

**Technical and Vocational Education
and Training as a Framework for Social Justice:**
Analysis and Evidence From World Case Studies

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Table of Content

Abstract	5
Summary	6
The Dominance and Limitations of Human Capital Theory	15
Human Capital Theory does not Explain Fully the Use of Qualifications in the Workforce	16
Human Capital Theory does not Recognise the Importance of Non-Utilitarian Studies	18
Human Capital does not Account for Education’s Non-Employment Benefits	19
Human Capital Theory does not Account for Colleges’ Institutional Role	19
Alternative: Human Capability	20
Productive Capabilities	25
Vocational Streams	25
Broader Resources, Institutions, and Social and Physical Infrastructure	27
Implications of Case Studies	28
Argentina: Capacity for Collective Action	28
False Bay College, Cape Town: Physical Integrity	33
Côte d’Ivoire: Minimal Infrastructure Requirements	35
Ethiopia: Strengthening the Informal Economy	36
Australia: Developing Institutions, Systems and Teachers	40
England: Adequate Resourcing	44
Germany: Trust and Coordination Between Social Partners	49
Taiwan: Educating the Whole Person	52

Implications for Technical and Vocational Education and Training	53
Technical and Vocational Education and Training's Development of its Students	53
Technical and Vocational Education and Training's Development of its Communities	57
Technical and Vocational Education and Training's Development of	
Occupations and Industries	58
Technical and Vocational Education and Training Colleges' Institutional Strengths	59
Conclusion	61
Acknowledgements	63
Education International	63
References	64

Table of Tables

Table 1: Methods used for each national case study	13
Table 2: Transparency International’s transparency score, selected countries, 2018	30
Table 3: Capabilities and functionings identified from interviews with students of False Bay College	34
Table 4: Informal employment as % of non-agricultural employment	38
Table 5: Number of equivalent full time students and % of publicly funded load enrolled in private institutions, by sector, Australia, 2017	41
Table 6: Number of further education students aged 19 and over by level, excluding apprenticeships and community education	45

Table of Figures

Figure 1. Education’s contribution to economic value posited by human capital theory	15
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Abstract

This report observes several limitations of human capital theory, both as a description of the way qualifications are used in the labour market, and in severely limiting the potential roles of technical and vocational education and training (TVET). It proposes as an alternative the human capabilities approach which posits that the goal should be for everyone to have the capability to be and do what they have reason to value. The paper reports the application of human capabilities to TVET as productive capabilities which are located in and concentrate on an intermediate specialised level, the vocational stream which links occupations that share common practices, knowledge, skills and personal attributes. The paper reports an application of the concept of productive capabilities to seven countries: Argentina, Australia, Côte d'Ivoire, England, Ethiopia, Germany, South Africa and Taiwan. From this the report finds that productive capabilities rest upon broader social, economic, cultural, and physical resources. These include the capacity for collective action, and the maintenance of physical integrity, physical and soft infrastructure such as legal and social institutions. The cases also illustrate the substantial role of TVET in supporting workers in the informal economy to transition to formal employment, including in developed economies where informal employment is from 10% to 15% of non-agricultural employment. Another case illustrates how marketisation and privatisation separately and together are undermining TVET provision, institutions, systems, and teachers. The report's final case illustrates the importance of TVET in educating the whole person.

The report concludes by considering implications for TVET's development of its students, communities, and of occupations and industries. The report argues that all qualifications have three roles: in education, in the labour market, and in society. It argues that to develop productive capabilities TVET should

develop individuals in three domains: the knowledge base of practice, the technical base of practice, and the attributes the person needs for their occupation. TVET has important roles anchoring its communities and in developing occupations and industries. To fulfill these roles TVET needs to have strong institutions with expert and well supported staff.

Summary

This study supported by Education International investigates the roles of technical and vocational education and training (TVET) in advancing social justice. The investigation is based on case studies of different intensities of seven countries: Argentina, Australia, Côte d'Ivoire, England, Ethiopia, Germany, South Africa and Taiwan. This work builds on work that Education International commissioned and published as Wheelahan & Moodie (2016) *Global trends in TVET: a framework for social justice*.

This report notes that TVET and indeed most postsecondary education is shaped by human capital theory, which posits that education develops skills which generate economic value. But human capital theory does not explain the roles of qualifications adequately: some employers use qualifications not to signal relevant knowledge and skills but to screen for employment potential; qualifications prepare high proportions of graduates for skilled work outside their educational field; qualifications have intrinsic educational value as well as generating cultural and social benefits; and education institutions contribute to their communities' educational, social, cultural and economic development beyond educating skilled workers.

An alternative is the human capabilities approach developed by the economics Nobel laureate Amartya Sen (2000, pp. 18, 285) and the philosopher Martha Nussbaum (2000, pp. 71, 78-80) who argue that the goal should be for everyone to have the capability to be and do what they have reason to value. We argue that TVET's role in developing human capability is to develop each student as a person, as a citizen, and as a worker. By developing each student as a person, we refer to tertiary education's role in developing students' capacity to understand and manage themselves, to understand and manage their environment, and to appreciate and contribute to human culture. By 'developing each student as a citizen', we refer to TVET's role in developing students' capacity to contribute to their community and to participate in the governance of their society. By developing each student as a worker, we refer to TVET's role in developing students' capacity to be and do in work what they have reason to value.

We apply the human capabilities approach to TVET 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. TVET 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.

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. 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.

Productive capabilities rest upon broader social, economic, cultural, and physical resources. While TVET 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.

Our case studies illustrate that peoples' capabilities depend on their context and on the conditions of their society such as public health, the quality and level of education of fellow citizens, means for transport and communication, means of collective decision making, means of collective action, means of exchange of goods and services, and the sharing of facilities and resources. In particular, social capacity includes a society's capacity to support and foster the capabilities of people who are disadvantaged by, for example, having fewer resources, knowledge, skills or abilities, access to capacities, or suffering discrimination.

We identified one issue from each of the eight cases discussed in this report which has wider implications. The identification of an issue from a case does not imply that the issue did not arise from other cases, nor even that the issue arose most starkly in the case we identify, but that the case is an informative illustration of the issue. First, we use the Argentinian case study to discuss what is perhaps the most basic requirement which is a capacity for collective action, through governments, communes, cooperatives and unions. Lack of transparency, corruption, and lack of coordination are specific weakenings of the capacity for collective action. The second case is drawn from Powell and McGrath (2019) about South Africa which

we use to identify a second basic requirement, which is the maintenance of physical integrity and personal safety. This includes bodily integrity from the availability of good food and water, healthy living conditions, shelter, warmth, clothing ‘to appear in public without shame’ (Sen, 2005, p. 154), and good health care. The third case study on Cote D’Ivoire also includes physical integrity and the protection of physical infrastructure and resources. The fourth case on Ethiopia focuses on the informal economy and illustrates that TVET and indeed most activities, depend on physical infrastructure: utilities such as water, power, and telecommunications; transport such as roads; waste disposal; buildings; and equipment. Activities also depend on ‘soft infrastructure’: institutions which enable societies to operate such as the legal system, the finance system, and emergency services. Even developed economies have a substantial informal economy of from 10% to 15% of non-agricultural employment, and many workers in the informal economy are the most disadvantaged. TVET has a substantial role in supporting workers in the informal economy transition to formal employment.

The fifth case is the Australian case study and it demonstrates how marketisation and privatisation separately and together are undermining the strength of institutions, the systematic organisation of provision, and the support for teachers to offer strong TVET. The sixth case study on England shows that TVET and its institutions need adequate resourcing. The seventh case study is Germany which is well recognised for the role of its social partners in coordinating TVET and integrating it with employment, industrial and economic policy. But it also illustrates the importance of shared trust in education and the organisation of work. Our final case is of Taiwan whose adoption of Confucian values results in its having TVET, in common with all education, educate the whole person. This is notwithstanding that the same Confucian teaching values scholarship more than practice.

This has implications for TVET's development of its students, communities, and of occupations and industries. All post-secondary qualifications should have these three roles, although the emphasis on each role may differ with each qualification:

1. **Labour market.** Qualifications should provide entry to and progression in the workforce.
2. **Education.** Qualifications should provide students with the knowledge and skills they need to study at a higher level in their field or a closely related field.
3. **Society.** Qualifications should contribute to society by developing students' appreciation of and contribution to culture and society. They should develop individuals' capacity to contribute to their families, communities, and occupations. Qualifications also contribute to social inclusion by supporting inclusion in education and the labour market, and by contributing to a more tolerant and inclusive society.

TVET to develop productive capabilities would develop individuals in three domains:

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 knowledge and 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 require an understanding of the nature of work, the relationship between education and work, and the kind of qualified person we want to produce.

TVET have an important role anchoring their communities by:

- proactively working with other key social partners in the region and nationally (where appropriate) to support sustainable social and economic development;
- anticipating, elaborating, codifying and institutionalising the knowledge base of practice for the future as well as the present and in considering the way work is changing and the implications that this has for a curriculum for the future. This is a crucial role that would support innovation, and requires appropriately qualified and supported teachers who engage in the scholarship of teaching and learning and in research on the way their field is changing;
- offering students a sufficiently comprehensive range of programs that enable them to realise their aspirations and providing students with the broad range of services and supports that are needed to successfully achieve their goals; and,
- developing qualifications that meet the needs of students, communities, local industries and regions.

TVET also has important roles developing occupations and industries. It:

1. Is a reservoir of accumulated expertise and resources;
2. Is expert in organising knowledge, restructuring knowledge for new purposes, and presenting it for new audiences (teaching);
3. Transfers new ideas from outside the occupation and local industry; and
4. Has a potentially valuable role in codifying, restructuring, and systematising rules and procedures of practice, not only to construct curriculum, but to establish assessment standards which can be important industry standards.

The report argues that to fulfill these roles TVET needs to have strong institutions with expert and well supported staff. TVET also needs to become institutionalised in the sociological sense of being generally understood by the public with established norms and organisational forms which are reinforced by the expectations and behaviour of other institutions, organisations and actors.

This is the final report of a project supported by **Education International** to examine national case studies of technical and vocational education and training (TVET) as a framework for social justice. The national case studies are investigating seven countries and are of different intensities using different methods, which are set out in Table 1.

Table 1: Methods used for each national case study

Country	Literature review	Statistics secondary analysis	On line survey	Interviews	Country visit
Argentina	✓	✓			
Australia	✓	✓	✓	✓	✓
Côte d'Ivoire	✓	✓	✓	✓	✓
England	✓	✓	✓	✓	✓
Ethiopia	✓	✓			
Germany	✓	✓			
Taiwan	✓	✓	✓	✓	✓

Each case study is reported fully in a separate report for each case. This report does not summarise those reports. Rather, it develops an analysis and argument from the evidence of those reports. The argument is for a new concept of and direction for TVET, to replace the dominant human capital understanding of TVET, and indeed of most postsecondary education. The report argues that TVET should develop students' capabilities to be and do what they have reason to value. However, the report builds on and goes beyond the capabilities approach to observe how society's structures and norms shape peoples' capabilities. The report emphasises the role of institutions in constituting and changing the social and economic conditions within which individuals realise their capabilities.

This work builds on work that Education International commissioned and published as Wheelahan, L & Moodie, G (2016) *Global trends in TVET: a framework for social justice*¹. This report observed that jurisdictions differ markedly in their resources, economic structure, politics, education system, and the interaction between those. Even within jurisdictions, there are marked differences in how sectors, industries and social partners operate. The earlier report concluded that any proposal to improve TVET needs to reflect its markedly different arrangements at the level of the individual, their work site and its broader context. The report proposed the capabilities approach as a way of relating individuals' characteristics to their broader circumstances.

1 For a copy of the report, see: <http://download.ei-ie.org/Docs/WebDepot/GlobalTrendsInTVET.pdf>

The Dominance and Limitations of Human Capital Theory

Augmented human capital theory dominates policy on TVET and indeed policy on most postsecondary education in many countries. Human capital theory is mainly a descriptive theory that postulates that education increases graduates’ skills which makes them more productive which in turn increases economic value (Figure 1). From this many derive a normative position, that the aim of education should be to increase economic value.



Figure 1. Education’s contribution to economic value posited by human capital theory

Human capital theory is understood to apply at the level of the individual, group, and whole economy. Individual graduates’ higher employment outcomes are ascribed to their increased human capital; more educated workers are thought to increase their productivity and hence the organisation’s profitability; increasing the qualifications of members of an occupation such as technicians or financial advisers is expected to increase their effectiveness; and increasing the proportion of an economy’s workers with higher qualifications is understood to increase economic growth, at least in specified circumstances.

Equity policy may also be based on human capital. The under representation of women in engineering, for example, and in senior positions is said to lose the economy valuable potential talent as well as disadvantaging women; and the lower proportions of qualified people from disadvantaged groups is thought to ‘waste’ human capital as well as disadvantaging individuals.

Of course, equity policy may be based on other grounds, such as social inclusion (Vinson, 2009), or broad notions of justice, but a policy maker seeking a parsimonious description of policy could include most equity aims within human capital theory.

Human Capital Theory does not Explain Fully the Use of Qualifications in the Workforce

Human capital theory has been challenged on methodological grounds by Spence (1973), Stiglitz and Weiss (1990), and others who argue that much of graduates' increased earnings is due to their innate ability independent of what they learn in education, or that it reflects cultural capital (Bourdieu, 1973) or other attributes not attributable to education. While this debate has not been settled, currently the better view seems to be that while some of the return on investment in education is due to signaling or to the so-called 'sheepskin effect' (Hungerford and Solon, 1987), education still adds substantially to graduates' productivity (Bills, 2003).²

However, while graduates have higher employment rates and higher pay than people with lower qualifications, around a third of graduates are employed in jobs which do not match their qualification (Sutherland, 2012, p. 622). Well over half of adults in Australia, Canada, and the UK report that they work in a different field to the field of their highest qualification (Moodie and Wheelahan, 2018, pp. 3-4; Montt, 2015, p. 11). The match between qualifications and work differs markedly by field: they are highest in regulated fields such as nursing and technical trades, and are lowest in unregulated fields, such as business,

² The 'sheepskin effect' refers to the notion that possession of an academic degree confers an advantage "in which a degree provides a larger boost to earnings than does a single year of schooling" (Bills, 2003, p. 452). So, even though two people may have the same number of years of education, if one of them has graduated while the other has not, the graduate will earn a higher income.

administration and sales. Matches between qualifications and work also differ markedly by country, with countries with coordinated market economies having much stronger matches than countries with liberal market economies (Hall & Soskice, 2001). There is therefore not the direct relation between TVET and work skills required for specific occupations posited by human capital theory. Further, the relation is shaped as much by the nature and structure of occupations as by the characteristics of education.

A common response to the so-called mismatch between education qualifications and work is to argue that qualifications should be more closely related to the jobs for which they are meant to prepare graduates. This is misleading for at least four reasons. First, tying education even more closely to a particular occupation would reduce its relevance to the other occupations for which qualifications are currently relevant. Secondly, tying education more closely to work ignores the role of demand for graduates in shaping the match between education and work (Keep, 2016b). Thirdly, numerous studies have shown labour market forecasting to be far too imprecise to plan educational provision in detail (Clowes, 1997, p. 363; O'Toole, 1977, p. 47; Barnow, 2002; Neuart & Schömann, 2002; Sexton, 2002; Freeman, 2006/2007; Richardson & Tan, 2007, p. 9; OECD, 2010, p. 58). Anticipating the demand for workers is so notoriously unreliable that it is said that labour market forecasting was invented to give astrology a good name (attributed to Ezra Solomon in *Psychology Today* [March 1984]; also attributed to John Kenneth Galbraith in *U.S. News & World Report* [7 March 1988, p. 64]).

A fourth reason for not tying education to specific occupations is the uncertainty in future occupations expected to be brought about the introduction of new digital technologies to work and its organisation, known as 'the 4th industrial revolution' (Avis, 2018).

While the lack of a close match between TVET and work is not explained by the common narrow interpretation of human capital theory, it may be at least partly explained by a broader understanding of human capital. While education may not develop specific occupational skills, it may nevertheless develop skills that contribute to productivity more generally. This is not an argument for general or so-called ‘generic’ skills. Developing a specialised skill in depth such as mathematics or law may develop skills that are valuable in many occupations.

The loose match between TVET and the labour market may also be partly explained not by an even broader understanding of human capital, but by signalling and screening.³ Qualifications may not only increase graduates’ skills relevantly for employment, but signal that they have attributes valued by employers such as general aptitude, application, and determination (Spence, 1973). That is, employers may not use qualifications to select workers who have relevant skills, but to screen applicants based on their potential to be productive workers.

Human Capital Theory does not Recognise the Importance of Non-Utilitarian Studies

Even the most utilitarian and materialist of TVET systems includes some provision of education for its own sake. For example, many colleges offer courses for adults in the visual and performing arts, and colleges offer courses in languages and the social sciences such as psychology and sociology. Since education’s provision of creative and liberal studies cannot be justified by human capital theory, human capital theory needs to be augmented to justify this provision.

³ Screening “is a mechanism by which markets react to imperfect information about individuals” (Bills, 2003 p.445), which refers to the way that employers use qualifications to screen individuals for positions, using them as a proxy for ability and perseverance. Signalling refers to the way individuals “signal their productive capacities” (ibid) to employers.

Human Capital does not Account for Education's Non-Employment Benefits

Neither does human capital theory account for TVET's manifest and manifold benefits to graduates beyond the workplace. It is now well established that graduates have better health, participate more in civic activities, volunteer more for community activities, and generally have higher social capital (Walker and Unterhalter, 2007). Many colleges invest much effort in constructing opportunities for their students to participate in extra-curricular activities, service learning, and many other activities that develop graduates beyond utilitarian workforce requirements. None of these benefits is accounted for by human capital theory and, by basing TVET policy on augmented human capital theory, one either overburdens the theory with successive augmentations, or undermines these broader roles.

Human Capital Theory does not Account for Colleges' Institutional Role

Human capital does not account for colleges' institutional role in developing communities, occupations, and industries. This is beyond graduating students with high occupational skills and high social capital. It is also beyond the economic benefit of the employees' wages and purchases of a public facility such as a hospital, museum, or prison. TVET colleges include an accumulation of educational facilities such as workshops, laboratories, libraries, lecture theatres and seminar rooms; and of knowledge and expertise in a range of fields. Importantly, colleges institutionalise systems of work, or ways of mobilising their resources and expertise to develop, transmit and diffuse knowledge for different purposes. This includes the familiar roles of offering expertise, advice, and consulting services formally and informally through diverse associations; of contributing to boards and committees; but also initiating the extension and reconstitution of knowledge and resources to meet new needs and stimulate new developments.

For communities, colleges provide a breadth, depth, and vitality of intellectual resources. For occupations colleges codify, restructure, and systematise rules and procedures of practice to form systematic procedural knowledge (Moodie, Skolnik, Wheelahan, Liu, Simpson and Adam, 2018). For industries, colleges provide a repository of renewing expertise and innovation. Finally, for individuals, colleges provide them with the means to take control of their lives and lead them in ways that they value. This leads us to consider human capital theory inadequate as a basis for TVET policy and propose, as an alternative, human capability.

Alternative: Human Capability

The economics Nobel laureate Amartya Sen (2000) and the philosopher Martha Nussbaum (2000) developed the capabilities approach to state goals for human development as an alternative to the goal of increasing economic output which remains the dominant development goal, or the goal of people having the same 'equal' access to resources and outcomes, which is sometimes posited as an alternative. Sen showed that human flourishing indicated by life expectancy and literacy rate are not correlated with per capita gross national product, though in some circumstances economic growth is needed to resource increases in human welfare. Sen argued that the goal should be human welfare, not increasing economic growth. Further, people need different economic resources to flourish: people in temperate climates need less heating and lighter clothes than people living in cold climates. Even within the same region, children, pregnant women and the aged need different amounts of food and health services to flourish. Neither is it desirable to state goals as people achieving the same outcomes.

For example, while it is desirable for all young people to complete a secondary school certificate and go on to complete a postsecondary qualification, this by itself will not overcome inequality in the labour market nor adverse outcomes for people who come from lower socio-economic backgrounds as well as communities that experience racism and other forms of discrimination.

Rather, Sen (2000, pp. 18, 285) and Nussbaum (2000, pp. 71, 78-80) argue that the goal should be for everyone to have the capability to be and do what they have reason to value. To identify, value, and prioritise capabilities, Sen (2005, pp. 157-160) emphasises transparent scrutiny, general social discussion, and continued public reasoning. For Sen, capabilities are contingent on circumstances, specific to their context and the purpose for which they are identified, and reflect the particular reality that any particular society faces.

Extending Sen's work, Nussbaum (2000, pp. 74-81) developed a list of central capabilities from 'years of cross-cultural discussion' and an 'overlapping consensus' which should be subject to 'continued reflection and testing against our intuitions'. Nussbaum (2000, p. 74) therefore believes that the central capabilities she identifies 'can command a broad cross-cultural consensus'. But as Powell and McGrath (2019, p. 58) observe, Nussbaum does not provide any more information on her method, so it is not open to evaluation.

Nussbaum (2000, pp. 78-81) proposed 10 central human functional capabilities 'related to one another in many complex ways':

1. Life.
2. Bodily health.
3. Bodily integrity.
4. Senses, imagination, and thought.
Being able to use the senses, to imagine, think, and reason...
5. Emotions. Being able to have attachments to things and people outside ourselves...
6. Practical reason. Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience.)
7. Affiliation. Being able to live with and toward others...
8. Other species. Being able to live with concern for and in relation to animals, plants, and the world of nature.
9. Play. Being able to laugh, to play, to enjoy recreational activities.
10. Control over one's environment.

The capabilities approach has been applied to education (Robeyns, 2006), and more recently to TVET (amongst others, by Wheelahan and Moodie, 2011). Education is clearly important to achieving human capability, however elaborated. An analysis of the implications of education as a whole for human capability emphasises literacy and numeracy, and education for citizenship, as Sen and Nussbaum do. We further argue that tertiary education's role in developing human capability is to develop each student as a person, as a citizen, and as a worker.

By developing each student as a person, we refer to tertiary education's role in developing students' capacity to understand and manage themselves, to understand and manage their environment, and to appreciate and contribute to human culture.

This includes the capacity to increase one's knowledge, understanding and appreciation, for example, by progressing to higher levels of education. These contribute to Nussbaum's central human functional capabilities for senses, imagination, and thought; practical reason; and control over one's environment.

By 'developing each student as a citizen', we refer to tertiary education's role in developing students' capacity to contribute to their community and to participate in the governance of their society. These contribute to Nussbaum's central human functional capabilities for affiliation and control over one's environment.

By developing each student as a worker, we refer to tertiary education's role in developing students' capacity to be and do in work what they have reason to value (Moodie, Wheelahan, & Lavigne, 2018). This contributes to Nussbaum's central human functional capabilities for senses, imagination, and thought; affiliation; control over one's environment; and it provides the resources necessary for life and health. We understand work broadly to be an activity which seeks to sustain an individual or society. This includes paid employment, voluntary work, and 'self provisioning within the household' as Pahl (1984) calls it, and excludes recreation and leisure (Voss, 1967).

Capabilities for work is distinguished from human capital, which is humans' augmentation of production for exchange:

At the risk of some 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, 2000, p. 293)

Capabilities for work are broader than ‘productive abilities’ counted as human capital, because they recognise and include the freedom of the person doing the work (Sen, 2000, p. 295). For the same reason, they are also more than Standing’s (2014, p. 966) ‘capability power’, which is a person’s potential to engage in paid employment. Still less are capabilities for work just the employability skills or competencies said to be developed by universities and vocational colleges that are sometimes called ‘capabilities’, as these are too narrowly defined and taught, and do not necessarily provide workers with options to flourish beyond the level of the credential (Moodie, Wheelahan, & Lavigne, 2018).

Capabilities depend on peoples’ agency in work, their freedom to choose what work they do and how they do it. Paid employment limits workers’ scope for action, but nevertheless capabilities in employment include the capability to develop one’s career, choose one’s job, and the way one does one’s tasks. Agency, therefore, includes personal development in work. Workers need the capability to respond to change and to change themselves for the better, including developing their knowledge, skills, and abilities to undertake different work (Moodie, Wheelahan, & Lavigne, 2018).

The exercise of agency generally, and capabilities in particular, depends on informed reason. People need the knowledge and skill to choose the work they have reason to value, and to choose be-

tween options they consider. This includes the ability to think about new ideas, or the ability to ‘think the unthinkable’, as Wheelahan (2007, p. 637) expressed it, following Bernstein (2000, p. 30). The capacity of informed reason is usually developed in formal education. Informed reason is analysed into knowledge, skill and ability in productive capabilities for employment, understood as a career and not merely as a job or, worse, a set of tasks (Moodie, Wheelahan, & Lavigne, 2018).

Productive Capabilities

We apply the human capabilities approach to TVET 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, 2012; Moodie, Wheelahan, Fredman and Bexley, 2015, p. 19). TVET 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 (Moodie and Wheelahan, 2018; Moodie, Wheelahan and Lavigne, 2018; and Moodie, Wheelahan, Lavigne and Coppens, 2018).

Vocational Streams

Productive capabilities are located in and concentrate on an intermediate specialised level, the vocational stream.⁴ A vocational stream links occupations that share common prac-

⁴ See Buchanan et al. (2001) for the beginning of discussions that eventually resulted in the concept of vocational streams in Australia.

tices, knowledge, skills and personal attributes. The UNESCO-UNNEVOC 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, p. 194). But it is most likely that different economies have different vocational streams (Wheelahan & Moodie, 2016, p. 62).

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, Yu, Marginson & Wheelahan, 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 (Wheelahan & Moodie, 2016, p. 62).

Broader Resources, Institutions, and Social and Physical Infrastructure

Productive capabilities rest upon broader social, economic, cultural, and physical resources. For example, people 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 TVET 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 (Wheelahan & Moodie, 2016, p. 62).

The next section describes case studies which illustrate that peoples' capabilities depend on their context and on the conditions of their society such as public health, the quality and level of education of fellow citizens, means for transport and communication, means of collective decision making, means of collective action, means of exchange of goods and services, and the sharing facilities and resources. In particular, social capacity includes a society's capacity to support and foster the capabilities of people who are disadvantaged by, for example, having fewer resources, knowledge, skills or abilities, access to capacities, or suffering discrimination (Moodie, Wheelahan and Lavigne, 2018).

Implications of Case Studies

The team studied seven cases, which are reported in separate publications. We added a case from South Africa described by Powell and McGrath (2019) because it is such a rich application of the capabilities approach to TVET. In the accounts below, we identify one issue from each case which has wider implications. The identification of an issue from a case does not imply that the issue did not arise from other cases, nor even that the issue arose most starkly in the case we identify. For example, the strongest theme arising from the study of TVET in England is the effects of big funding cuts over the last 15 years, and accordingly this is the theme we identify for England. But even with the big funding cuts English TVET has suffered, it is still rather better resourced than TVET in Côte d'Ivoire, Ethiopia and South Africa.

Argentina: Capacity for Collective Action

Argentina has a population of over 43.4 million people and is an upper middle income country. The state does not charge fees for education in public institutions from primary to tertiary, including university undergraduate levels, and subsidises some private education. TVET is a relatively modest part of young peoples' education: some 13% of pupils were in technical secondary schools and 6.6% in vocational training in 2012 (Lolwana, Ngcwangu, Jacinto, Millenaar and Carton, 2015, pp. 37-39).

In several reviews of Argentina in the late 2000s the OECD argued for Argentina to improve its governance generally, including its governance of TVET. In its multi-dimensional economic survey of Argentina of 2017 the OECD (2017, p. 35) argued for 'Strengthening institutions and safeguarding against corruption':

Ensuring public sector integrity is crucial to maximise spending efficiency and citizens' trust in institutions and government (OECD, 2016a). Argentina ranks among the last ten of 140 countries in favouritism of government officials, ethics and corruption and executives view corruption as one of the five most problematic factors for doing business in Argentina.

(OECD, 2017, p. 35)

This low trust led to low public and private investment in infrastructure, the low quality of infrastructure and to high costs (OECD, 2017, pp. 44-45). Government corruption extended to its statistics: 'Argentina's statistics deteriorated over 2007-15 amid growing political pressures to show more "positive" data about the economy and society' (OECD, 2017, p. 18).

Other countries also suffer from lack of confidence in governance. Transparency International (2018) collects the perceptions of 'experts and businesspeople' on the 'levels of public sector corruption'. It ranks 180 countries and territories on 'a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean. It should be emphasised that these scores are based on perceptions, not actual governance. More than two-thirds of countries score below 50 on this year's CPI, with an average score of just 43' (Transparency International, 2018). While Argentina had a transparency score of only 40, Côte d'Ivoire and Ethiopia have lower transparency scores (Table 2).

Table 2: Transparency International's transparency score, selected countries, 2018

Country	Score
Germany	80
United Kingdom	80
Australia	77
Taiwan	63
South Africa	43
Argentina	40
Côte d'Ivoire	35
Ethiopia	34

Source: Transparency International (2018)

The OECD (2017) did not report a lack of integrity in the governance of TVET, but it reported divided responsibilities and low levels of coordination which is shared by many other countries, including Australia and England. Côte d'Ivoire suffers from the instability of the organisation and governance of its TVET system.

There is little coordination between TVET programmes and the general education system. TVET is offered by the Ministry of Education, the Instituto Nacional de Educación Tecnológica (INET), the Ministry of Labour, Employment and Social Security and by private schools, companies and organisations. Institutions operate tension between the two ministries concern key issues including the organization of vocational training,

its administration, the type of certification provided (educational certificate or training certificate) and the organization of the curriculum. The lack of consensus between the Ministries has led to parallel services.

Lolwana, Ngcwangu, Jacinto, Millenaar and Carton (2015, p. 37)

The OECD (2017, p. 20) reported Argentina's historical and recent economic difficulties but stated that 'The outlook has improved'. However, in its economic survey of Argentina in 2019 the OECD (2019a, pp. 15-16) reported:

The severe economic crisis that unfolded as of April 2018 and pushed the economy into a deep recession, however, has shifted the immediate policy focus to restoring confidence and unwinding significant fiscal and external imbalances. As confidence tumbled, the value of the currency halved while interest rates, unemployment and inflation soared.

(OECD, 2019a, pp. 15-16)

The OECD (2019a, pp. 110, 120) recommended that Argentina 'Improve the quality of lifelong learning institutions for adults through better coordination between the different existing institutions across and within provinces.' In the sub title of its report on its integrity review of Argentina the OECD (2019b) argued for 'systematic and sustained change'.

Lack of transparency, corruption, and lack of coordination are specific weakenings of the capacity for collective action. The capacity for collective action is most commonly expanded by governments, but is also expanded by communes, cooperatives and unions. The capacity for collective action is eroded by taking decision making and its implementation outside government control, for example by privatisation.

This is highlighted by the current fashion to redesignate private educational bodies as ‘independent’, though they often depend on government subsidies. Education International (2018, pp. 1, 2) described Argentina’s privatisation of education:

The process of privatisation in the country is happening in two different ways: what can be described as privatisation ‘in’ and privatisation ‘of’ education. The former refers to the transfer of ideas, practices and methods from the private to the public sector, and the latter meaning a widened participation of private stakeholders in the design, management, and provision of public education.

(p. 1)

These processes include the re-distribution of enrolment, government investment in private sector actors, the growing presence of the private sector in decision-making, the privatisation tendencies in teacher training and teaching, and the impacts of the profit-making market of standardised testing.

(Education International, 2018, p. 2)

Foundations erode a community’s capacity for collective action since they usually make their funding and involvement conditional on following the policies of the organisation, which are normally based in and funded from another country. Foundations are particularly detrimental since they weaken the capacity for collective action twice: once, by minimising the taxes they pay to fund governments’ capacity for collective action; and secondly, by establishing policies which are different from and often counteract government policies.

False Bay College, Cape Town: Physical Integrity

Powell and McGrath (2019, p. 66) identify capabilities from their deep interviews of 20 students and graduates of False Bay College in Cape Town, South Africa. False Bay TVET College (2012) has 5 campuses around False Bay about 30 kilometres south and south east of Cape Town's central activity area. The Westlake, Muizenberg and Fish Hoek campuses are in relatively affluent areas previously reserved for whites, but many of their students are from neighbouring poor communities. The Mitchells Plein campus is in an area previously reserved for coloured people forcibly relocated from their homes which were in areas designated for whites in the 1970s. Around 20% of the 400,000 people living in the area live in informal housing, almost half live below the poverty line, 43% are unemployed, and almost 40% of young people aged 5 to 24 are not in education. The Khayelitsha campus was established in 1985 to house blacks who were granted a permit to live there. (Powell and McGrath, 2019, p. 65)⁵

False Bay College's 12,000 students (Republic of South Africa Department of Higher Education and Training, 2019, p. 94) study apprenticeships, distance education and face to face in business, education, engineering, hospitality & tourism, and information technology.

Powell and McGrath (2019, p. 119) identify from their interviews 8 capabilities and 25 functionings, or achievements that interviewees sought from the exercise of their capabilities:

⁵ Before the end of apartheid in South Africa in 1994, the government regulated where those classified as 'coloured' and 'black' could live.

Table 3: Capabilities and functionings identified from interviews with students of False Bay College

Capabilities	Functionings
Economic opportunities	<ul style="list-style-type: none"> Being fairly remunerated Earning a living wage Having employment stability and security Having access to fair and equal opportunities for career progression Ability to make a valuable contribution at work Ability to take pride in work
Active citizenship	<ul style="list-style-type: none"> Inclusion in political and institutional decision making Knowledge and understanding of their community's problems Ability to mobilise resources for change Strong sense of own effective agency
Confidence and personal empowerment	<ul style="list-style-type: none"> Being encouraged to live a full life Being able to encourage others to live a full life Having a range of futures as possible aspirations
Bodily integrity	<ul style="list-style-type: none"> Being free from attack and physical harm, including sexual assault, and from fear thereof Being safe from the psychological trauma of attack on one's person, or other members of the family, community or others
Senses and imagination	<ul style="list-style-type: none"> Development of an appreciation of the creative arts Participation in sports that promote physical wellbeing
Recognition and respect	<ul style="list-style-type: none"> Being treated as a dignified human Having self respect Not being discriminated against
Upgraded skills and qualifications throughout life	<ul style="list-style-type: none"> Having the opportunity to study and learn throughout life Having the learning skills for further study
Occupational knowledge	<ul style="list-style-type: none"> Having the qualifications needed to enter the workforce Having the skills to do a good job Having the learning skills to enable experiential learning at work

Source: Adapted from Powell and McGrath (2019, p. 119) Table 6.1 Dimensions of VET capabilities and valued functionings that matter to TVET college students.

Not all capabilities are equally within the college's ability to expand. Powell and McGrath (2019, p. 153) report the outcome of the college's attempt to expand its students' bodily integrity:

To reduce the dangers involved in using public transport, the college tried to arrange buses to collect students at local stations and transport them to their campus. However, the taxi companies threatened to burn the buses and the students in them, forcing the scheme to be abandoned.

(p. 153)

This is an issue not just for South Africa as an upper middle-income country with extremely high income inequality (Beaubien, 2018), but some USA institutions also have difficulty ensuring the safety of their students travelling in their campus neighborhoods. Some elite USA universities have established community partnerships to invest in the renewal of their neighborhoods (Melhuish, 2016; Paul, 2004; Romano, 2006).

Physical integrity includes being adequately nourished and having adequate shelter which Nussbaum (2000, p. 78) includes as part of 'bodily health' and the security of one's property.

Côte d'Ivoire: Minimal Infrastructure Requirements

Côte d'Ivoire has a population of some 24 million people and is a lower middle-income country. Côte d'Ivoire is strongly shaped by its history as a colony of France from the middle of the 19th century to 1960, and France's influence remains strong, with French companies being heavily involved in Côte d'Ivoire. Côte d'Ivoire's education remains modelled on the French system and, for many years after its independence, was staffed by expatriate French teachers (Grootaert, 1988, p. 67). Côte d'Ivoire has suffered major political rifts that culminated in the military coup of 1999 and subsequent civil wars.

This not only obviously greatly curtailed peoples' physical integrity but also destroyed infrastructure and resulted in many young people missing out on education (Dabalen and Paul, 2014; Walther, 2017). Major tensions remain, undermining peoples' feeling of security.

One of the challenges the Ivorian government has identified for its TVET system is the obsolescence and decay of its equipment and buildings (METFP, 2016) which is a legacy of the civil war, lack of funding, and the instability of TVET organisation and governance. TVET lacks computer equipment. Classrooms are without windows when they are not just outdoor courts. In one college visited by a member of our research team, the mechanics workshop had only one engine, more than thirty years old, and which does not work. As a result, mechanics students receive a mainly theoretical training and try to learn from Internet clips of current engines.

TVET and, indeed, most activities depend on physical infrastructure: utilities such as water, power, and telecommunications; transport such as roads; waste disposal; buildings; and equipment. Activities also depend on 'soft infrastructure' (Gu, 2017), institutions which enable societies to operate such as the legal system, the finance system, and emergency services (Hamutuk, no date).

Ethiopia: Strengthening the Informal Economy

Ethiopia has a population of 105 million people and is a low income country. TVET starts in upper secondary education and is an alternative to preparatory secondary education. It has five levels, each of from 1 to 3 years (Federal Ministry of Education, 2015). Students are required to pass an occupational competency assessment before moving to a higher level. TVET students have no option to transfer to general tertiary education.

Over 90% of primary and secondary pupils are enrolled in public schools, but the government estimates that around 30% of TVET students enroll in private institutions (Teferra et al., 2018).

The informal economy comprises ‘all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements’ (International Labour Organization, 2002, resolution 3, p. 25/53). The informal economy includes unincorporated and often unregistered family enterprises. The International Labour Organization (2018, p. 1) considers employees ‘to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.).’

Around half of Ethiopia’s workers are employed in the informal economy outside agriculture, about the same rate as Argentina (Table 4). Some countries have even a bigger informal economy. A very high 88% of non-agricultural workers in Côte d’Ivoire work in the informal economy. The International Labour Organization (2013a) estimates that most OECD countries have much smaller levels of informal employment. Even so, the levels of informal employment are sizeable even in wealthy countries, and they are increasing in some countries (International Labour Office, 2018, p. 15). And in both developed and in developing countries workers in the informal economy are more likely to be poor (International Labour Organization, 2018, p. 6).

Table 4: Informal employment as % of non-agricultural employment

Country	Informal employment, %
Côte d'Ivoire	88
China	54
Ethiopia	c 53
Argentina	50
South Africa	35
Australia	c 14
United Kingdom	13
Germany	10

Source: International Labour Organization (1996-2019; 2018, pp. 85-90; 2013a)

One of the biggest sources of skills acquisition in informal economies are informal apprenticeships (International Labour Organization (2013b, section 7.2 p. 5). The Organization (2013b, section 7.2 p. 5) notes that informal apprenticeships 'have evolved over considerable time and have strong roots in the socio-cultural milieu of many societies'. The Organization (2013b) elaborates:

Because the theoretical content is usually low and learning is based on observation and repetition, the apprentice does not gain a broader understanding of the theory of the trade, nor is innovation and diversification encouraged. Significantly, because IA [informal apprenticeship] is embedded within socio-cultural

traditions it is very much oriented to boys rather than girls, though some apprenticeship training does take place in female dominated trades such as hairdressing and embroidery. While the training agreement is governed by informal rules, a lack of formal regulation and certification means that apprentices usually do not gain standardised skills. Moreover, the quality of training varies greatly depending on the pedagogical skills of the master craftsman, with some having secondary or VET education, and with others having far more basic education.

(International Labour Organization, 2013b, section 7.2 p. 5)

King (1989, p. 3) found that important educators of workers in the informal economy were ‘backstreet colleges’ which operated similarly to informal economic units.

The International Labour Conference (2015) adopted several recommendations to support a transition from the informal to the formal economy, and the International Labour Office (2018, p. 51) added that ‘training and skills development are essential contributing factors for the transition to the formal economy’. It found that informal employment was related to low levels of education (International Labour Office, 2018, p. 52). Oketch (2007, p. 233) recommended that TVET increase its contribution to the informal economy by increasing its links to the informal economy.

The International Labour Organization (2013b, section 7.2 p. 4) notes that public vocational education and training systems have often been established to serve the needs of the formal economy and ‘tend to require significant prior education including literacy, numeracy and high school education, thus marginalising a large section of the poor from entry’. Other obstacles to people in the formal economy accessing formal TVET are fees and income lost while training. The ILO (2013b, section 7.2 pp. 10, 11-12, 13) notes that apprentices may need financial support such as training subsidies and transport allowances.

It proposes improving informal apprenticeships by linking them to formal colleges, and ‘linking to or building certification and assessment systems can enable 1 to transmit a more uniform and standardised set of skills to trainees and introduce recognition of skills at national level’. ILO (2013b, section 7.2 pp. 11, 12) recommends complementary training for apprentices including ‘literacy, numeracy, marketing, business skills and theoretical knowledge of the trade’; ‘developing incentives and support structures for master craftspersons and apprentices’; and ‘Post training support, in particular linking to employers, business advisory services and labour market information systems’.

Australia: Developing Institutions, Systems and Teachers

In 2017 some 55% of pupils in upper secondary education in Australia enrolled in at least 1 vocational subject (United Nations Educational, Social and Cultural Organization, 2019). The overwhelming majority of these pupils take 1 or 2 vocational subjects in a program dominated by academic or general studies. Some 40% of upper secondary pupils were enrolled in a private institution (United Nations Educational, Social and Cultural Organization, 2019), an issue we return to later.

Australia divides postsecondary education sharply into vocational education and training, and higher education. These sectors are of very similar sizes, but 43% of publicly funded equivalent full time vocational education and training students are enrolled in private institutions while only 8% of higher education students are enrolled in private institutions (Table 5). Of vocational education and training students only 15% are enrolled in tertiary education or ISCED 5; the others are enrolled in postsecondary non tertiary education. Some 4% of vocational education and training enrolments are in secondary schools.

Table 5: Number of equivalent full time students and % of publicly funded load enrolled in private institutions, by sector, Australia, 2017

Sector	Equivalent full time students	% private
Vocational education and training	1,089,966	43
Higher education	1,072,263	8

Sources: NCVET (2018, p. 20) Table 11 Total VET subject enrolments and hours of delivery by provider type and funding source, 2015–17 and Australian Government Department of Education and Training (2018) Table 4.1: Actual student load (EFTSL) for all students by state, higher education institution and broad level of course, full year 2017.

Private providers’ share of publicly funded vocational education and training equivalent full time students of 43% in 2017 is a huge increase on its 12% share of publicly funded student load a decade ago in 2008 (Wheelah, Moodie, Lavigne and Samji, 2018, p. 44). This is the direct outcome of policies of Australian federal and state governments, first to marketise and then to privatise vocational education and training.

By marketise we mean governments’ allocation of resources by a competition, typically for students. This is said to make institutions more flexible and responsive to “customers”. Since the 1980s governments have sought to position public vocational colleges as one ‘provider’ in a market populated by public and private providers. Markets are typically presented or at least understood as being natural features of a (capitalist) economy ‘led by an invisible hand’ (Smith, 1959, part IV, chapter 1), but all markets are constructed by government laws and policies. This became apparent as consultants seeking to explain and improve governments’ frequent changes and reversals of its vocational education and training market settings as ‘market design’ and ‘market redesign’.

One incoherence never resolved in Australian vocational education and training policy is that governments and employers insist that employers are vocational education and training's clients, 'stakeholders' or leaders of the system, yet the biggest non government stakes are invested by students, not employers. So governments seek to constrain and redirect student markets to serve employers' interests according to criteria such as employment demand or 'skills shortages' whose empirical foundations are flimsy at best. Governments have also narrowed public colleges' roles from providing further education and holistic vocationally oriented education to providing specific skills said to be required by employers, and governments have imposed on all providers a narrow competency-based training curriculum said to serve employers better (Wheelahan, Moodie, Lavigne and Samji, 2018, p. 5).

In this context privatisation refers to the extension of public subsidies to for-profit private training providers. Australian governments and their advisers call this making government funding 'contestable', but it has deeper origins in the policy of competitive neutrality which Australian governments adopted from the 1990s (Hilmer, 1993), well before the OECD's (no date) first deep discussion of the issue in 2004. This policy is for public and private 'competitors' to compete on the same terms. It has resulted in public and private vocational providers having the same regulation, the same accreditation, the same quality assurance, and in many cases, the same access to public funding. This resulted in public funds subsidising private profits, a considerable waste of public funds on programs private providers found most profitable, widespread exploitation of students, numerous scandalous market abuses and rorts (Wheelahan, Moodie, Lavigne and Samji, 2018, p. 19), and legal prosecutions (Taylor and Branley, 2015).

Marketisation and privatisation has seriously weakened vocational education as providers have competed by cutting provision and lowering standards. Public colleges have been

seriously weakened, thousands of teachers and education support workers have been sacked, and campuses have been closed throughout Australia. Governments have changed and reversed policies frequently, and have cut funding levels several times with sometimes just weeks notice before the start of teaching. Students' fees have risen and the range and types of programs available to students have been cut, as Australian and state governments limit public funding to programmes deemed to be 'in demand' in the labour market. This has resulted in substantially declining enrolments and reduced opportunities for students (Wheelahan, Moodie, Lavigne and Samji, 2018, p. 5).

Governments redefined their role to 'steer' the economy and society through the operation of markets, rather than provide services directly. Governments thus relinquished to the market the idea of colleges being part of a system which through coordination complement each institution's roles to offer a systematic and comprehensive service.

Since governments have privatised just the provision of programs and have cut other funds to colleges they have ignored public colleges' institutional roles as resources to their communities, industries and students.

Missing in Australian policy on vocational education and training is recognition and support of vocational colleges as institutions which:

1. support sustainable educational, social and economic development of the institution's region, and support its innovation and implementation of changes;
2. anticipate, elaborate, codify and institutionalise the knowledge base of practice for the future as well as the present, and consider the way work is changing and the implications that this has for a curriculum for the future;

3. offer students a sufficiently comprehensive range of programmes that enable them to realise their aspirations and providing them with the broad range of services and supports that are needed to successfully achieve their goals; and,
4. developing qualifications that meet the needs of students, communities, local industries and regions (Wheelahan, 2019, p. 21).

These roles require appropriately qualified and resourced teachers with enough time to engage in the scholarship of teaching and learning, and to research the way their field is changing (Wheelahan, 2019, p. 21). This will require government investment in teachers. TVET teachers need to be supported to become ‘dual-professionals’ who are industry experts as well as expert teachers. This is particularly important in supporting the most disadvantaged students to ensure they have access to programs and support that helps them to succeed. Teachers need to be able to devote time and attention to extending their knowledge in their field to help TVET institutions fulfill the above roles. This means that TVET teachers must be employed in decent terms and conditions of employment with job security and decent pay and benefits, and that they need to have a say in the way their institution develops and performs these roles.

These roles also require colleges to be considered and planned together to provide comprehensive and systematic services, and to be integrated with other educational, social and economic services.

England: Adequate Resourcing

Some 40% of upper secondary enrolments are in vocational education in the UK, less than 47% in Germany but much higher than 9% in Canada (Moodie, Wheelahan, Lavigne and Coppens, 2018, p. 5, from UNESCO UIS). What in England is called ‘further education’ comprises a great diversity of offerings,

including initial vocational education, higher vocational and technician programs, retraining programs, and diverse general education programs offering adults a second chance at basic learning (Augar, 2019, p. 117; Moodie, et al, 2018, p. 8). Table 6 shows the number of adults aged 19 and above in various programs other than apprenticeships and community education. These enrolments fell by 36% in the 5 years from 2012/13 to 2017/18 due to substantial increases in fees, substantial cuts in funding and competition from higher education, most of whose enrolments are not capped.

Table 6: Number of further education students aged 19 and over by level, excluding apprenticeships and community education

	2012/13	2017/18	% change 12/13 to 17/18
Total students	1,782,200	1,131,700	-36%
Below level 2 (excl. English & maths)	745,300	399,000	-46%
English & maths	439,000	364,000	-17%
Full level 2	418,900	56,300	-87%
Full level 3	147,400	120,100	-19%
Level 2	677,500	512,100	-24%
Level 3	238,900	143,300	-40%
Level 4+	34,500	16,900	-51%
No level assigned	209,900	29,300	-86%

Source: adapted from Augar (2019, p. 119) Figure 4.2: Adult (19+) FE and skills participation by level – learner volumes (excluding apprenticeships and community learning).

Enrolments in full level 2 programs fell the most, by an extraordinary 87%. A full level 2 achievement is equivalent to five or more passing grades of the General Certificate of Secondary Education, the level below A levels which qualify graduates for admission to university. Full level 2 is a substantial qualification with a clear occupational role typically taken by adults. Enrolments in these programs have plummeted because the government cut their funding, forcing colleges to greatly increase their fees. As Augar (2019) reported:

But from 2012/13 onwards, employed people aged 24 and over were required to pay half of their tuition costs and in addition, in 2016/17, government support for workplace training for this group was entirely removed. This means that employed people aged 24 and over needing to reskill or wishing to gain a first full Level 2 in order to progress further up the education and career ladder now have to pay half the tuition costs - this could typically be in the region of £500 - unless their employer will pay.
(Augar, 2019, p. 54)

There was almost as big a fall, of 86%, in enrolments in studies with no level assigned. Most of these are not incorporated within a formal academic or vocational sequence, and some are taken out of general interest. Most are not eligible for earmarked academic or vocational funding, and therefore colleges now recover much of their cost from fees, for which loans are not available.

Some 200 general further education colleges including specialist colleges offer about 60% of further education up to senior secondary (level 3), about 19% is provided by 1,179 private training providers, about 5% is offered by some 94 sixth form colleges other than school sixth forms, and about 16% is offered by 280 other publicly funded training providers including local authorities, charities and higher education institutions (Augar, 2019, pp. 19, 116; Moodie, et al, 2018, p. 7). In addition colleges

offer a range of higher level programmes through a variety of arrangements funded from diverse sources.

Further education colleges are funded from six major funding sources, which vary markedly in their levels and conditions (Moodie, Wheelahan, Lavigne and Coppens, 2018, pp. 8-9). Governments have cut funding per student substantially since 2010 (Moodie, Wheelahan, Lavigne and Coppens, 2018, p. 9). The recent major review of post-18 education and funding in England chaired by Philip Augar (2019) found that:

Funding is a fundamental challenge in FE. Funding for adult learners in FE is fragmented, unpredictable and sits at a much lower level per learner than both HE and 16-18 funding, at about £1,000 per year (although many adult FE learners are part time). Largely reflecting the collapse in learner numbers, total spending on adult skills has fallen by approximately 45 per cent in real terms between 2009/10 and 2017/18. This is one of the most important statistics in this entire report and cannot be justified in terms of either economics or social equity. (Augar, 2019, p. 119)

Augar's Post-18 Education and Funding Review Panel observed that the dire consequences for further education colleges had been anticipated by the National Audit Office:

The combination of falling numbers, reduced entitlements and pressure on funding rates has been predictably dire for FECS' financial position. In 2015, the National Audit Office (NAO) reported that the financial health of the FEC sector had been declining since 2010/11, and that the number of colleges under strain was likely to increase rapidly. This duly occurred. In a recent report on college finances, the Association of Colleges noted that 40 per cent of FECS were in deficit in 2016/17. (Augar, 2019, p. 121)

A member of the Augar panel Alison Wolf (2019) observed:

As for further education, which serves the whole non-university adult population from 18 to 85 plus, its funding has been devastated. The core adult education and skills budget has fallen by 45 per cent in real terms since 2010, student numbers have plummeted, and public spending per student is more than six times as high in universities as it is in the nation's colleges.

(Wolf, 2019)

Wolf (2019) adds that as a result 'Courses teaching technician and advanced craft skills are vanishing from English education at speed'. Funding cuts have also resulted in further education staff suffering a cut in pay of 25% in real terms since 2009, and have forced colleges to cut programs, amalgamate, to close campuses, intensify work and adopt exploitative working conditions (Moodie, Wheelahan, Lavigne and Coppens, 2018, pp. 9-10, 46). Colleges have difficulty recruiting and retaining staff (Augar, 2019, p. 136).

The Augar committee reported that governments had accompanied their substantial cuts to recurrent funding with substantial cuts to capital funding:

According to the Association of Colleges, annual capital spending in the FEC sector has reduced from almost £1 billion a year between 2010 and 2015 to less than half of that – £404 million – in 2016/17. Capital funding for the FE sector from government has fallen from a peak in 2009/10 of over £940 million per year to just £130 million per year, delegated to Local Enterprise Partnerships via the Local Growth Fund (LGF). [...]

Following their drop in revenue described above, many FECs are unable to fund maintenance, let alone undertake significant new investment, from operating surpluses and instead have had to rely on private sector borrowing. FECs' parlous financial

condition and the unintended consequence of a new insolvency regime introduced in January 2019 that brings colleges within the remit of company insolvency law and so cuts their credit score, has increased the cost of private sector debt.

(Augar, 2019, p. 128)

TVET in many other case study countries suffer from lack of resources, and some have substantially fewer resources than even the poorest resourced English college. That a country as wealthy as the UK (Moodie, Wheelahan, Lavigne and Coppens, 2018, p. 4) does not resource its TVET adequately indicates the extent of challenges faced by TVET, and emphasises the basic point that TVET cannot fulfil its potential to support students and their communities achieving their capabilities without adequate resources.

Germany: Trust and Coordination Between Social Partners

Almost 58% of Germans had completed upper secondary education in 2017, substantially higher than the European Union average of 47%, mainly due to Germany's well established and highly respected vocational education, and particularly its dual system of apprenticeship in which 70% is undertaken at work and 30% at school (Hippach-Schneider and Huismann, 2019, pp. 11, 14). Germany segments its education into academic and vocational relatively early (Rostamian, Lavigne, Moodie and Wheelahan, 2019, p. 6). Some 46% of upper secondary pupils are enrolled in vocational programs (UNESCO, 2019). Many pupils who complete the senior secondary academic qualification, the *Arbitur* (called *Abiturienten*), proceed to an apprenticeship (Pilz, 2009). So around half of school leavers take a vocational path, mostly the apprenticeship (Hippach-Schneider and Huismann, 2019, p. 14).

Germany's very strong vocational education and particularly its dual apprenticeship system is based on strong coordination and mutual trust between the social partners: employers, trade

unions and government, at several levels from national to local. This coordination extends deeply not only into vocational senior secondary and postsecondary education, but also into employment and the organisation of work. Dual apprenticeships prepare graduates for 327 recognised training occupations regulated by the state (Bundesinstitut für Berufsbildung, 2016).

Cooperation between the social partners of employers, trade unions and federal and state governments is based on consensus:

Cooperation based on mutual trust is essential between government and social partners. Employers and trade unions jointly formulate the requirements for the occupational standards. All co-operation related to VET is based on consensus; no regulations concerning initial or further VET may be issued against the declared will of either of the social partners.

(Hippach-Schneider and Huismann, 2019, p. 50).

Trust in the dual system is built on deep cooperation between the social partners:

Besides the actors from the state and social partners in Germany the so called 'competent' bodies' [sic] (zuständige Stellen) play a crucial role. They include professional chambers as well as various federal and state authorities. Their tasks are ensuring the suitability of training centres; monitoring training in enterprises; advising enterprises, trainers and apprentices; establishing and maintaining lists of training contracts; organising the exam system and holding final exams. Each competent body has a tripartite vocational training committee whose members represent employers, trade unions and teachers. These committees must be informed and consulted on all important VET issues and decide on regulations for implementing VET.

(Hippach-Schneider and Huismann, 2019, pp. 37-38)

Germany's regulation extends to vocational school teachers and to in-company trainers. School teachers of general vocational subjects are required to undertake a masters degree and preparatory practical service (Referendariat) (Hippach-Schneider and Huismann, 2019, p. 42). In-company trainers responsible for training apprentices in the workplace are required to be registered by the relevant chamber of skilled crafts or by the chamber of industry and commerce. Chambers offer courses of around 115 hours to prepare prospective trainers for the examinations they administer (Hippach-Schneider and Huismann, 2019, p. 42).

Germany's strongly regulated employment and deeply coordinated vocational education requires extensive consultations to change, which often takes considerable time, leading to criticisms of inflexibility (Lange, 2012) or at least to changes lagging need. Germany develops deep vocational knowledge and skills by having students specialise early and deeply in vocational education. This early and deep tracking or streaming reduces vocational students' flexibility in transferring to academic education, leading to calls to increase the 'permeability' between vocational and academic education (Moodie, 2017). Perhaps in response to the perception of tracking as a problem or perhaps in response to USA -Anglo norms, the academic track is adopting some vocational characteristics (Gellert and Rau, 1992; Dessinger, 2000) and the vocational track is adopting some academic characteristics (Hippach-Schneider and Huismann, 2019, p. 68).

Taiwan: Educating the Whole Person

Taiwan has high participation rates from primary to tertiary education, reflecting a strong political and cultural recognition of the importance and value of education and its role in economic performance. Taiwan invests great importance in technical and vocational education to prepare highly skilled workers for manufacturing and services, which account for about 90% of its gross

domestic product. Technical and vocational education has been structured parallel to academic education from secondary school to the highest levels of credentials since the Industrial Vocational Education Cooperative Project launched jointly by the USA and Taiwanese governments in the 1950s. Vocational education has four levels in parallel with academic education: vocational senior high schools, junior colleges of technology which offer programs of two years and five years' duration, colleges of technology which offer two-year bachelors with service extensions, four-year bachelors, masters, and doctorates; and universities of technology which offer bachelors, masters, and doctorates (Mou, Lavigne, Rostamian, Moodie and Wheelahan, 2018, pp. 8-10, 13-14).

Taiwanese technical and vocational education is strongly shaped by Confucianism in two ways. Confucianism accords highest value to scholars and scholarship, and accordingly lower value to manual work and thus vocational education. Respondents to our team's survey identified this as a challenge for TVET's development in Taiwan (Mou, Lavigne, Rostamian, Moodie and Wheelahan, 2018, p. 33), although it is not clear that this is more of a problem for TVET in Taiwan than in many other countries.

TVET in Taiwan is also strongly shaped by Confucianism's emphasis on whole-person education, the view that the ultimate aim of education is to cultivate a full person who knows how to appreciate life and pursue happiness, and who understands that professional skills are but one part of a whole person. So in addition to attaching much importance to practice and internships, TVET in common with academic education includes humanities and the arts as indispensable components of individuals' competencies. Accordingly, technical and vocational institutions include studies in the humanities, arts, languages, and education in their curriculum. Campus's physical and cultural environments are designed to promote virtue, and virtue and moral action are key parts of the evaluation of students (Mou, Lavigne, Rostamian, Moodie and Wheelahan, 2018, p. 14).

Implications for Technical and Vocational Education and Training

Basing technical and vocational education and training on developing human capabilities recognises TVET's role in developing graduates' productivities beyond just specific work skills, it accounts for TVET's development of students beyond employment, and it accounts for TVET's non employment benefits.

Technical and Vocational Education and Training's Development of its Students

Technical and vocational education and training should develop at least some of the common capacities upon which capabilities depend. This includes developing students' capacity to organise themselves; to contribute to the organisation of their family, group, and community; and to collaborate with others. This is degraded as 'teamwork' in many business prescriptions of tertiary education programs. All tertiary education should also contribute to the special common capacity of ensuring the capabilities of people who are disadvantaged in comparison with most others by, for example, having fewer resources; having less knowledge, skills or abilities than others; or who have suffered discrimination.

Schröer (2015) argues that three categories of capabilities support young people to make real choices in their lives:

- capability for *education*, which refers to 'the real freedom to choose a training program or a curriculum one has reason to value';
- capability for *work*, which refers to 'the real freedom of making the choice to undertake the job or activity one has reason to value'; and
- capability for *voice*, which refers to 'the real freedom to express one's wishes, expectations, desires etc. and make them count when decisions concerning oneself are made' (p. 369).

These suggest three roles for all tertiary education qualifications, although the emphasis on each role may differ with each qualification (Gallacher, 2011, pp. 2-3; Gallacher, Ingram, and Reeve, 2012, p. 383; Moodie, Fredman, Bexley and Wheelahan, 2013, p. 30):

1. Labour market. Qualifications should provide entry to and progression in the workforce.
2. **Education.** Qualifications should provide students with the knowledge and skills they need to study at a higher level in their field or a closely related field.
3. **Society.** Qualifications should contribute to society by developing students' appreciation of and contribution to culture and society. They should develop individuals' capacity to contribute to their families, communities, and occupations. Qualifications also contribute to social inclusion by supporting inclusion in education and the labour market, and by contributing to a more tolerant and inclusive society.

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 knowledge and 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 require 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, p. 217; Wheelahan & Moodie, 2016, p. 63).

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 (Wheelahan & Moodie, 2016, p. 63).

For example, the capabilities that electricians need differ from those of childcare workers. Both require an understanding of the theoretical basis of their practice (for example, mathematics for electricians, theories of child development for childcare workers), both need to develop the technical skills that underpin practice in their field, and both 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 both need to be able to solve problems, both need to communicate, apply knowledge and the like, but these mean different things in each field (Wheelahan & Moodie, 2016, p. 63).

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 child-care centre with a two-year-old who is throwing a tantrum. Each requires theoretical knowledge as well as skill in solving these respective problems (Wheelahan & Moodie, 2016, p. 63).

Strong institutions are needed to support these outcomes, which include stable, strong, well-funded public TVET institutions. Winch (2013a) 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...

(Winch, 2013a, p. 116)

Technical and Vocational Education and Training's Development of its Communities

- Technical and Vocational Education and Training institutions have an important role in developing their local communities, and in anticipating and meeting their needs. The University and College Union (2009) in England advocated such a role in responding to a new economic and social climate and in regaining the trust of young people following the 2011 riots in England (University and College Union campaign unit, no date). The role of TVET institutions in development of their communities is illustrated by Wheelahan (2017, p. 26; 2018, p. 17), who explains that Australian public colleges anchor their communities by:

- ‘proactively working with other key social partners in the region and nationally (where appropriate) to support sustainable social and economic development;
- anticipating, elaborating, codifying and institutionalising the knowledge base of practice for the future as well as the present and in considering the way work is changing and the implications that this has for a curriculum for the future. This is a crucial role that would support innovation (Moodie, 2008), and requires appropriately qualified and supported teachers who engage in the scholarship of teaching and learning and in research on the way their field is changing;
- offering students a sufficiently comprehensive range of programs that enable them to realise their aspirations and providing students with the broad range of services and supports that are needed to successfully achieve their goals; and,
- developing qualifications that meet the needs of students, communities, local industries and regions’ (p. 10).

Technical and Vocational Education and Training’s Development of Occupations and Industries

Much practice includes ‘systematic procedural knowledge’ or the application of ‘established rules and practices’ (Young, 2006, p. 62) of an occupation such as organising a building site or taking a patient’s temperature. This is ‘the practical knowledge itself structured following the dictates of the workflow and the series of actions needed to achieve the desired final product’ (Valleriani, 2017b, pp. 2-3). Much of this procedural knowledge is tacit and uncodifiable, and thus can be learned only on the job. But much can be codified, systematised, generalised, and recontextualised for teaching formally.

Valleriani (2017a, p. vii; 2017b, pp. 3, 4, 5) and his co-authors (Merrill, 2017, p. 35; Lefèvre, 2017, p. 267) observe that

occupations structure knowledge in practice in their workflow, division and organisation of labour, work drawings, models, measuring instruments, tables of measurements, written recipes, formulas, timetables, manuals, and practice guides. Practitioners restructured their knowledge to manage their operations; to share it, mainly for apprenticeships and other forms of education; and to document their trials and experiments (Merrill, 2017, p. 23; Valleriani, 2017b, p. 9).

Practitioners restructure rather than merely replicate their knowledge because, for example, when a carpenter teaches an apprentice they don't just work wood, they explain how to work wood; they convey to the apprentice not know-how, but knowledge about know-how (Büttner, 2017, p. 118). This restructuring of practical knowledge not only codifies the knowledge of practitioners, but organises it and gives it an analytical framework with principles and theories incorporated from the scholarly literature (Valleriani, 2017b, pp. 6, 11).

This recontextualising of occupational knowledge is often done by occupational associations, trade associations, regulatory bodies, government departments, and by companies which institutionalise them in work processes and manuals that they protect as trade secrets. But there are many industries without such institutional support, at least locally, and colleges have a valuable role in codifying, restructuring, and systematising rules and procedures of practice. This not only helps construct curriculum, but establishes assessment standards which can be important industry standards.

TVET colleges are also reservoirs of accumulated expertise for local industries. They may also be the source of innovation, and of the transfer of new ideas from outside the local industry (Moodie, 2006).

Technical and Vocational Education and Training Colleges' Institutional Strengths

Technical and vocational education and training colleges need to be strong institutions with accumulated expertise and resources to fulfil their roles in developing students as humans, citizens, and as workers; and to fulfil their institutional roles in developing communities, occupations, and industries. This requires continuing funding as institutions rather than separate payments for discrete programmes, projects or other products by severable contracts or other arrangements (Wheelahan 2017; 2018, p. 18). This in turn requires the development of communities of trust between institutions and their funders, communities, industries and students (Wheelahan, 2017, pp. 25-26; 2018, pp. 16-18). TVET teachers need to be supported to become 'dual professionals' who are industry experts and expert teachers who support, contribute to, and have a say in, their college as a strong TVET institution.

TVET also needs to become institutionalised in the sociological sense of being generally understood by the public with established norms and organisational forms which are reinforced by the expectations and behaviour of other institutions, organisations and actors (Streeck and Thelen, 2005, pp. 9, 12). This is not so much of an issue for schools and universities which are generally firmly institutionalised, but it is an issue for TVET, whose ideal or model is less well described, understood and accepted. Most descriptions of TVET's roles are residual – they describe TVET as that which is left over from both secondary and higher education. TVET needs to be established with a strong and stable institutional identity.

Conclusion

This study was commissioned by Education International to examine national case studies of technical and vocational education and training as a framework for social justice. The national case studies are of seven countries and are of different intensities using different methods. They found that TVET and the expansion of human capabilities depends on a range of social institutions and capacities that are provided by government.

*There must be a capacity for **collective action**, an ability to take and implement decisions. People must have confidence in their **physical integrity and safety**, and buildings, equipment and other assets must be reasonably secure.*

*TVET institutions, their students and society generally needs basic **infrastructure** such as water, sanitation, power, and transport.*

*TVET has an important role in **strengthening the informal economy**. While this arises most starkly in countries with a big informal economy, in all countries the informal economy is significant, and it includes the most disadvantaged people.*

TVET cannot fulfil its role if it is conceived of as just a commercial service provider. As Vernell (2010) wrote:

The starting point should be to demand the end of the economic approach which believes that basic human needs like a home, an education, healthcare and meaningful employment should depend on the market. This is not only morally wrong; it also does not work. Social needs, not private profit, should determine what is produced

(pp. 34-35).

*TVET must be developed as a **system of institutions where TVET teachers are supported to develop as dual-professionals who support, contribute to, and have a say in, the development of their college.***

*TVET depends on **adequate and long-term resourcing.***

*TVET makes its strongest contribution when it is based on **strong trust and coordination between the social partners: employers, trade unions (in this case education unions) and government.***

*TVET has a role in **educating the whole person**, which we elaborate as expanding students' capabilities.*

The paper argued that the dominant human capital theory does not adequately explain the use of qualifications in the workforce, it does not recognise the importance of non utilitarian studies, it does not account for education's non employment benefits, and does not account for colleges' institutional roles.

The paper argued that a better philosophy or principle supporting technical and vocational education and training is human capability, for everyone to have the capability to be and do what they have reason to value. The paper argued that TVET's role in developing human capability is to develop each student as a person, as a citizen, and as a worker. This leads to TVET's roles in developing their communities, and in developing local occupations and industries. TVET has a particular role in developing productive capabilities, which are located in and concentrate on an intermediate specialised level, a vocational stream which links occupations that share common practices, knowledge, skills and personal attributes. Vocational streams increase horizontal flexibility and transferability at work by linking occupations in a broad field of practice and increase vertical flexibility and progression.

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Education International

Education International (EI) is the world's largest federation of unions, representing thirty million teachers and education employees across the globe. EI maintains that Technical and Vocational Education and Training (TVET), like all education, is a basic human right. The full participation of citizens in the sustainable, social, cultural, political and economic life of their communities is facilitated by the knowledge, understanding and skills acquired through education and training. All individuals should enjoy equal access to TVET without discrimination and without the ability to pay being a barrier to their participation.

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