vocational secondary education.

Finally, Table 7 shows that numbers of enrolments in ISCED 4 post secondary non-tertiary are related to income level. Table 8 takes the share of population by income group from Table 3 and compares that with groups' share of enrolments in ISCED 4 post secondary non-tertiary calculated from Table 7. It expresses the difference as a share of income groups' share of population. We find that countries in the high income group have a share of ISCED 4 enrolments 135.4% above their share of population, and that the shares fall progressive to the low income group whose share of ISCED 4 enrolments is -58.6 their share of population.

Table 8: countries share of population compared with their share of enrolments in ISCED 4 post secondary non tertiary education, by income group, 2013

Income group	Share of population	Share of ISCED 4	Share of ISCED 4 – share of population
High	16.4	38.6	135.4
Upper middle	34.9	27.7	-20.6
Lower middle	40.0	30.1	-24.8
Low	8.7	3.6	-58.6
Total	**100**	**100**	**0**

Source: calculated from UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

Unfortunately, the UNESCO Institute for Statistics' (2016) data centre does not report enrolments by general / academic and vocational / professional higher than level 4 post secondary non-tertiary. It is particularly unfortunate that the data centre does not report program orientation for ISCED level 5 short cycle tertiary education because much education at this level is vocational in character and because vocational short cycle tertiary education is often included in analyses and discussions of vocational education.

What is classified as short cycle tertiary education differs markedly in different jurisdictions and accordingly these programs are of varying efficacy. In some jurisdictions, short cycle tertiary programs prepare graduates only for direct entry to or advance in the workforce. Examples are Austria, Czech Republic, France, Germany, Switzerland and the USA. (The USA classifies associate degrees that may be credited towards baccalaureates not as short cycle tertiary education but as the first stage of the baccalaureate.) In other jurisdictions, short cycle tertiary programs are general which may lead to employment or to higher study. Examples are Ireland, Japan, Mexico, Norway, Portugal and South Korea. In yet other countries short cycle tertiary includes both directly vocational and more general programs. Examples are Aotearoa New Zealand, Australia, Canada, Sweden and the UK (OECD, 2014: 39-55). Indeed, what counts as success differs in different systems. But in general, short cycle tertiary education, in common with most vocational education, is more successful in the coordinated market economies of northern continental Europe such as Austria, Germany and Switzerland.

UNESCO Institute for Statistics (2007: table 3, pages 82-92) reports all enrolments in 2002 in ISCED level 5 first stage of tertiary education and level 6 second stage of tertiary education and the number of enrolments in ISCED 5B first stage of tertiary education (practical). There are many gaps in the data, but from the data that are reported enrolments in 5B programs were 23% of all level 5 and level 6 enrolments. UNESCO Institute for Statistics (2007) uses ISCED 97 and UNESCO Institute for Statistics (2016) uses ISCED 2011 which classifies tertiary programs by general / academic and vocational / professional. However, in the absence of anything better we estimate that there may be about 42 million enrolments in ISCED 5 short-cycle tertiary vocational education.

Adding this estimate of short-cycle tertiary vocational education enrolments to data extracted and calculated from UNESCO Institute for Statistics (2016) generates the figures reported in Table 9. It shows that most vocational education enrolments are in upper secondary (54,707,659) and in short cycle tertiary (estimated 42,000,000).

Most vocational education enrolments are in East Asia and Pacific, and Europe and Central Asia and these regions' secondary vocational enrolments are so much bigger than other regions' secondary vocational enrolments that these regions would likely have more total vocational enrolments even were it possible to identify vocational short cycle tertiary enrolments by region.

Table 9: number of vocational enrolments by level and region, 2013

Region	ISCED 2: lower secondary	ISCED 3: upper secondary	ISCED 4 post secondary non tertiary	ISCED 5 short cycle tertiary	Total
East Asia & Pacific	277,472	28,177,044	2,019,494		**30,474,010**
Europe & Central Asia	562,633	15,919,461	1,909,088		**18,391,182**
Latin America & Caribbean	1,976,505	3,109,892	884,519		**5,970,916**
Middle East & North Africa	344,879	3,052,628	226,010		**3,623,517**
North America	0	119,479	1,174,431		**1,293,910**
South Asia	0	2,485,233	849,267		**3,334,500**
Sub-Saharan Africa	518,947	1,843,922	309,880		**2,672,749**
Region unspecified				42,000,000	**42,000,000**
Total	**3,680,436**	**54,707,659**	**7,372,689**	**42,000,000**	**107,760,784**

Source: authors' estimate and UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

Table 10 uses the figures in Table 9 to calculate shares of the total vocational enrolments by level and by region. Thus, we see that upper secondary vocational enrolments in East Asia and Pacific have by far the biggest share of vocational enrolments at 26.1%, and that the second biggest share are upper secondary in Europe and Central Asia at 14.8% of the total.

Table 10: share of vocational enrolments by level and region, 2013

Regions	ISCED 2: lower secondary	ISCED 3: upper secondary	ISCED 4 post secondary non tertiary	ISCED 5 short cycle tertiary	Total
East Asia & Pacific	0.3	26.1	1.9	0.0	**28.3**
Europe & Central Asia	0.5	14.8	1.8	0,0	**17.1**
Latin America & Caribbean	1.8	2.9	0.8	0.0	**5.5**
Middle East & North Africa	0.3	2.8	0.2	0.0	**3.4**
North America	0.0	0.1	1.1	0.0	**3.4**
South Asia	0.0	2.3	0.8	0.0	**3.1**
Sub-Saharan Africa	0.5	1.7	0.3	0.0	**2.5**
Region unspecified	0.0	0.0	0.0	39.0	**39.0**
Total	**3.4**	**50.8**	**6.8**	**39.0**	**100.0**

Source: authors' estimate and calculations from UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

Table 11 examines the same figures aggregated by countries' income groups. It shows that by far the most vocational enrolments are in upper middle income countries with 34,520,650 enrolments, and that broadly similar vocational enrolments are in high income countries with 16,871,184 enrolments and lower middle income countries with 12,854,334 enrolments.

Table 11: number of vocational enrolments by level and country income group, 2013

Income group	ISCED 2: lower secondary	ISCED 3: upper secondary	ISCED 4 post secondary non tertiary	ISCED 5 short cycle tertiary	Total
High	968,347	12,955,709	2,947,128		**16,871,184**
Upper middle	1,909,225	30,757,870	1,853,555	35.4	**34,520,650**
Lower middle	551,259	9,878,008	2,425,067		**12,854,334**
Low	251,605	1,116,072	146,939		**1,514,616**
Unspecified				42,000,000	**42,000,000**
Total	**3,680,436**	**54,707,659**	**7,372,689**	**42,000,000**	**107,760,784**

Source: authors' estimate and UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

As before, the figures in Table 11 were recalculated to find shares of vocational enrolments by level and country income group shown in Table 12. This quantifies what was evident from a visual inspection of Table 11, that the biggest shares of vocational enrolments are at upper secondary level in upper middle-income countries with 28.5% and high-income countries with 12.0%.

Table 12: share of vocational enrolments by level and country income group, 2013

Income group	ISCED 2: lower secondary	ISCED 3: upper secondary	ISCED 4 post secondary non tertiary	ISCED 5 short cycle tertiary	Total
High	0.9	12.0	2.7	0.0	**15.7**
Upper middle	1.8	28.5	1.7	0.0	**32.0**
Lower middle	0.5	9.2	2.3	0.0	**11.9**
Low	0.2	1.0	0.1	0.0	**1.4**
Unspecified	0.0	0.0	0.0	39.0	**39.0**
Total	**3.4**	**50.8**	**6.8**	**39.0**	**100.0**

Source: authors' estimate and calculations from UNESCO Institute for Statistics (2016) Data centre. Data extracted 20 July 2016.

3.4 Future demand

The increased number of pupils completing primary education in developing countries will increase the demand for secondary education, including secondary vocational education (Marope, Chakroun and Holmes, 2015: 41). In developed countries, the aging workforce is likely to increase the need for vocational education to upgrade the skills of existing workers. And, priorities in low and middle-income countries are shifting to go beyond basic education to equip the population with the skills needed for participation in the 'global knowledge economy' (Tikly, 2013: 6). In all economies, vocational education will have an important role in equipping workers to develop new skills and adapt to changing needs.

3.5 Conclusion

Of all vocational education by the definition of the International Standard Classification of Education ISCED 2011, half at 50.8% is at ISCED level 3 upper secondary, 39% at ISCED 5 short cycle tertiary and 3.4% at ISCED 2 lower secondary. The remaining 6.8% is at ISCED 4 post secondary non tertiary, but 89.2% of all enrolments at ISCED 4 are vocational. Enrolments in ISCED 4 and all vocational enrolments are strongly related to countries' income group: high income groups are strongly over represented, proportions fall as income group falls, and lower income groups are strongly under represented.

Some 8.7% of the world's population is in low income countries by the World Bank's definition. While this is a modest share of the world's population, they have the greatest need and therefore warrant strong investment of resources, including policy and analysis. We estimate vocational enrolments for ISCED level 5 short cycle tertiary to be 39% of all vocational enrolments. Unfortunately, this estimate is not accurate enough to give estimates by region or countries' income level. Of the other 61% of all vocational enrolments, low income countries have 2.3% or just over a quarter of their share of the world's population. Lower middle income countries have 19.5% of these vocational enrolments at ISCED levels 2, 3 and 4, half of their share of the world's population of 40%.

There are several possible explanations for low and lower middle income countries having low proportions of vocational education. Lower income countries may not collect and report data on vocational education or indeed all education as

completely and as accurately because of the resources and infrastructure needed to collect and report data. Lower income countries have lower proportions of enrolments in post primary education where vocational enrolments are higher. Vocational education is more expensive than general education because it needs more physical and staffing resources and may not be affordable by lower income countries. Donor agencies have not valued and invested in vocational education until recently. Higher proportions of the economies of lower income countries are informal which may train their workers informally. And lower income countries are less industrialised and may thus need lower proportions of workers with vocational education.

Nonetheless, the disproportionately low proportions of vocational education in lower income countries is likely to further disadvantage lower income countries and should be redressed with increased investment, including of policy and analysis. While the informal economy is by its nature difficult to reach, and is unlikely to have much resources for formal vocational education, its economic and social importance provides a strong case for improving its skills development. There is a major gap in vocational programs and in understanding skills formation in the informal economy and how it may be improved.

The groups of countries with the biggest shares of vocational education are South Asian countries with lower middle incomes which have 23% of total population, and East Asian and Pacific countries with upper middle incomes, which have 20.1% of total population. In contrast, the high income North American and European countries which so dominate data, research and discussion in vocational education as well as many other fields have only 11.6% of total population. This reinforces the argument for a reorientation of investment in vocational education analysis.

4. Different roles, types and purposes of qualifications

This chapter discusses some of the diversity in the way in which qualifications, including vocational qualifications, are used by employers and students, which generates different types of qualifications. Vocational education also has different roles depending on their jurisdiction's type of transition system, and the chapter describes two typologies which generate several different functions for vocational education. This leads us to posit three purposes for all qualifications, including vocational qualifications, with different types of qualifications placing different emphases on each purpose and fulfilling them in different ways. This has implications for vocational education's curriculum and pedagogy.

4.1 Employers use qualifications as signals and as screens

Sometimes employers use qualifications as a signal that graduates have specific knowledge and skills needed for a job they want to fill. Examples are nursing diplomas, engineering degrees and welding certificates. The content of these qualifications is specified tightly and often their pedagogy is also specified to include minimum experience in the workplace. This describes an occupational labour market, where entry to and progression in these occupations is via specific qualifications. The qualification and occupation is often regulated by a government body, by an occupational association or by employers and unions.

Other times employers use qualifications to screen applicants for potential to undertake a variety of jobs. Examples are high school diplomas and diplomas and degrees in general arts and sciences which might be used to screen applicants for jobs such as administrator, analyst, carer, clerk, machine operator, manager and salesperson. While labour markets for these jobs do not specify occupationally specific qualifications as a condition of employment, they may be identified by sector such as finance, hospitality, property or transport. These jobs are subject to only general regulation such as of occupational health and safety, anti discrimination and minimum wages (Table 13), and consequently we can refer to them as unregulated occupations.

Unregulated occupations may be located within internal or external labour markets. An internal labour market is one where employers use the initial qualification to screen the potential of employees upon entry, but then provide within the firm enterprise specific training to graduates as part of their employment and progression to higher level jobs. In contrast, an external labour market is where entry to and progression is through the competitive market external to the employer. In external labour markets graduates must 'second-guess' the labour market and often provide their own continuing education (Wheelahan et al. 2015a).

Table 13: qualifications as signals and screens

Characteristic	Signal	Screen
Qualification role	To indicate specific skills	To indicate general potential
Qualification specification	Tight	General
Regulation	Usually specific	General
Labour market	Occupational	Internal and external

Loose links between qualifications and jobs are evident in many countries (CEDEFOP, 2015). As an illustration, only from 30% to 40% of vocational graduates in Australia and Canada work in the occupation for which they have been ostensibly trained (Wheelahan et al. 2015a; 2015b). While Australian and Canadian vocational graduates report that their qualification was important for them in gaining work and that it is useful in their work, most vocational graduates work in occupations other than the ones directly associated with their qualification. That is, in these countries, employers use most vocational qualifications to screen job applicants for potential, rather than as a signal of specific knowledge and skills.

A qualification can be both a signal and a screen. Common examples are law degrees and qualifications in commerce and mathematics. Law firms use a law degree as a signal of legal knowledge and skills when hiring first year associates but many other employers use law and often other degrees to screen for graduates with putative high intellectual ability. Some employers use commerce and mathematics qualifications to signal a specific ability, but many employers use these qualifications to screen for applicants with general business or quantitative skills.[2]

2 Economists developed the concept of signaling and screening to deal with problems such as the market for lemons (cars that turn out to be clunkers) rather than high quality cars (peaches) that arise in markets where there is information asymmetry – where the buyer or the seller knows more information than their counterpart (Spence, 1973, 2002). In economics signaling is what sellers do to indicate that their product or service is of high quality, whereas screening is what buyers do to ensure that they don't end up with a lemon. We are therefore using the concept of signaling and screening somewhat differently from economists to refer to different ways in which qualifications are used in the labour market.

4.2 Different types of qualifications

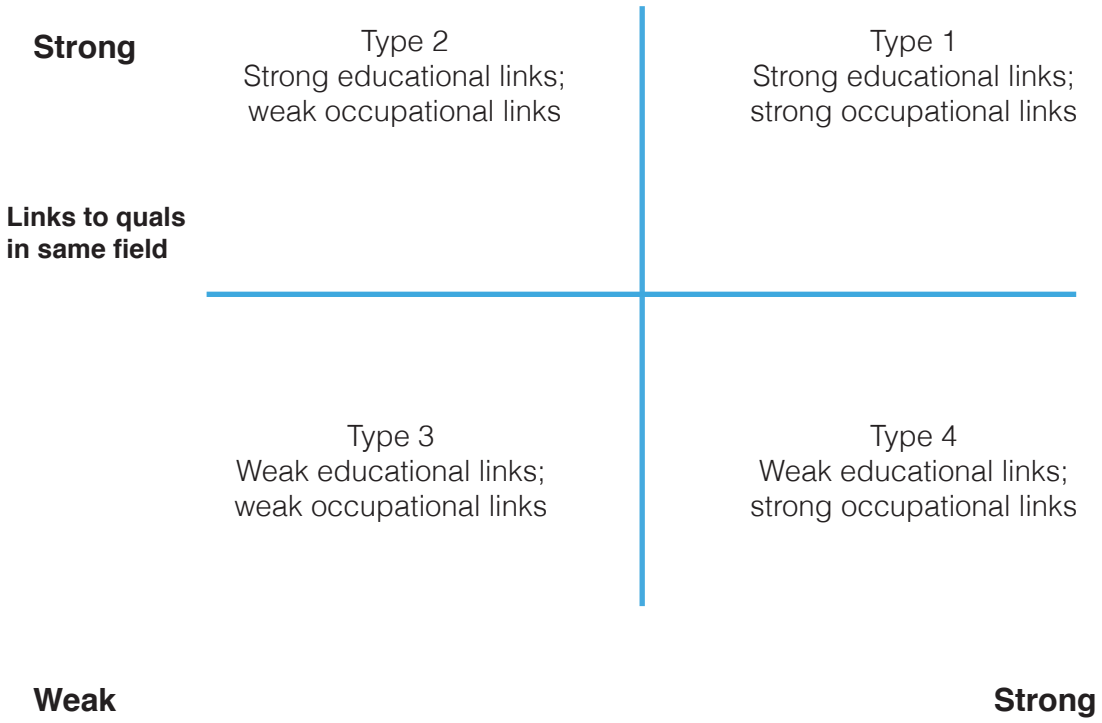
Vocational qualifications have very variable links with work. A high proportion of graduates of some qualifications proceed to occupations associated with their qualification, but this varies markedly by field and qualification level. Conversely, some occupations in some industries have a high proportion of workers with the relevant educational qualification, but this also varies markedly by occupation, occupational level and industry.

Further, some qualifications in some fields have a high proportion of graduates proceeding to further study, with some proceeding to further study in the same field and some in a different field. Other qualifications have a low proportion of graduates proceeding to further study in the same field, and this also varies by field and level of qualification. Conversely, some qualifications in some fields admit a high proportion of students with previous tertiary study, either in the same or in a different field. Other qualifications have low proportions of students with previous study and enrol high proportions of school leavers.

This chapter presents a typology of tertiary education qualifications to help understand these relationships, which is shown in Figure 2. The typology was developed as a result of empirical research in Australia and Canada (Moodie et al., 2015: 14-17; and Wheelahan et al. 2015b), and while the specific fields of education used to illustrate the different types of qualifications may differ between countries the typology is a good basis for analytically distinguishing the different kinds of relationships that are possible between qualifications and the labour market.

The typology is based on two factors: the links that qualifications have to other qualifications within the same field of education, and the links between qualifications and the occupations associated with those qualifications. Qualifications are placed along the vertical axis according to how closely they are linked to other qualifications within the same field of education: where links are weak, very few graduates who undertake a second qualification do so in the same field of education; where links are strong, most graduates who undertake a second qualification progress to a second qualification within the same field of education. Qualifications are placed along the horizontal axis according to how closely they are linked to occupations: where links are weak, very few graduates work in the occupation directly associated with their qualification; where links are strong, most graduates work in the occupation associated with their qualification. This generates four types of qualifications, with a typical example in each (Figure 2).

Figure 2: types of qualifications



Source: adapted from Moodie, Wheelahan, Fredman and Bexley (2015: 17) Figure 1 Four types of qualifications pathways.

Type 1: strong links to education, strong links to occupations

The first type described, shown in the top right quadrant of Figure 2, are qualifications with strong links to education and strong links to work. Type 1 occupations are regulated and have strong occupational pathways, which are replicated by strong educational pathways. Type 1 occupations generally have long training times and educational programs have high input from occupational and registering bodies. A good example is nursing in countries where there is a strong occupational pathway between college-trained and university-trained nurse (see Moodie, 2012: 150 for a discussion of nursing in Australia). Strong educational pathways are related to strong occupational pathways, and the patterns of articulation between vocational and higher education reflects occupational structures. For example, while there can be strong educational pathways between college and university trained nurses, there are rarely pathways between nursing and medicine or from nursing to dentistry or physiotherapy.

Further, at least in some jurisdictions there is only a weak pathway if any from carer occupations and qualifications to college nursing qualifications and occupations.

Type 2: strong links to education, weak links to occupations

The second type described, shown in the top left quadrant of Figure 2, has strong links to other qualifications within the same field of education but weak links to occupations. Type 2 occupations are mostly unregulated and employers use qualifications to screen employees for potential; these employees are given enterprise and industry-specific training and development as part of their employment in internal labour markets or they compete against each other in external labour markets. Consequently, diploma and bachelor graduates compete with each other for similar jobs in type 2 occupations and many graduates from mid-level qualifications proceed to further studies, particularly degrees, because they need to get a degree to get a good job (Wheelahan, Moodie and Buchannan, 2012: 35). A good example is the management and commerce broad field of education, except qualifications preparing people for regulated occupations such as accounting.[3] However, while there are strong links between qualifications within the same broad field of education, there are weak links between qualifications and occupations. Relatively high proportions of management and commerce graduates work in different fields; for example, business graduates working in non-business fields such as government and hospitality and tourism; and conversely, relatively high proportions of employees work in business without a business qualification but a qualification in another field.

Type 3: weak links to education, weak links to occupations

The third type of qualifications, shown in the bottom left quadrant of Figure 2, has weak links to both other qualifications in the same field of education and to occupations. In Australia these are exemplified by what are called here the academic disciplines, or may be called the liberal arts and sciences, such as biology, chemistry, history, languages, literature, mathematics, philosophy and physics. But in other jurisdictions such as many USA states and some Canadian provinces there is stronger progression from liberal arts associate degrees taken in colleges to liberal arts baccalaureates taken in 4-year institutions or universities.

3 See Wheelahan, Moodie and Buchanan (2012: 41) for a discussion of Australia, and Wheelahan et al. (2015b) for a discussion of Canada.

Type 3 qualifications have indirect links to occupations. For example, science graduates may go to the health field of education to undertake their second qualification to prepare them to become medical doctors or another health professional or to the education field of education to prepare them to become a teacher. While employment outcomes for the academic or liberal disciplines are reasonable, most are not employed in the fields in which they were educated. As with type 2 occupations, type 3 occupations are mostly unregulated and employers use qualifications to screen employees for potential.

Type 4: weak links to education, strong links to occupations

The final type of qualification has weak links to other educational qualifications but strong links to work and is shown in the bottom right quadrant of Figure 2. The links between individual qualifications and occupations are strong, but occupational pathways are weak, and consequently educational pathways are weak. Type 4 occupations tend to be highly segmented with very weak occupational pathways. They are often strongly regulated, with the occupational bodies having high input into the curriculum and design of the qualification. There may be few opportunities to progress to higher-level occupations in the absence of occupational pathways, so those who do seek to move to higher-level occupations receive little or no credit from their previous vocational qualifications in higher education when they embark on this path (Wheelahan, Moodie and Buchanan, 2012). The traditional trades may exemplify this category. For example, unless there is a strong occupational pathway between electrician and engineer, very few electricians will become engineers.

4.3 Systems of transition from education to work

The literature on transition systems helps to make sense of the different relationships between qualifications and the labour market between countries and within countries. The links between qualifications and work are the explicit subject of studies of student or education to work transition systems, which after Iannelli and Raffe (2007: 50) and Raffe (2008: 278) may be understood as the relatively enduring features of a country's institutional and structural arrangements which shape the processes and outcomes of people's transitions from education to the workforce. Verdier (2013: 70) explains that vocational education systems are enmeshed in, contribute to, and in turn are shaped by other social sub-systems such as the structure of "labour relations, basic education, higher education, labour market [and] company management". The nature of these systems will differ between high, middle and low-income countries, and will result in different levels of resources vocational education systems and students can draw upon.

While there are several typologies that analyse these different relationships between education and the labour market and other institutions in society, this paper draws upon the 'Varieties of Capitalism' approach (Hall & Soskice, 2001) which broadly distinguishes between liberal market economies in Anglophone countries and coordinated market economies in Northern Europe to understand the links between vocational education and the labour market.[4] The Varieties of Capitalism literature argues that different types of countries have different types of transition systems that reflect the nature of their social and political institutions, economy and labour market. Each results in different "systems of labour market regulation, of education and training, and of corporate governance" (Culpepper, 2001: 4). The skill formation system is different in each. Liberal market economies use the market to coordinate the economy and to match graduates to job. In liberal market economies, education itself operates as a market and the relation between employers and educational institutions is mostly indirect and mediated through the market where graduates compete with each other for jobs. The emphasis on 'generic skills' and 'employability skills' in both VET and higher education in these countries arises because graduates need skills to compete with each other in the labour market. Regulated occupations exist, but they are in a minority and most of the labour market is unregulated.

This paper uses the Varieties of Capitalism's distinction between liberal market and coordinated market economies as ideal types, recognising that no one country conforms in all aspects to an ideal type. See the discussion in Wheelahan (2015).

Coordinated market economies use mainly non-market mechanisms to coordinate the economy based on social partnerships between employers, workers and the state, and these mechanisms are used to match graduates with jobs. There are tight links between work and education in the coordinated market economies (although this is mainly restricted to entry level occupations for young people) reflected in strong apprenticeship systems that prepare young people for work and for citizenship more broadly. In these systems, education is embedded in the occupational field of practice and in the educational institution as learning takes place in both sites. Young people are engaged in an employment contract with the employer and spend substantial time learning at work, as well as in vocational schools or colleges.

Vocational education is positioned differently in liberal market and coordinated market economies. Iannelli and Raffe (2007: 50) observe that in countries with strong links between vocational education and the labour market, such as the Netherlands, the student transition system is dominated by an employment logic: there are strong institutional networks which can support transitions from education to work (Raffe, 2008: 285), there are frequent interactions between vocational education and labour market institutions which transmit strong and clear signals from the labour market to the vocational education system and accord employers and/or trade unions a bigger role in designing, updating, delivering and assessing vocational programs. Employers are thereby likely to have more direct knowledge of vocational education programs and of their graduates. Correspondingly, vocational education students have more contact with employers and easier access to recruitment networks. These systems have correspondingly weaker links between vocational education and academic education, except perhaps for academic education in the same vocational field.

In contrast, in transition systems dominated by an education logic such as in Scotland and other liberal market economies, post compulsory vocational education has weak links with employment, is less sharply differentiated from academic education and has stronger links with higher education. Iannelli and Raffe (2007: 51) note that in transition systems following an education logic employers select job applicants with the greatest potential indicated by the highest level of educational attainment rather than those with specific vocational skills. Vocational education functions more clearly as part of the education system, and the relationship with upper secondary education is defined more by lower status than by stronger orientation to employment. Indeed, vocational education offered in the senior secondary school system is often used as a retention strategy for disengaged young people rather than a serious strategy to place young people in the labour market (K. Clarke, 2012). Employers select on potential, and this is

indicated by level of study and attainment, with vocational education regarded as the option taken by 'weaker' students (Bosch & Charest, 2008). This accounts for the low status of vocational education in these countries. Iannelli and Raffe (2007: 52) concluded that Sweden's and Ireland's transition systems are in an intermediate position between employment and educational logics.

It is important to distinguish the logic of a transition system from its curriculum. The German dual system archetypically has a strong employment logic, but it also has a broad curriculum that emphasises education for citizenship, a strong educational dimension and broad-ranging theoretical knowledge needed for an occupation (Hanf, 2011). Conversely, in many liberal market economies (Hall and Soskice, 2001) vocational education is based on a narrow, skills- focused curriculum which has been widely criticised for not inducting students into the knowledge and skills they need for citizenship or for work (K. Clarke, 2012; Wolf, 2011). This is because each type of system has a different notion of skill and of occupations. In liberal market economies, the notion of skill is task-focused, individualised, and disconnected from systems of theoretical knowledge (L. Clarke & Winch, 2006; Wheelahan, 2012). In contrast, in coordinated market economies (Hall & Soskice, 2011) vocational education prepares students for an occupation which is "a formally recognized social category, with a regulative structure governing VET, qualifications, promotion and the range of knowledge, both practical and theoretical, that are required to undertake the activities that fall within it" (L. Clarke, 2011: 103). The starting point in each case is different: in liberal market economies, it is the skills needed for particular tasks; in coordinated market economies, it is the person and what they require to be a member of an occupation (Winch, 2013b).

Iannelli and Raffe (2007: 50) and Raffe (2008: 287) observe that the different dimensions of transition systems tend to be related empirically and theoretically: countries with strong links between vocational education and work also tend to have strong occupational labour markets, strong apprenticeship systems, standardised education systems, and occupationally specific vocational education programs. In contrast, countries with weak links between vocational education and work were said to have strong internal labour markets and external labour markets. Raffe (2008: 287) argues further that the concept of the transition system is cognate with other system concepts such as production systems, skill acquisition systems and skill diffusion systems.

Nonetheless, one year later Raffe (2008: 289) argued that more recent research had retreated from simple typologies of transition systems as more countries are studied and are found not to fit into the types constructed from comparisons of

a few countries. Furthermore, the simple typologies homogenised systems. National labour markets in some industries may be occupational while others may be internal, and links between education and the labour market may vary by occupation, by educational level or sector. Raffe (2008) therefore reviews work on transition systems at four levels of analysis, with each level increasingly generalising or homogenising transition systems.

Level 1 is micro transition processes and outcomes such as flows between education and the labour market. Level 1 may be aggregated to a 2nd level to show national transition patterns such variations in the match between specific vocational education fields and occupations. National transition patterns are explained at a 3rd level of analysis by transition systems' institutions and structures such as the prevalence of occupational and internal labour markets, labour market flexibility and regulation, the uniformity of standards of curricula and qualifications, the proportions of pupils who complete schooling and proceed to higher education, the size and nature of vocational pathways, and the strength of the institutional linkages between education and the labour market. Types of transition systems are introduced at the 4th level of analysis.

This points to the importance of not overly homogenising skill systems within nations and why differentiated policies are needed to account for the different types of relationships between qualifications and the labour market, particularly between regulated and unregulated occupations. The notion of skills ecosystems helps to overcome this problem. Finegold (1999: 61, 66) describes a high skill ecosystem as "a geographic cluster of organizations (both firms and research institutions) employing staff with advanced, specialized skills in a particular industry and/or technology". They share four requirements with natural ecosystems: a catalyst to trigger their development, continuing nourishment, a supportive environment, and high interdependence among the actors in the system. Finegold (1999: 63) suggests that there are at least three skill segments in most countries. Buchanan and colleagues (2001: 21) extend the idea of skill ecosystems to "clusters of high, intermediate or low-level competencies in a particular region or industry shaped by interlocking networks of firms, markets and institutions".

Regions or industries within countries may be characterised by alternative dynamics (or skills ecosystems), such as between highly regulated occupations (like the electrical trades in vocational education, or medicine or nursing in higher education) in liberal market economies. Generally speaking, there are strong relationships in vocational education and higher education between regulated occupations that have had significant input by

the occupational and professional bodies into the curriculum, assessment and requirements for entry to the field of practice. However, while this may be the case for the regulated occupations that is the purview of vocational education this is not enough to overcome the low status of vocational as a system within liberal market economies with largely unregulated occupations. At the level of the transition system, the dominant educational or employment logic will help to shape the status of vocational education, so that it is lower status in those systems with educational logics, and relatively higher status in those systems with employment logics. However, it is important to recognise that there will be variation within those systems between different skills ecosystems and the links between qualifications and the labour market in those systems.

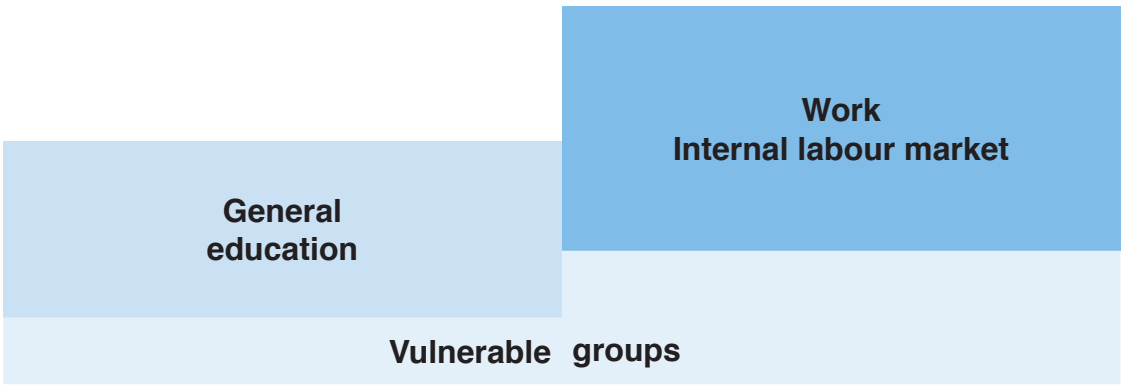
4.3.1 Alternative model of transition systems

Rauner (1999) proposes a somewhat different analysis of transition from education to work based on two concepts: the number and the height of steps in the transition from general education to full engagement in work, which are shaped by the nature of the labour market the graduate enters. He proposes four models. In each model there are people who are vulnerable to not being included in each transition, but the size of the vulnerable groups is related to the number and size of the model's transitions.

4.3.1 Model 1: direct transition

In the first model, there is one transition from general education to full work. This is because the graduate of general education enters an internal labour market and training is carried out as a dimension of in-company organisational development (Grollmann and Rauner, 2007: 3). As in all systems, there is a vulnerable group of pupils who do not complete schooling (well) who risk not being included in or even being marginalised from society. While the one threshold for transition to an internal labour market is modest, some additional pupils who leave school do not have a smooth transition to employment, increasing somewhat the members of groups vulnerable to marginalisation. Japan is an example of direct transition (Rauner, 1999: 238) (Figure 3).

Figure 3: direct transition from education to full work

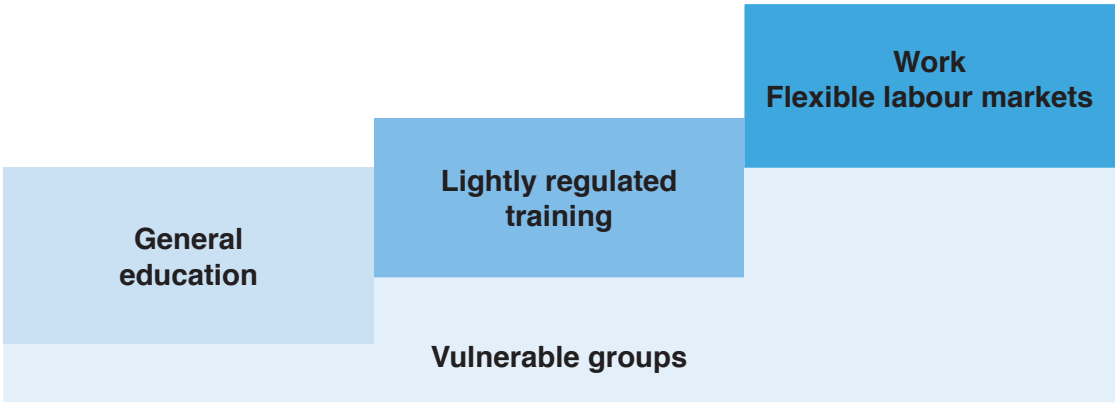


Source: adapted from Rauner (1999: 239) and Grollmann and Rauner (2007: 3).

4.3.2 Model 2: deregulated transition

In the second model, there is a first transition from general education to lightly regulated training and a second transition from training to full work in flexible labour markets. Both transitions have high thresholds and correspondingly high risks for vulnerable groups. To the groups who do not complete school (well) are added the groups who do not start and complete training and additional groups at risk of not gaining employment. The USA and the UK are examples of deregulated transition (Rauner, 1999: 240) and also increasingly countries with a strong academic orientation of the overall educational system which invest in post secondary vocational education such as Spain and Italy (Grollmann and Rauner, 2007: 4) (Figure 4).

Figure 4: deregulated transition

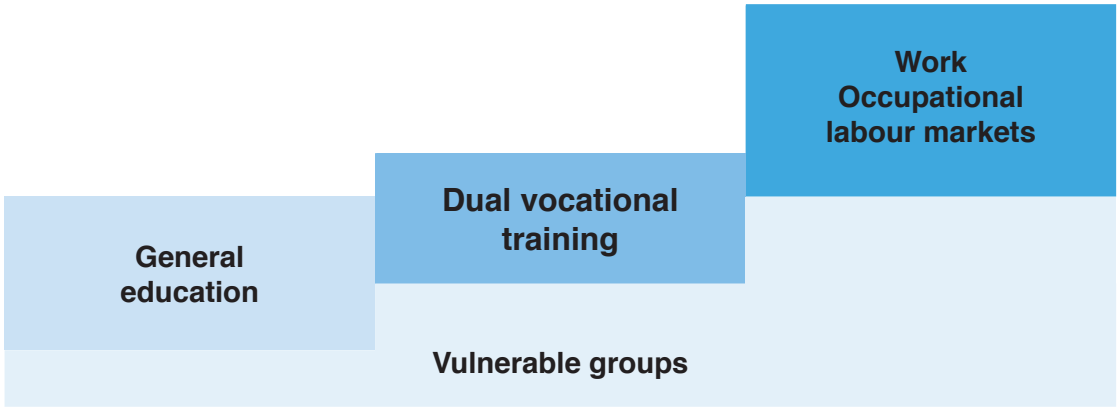


Source: adapted from Rauner (1999: 239) and Grollmann and Rauner (2007: 4).

4.3.3 Model 3: regulated overlapping transition

In the third model, there are also two transitions, but the intermediate stage is the regulated system of dual vocational training, and work is organised in occupational labour markets. While there are potentially the same groups vulnerable to not managing the two transitions from general education to vocational training and from training to employment, the dual vocational training system is coordinated by the social partners so pupils and trainees do not bear so much responsibility for managing these transitions themselves. Consequently, the transition thresholds are low and the risks for vulnerable groups are correspondingly lower. This model predominates in Germany, Holland, Denmark and Belgium (Rauner, 1999: 240) (Figure 5).

Figure 5: regulated overlapping transitions

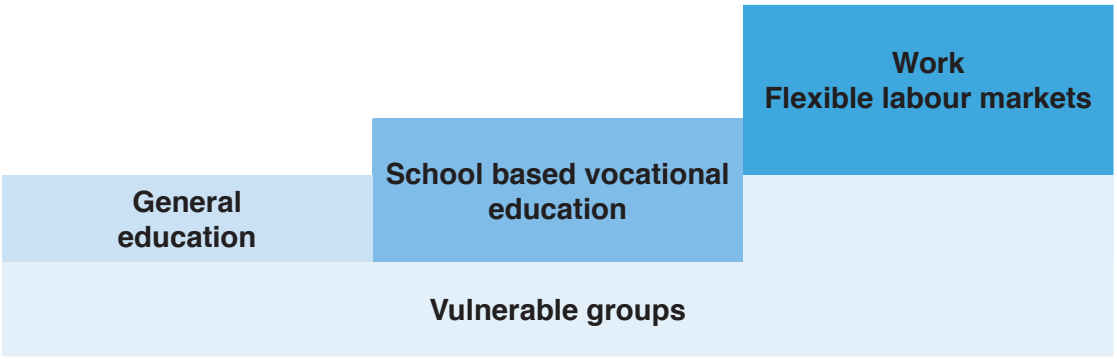


Source: adapted from Rauner (1999: 240) and Grollmann and Rauner (2007: 5).

4.3.4 Model 4: shifted transition

In the fourth model, there is a transition from general education to school based vocational education with a low threshold and a second transition to work in an occupational labour market with a high threshold. Because the first transition from general education to school based vocational education has a low threshold and is relatively seamless the size of the groups made vulnerable by this transition does not increase markedly. However, there is a rather bigger threshold in the transition from school based vocational education to occupational labour markets and there is a marked increase in the size of the groups not able to gain employment and thus make this transition successfully. Rauner (1999: 241) includes in this model 'the large number of countries with a well-developed, school-based (state) vocational training system' such as France and Turkey (Grollmann and Rauner, 2007: 9) (Figure 6).

Figure 6: shifted transition



Source: adapted from Rauner (1999: 242) and Grollmann and Rauner (2007: 6).

4.4 Qualifications' three purposes

The above analysis demonstrates that vocational education qualifications must serve multiple purposes and that they will need to serve these purposes in different ways depending on the nature of the transition system that they are situated within, the kind of labour market they serve, and the relative level of risk associated with transitions in different types of systems. This analysis leads us to propose that both vocational and academic qualification serve three broad purposes (Gallacher, 2011; Gallacher, Ingram and Reeve, 2012; Wheelahan and colleagues, 2015a):

1. *In the labour market*: qualifications help guide entry into and progression in the workforce.
2. *In education*: qualifications are a transition to higher-level studies. All qualifications should provide students with the knowledge and skills needed to study at a higher level in their broad field or a complementary field.
3. *In society*: qualifications widen access to education and support social inclusion and social mobility by supporting disadvantaged students to enter higher-level studies and occupations, and by preparing citizens to live and work in their communities and in society.

All three purposes are needed to support both educational and occupational progression, to strengthen the links between qualifications and jobs, and to support social inclusion and social mobility (Deissinger, Aff, Fuller, & Helms, 2013). However, qualifications differ in the way they serve these purposes and this is largely related to how they are used in the labour market

(CEDEFOP, 2013). The balance between the purposes that qualifications play may vary depending on the relationship between the field of education and the occupational field of practice, and whether occupations are regulated or unregulated. Qualifications for strongly regulated occupations would emphasise the labour market purpose, while they must also include the educational purpose to support progression within the occupation, and they can be evaluated by the extent to which they serve the third purpose. Qualifications for unregulated occupations would emphasise the educational purpose of qualifications because this enables graduates to gain higher-level qualifications and the broader knowledge and skills that they need for a wider range of occupations.

4.4.1 Employment

Vocational education's employment purpose includes awarding qualifications which are well recognised in the formal economy. This can support graduates' movement from informal to formal employment, from rural to urban areas and from one region to another. Marope, Chakroun and Holmes (2015: 17) argue that this movement is important because demographic change and different changes in employment demand results in geographic mismatches between the supply and demand for skilled labour.

In addition to preparing graduates for entry to or progression in the formal workforce, it is argued that vocational education has an important role in developing graduates' capacity for self- employment (UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, 2016: 8; Marope, Chakroun and Holmes, 2015: 179). This is particularly important in developing countries where the informal sector is such a high proportion of total employment. However, it must be recognised that while important, it is nonetheless very problematic because it is shifting the risk of unemployment from government and the social actors to individuals, and is most associated with precarious forms of employment that has minimal protections. On its own, it cannot substitute for a labour market strategy that seeks to create decent jobs, and can only ever be an element of broader social, economic and labour market strategies. Strategies to support self-employment are also important in developed economies in fields with high proportions of self-employment such as the creative arts or creative industries, but here too it carries risks intrinsic to precarious employment. However, as UNESCO Institute for Statistics (2007: 35) argues, in these economies vocational education has an important role in raising the productivity of the informal sector.

4.4.2 Education

Vocational qualifications should prepare graduates for further study in their broad field and in complementary fields (UNESCO-UNEVOC ICTVET, 2016: 11) because in many fields occupational progression depends on gaining a higher qualification and because social progression is so strongly related to educational progression. This involves balancing preparation for further vocational education and preparation for direct entry to the workforce (Marope, Chakroun and Holmes, 2015: 175) and the balance will be different in different fields, at different levels and in different institutions.

4.4.3 Society

Vocational education has a compelling social rationale. As Marope, Chakroun and Holmes (2015: 18) argue, because labour is the main asset of poor people in all countries, increasing the value of that asset not only contributes to economic growth but also improves poor peoples' life chances. Like general education, vocational education supports general human development through literacy, numeracy, health, nutrition, quality of life (Marope, Chakroun and Holmes, 2015: 19) and reproductive choice. As we noted above, a higher proportion of enrolment in vocational secondary education is associated with both higher participation in secondary education overall and greater gender equity in vocational secondary education (UNESCO Institute for Statistics, 2007: 64).

Vocational education can help engender tolerance, reduce racism and increase the development of an inclusive society and acceptance of change

Work is a foundation for stability and a sense of self-identification, dignity and self worth (Marope, Chakroun and Holmes, 2015: 51). Where someone works in a recognised occupation they are able to differentiate themselves and their career from other workers (Jäger, 1989: 568, cited in Rauner, 1999: 242). Marope, Chakroun and Holmes (2015: 162-3) cite Shiohata's (2011) case study of women textile weavers in Laos who acquire their skills from their mothers and other female family members which offers them both a livelihood and a way to sustain their cultural identities. As Bernstein (2000: 59) argues, specialised identities are not just individuals' personal and psychological constructions. They arise out of a particular social order in which individuals'

identities are constructed through relations of "reciprocal recognition, support, mutual legitimisation and finally through a negotiated collective purpose".

Vocational education is a potential route for educational, economic and social progression because vocational education tends to have higher proportions of students who are traditionally disadvantaged (Deller and Oldford, 2011; Trick, 2013). Enhancing pathways from colleges to university is seen as a way to enhance access to university-level education for underrepresented groups such as low-income, remote or rural learners, adult and Aboriginal students, as well as those who may not qualify to attend due to weak academic history (Kerr, McCloy and Liu: 2010; Lennon, Zhao and Gluszynski, 2011). This supports both occupational progression and social mobility by providing access to higher levels of education and higher income jobs (Wheelahan, 2009).[5]

Vocational education has the potential to help economies become more sustainable (Marope, Chakroun and Holmes, 2015: 22) and will have an important role in retraining people whose livelihood is threatened by environmental degradation.

4.5 Implications for vocational education

The three purposes for qualifications described above have implications for their curriculum and pedagogy. Qualifications must reflect the changing nature of work (UNESCO-UNEVOC ICTVET, 2016: 8), the requirement to use higher-level and more abstract knowledge as the basis of occupational progression and the need to help students to contribute to their family, community and society since these enable effective contributions at work.

However, the way that qualifications serve these three purposes will vary depending on whether they serve regulated or unregulated occupations, the extent to which occupational pathways exist, the type of skills ecosystem they are embedded in, how they mediate access to the labour market, and whether they are embedded in a system that is dominated by an employment or an education logic. This analysis demonstrates that simply insisting that

5 However, more policy attention is required to ensure that pathways can support social mobility and social inclusion. Elite programs such as medicine and law admit few transfer students, and at least two studies in different countries have found that the transfer of students from college to university tend to under-represent students from disadvantaged backgrounds (Thompson, 2009; Wheelahan, 2009).

vocational education be more relevant to the labour market misunderstands the way in which transition systems mediate those transitions. If the objective is to tie qualifications more tightly to occupations then the way to do this is to regulate occupations and their educational requirements for entry, not to narrow the focus of vocational qualifications. Tying qualifications more tightly to occupations when those qualifications are used as a screen by employers risks narrowing the types of jobs graduates can get. It is precisely because qualifications signal broader knowledge, skills and attributes that graduates are able to use them to seek employment. However, it may be possible to support stronger links between qualifications and the labour market if the focus were on preparing students for a broad field of practice rather than narrowly defined occupations. These implications are included in discussion of vocational streams and productive capabilities in the next chapter.

Analysis of the nature of transition systems demonstrates the importance of policy learning rather than policy borrowing. It is clear that seeking to reproduce frameworks, curriculum and qualifications from one type of system to the other fails to take account of the complexities, social partnerships and transition systems in different countries.

4.6 Conclusion

Vocational qualifications are used in different ways in a variety of different contexts. Employers use some qualifications to signal that graduates have specific knowledge and skills needed for specific jobs. Employers use other qualifications to screen graduates for general potential for a range of jobs. Some qualifications are used as a signal for some jobs and as a screen for other jobs. Vocational qualifications also have different relations with other qualifications. Some vocational qualifications have high proportions of graduates proceeding to qualifications at a different level in the same field while other qualifications have low proportions of graduates proceeding to qualifications at a different level in the same field. This generates a typology of four types of qualification depending on whether their links to occupations are weak or strong and on whether their links to qualifications within the same field of education are weak or strong.

Vocational qualifications also have different roles depending on the nature of the system for graduates' transition from education to work. Some systems have

strong institutional networks linking education to work while in other systems post compulsory vocational education has weak links with employment, is less sharply differentiated from academic education and has stronger links with higher education. These broad differences in transition systems can be elaborated into four models of transition systems. In one model, there is direct transition from general education to work which is segmented by an internal labour market with internal training. In a second model, there is a first transition from general education to lightly regulated vocational education and a second transition to flexible labour markets. A third model is of a first transition from general education to a regulated system of dual vocational education and work experience and a second transition to work which is organised in occupational labour markets. The fourth model is of a first transition from general education to school based vocational education and a second transition to work in an occupational labour market.

The chapter argues that the different uses of vocational qualifications in work, their different relations with other educational qualifications and their different roles in different types of transition systems may be reflected in three purposes of qualifications:

1 to guide entry to and progression in the *labour market*;

2 to equip graduates to proceed to higher level studies in the *education* system; and

3 in *society* to widen access to education and work and to support social inclusion and mobility by providing access to higher levels of education and work, particularly for disadvantaged students and students from under represented groups.

Vocational education can help engender tolerance, reduce racism and increase the development of an inclusive society and acceptance of change.

The chapter argues that all vocational qualifications should serve all three purposes but that the balance between each purpose depends on the nature of the qualification, how it is used in the labour market, its links with other educational qualifications and the nature of the transition system in which it is embedded.

5. Productive capabilities

Previous chapters have noted the very considerable diversity in economic resources, economic and social structures and institutions, and the different cultures in countries that shape vocational education in very different ways. Even high income industrialised countries have very different forms of vocational education. This has so far presented difficulties for analysis: it is hard to include most of the world's vocational education within one conceptual framework. In this chapter the diversity of countries' circumstances and of their vocational education is a challenge for developing norms. The challenges and obstacles in countries are so different that what may be desirable in one country doesn't even arise as an issue in several others.

Marope and colleagues (2015: 42) argue that the economic perspective has dominated vocational education for much of the last century, and that the "contribution of TVET to holistic, humanistic and sustainable development is less acknowledged". However, a satisfactory alternative theoretical basis for vocational education has yet to be elaborated. Tikly argues that while the 'sustainable development' model offered by UNESCO is an advance on the human capital approach, that nonetheless it is limited. This is because: "the concept of sustainable development is rather vague" and difficult to pin down and quantify; that "the process underlying how this might be achieved is not specified" with the danger that it may result in prescriptive and top-down approaches; and, that concerns about gender and other forms of social inclusion appear at the margins, "rather than integral to the way that the sustainable development approach has been developed thus far" (Tikly, 2013: 17).

In this chapter, we propose that a common high-level role for vocational education that accommodates its very different circumstances is to develop peoples' productive capabilities. Tikly (2013: 20) argues that the capabilities approach "allows for an expanded view of the purpose of TVET as supporting the development of human capabilities and functionings that individuals, communities and society at large have reason to value". Tikly applies the capabilities approach to understanding the broad purposes of vocational education and the role it can play in society, and also to issues of funding and governance.

This chapter elaborates that analysis through the concept of productive capabilities to consider the distinctiveness of the capabilities approach as a conceptual model for considering the relationship between vocational curriculum, qualifications and society. In particular, it identifies the ways in which the relation between vocational education and the labour market can be strengthened without narrowing the purpose

of qualifications or their curriculum (Buchanan and colleagues, 2009; Wheelahan and Moodie, 2011; Moodie, Wheelahan, Fredman and Bexley, 2015). We start by describing the capabilities approach, we apply that to vocational education as productive capabilities, and then we describe how vocational education may develop productive capabilities.

5.1 The capabilities approach

The capabilities approach as developed by Amartya Sen (1999a) and Martha Nussbaum (2000) is concerned with the notion of human flourishing and the broad social, economic, cultural and echnological resources that are needed to support that. Education is crucial not just for its instrumental purposes, but because it has intrinsic worth in its own right. Capabilities refer to the social and individual resources that people have access to that enable them to live lives they have reason to value; this is the notion of 'agency freedom' in which individuals choose how they wish to use their capabilities, or the 'functionings' that they wish to achieve (Robeyns, 2005).

Capabilities refer to what people are able to do and to be (Robeyns, 2005: 94). The capabilities approach distinguishes between capabilities and functionings. Capabilities refer to people's capacity to act, while achieved functionings refer to the outcomes that ensue when they choose to use their capabilities to achieve a particular goal. A complex set of capabilities provides individuals with the basis for making choices in their lives, whereas functionings are the outcomes when they exercise choice. A particular set of capabilities can produce any number of outcomes. Two people with similar capability sets may make choices that result in different functionings or outcomes. The capabilities approach has a different starting point to human capital approaches, as Sen explains:

> At the risk of oversimplification, it can be said that the literature on human capital tends to concentrate on the agency of human beings in augmenting production possibilities. The perspective of human capability focuses, on the other hand, on the ability – the substantive freedom – of people to lead the lives they have reason to value and to enhance the real choices they have. The two perspectives cannot but be related, since both are concerned with the role of human beings, and in particular with the actual abilities that they achieve and acquire. But the yardstick of assessment concentrates on different achievements.
>
> (Sen, 2007: 99)

The capabilities approach is increasingly being used in economic and social policy. For example, Amartya Sen's work underpins the United Nations' Human Development Index (Stanton, 2007: 3). Robeyns (2005: 94) explains that:

> The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society.

The capabilities approach provides the basis for understanding and addressing multiple and overlapping forms of disadvantage. Tikly (2013: 25) explains that the capabilities approach "implies a focus on the institutional and cultural barriers that prevent inclusion of different groups". It has implications for resourcing because it recognises that some groups will need higher levels of resources to achieve comparable capabilities as the basis for exercising choice in their lives. And, consequently, this has implications for policy, funding and governance. As capabilities are embedded in their social context and manifest differently in different contexts, they require local engagement with social partners, educational institutions and a nuanced understanding "of the different kinds and levels of resource input required by different groups of learners" (Tikly, 2013: 29).

The development of capabilities is underpinned by institutional frameworks and social partnerships. This points to the importance of strong public vocational education institutions in mediating the development of capabilities and in mediating links between students and other social partners. And, this requires strong public vocational education institutions to participate in discussions and debates about the nature of capabilities, and to support their development. Sen (1999b: 123), explains that we live and operate in a world of institutions, and that "Our opportunities and prospects depend crucially on what institutions exist and how they function". He explains, "Not only do institutions contribute to our freedoms, their roles can be sensibly evaluated in the light of their contributions to our freedoms" (Sen, 1999b: 123).

5.2 Caveats in using the capabilities approach

There are important caveats in understanding the way in which the capabilities approach can be used. Tikly (2013: 22) explains that "the capability approach

should not be seen as providing ready-made answers to the policy issues and challenges facing the TVET sector today". He argues that it "should be seen as a way of framing issues and as a starting point for evaluating policy choices" (Tikly, 2013: 22). The second caveat that he raises is that the capabilities approach is still in its infancy in being applied to education in general and vocational education in particular.[6]

The third caveat we raise is that while the capabilities approach provides a normative framework for evaluating, assessing and providing the conditions for individual well-being and social arrangements, it does not provide explanations about the causes of "capability deprivation" (Sayer, 2011: 238). Sayer (2011) explains that capabilities must be developed in context-sensitive and dependent ways, because without this there is a lack of attention to the social conditions and social arrangements that are needed to realise capabilities. This requires substantive social analysis, and in the context of vocational education, must be located in an understanding of the nature of transition systems, skills ecosystems, the different types and levels of 'risk' associated with those transitions, and the different ways qualifications are used to mediate access to the labour market. Unless the conditions for the realisation of capabilities are considered (for example, the type of labour market students are entering, access to health care, housing, transport etc), the use of the capabilities approach may result in the formal provision of opportunities, but not the substantive means to realise them, or it may result in paternalistic policies. For example, Klein (2015) argues that the capabilities approach was used in Indigenous policy in Far North Queensland in Australia to justify paternalistic and directive policies such as income management, welfare to work policies and to re-engineer social norms.

The fourth caveat is that while the capabilities approach could help renovate vocational education qualifications so they are more holistic and developmental, it cannot on its own 'fix' the problems of the labour market. To do this would require a focus on the labour market itself, and not just vocational education qualifications (Bryson, 2015). For example, while vocational education may provide education that helps students develop capabilities, these capabilities may not be able to be realised in workplaces that resist change, are discriminatory, or provide few opportunities for discretionary learning or for the development of autonomous practice.

6 Although considerable work is being done and the body of work is developing. See Walker (2007, 2008); Walker and Unterhalter (2007a, 2007b); Unterhalter (2009); Boni, Lopez-Fogues and Walker (2016); and, Saito (2003), among others. However, it is true that while the capabilities approach has been considered in more depth for school education and higher education, less work has been undertaken in vocational education, although see Cairns and Stephenson (2009); Powell and McGrath (2014); Buchanan and colleagues (2009); Wheelahan and Moodie (2011); Wheelahan, Moodie and Buchanan (2012); Moodie, Wheelahan, Fredman and Bexley (2015); and, Leahy (2012, 2013).

The final, and in many ways crucial, caveat, is that capabilities cannot be considered in the abstract. Capabilities are not just an individual attribute: they include the resources available to a person and their personal, social and environmental circumstances that make it possible for them to realise what they reasonably value. A problem in some of the literature is that it considers capabilities in the abstract to generate idealised lists of individuals' attributes such as general skills, employability skills and graduate attributes. However, since these are detached from the requirements of particular occupations and the circumstances in which they are practised they don't advance analysis beyond other lists of general skills and attributes. For example, workers in engineering and construction need different capabilities and conditions to realise those capabilities compared to those in care work. Abstracting capabilities from the vocational field of practice in which they are to be realised would result in idealised skills that lack relevance. Because capabilities are embedded in their social context they manifest differently in different contexts. Advancing or indeed maximising human capabilities in one context is different from advancing capabilities in another context.

5.3 Productive capabilities

We apply human capabilities to vocational education by considering what people are able to 'be and do' at work and through work to realise themselves and their goals. We understand productive capabilities to refer to the resources and arrangements of work and the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work (Moodie, Wheelahan, Fredman and Bexley, 2015: 19). Vocational education students need to understand how their field of practice fits within their communities and societies, and they require the capacity to be 'citizens' within their field, so they can help shape its future.

5.3.1 Vocational streams

Productive capabilities are located in and concentrate on an intermediate specialised level, the vocational stream. A vocational stream links occupations that share common practices, knowledge, skills and personal attributes. The UNESCO-UNEVOC conference in 2004 adopted 12 vocational disciplines:

agriculture, food and nutrition; business and administration; civil engineering; education and culture; electrical and electronic engineering and information and communication technology; health care and social care; leisure, travel and tourism; media and information; mining and natural resources; process engineering and chemistry; production and manufacturing; and textile and design (Pahl and Rauner, 2009: 194). But it is most likely that different economies have different vocational streams. The UK's independent panel on technical education (Sainsbury, 2016: 33) adopted 15 occupational groups from analysing current labour market information and projections of future skills needs which were reviewed with employers, academics and professional bodies and tested for alignment with English apprenticeship standards and current tech levels and technical certificates. The panels' groups are: agriculture, environmental and animal care; business and administrative; catering and hospitality; childcare and education; construction; creative and design; digital; engineering and manufacturing; hair and beauty; health and science; legal, finance and accounting; protective services; sales, marketing and procurement; social care; and transport and logistics.

Vocational streams increase horizontal flexibility and transferability at work by linking occupations in a broad field of practice and increase vertical flexibility and progression by supporting education and occupational progression in a broad field of practice (Buchanan and colleagues, 2009). For example, a vocational stream could be developed in rural services to allow people to work in different rural industries in a region as seasonal demand changed and to progress over time from semi-skilled to skilled and then to highly skilled occupations. This would help to improve links between qualifications and occupations, while not precluding their broader purposes.

5.3.2 Broader resources

Productive capabilities also rest upon broader social, economic, cultural and technological resources. For example, individuals need to have the language, literacy and mathematical skills for engaging and progressing in study and work. They need to have access to the social and economic resources that facilitate their participation in study and work, such as the necessary housing, healthcare, transport and childcare, as well as enable their participation in civic society and in their communities. And they need to have the knowledge, skills and attributes required to navigate, negotiate and engage in these aspects of life; the capacity to be skilful at work emerges from broader knowledge,

skills and attributes. While vocational education should develop a broad field of practice, it should also contribute to and benefit from helping students develop the building blocks of these broader capabilities. Qualifications may do this in different ways, depending on their relationship with the structures of the labour market.

5.3.3 Vocational education to develop productive capabilities

Vocational education to develop productive capabilities would develop individuals in three domains (Wheelahan and Moodie, 2011).

1. *The knowledge base of practice:* this includes the theoretical knowledge needed for the field of practice, but also for higher-level study within the occupation. It also includes knowledge about the history and trajectory of their field of practice, ethical dilemmas and debates, and knowledge about sustainable practices.

2. *The technical base of practice:* this includes industry skills, or the ability to perform particular roles and tasks, that transcend particular workplaces.

3. *The attributes the person needs for that occupation*: this includes attributes such as ethical practice, but also effective communication skills, the capacity to work autonomously and in teams, creativity, information management and so forth. While these are sometimes described as general or generic, they are understood differently in different fields of practice and need to be developed in specific disciplines and occupations. Since capabilities are embedded in their context, productive capabilities requires an understanding of the nature of work, the relationship between education and work, and the 'kind of qualified person...we want to produce' (Muller, 2009: 217).

Capabilities would thus be realised in different ways not only between nations and regions, but also between industries and fields of practice. They provide the conceptual basis of qualifications, but the specific focus and content of teaching and learning and curriculum requires deep understandings of the contexts for which students are being prepared, engagement with local communities of interest, and negotiation over the outcomes. For example, the capabilities that electricians need will differ from those of childcare workers.

Both will require an understanding of the theoretical basis of their practice (for example, mathematics for electricians, theories of child development for childcare workers), both will need to develop the technical skills that underpin practice in their field, and both will need to develop the attributes required of practitioners in their field. They both need to understand their communities, and be able to participate in their workplaces in shaping practice. They will both will need to be able to problem solve, communicate, apply knowledge and the like, but these mean different things in each field. It is not possible to develop a generic list of skills (even so-called 'soft skills') and expect that they can be taught and applied generically. The implementation of skills in different fields of practice requires knowledge that underpins that field of practice. For example, problem solving in putting out a fire on an oilrig is quite different to solving a problem in a childcare centre with a two-year-old who is throwing a tantrum. Each requires theoretical knowledge as well as skill in solving these respective problems.

Strong institutional frameworks are needed to support these outcomes, which include stable, strong, well funded public vocational education institutions. Winch (2013a: 116) explains that vocational education frameworks need stability:

> "...so that it can evolve along pathways familiar to participants, and so that routes and qualifications are recognized by all stakeholders... Governments must resist the temptation to change TVET structures for short-term political benefit, and should plan for robust and long-term stable structures. Last, but not least, qualifications should contain substantial theoretical content to facilitate permeability and broad occupational capabilities..."

5.4 Conclusion

This chapter proposes that a common high-level role for vocational education that accommodates its very different circumstances is to develop peoples' productive capabilities. Productive capabilities are the resources and arrangements of work and the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work. Because capabilities are embedded in their social context and manifest differently in different contexts,

they require local engagement with social partners, educational institutions and a nuanced understanding of the different kinds and levels of resources needed by different learners.

To develop students' productive capabilities vocational education needs to develop individuals in three domains:

1. the knowledge base of practice;
2. the technical base of practice; and
3. the attributes the person needs for that occupation.

Capabilities would be realised in different ways not only between nations and regions, but also between industries and fields of practice. They provide the conceptual basis of qualifications, but the specific focus and content of teaching and learning and curriculum requires deep understandings of the contexts for which students are being prepared, engagement with local communities of interest, and negotiation over the outcomes.

6. Vocational education's future

This chapter outlines an approach to realising vocational education's potential to develop the productive capacity of people, their societies and their economies. First, vocational education must itself have the capacity to develop productive capacity. This needs to be established in strong physical and social institutions. Vocational education needs to collaborate and coordinate with other sectors, and this may be achieved by engaging vocational education in a social dialogue with social partners. Vocational education needs to increase its contribution to the informal economy which exists in all countries, and is bigger in low income countries which most need development and economic growth. We argue that many of these important strands for vocational education's future in its very different contexts may be achieved by designing vocational education to develop productive capabilities.

6.1 Develop vocational education institutions and their capacity

Vocational education cannot contribute to developing individuals' and society's capacity without it itself having the capacity to do so. This requires an appropriate curriculum and the pedagogy and the resources to support high quality teaching and learning (Gamble, 2013). Those resources include appropriately qualified teachers with enough time to devote to their students' and their own development, and facilities in which they and their students can work (ILO, 2015a). As with any other form of education, vocational education also needs the structures and physical and social institutions to accumulate expertise, transmit knowledge from the past and anticipate and codify future needs. In many jurisdictions, vocational education institutions need to be further developed and strengthened to increase their contribution.

6.2 Social partners and social dialogue

Because of its direct interaction with both general and academic education and work, vocational education particularly needs to collaborate and coordinate

with other sectors. Strong collaboration and coordination may be achieved by engaging vocational education in a social dialogue with social partners. The European Union (2016) understands the social partners to be organisations which represent the interests of workers and employers 'taking into account the diversity of national systems' (European Union, 2016). The social partners' participation in deciding and implementing vocational education policy is highly desirable to maximise workers' participation in decisions that affect their work and futures, to encourage participation in continuing as well as initial vocational education, to support close cooperation between vocational education and work, to facilitate vocational education and work responding to their changing conditions, and to contribute to active labour market policies (ILO, 2010: 14). Employers' participation in vocational education programs encourages their acceptance of students on work placements and their employment of graduates (UNESCO-UNEVOC ICTVET, 2016: 8) since they have direct knowledge of students' strengths.

Marope, Chakroun and Holmes (2015: 181) argue that the social partners' participation in vocational education policy and governance is facilitated by "well-organized representative structures, such as a chamber of commerce, professional associations, trade unions or a national youth council, for example". However, they imply that industry should not be so directly involved in vocational programs which mainly lead to further education (Marope et al. 2015: 174). And they are sceptical about employers' participation in the governance of vocational education. Further, Marope, Chakroun and Holmes (2015: 174) argue that the interests of managers may not coincide with the interests of their firms and that the aggregated interests of firms may not amount to the national interest.

Arguably, vocational teachers' participation in developing vocational education policy is crucial for its effectiveness (UNESCO-UNEVOC ICTVET, 2016: 9). Vocational teachers are generally focused on preparing students for their broad occupational field and their longer term careers rather than short-term interests of particular employers. They need to be a key part of the social dialogue about the purposes of vocational education, and how it should be structured and implemented to support students' outcomes, as do their unions. The OECD (2015b: 174) argues that "Understanding the role and potential of teacher unions for improving education is essential for the health of countries' education systems".

The ILO (2013a:12) understands that:

social dialogue includes *all types of negotiation, consultation or information*

> *sharing among representatives of governments, employers and workers or between those of employers and workers on issues of common interest relating to economic and social policy.*
>
> Social dialogue is both a means to achieve social and economic goals and an objective in itself, as it gives people a voice and stake in their societies and workplaces. It can be bipartite, between workers and employers (referred to by the ILO as "the social partners") or tripartite, including government.
>
> Social dialogue can improve the design of policy measures; it can contribute to their effective implementation and it can improve the quality of the outcomes.
>
> (ILO, 2013:12, original emphasis)

Consequentially social dialogue 'can be informal or institutionalised, and can take place at the national, regional, sectoral or enterprise level' (ILO, 2010: 48). Social dialogue is important in establishing and changing vocational education systems (ILO, 2010: 15). Social dialogue is a way of developing the cooperation between the supply side role, the demand side roles and the relational role which 'involves the exchange of strategic intelligence between institutions on the demand and supply sides of HRD [human resource development], enabling optimal HRD decisions to be made' (Marope, Chakroun and Holmes, 2015: 173).

6.3 Address the informal economy

All countries have an informal economy, yet vocational education usually does not serve its skills needs, even in countries where the informal economy is a high proportion of total employment. While the informal economy is by its nature difficult to reach, and is unlikely to have much resources to pay for formal vocational education, its economic and social importance provides a strong case for improving its skills development (Marope, Chakroun and Holmes, 2015: 74; Khan, no date: 160; UNESCO Institute for Statistics, 2007: 35; ILO, 2010: 15). Khan (no date: 160) argues that vocational education needs to address the particular needs of rural areas, where much of the informal economy is located.

Much vocational education in low income countries is in traditional apprenticeships in the informal economy. Marope, Chakroun and Holmes (2015: 53) cite Walther (2007) for their statement that 'Up to 90 per cent of TVET opportunities in some

West African countries are located within the traditional apprenticeship system'. However, they express concerns that traditional apprenticeships are of poor quality and replicate outdated methods of production (Marope, Chakroun and Holmes, 2015: 75, 76).

Since formal vocational education is mostly yet to address the needs of the informal economy there are few examples let alone models of how this may be done. This reflects a major gap in understanding skills formation in the informal economy and how it may be improved. But it seems at least possible that it be necessary to develop new vocational education structures and programs to serve the needs of informal and rural economies, keeping in mind that vocational education cannot, by itself solve the economic and social problems of low income countries. While vocational education is crucial to social and economic development, it is necessary to focus on broader economic and social strategies to ensure responsibility for access to decent jobs is shared by all social partners.

6.4 Productive capabilities

Designing vocational education to develop productive capabilities integrates many of these important strands for vocational education's future. Since capabilities are embedded in their context it ensures that vocational education prepares graduates for occupations as they exist in each economy. By developing graduates for vocational streams, it prepares graduates for both horizontal and vertical progression. By developing students' knowledge base of practice, technical base of practice and occupational attributes it prepares them for advancement in their occupation and also for educational progression. This ensures that vocational qualifications serve the three goals of all qualifications in the labour market, in education and in society.

Capabilities embed occupations in their broader economic, social and organisational context, which differ markedly between countries and regions. This means that the specifics of vocational education will differ in different contexts. But in all contexts, productive capabilities share the goal of preparing graduates to 'be and do' what they want to be at work and through work to realise their goals and themselves. Capabilities also provide the framework for evaluating vocational education systems, institutions and qualifications and focus on human flourishing, human rights and social inclusion as the starting point.

To advance the potential of productive capabilities, further work is needed to investigate and elaborate how they may be developed for specific vocational streams and in specific contexts. From this it would hopefully be possible to identify some general principles for developing productive capabilities and determining the conditions under which they are best developed in different types of countries at different levels of development.

6.5 Conclusion

This chapter argues that vocational education's contribution to its economy and society and more broadly to the United Nations' sustainable development goals depends on it having the appropriate capacity: curriculum, pedagogy and the resources to support high quality teaching and learning which include appropriately qualified teachers with enough time to devote to their students' and their own development, facilities in which they and their students can work; and structures and physical and social institutions to accumulate expertise, transmit knowledge from the past and anticipate and codify future needs. Because vocational education has close relations with general and academic education, and because of its strong links to work, vocational education needs to collaborate and coordinate with work and other sectors. Vocational education may achieve this by engaging in a social dialogue with social partners.

Vocational education can make a major contribution to increasing social and economic justice, and advancing social and economic inclusion and mobility by being invested in areas and groups with the greatest need. A disadvantaged sector that has been largely overlooked by most social services including vocational education is the informal economy. The informal economy is difficult to reach and has scant resources to support vocational education. Serving the informal economy remains a major gap in vocational education understanding and practice.

The chapter argues that many of these important strands for vocational education's future may be integrated by designing and developing vocational education to develop productive capabilities, which we understand to be the resources and arrangements of work and the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work.

7. Conclusion

This paper seeks to advance Education International's discussion of the role of vocational education in supporting the achievement of UNESCO's *Education 2030,* which commits the international community to *"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"* (UNESCO, 2015a: iii). Education is the subject of the United Nations' sustainable development 'Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' and arguably education is important for achieving all 17 of the United Nation's sustainable development goals. This applies to vocational education as much as to other forms of education, and vocational education is the explicit subject of target 4.4 to 'substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship' by 2030 and target 4.5 to 'eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations' by 2030. The United Nations recognises the importance of qualified teachers in achieving these goals in target 4.c.

However, the paper notes that this strong support in principle for vocational education becomes attenuated and qualified as more specific policies and actions are proposed in UNESCO's policy, recommendations and draft strategy for technical and vocational education and training. In addition, vocational education is confronting several challenges: growing unemployment and the changing structure of the labour market which is reducing the attractiveness of traditional vocational education, lower status, privatisation and marketisation, and the application of human capital policies. The paper argues that these challenges may be met by articulating the mission of public vocational education institutions as anchor institutions in their local communities that serve their industries and regions, contribute to sustainable social and economic development, and support individuals to exercise choice in how they live their lives and contribute to their families and communities.

The paper adopts the definitions of the International Standard Classification of Education ISCED 2011 and examines data published by the UNESCO Institute for Statistics' data centre to observe the incidence of vocational education by level of education, region and country income group. The paper finds that countries in low and lower middle income groups have a disproportionately low share of vocational education enrolments. While this may be due partly to these countries' lower need

for vocational graduates because of their different economies, it is also likely to be due at least partly to the lack of resources to support vocational education in lower income countries. The paper argues that this further disadvantages lower income countries which should be redressed with increased investment, including of policy and analysis.

While all countries have an informal economy, it is a bigger share of economic activity in lower income countries. Contributing to the development of skills in the informal economy is therefore an important role for vocational education, which has so far been mostly overlooked in practice, policy and analysis. While the informal economy is by its nature difficult to reach, and is unlikely to have many resources for formal vocational education, its economic and social importance provides a strong case for improving its skills development.

The paper observes that vocational qualifications are used in different ways in a variety of different contexts and have different roles depending on the nature of the system for graduates' transition from education to work. The paper argues that these differences are reflected in different purposes for qualifications:

1. to guide entry to and progression in the *labour market*;
2. to equip graduates to proceed to higher level studies in the *education* system; and
3. in *society* to widen access to education and work and to support social inclusion and mobility by providing access to higher levels of education and work, particularly for disadvantaged students and students from under represented groups. Vocational education can help engender tolerance, reduce racism and increase the development of an inclusive society and acceptance of change.

The paper argues that all vocational qualifications should serve all three purposes but that the balance between each purpose depends on the nature of the qualification, how it is used in the labour market, its links with other educational qualifications and the nature of the transition system in which it is embedded. The paper argues that these purposes may be encompassed in a common high-level role for vocational education to develop peoples' productive capabilities. Productive capabilities are the resources and arrangements of work and the broad knowledge, skills and attributes that individuals need to be productive at work, to progress in their careers, and to participate in decision-making about work. Because capabilities are embedded in their social context and manifest differently in different contexts, they require local engagement with social partners, educational institutions and a nuanced understanding of the different kinds and levels of resources needed by different learners.

To develop students' productive capabilities vocational education needs to develop individuals in three domains:

1 the knowledge base of practice;

2 the technical base of practice; and

3 the attributes the person needs for that occupation.

Capabilities would be realised in different ways not only between nations and regions, but also between industries and fields of practice. They provide the conceptual basis of qualifications, but the specific focus and content of teaching and learning and curriculum requires deep understandings of the contexts for which students are being prepared, engagement with local communities of interest, and negotiation over the outcomes.

Vocational education can make a major contribution to increasing social and economic justice, and advancing social and economic inclusion and mobility by being invested in areas and groups with the greatest need. An important area of need, largely overlooked by vocational education as much as other formal social services, is supporting the development of skills in the informal economy. While the lack of attention to the informal economy is as understandable as it is hard to redress, it remains a major gap in vocational education understanding and practice.

The paper argues that vocational education's contribution to its economy and society and more broadly to the United Nations' sustainable development goals depends on it having the appropriate capacity. This includes an appropriate curriculum and pedagogy and the resources to support high quality teaching and learning. This in turn includes appropriately qualified teachers with enough time to devote to their students' and their own development, and facilities in which they and their students can work. Less often acknowledged but crucial in the face of several governments' privatisation of vocational education is the need to maintain vocational education structures and physical and social institutions to accumulate expertise, transmit knowledge from the past and anticipate and codify future needs. Vocational education may maintain close relations with other forms of education and strong links with work by participating in a social dialogue with social partners.

The paper argues that many of these important strands for vocational education's future may be integrated by designing and developing vocational education to develop productive capabilities, which we understand to be the resources and arrangements of work and the broad knowledge, skills and attributes that individuals

need to be productive at work, to progress in their careers, and to participate in decision-making about work.

Next steps

Teachers and strong publicly funded vocational education institutions are the key building blocks of strong vocational education systems that can contribute to social inclusion, and sustainable, fair and socially just economic prosperity. Publicly funded vocational education institutions are the key anchor institutions in their communities and local industries. Vocational education teachers and institutional leaders are deeply involved with their communities, understand their needs, and how to support them. If they are to do their jobs effectively, two conditions are necessary. First, there must be an acknowledgement of the role that they play in supporting and sustaining strong, resilient and productive communities. Unlike schools and universities where there is a broadly shared understanding about the role they play in society, there is no shared understandings about the role of vocational education institutions and teachers, and this is a serious problem for our sector.

The second condition, is that vocational education institutions, teachers, and their unions need to have a good understanding of the nature of the transition system that they are situated in, and the kinds of policies, practices and approaches that are needed to support social and economic development, and to support students' transitions to the labour market. This includes an understanding the different ways the capabilities approach can be applied in different types of transition systems, if it is to be used as a conceptual basis for vocational education qualifications as well as for evaluating the role and purpose of vocational education and its institutions more broadly.

Consequently, this paper proposes that Education International develop a research program that:

- explores the nature of different types of transition systems in low, medium and high income countries, and the different kinds of 'vocational streams' that exist within these countries, the nature of the social partnerships that underpin them, and the potential for further development of social partnerships;
- considers the role and relevance of the capabilities approach in these countries at the level of policy and at the level of qualifications;
- develops and articulates an analysis of the role of publicly funded vocational education institutions in supporting strong student transitions within the different types of transition systems, and in the role that vocational education institutions

play as anchor institutions in their communities, and in developing, articulating, codifying and institutionalising knowledge and skills needed for the future.

Such a project may provide the basis for developing proposals in partnership with key international governmental organisations and national governments for a small number of action research projects that seek to develop the notion of vocational streams and the capabilities approach in different contexts. Such projects could inform the development of more nuanced policies that are based on policy learning rather than policy borrowing.

8. The authors

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Education International is a federation of 396 associations and unions which represent some 32.5 million teachers and other employees in all forms of education: early childhood, primary school, secondary school, vocational, university and adult education. Education International represents organisations from 171 countries which are served in 5 regions: Africa, North America and the Caribbean, Asia and the Pacific, Europe and Latin America (Education International, no date, b).

Education International has been very active in vocational education. Its Congress has adopted several resolutions on vocational education:

- 2007 Congress, The 6 essential points to strengthen vocational education and training;
- 2011 Congress, Policy statement on vocational education and training; 2011 Congress, New impact of vocational education and training in each EI region;
- 2011 Congress, Resolution on vocational education, gender and inclusiveness; and
- 2015 Congress, Resolution 1.4, Promoting vocational education and training (VET) – qualifying young people.

(Education International, no date, a: 1)

Education International (2009) produced a literature review on vocational education and training, it convened a VET Task Force from 2013 to 2015 and World Congress 2015 had a Roundtable on VET, Further and Higher Education Caucus.

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