Perspectives on Rethinking and Reforming Education

Bin Bai
Paryono *Editors*

Vocational Education and Training in ASEAN Member States

Current Status and Future Development

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Preface

Technical and Vocational Education and Training or TVET has been one of the major initiatives in Southeast Asian region lately as reflected in the Priority number 4 of Southeast Asian Ministers of Education Organization (SEAMEO) Seven Priority Areas (2015–2035)—promoting TVET among learners, teachers, and parents with more visible investment and relevant curricula that focuses on creativity and innovation with a clear pathway to lifelong learning (LLL), higher education (HE), and regional mobility.

In addition, the Association of Southeast Asian Nations (ASEAN) has a Work Plan on Education 2016–2020 under which TVET is one of the strategic goals, Strategic Goal 4—support the development of TVET and lifelong learning by maximising access to TVET, strengthening regional harmonisation and TVET personnel development, establishing regional quality assurance and recognition of TVET, and reducing the gap between supply and demand of skilled labours.

At this moment, comprehensive TVET country profiles from this region are not easily found both online and in printed form. There are few existing resources available online, such as posters developed by SEAMEO VOCTECH Regional Centre and UNESCO-UNEVOC. There is a printed version of "Training Systems in Southeast Asia" published by SEAMEO VOCTECH and NCVER, Australia, in 2000 that we believe the information has been outdated. The availability of TVET country profiles in this printed form will offer up-to-date information about TVET in Southeast Asia to the readers, at least for the moment. This book covers a quite detailed information about TVET in the region that differentiates from other existing publications.

This book comprises TVET country profiles from Southeast Asia, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. In addition to country profiles, this book also describes some issues and challenges faced by the countries and also future directions.

Few authors of this book were initially requested to contribute to SEAMEO VOCTECH's online knowledge platform. In this book, they update and add newest information in their articles. We thank SEAMEO VOCTECH for allowing some of the information to be published in this printed form.

We also thank Faculty of Education of Beijing Normal University. This book is funded by 2018 Comprehensive Discipline Construction Fund of Faculty of Education, Beijing Normal University.

In this opportunity, we would like to express our appreciation to the following contributors and their affiliations which have allowed them to contribute to this book. Those individuals and their affiliations are as follows: Norazlina Hj Othman from Institute of Brunei Technical Education; Pak Ravy and Chrea Sesokunthideth from the National Technical Training Institute of the Kingdom of Cambodia; Dr. Bruri Triyono from Yogyakarta State University, Indonesia; Kirya Moses, an intern at SEAMEO VOCTECH, Brunei Darussalam; Dr. Phouvieng Phoumilay from Vocational Education Development Institute of Lao PDR; Dr. Razali Hasan from University of Tun Hussein Onn Malaysia; Dr. Theresa Thang Tze Yian from Institute of Technical Education, Singapore; Dr. Tiamyod Pasawano from Rajamangala University of Technology Thanyaburi, Thailand; Nguyen Dang Tuan from GIZ-RECOTVET, Vietnam.

Few reviewers that we would like to mention their contribution to the book chapters are comprising staff from SEAMEO VOCTECH and GIZ-RECOTVET. We appreciate the input and reviews from Dr. Mohd Zamri Sabli, Dr. Abbes Sebihi, Cynthia Abdullah, Sadhvi Mathur from SEAMEO VOCTECH, and Franziska Seel from GIZ-RECOTVET.

Appreciation also goes to a few staff and students from Beijing Normal University for their hard work in making this publication possible. They are Li Mixue, Liu Yuting, Xie Lirong, Wu Qiuchen, and Zhu Xiaolin.

Lastly, we hope that this book can offer a comprehensive TVET information of the Southeast Asian countries and enjoy reading it.

Beijing, China — Bin Bai
Gadong, Brunei Darussalam — Paryono

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Chapter 1
Vocational Education and Training in Brunei Darussalam

Norazlina Othman

1.1 Overview

There are formal- and non-formal-level technical and vocational education and training in Brunei Darussalam. IFormal Technical and Vocational Education and Training (TVET) in Brunei Darussalam is under the Ministry of Education and is run by public schools and colleges as well as private colleges. For the certificate and diploma level, TVET is run by the Institute of Brunei Technical Education (IBTE), while the higher level, diploma level, is run by Brunei Polytechnics. In addition, there are 4 private colleges offering TVET programmes.

At the non-formal level, like short courses, Ministry of Culture, Youth and Sports offer several TVET programmes from a few weeks to a year.

Brunei's GDP is mainly composed of three sectors: agriculture, industry and services, and in 2017, agriculture accounts for 1.2%, industry accounts for 56.5%, and services account for 42.3% in Brunei. Major industries include oil, gas and halal products.[1] These economic sectors absorb the country's workforce in agriculture, industry and services as much as 4.2, 62.8 and 33%, respectively.

This paper uses references from SEAMEO VOCTECH Regional Knowledge Platform and UNESCO-UNEVOC that has been validated by the key informant from Brunei Darussalam (Dr. Chin Wei Keh). The country paper contributor is Norazlina Othman.

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[1]Central Intelligence Agency (2018).

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In the coming years, the government of Brunei is planning to sharpen its focus on other areas of the economy (besides oil and gas), including financial services, the halal industry and tech start-ups. Oil and gas are still the major industries and construction and real estate sector are expected to continue growing.[2]

1.2 Demographic and Socio-economic Status in Brunei

See Tables 1.1, 1.2 and 1.3.

Table 1.1 Economy/standard of living in Brunei Darussalam

Economy/standard of living	Population	422,678 (2016)[a]
	Human development index	0.865 (2015)[b]
	Purchasing power parity	–
	Gini coefficient	–
	GDP—total (current price)	BND (Million) 15,747.7 (2016)[c]
	GDP—per capita (current price)	BND 37,257.0 (2016)[c]
	Poverty rate	–
	Gender dynamics/human sex ratio/gender development index (F-M ratio)	0.986[d]

[a]United Nations Development Program (2016b)
[b]Jahan (2016)
[c]Asian Development Bank (2016)
[d]United Nations Development Programme (2016a)

Table 1.2 Education in Brunei Darussalam

Education	Education index	0.692[a] (2013)
	Adult literacy rate (% ages 10 and older)	96.4%[a] (2016)
	Expected years of schooling	14.9 Years[a] (2016)
	Mean years of schooling (of adults)	9.0 Years[a] (2016)
	School dropout rate	–

[a]United Nations Development Programme (2016a)

[2]SEAMEO VOCTECH (2016).

Table 1.3 Labour force age 18–59 in Brunei Darussalam (LFS 2014)[a]

Labour force	Total	Male	Female
Labour force	195,635	110,569	85,066
Employed	182,161	103,586	78,575
Unemployed	13,474	6983	6492
Participation rate	76.8	84.7	68.4
Unemployment rate	6.9	6.3	7.6

[a]United Nations Economic and Social Commission for Asia and the Pacific (2015)

1.3 TVET Mission, Legislation and National Policy or Strategy

1.3.1 TVET Mission/Goals

Brunei Vision 2035 (Wawasan Brunei 2035) aims to transform Brunei Darussalam by 2035 as a nation widely recognized for its educated and highly skilled people measured by the highest international standards; improve the quality of life to be one of the top 10 nations in the world; and build a dynamic and sustainable economy with per capita income to be one of the top 10 countries in the world.

Majority of TVET are offered at the post-secondary level, where the main public provider is *Institut Pendidikan Teknikal Brunei* (IBTE) under the Ministry of Education (MOE). IBTE's mission is to produce highly skilled and employable graduates who meet stakeholders' expectation through a holistic learning environment. IBTE has aligned its KPI (key performance indicators) to support the national KPI, which are as follows[3]:

(1) Employment rate of 80%; the proportion of graduates employed within six months after their convocation ceremony.
(2) Employers' satisfaction rate of 90%; the proportion of employers (i.e., supervisors) being satisfied with the work and performance of our hired graduates.
(3) Students' completion rate of 90% (Fig. 1.1).

1.3.2 TVET Legislation

In 2007, "the Compulsory Education Order 2007" was enacted. It mandates that Bruneian children residing in the country, regardless of gender and race, shall receive formal education for at least nine years. This comprises one year in preschool education, six years in primary education and two years in lower secondary.

[3]Ebil et al. (2017).

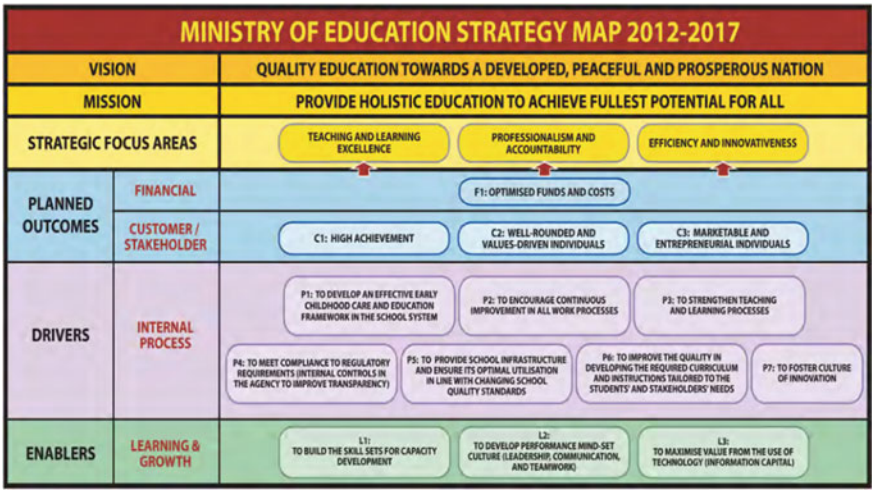

Fig. 1.1 Ministry of Education Strategy Map 2012–2017

The "National Education System for the 21st Century" or "Sistem Pendidikan Negara Abad ke-21" (SPN21) was introduced in 2009 with three main changes: educational structure; curriculum and assessment; and technical education. SPN21 aimed to reposition technical education as a choice of post-secondary education capable of producing a highly skilled workforce in line with the needs of the industry.[4] In response to the need to restructure and establish a new system of Technical and Vocational Education and Training which is better aligned with the social and economic needs of the country, Institut Pendidikan Teknikal Brunei (IBTE) was established on 27 May 2014, following the consent of three documents by His Majesty the Sultan and Yang Di-Pertuan of Brunei Darussalam: The White Paper, Upgrading Plan for Technical Education and Institute Brunei Technical Education Order 2014.

1.3.3 TVET Strategy

In 2013, His Majesty the Sultan of Brunei Darussalam, in his *Titah*, urged a re-evaluation of technical and vocational education, in the hope of contributing more to the needs of industry and local job market. In response to this, IBTE was established on 27 May 2014, following the consent of three documents by His Majesty:

(1) The White Paper;
(2) Upgrading Plan for Technical Education;
(3) Institute Brunei Technical Education Order 2014.

[4]Minstry of Education (2017a).

Under "The White Paper," six key changes were proposed to be implemented within the next 5 years by IBTE[5]:

(1) Course restructuring
(2) Expanding apprenticeship options
(3) More progressing opportunities
(4) Upgrading the training environment
(5) A new scheme of teaching service
(6) Renaming DTE and vocational institutes.

This has led to the establishment of the Industry Competency Framework (ICF); a strong collaboration between Department of Energy and Industry at the Prime Minister's Office (EIDPMO); Institute of Brunei Technical Education (IBTE), MOE and industries. Under the ICF, industry members were heavily involved in the programmes offered—from designing the curriculum to delivering and evaluating students to ensure that the programmes are competency-based and meet industry sectors' needs. Additionally, prior to the convocation ceremonies for the programmes, ICF committees will also organize an "IBTE market day" whereby employers from government and non-government agencies are invited to provide a conditional offer of employment to potential candidates.

1.4 TVET Governance and Financing

1.4.1 Governance

The responsibility of IBTE is to replace the responsibilities mandated to the Department of Technical Education, in terms of transforming the existing administrative structure to a system based on the Board of Governance constitution. The rationale for the establishment of IBTE is to restructure the technical education system to be more responsive and relevant to the needs of the country.

IBTE is headed by Director and Chief Executive Officer (CEO), who is responsible for leading the development and execution of IBTE vision, mission and goals. The CEO acts as a direct liaison between the Board of Governors (BoG) and the Minister of Education (MoE). The CEO also communicates with the BoG and Minister of Education on behalf of IBTE.

The IBTE organization structure was realigned in 2013 to deliver an effective system for its stakeholders. The seven national technical and vocational colleges, which previously functioned as individual institutions, are restructured and organized into two network schools, namely IBTE Central and IBTE Satellite (Fig. 1.2).

[5]SEAMEO VOCTECH (2017a).

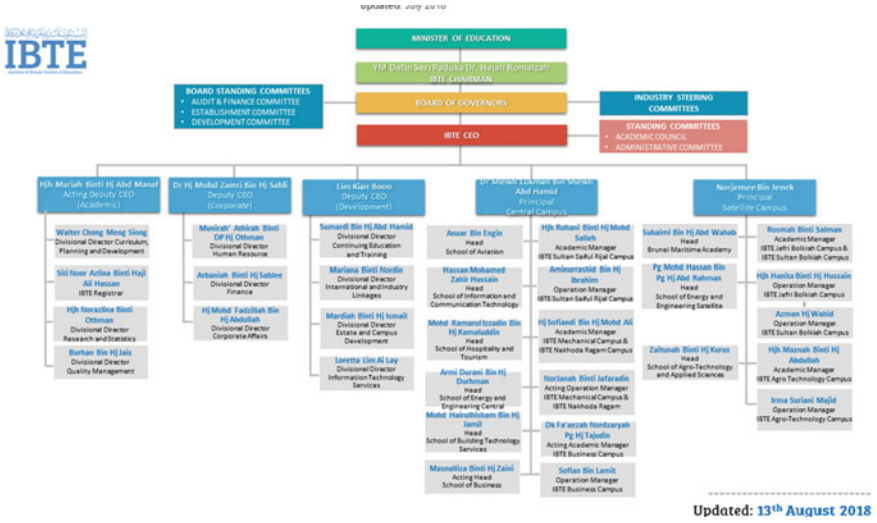

Fig. 1.2 IBTE organization chart (Institute of Brunei Technical Education 2017a)

1.4.2 Financing

Institute of Brunei Technical Education (IBTE) is primarily funded by the Brunei Government through the Ministry of Education (MOE).

IBTE funds allocated are subjected to the following factors but not limited to:

- The type of programmes run in each school;
- The number of students in each school;
- The employability rate of programmes;
- Past spending performances.

1.5 Education and TVET System

1.5.1 National Education System (Twenty-First Century/Revised System)[6]

In 2009, the Ministry of Education (MOE) in Brunei introduced a new educational system known as the National Education System for the twenty-first century or *Sistem Pendidikan Negara Abad Ke-21* (SPN21). The current structure of this system is shown in Fig. 1.3.

[6]Unesco (2017).

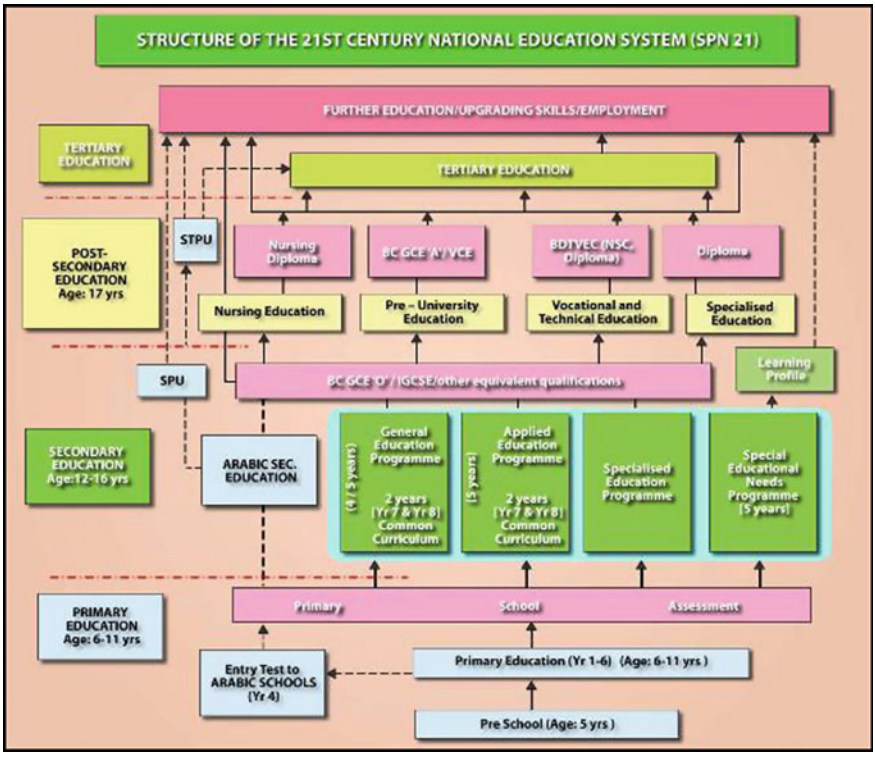

Fig. 1.3 National Education System for the twenty-first century

In 1993, the 9-Year Education Policy introduced in 1972 was replaced by the 12-Year Education Policy, which stipulated that every student should be provided with 12 years of education, 9 of which would be free. The new regulations advocated preschool and primary school for 7 years, 3 years in lower secondary and 2 years in upper secondary. Brunei Darussalam subsequently embraced the concept of inclusive education in 1994 and implemented the Special Education Policy in 1997. This policy provides special educational needs for the inclusion of students in mainstream schools. In 2003, a new Education Order was inaugurated with the aim of establishing an effective, efficient and equitable system of education that was both consonant with the national philosophy of a Malay Islamic Monarchy or *Melayu Islam Beraja* (MIB), as well as the needs of modern, technological society and ICT era. In 2007, the enactment of the Compulsory Education Order 2007 mandated that every Brunei child and those residing in this country above the age of six years who have not yet attained the age of 15 years must receive compulsory education for at least nine years.

Table 1.4 IBTE entry requirements

Levels	Minimum qualifications
Industrial skills qualifications	Completion of year 9 or equivalent qualifications
National technical education certificates (NTec)	Completion of year 10 (Express) or year 11 of Secondary education with passes in relevant subjects, or equivalent qualifications
Higher national technical education certificates (HNTec)	Three "O" Levels with prerequisite grades in relevant subjects or an NTec in related field, or equivalent qualifications
Diploma	Five "O" Levels with prerequisite grades in relevant subjects, or equivalent qualifications

1.5.2 TVET System

Majority of TVET are offered at a post-secondary level. The IBTE entry requirements can be seen in Table 1.4.

While the programmes offered by IBTE mostly focus on preparing for graduate employment, they also provide opportunities for further study for those with advanced status. Schematic diagram to show the progression opportunities of IBTE graduates is shown in Fig. 1.4.

The diagram to show the progression of opportunities from secondary education to IBTE is shown in Fig. 1.5.

1.5.2.1 Formal TVET System

For the formal TVET system, education and training are typically provided by an education or training institution, structured (in terms of learning objectives, learning time, or learning support) and can lead to certification. Formal learning is intentional from the learner's perspective.

The two main public TVET providers in Brunei Darussalam are IBTE and Polytechnic Brunei (PB). There are seven campuses in IBTE[7]: IBTE Sultan Saiful Rijal Campus, IBTE Jefri Bolkiah Campus, IBTE Business Campus, IBTE Mechanical Campus, IBTE Sultan Bolkiah Campus, IBTE Nakhoda Ragam Campus and IBTE Agro-technology Campus. These campuses will be further breakdown into nine schools, as shown in Fig. 1.6.

The technical institution has undergone a transformation, including courses restructuring and expansion of an apprenticeship scheme. Under this new TVET system, all Brunei Darussalam Technical and Vocational Education Council (BDTVEC) Programmes (i.e. Diploma Level 4 and Skill Certificates programmes) will be phased out by 2017 and will be replaced by IBTE programmes. The new curricula developed

[7]Institute of Brunei Technical Education (2017b).

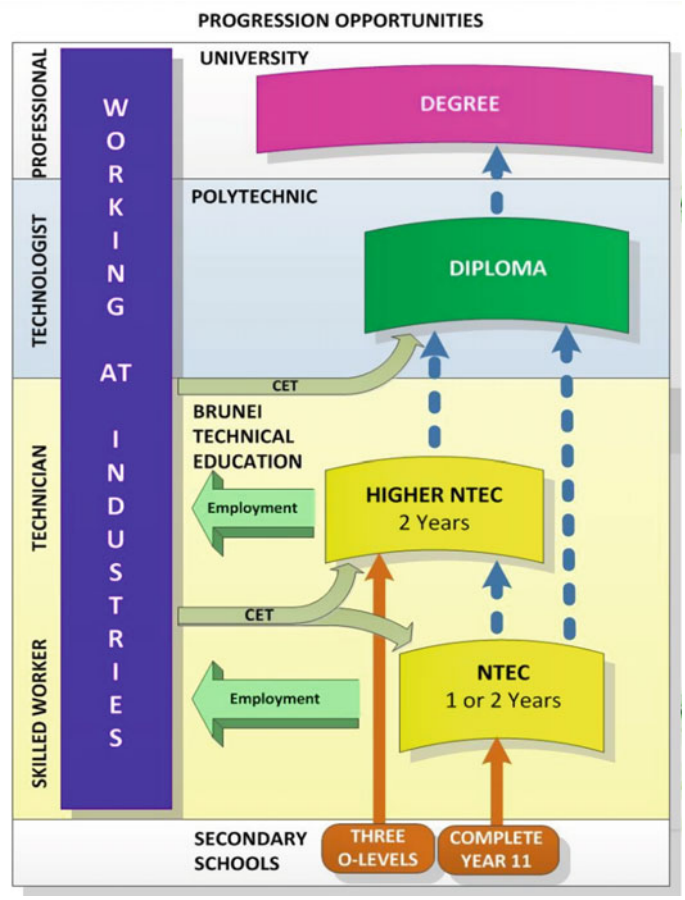

Fig. 1.4 Progression opportunities for IBTE graduates

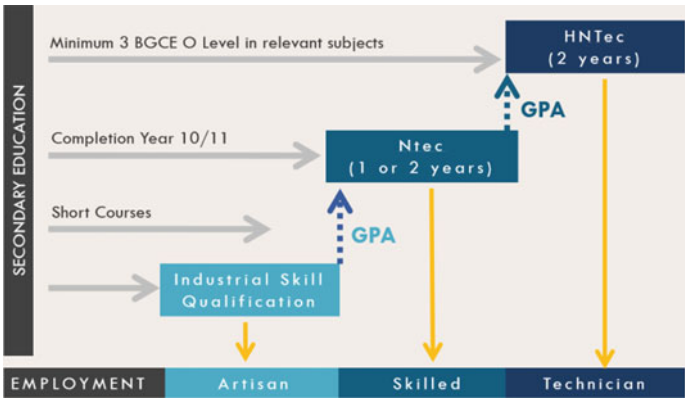

Fig. 1.5 Progression opportunities from secondary education to IBTE

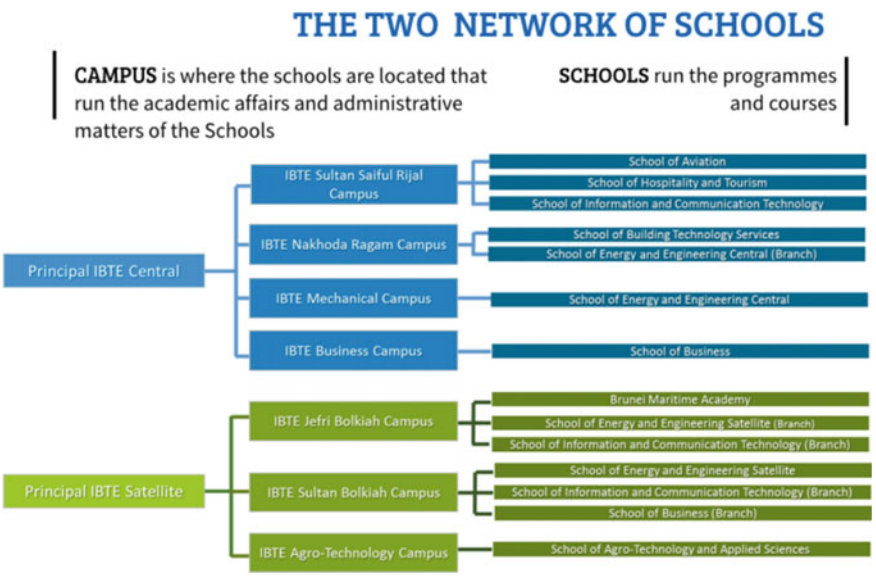

Fig. 1.6 Campuses in IBTE

by the Curriculum Planning and Development Committee in IBTE focused on the development of students' practical skills, hence implementing competency-based assessment (CBA) into each subject to ensure the programmes in IBTE meets the industrial standards and produces job-ready graduates.

Students may apply to IBTE through three levels of training: (i) Higher National Technical Education Certificate(HNTec), (ii) National Technical Education Certificate (NTec) and (iii) Industrial Skills Qualification (ISQ).

ISQ is part of the Energy Industry Competency Framework (EICF ISQ), launched in July 2013 to standardize education and training necessary for the local workforce to work in the oil and gas industries. ISQ is a one-year programme where five months (first semester) will be spent on learning core modules of the school followed by the four to six months (second semester) of technical module offered by the Registration Training Organisations (RTOs) from the energy industry. Depending on the programmes, the duration for the NTec is one or two years and the HNTec programme lasts for two academic years. Both programmes are school based on practical training in school workshops followed with short work placements in industry. IBTE also offers dual system apprenticeship (DSA) programmes both in NTec and HNTec levels, normally conducted over two years to a maximum of four years. DSA programmes consist of two components: (i) Institute-Based Trainings (IBT) at IBTE or at a Registered Training Organisations (RTO) and (ii) On-the-Job Training (OJT) at the workplace of the employer under the supervision of an expert. The list of programmes offered in IBTE can be found in Fig. 1.7.

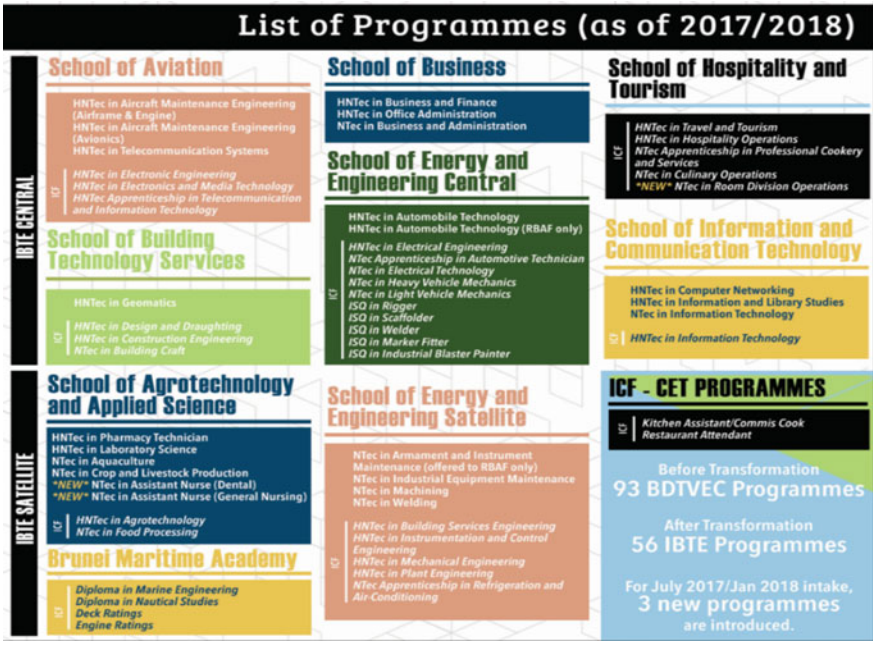

Fig. 1.7 List of programmes offered in IBTE

At present, there are five private TVET providers in Brunei Darussalam, namely Laksamana College of Business, Kemuda Institute, Micronet International College, IGS and Cosmopolitan College of Commerce and Technology. These private institutions provide courses from Pearson's BTEC, National Craft Certificates (NCC Education), Limkokwing University of Creative Technology (LUCT), BDTVEC and London Chamber of Commerce.

1.5.2.2 Non-formal and Informal TVET System[8]

Non-formal is the education and training that takes place outside the formal system either on a regular or intermittent basis. Informal TVET covers learning resulting from daily life activities related to work, family, or leisure. Informal learning is part of non-formal learning. It is often referred to as experience-based learning and can be understood to a certain degree as accidental learning.

The Continuing Education and Training (CET) under the Institute of Brunei Technical Education has been in existence since 1958. The IBTE CET offers short courses, programs and workshops that are designed to further encourage social/career mobility and education progression particularly for school leavers and matured students.

[8] See Footnote 6.

BDQF Levels	Schools Sector Qualifications	Technical and Vocational Education Sector Qualifications	Higher Education Sector Qualifications
8			Doctoral Degree
7			▯ Master's Degree ▯ Post Graduate Diploma ▯ Post Graduate Certificate
6			Bachelor's Degree
5		▯ Advanced Diploma ▯ Higher National Diploma (HND)	▯ Foundation Degree ▯ Advanced Diploma ▯ Higher National Diploma (HND)
4	▯ GCE "A" Level ▯ IGCSE "A" Level ▯ IB Diploma ▯ STPU	▯ Diploma ▯ Higher National Technical Education Certificate (HNTec)	
3	▯ GCE "O" Level (Grades A-C) ▯ IGCSE and GCSE "O" Level (Grade A* - C) ▯ SPU (Grades A-C) ▯ BTEC level 2 Diploma	▯ Skills Certificate 3 (SC3) ▯ National Technical Education Certificate (NTec)	
2	▯ GCE "O" Level (Grades D-E) ▯ IGCSE "O" Level (Grade D-E) ▯ SPU (grades D) ▯ BTEC Level 2 Extended Certificate	▯ Skills Certificate 2 (SC2) ▯ Industrial Skills Qualifications (ISQ)	
1	BTEC Level Introductory Certificate	Skills Certificate 1 (SC1)	

Fig. 1.8 Brunei Darussalam qualifications framework (BDQF) (Ministry of Education 2017b)

IBTE CET is one of the national providers of non-formal TVET, committed to providing quality, innovative training and personal enrichment opportunities for the citizens and non-citizens in Brunei Darussalam. The IBTE CET provides lifelong learning opportunities, which allow adult learners to acquire further knowledge and skills in relevant fields.

1.6 National Qualification Framework

His Majesty the Sultan dan Yang Di-Pertuan of Negara Brunei Darussalam has consented to the establishment of the National Qualification Framework, namely Brunei Darussalam Qualifications Framework (BDQF) by the Ministry of Education through the Brunei Darussalam National Accreditation Council (BDNAC).

The BDQF has been stipulated in the Brunei Darussalam National Accreditation Council Order 2011 (BDNAC Order 2011). With reference to the BDNAC Order 2011, the BDQF is used as a tool to develop guidelines that classify qualifications based on criteria agreed at the national level and benchmarked with international good practice.

The framework explains the level of learning, the learning outcomes of study areas and a credit system based on student's academic load. This criterion applies to all qualifications recognized by Brunei Darussalam, thereby integrating and linking all qualifications recognized within the country (Fig. 1.8).

1.7 Quality Assurance and Standards

The existing agencies under MOE responsible for accrediting quality education in Brunei Darussalam are the Brunei Darussalam National Accreditation Council (BDNAC) and Brunei Darussalam Technical and Vocational Education Council (BDTVEC).

The BDNAC is the sole accrediting body in Brunei Darussalam responsible for all matters related to the assessment and accreditation of qualifications recognized by the Government of His Majesty the Sultan dan Yang Di-Pertuan of Brunei Darussalam, which established in 1990. This includes all approved programmes on its website, with levels and purposes as a point of reference and value-added information for learners and employers. In 2011, the BDNAC Order was in place and the Brunei Darussalam Qualification Framework (BDQF) was formed. The BDQF explains the level of learning and provides mechanisms for the progression or inter-relationship between academic qualifications, including non-degree and degree qualifications, learning outcomes of study areas and credit system based on student academic load to facilitate the credit accumulation and transfer, which is acceptable within and outside Brunei.

Under the EICF, the Energy and Industry Department of the Prime Minister's Office (EIDPMO), in collaboration with MOE, have also set up a working group to overlook the Energy Industry Quality Assurance (EIQA) which would manage, monitor and audit the quality process and standards for RTOs.

All training providers or institutions of higher education have to develop their own coherent internal quality assurance including management system of organizational structure, its responsibilities, procedures and resources for setting and implementing quality policies.

IBTE has set up a new division called "Quality Management Division." This division was established to ensure that the quality management system is operating within the IBTE effectively and efficiently. The main functions of the quality management division are as follows;

- To oversee the quality management system (QMS) and related processes (quality planning, support, product realization and improvement processes).
- To give support to those programmes in acquiring international and national certification/accreditation.
- Ensure QMS & IBTE academic policies are communicated and implemented within IBTE and its campuses/schools.
- To support IBTE schools' management representatives to identify and plan the activities and resources needed to develop, implement and maintain the QMS and to achieve the quality standards.
- To centrally monitor and evaluate teaching and learning and examination and assessment processes of every programme.

In 2016, IBTE has been awarded the ISO 9001-2008 quality management system (QMS) certification—the first post-secondary institution in Brunei that have been awarded the ISO certificate.

1.8 TVET Graduates

Based on Student Admission Data July 2016 (based on 1st choice), the top 10 most popular courses among students are:

(1) HNTec Information Technology
(2) NTec Business and Administration
(3) HNTec Business and Finance
(4) NTec Information Technology
(5) NTec Apprenticeship in Professional Cookery & Services
(6) HNTec Construction Engineering
(7) HNTec Electronics and Media Technology
(8) BMA COP Apprenticeship in Engine Ratings
(9) HNTec Information and Library Studies
(10) HNTec Office Administration.

The employment rate from the year 2015–2017 is shown in Table 1.5.

The sector and occupations, which are financially rewarding, are those related to oil and gas industries. The median starting salary for ISQ program is $700, whereas other sectors starting salary for SC2 are only $540[9] (ISQ—Industrial Skill Qualification; SC2—Skill Certificate 2).

The Research and Statistic Division (RSD), IBTE has conducted Employers Satisfaction Survey (ESS) since 2014. The purpose of this study is to identify the level of employers' satisfaction with IBTE graduates. The study is conducted one year after the graduation ceremony and targeted at the direct/immediate supervisors of the graduates.

The key findings of the surveys for the years 2015–2017 are tabulated in Table 1.6.

Table 1.5 Employment rate from the years 2015–2017

Year	2017	2016	2015
[a]Employment rate (%)	61.3	74.5	71.5

[a]Employment rate is the proportion of employment-seeking graduates (i.e. excluding graduates doing further studies) that are successfully employed, six months after the national convocation ceremony

[9]SEAMEO VOCTECH (2017b).

Table 1.6 Key findings of the surveys for the years 2015–2017

Year	2017	2016	2015
No. of responses from industries	237	208	134
Perception of TVET in Brunei			
% agreed that IBTE is producing enough supply of TVET graduates to meet industrial needs (%)	65.4	83.2	66.4
% agreed that IBTE have been providing appropriate skills to its graduates (%)	68.4	82.2	78.4

IBTE Employment Study Report 2017

1.9 TVET Personnel (Teachers)

1.9.1 Composition of Personnel

IBTE is made up of 425 teachers/instructors, 21 school management and 1 full-time in-company trainer. Additionally, numerous experts from Registered Training Organisations (RTOs) for certain programmes such as industrial skills qualification (ISQ) and dual system apprenticeship (DSA) also contribute to IBTE students' training.

1.9.2 Composition of Teaching Workforce[10]

In Brunei Darussalam, IBTE teachers consist of expatriate and locals with an average age of 38. There is no gender imbalance in IBTE teachers as the number of males almost equals to female teachers. For the local teachers, they are mainly recruited from fresh graduates with a minimum qualification of at least one level higher qualification than those in related field. Hence, the basic qualification is Diploma Level 5 (formerly known as Higher National Diploma).

Most local IBTE teachers are recruited prior to acquiring their teaching qualification. Only a small proportion of the local IBTE teachers have industrial experience. The training and recruitment of IBTE teachers in Brunei are based on the in-service model, in which the teacher's qualification is acquired at the university level within the first few years usually in the probationary phase of employment.

[10] A Portal to LLL Resources (2017).

1.9.3 Salaries of Teachers/Trainers/Instructors

The starting salary for the basic qualification (Diploma Level 5) is BND$2035 per month.

1.9.4 Teachers' Professional Development[11]

Teachers' continual professional development (CPD) is provided through in-house training, short courses locally and overseas and industrial placement. Locally, CPD is led by different agencies under the purview of MoE such as SHBIE and ILIA.

- SHBIE is a graduate school of education as well as one of the major providers of continuous professional development for teachers. Education is offered in two main categories: (a) teachers' personal development teachers are given opportunities to upgrade their academic qualifications through post-graduate studies up to Ph.D. level, (b) teachers' professional development in-service teachers attend various research-based continuous professional development courses designed by the institute in collaboration with the MoE. Examples include the twenty-first century Teaching and Learning (21CTL) course and the personalized pedagogy and technologies course. In addition, the MoE, the Ministry of Religious Affairs and private schools run a range of short courses.
- ILIA provides action-based, continuing professional development for teachers and school leaders in terms of individual leadership, teacher leadership and school leadership training through its three-tier school leadership programmes. These programmes are designed for aspiring school teachers, middle leaders and senior school leaders.

1.10 Private Sector Cooperation

With the launching of Brunei's long-term development plan (Brunei Vision 2035), the private sector will increasingly be involved in the planning and implementation of development projects—including those relating to TVET. This is particularly the case for post-secondary TVET, where industries play important roles in several aspects, including curriculum planning, the development and implementation of apprenticeship schemes, and competency-based training and assessment. Under the competency-based arrangements, any assessments for students need to be verified by the relevant industries.

[11] Institute of Brunei Technical Education (2013, 2017.2.5).

Engagement by employers, employees and civil society in TVET can take various forms, including[12]:

- Participating in developing national, sector or local policies;
- Supporting funding mechanism;
- Joining the boards and management bodies of TVET provider;
- Helping to identify occupational skills and standards as the basis for education and training standards;
- Participating in pilots, initiatives and innovations.

Under the new IBTE constitution, a Board of Governors (BOG) was appointed by the government to oversee IBTE strategic mission, direction and goals. The BOG is empowered with the autonomy and flexibility to establish its standing and special committees may be required to regulate and better discharge its primary functions and duties. The BoG members consist of high-level officials from both the government and the private sector.[13] The government members include Ministry of Education, Ministry of Finance, Prime Minister's, Industry and Energy Department, Prime Minister's Office (EIDPMO) and Ministry of Primary Resources and Tourism, Ministry of Development and Brunei Investment Agency (BIA). The private-sector members are from Darussalam Enterprise (DaRe), Authority for Info-Communication Technology Industry (AITI), Royal Brunei (RB), Telecom Brunei Berhad (TelBru), Tabung Amanah Islam Brunei (TAIB), Association of Surveyors, Engineers and Architect (PUJA), Brunei Gas Carrier and Centre of Capacity Building (PPK).

IBTE also works together with the Industry Competency Framework (ICF) team under the Energy and Industry Department at the Prime Minister's Office (EIDPMO), industries and other government agencies to revise the curriculum. From these strong collaborations, a Programme Development & Evaluation Committee (PDEC) was established to bring in industrial subject-matter experts (SMEs) and teaching professionals from various institutions to develop a competency-based curriculum.

From the non-oil and gas sectors, the initiative has been done to link and strengthen collaboration between IBTE and industries through the formation of Industry Steering Committee (ISC). With the formation of the ISC, IBTE hopefully will be able to implement its core business of developing and ensuring relevant training programme to meet the needs of the industry. ISC acts as an advisory body to support the development and implementation of the training programmes that would meet the need of the industry.

IBTE also strengthened their existing apprenticeship programmes through a dual system apprenticeship (employed-based training model). In this model, the apprentice is employed by a company and spends time in the workplace and at a Registered Training Organisation (RTO) undertaking "off-the-job training" during a period of block release, 6 months in the company and 6 months in RTO. RTO has proposed 16 new dual-system apprenticeship programs for the oil and gas, marine, hospi-

[12] IBTE Ignite (2017a).

[13] Institute of Brunei Technical Education (2013, 2017.1.5).

tality, construction services, construction, business and services, automotive, food technology and agricultural technology industries.[14]

1.11 Ongoing Reforms/Projects[15]

The followings are the key changes to be implemented by IBTE (for the year 2013–2018) as stated in Transformation of Technical and Vocational Education: White Paper.[16]

1.11.1 Course Restructuring

With the introduction of SPN21 by the Ministry of Education in 2008, plans have already been put in place to improve primary and secondary education in schools. All students will henceforth receive at least 10 or 11 years of primary and secondary education before proceeding to further education and training. In view of these changes, the present courses need to be restructured and reconfigured to better match the needs of the new cohort of school leavers, which are estimated to be more than 60% (students obtained 4 GCE "O" Levels and below in 2012). The range, level and capacity of courses will be reviewed and better aligned with the major sectors of the economy. The new BTE will strengthen its focus on the development of practical skills. The curriculum will be "competency-based" and training "hands-on." It will conduct three levels of courses and award its own certificates, viz Industrial Skills Certificate (ISQ), National Technical Certificate (*NTec*) and Higher National Technical Certificate (*HNTec*). The present two-year diploma courses will be gradually phased out or subsumed under the Brunei Polytechnic. Graduates of the *HNTec* courses are trained as "technicians," whereas those in *NTec* and *ISQ* will qualify as "skilled personnel." The ISQ courses are industrial short courses ranging from three months to one year depending on the nature of the occupation. The *NTec* full-time courses are of one- or two-year duration depending on the nature and depth of training required. *HNTec* courses, on the other hand, are pegged at a higher level of training with more theory and take two years to complete. Every school leaver who has completed 10 or 11 years of schooling under SPN-21 is eligible to apply for a course in BTE. The *HNTec* courses will require a minimum of three GCE "O" levels with subject perquisites and grades. To better respond to the wide range of educational achievements, especially in Language, Mathematics and Science, there will be two clusters of *NTec* courses. Cluster "A" is the mechanical-based courses for which no GCE "O" or subject pre-requisites are required. All other courses (e.g. electrical-

[14] See Footnote 11.

[15] IBTE Ignite (2017a).

[16] See Footnote 11.

or electronics-based) which require pre-requisite subjects and grades will be placed under cluster "B." ISQ courses cater for those who wanted to obtain industrial skill for employment and require completion of 9 years. Based on the potential pool of school leavers and projected student intake rates under SPN21, BTE will need to build a full-time total training capacity of 8000 places over the next seven years. By then, it will offer a projected number of 10 *ISQ*-, 43 *NTec*- and 36 *HNTec*-approved courses.

1.11.2 Expanding Apprenticeship Options

Apprenticeship is not just another model of skills training. Besides the knowledge and skills, apprenticeship helps to build a strong bond between the apprentice and his company, and an educational institute will be difficult to achieve. The best practice is the "dual" system of apprenticeship in Germany and Switzerland which trains up to 70% of a school cohort. The result is that these countries have produced one of the most highly professional and skilled workforces in the world. However, our traditions and contexts are not the same. It will be unrealistic to fully depend on this mode of training. But it is a training scheme suitable for those who wish to earn as they learn. There is potential to expand the scope of apprenticeship in Brunei Darussalam. Working with the major sectors of industry, new areas of apprenticeship, some of which may not be available under the full-time system, can be identified and introduced. The target is to expand the present apprenticeship places from the present 60 to 200 places in the next five years. The wider options in apprenticeship training will help to provide more occupational choices and match the interest of school leavers. This form of industry-based training will strengthen the partnership and collaboration between the industry and BTE.

1.11.3 More Progression Opportunities

With social and economic progress, the aspirations of the young and expectations of parents will accordingly rise. Many will continue to aspire for a university degree education. There is no wrong in having these aspirations. The important issue is the recognition that each individual is different. In principle, the eligibility criteria for progression to the next level of training should be based on merit performance and the potential to do well. Quality and standards must not be compromised. The primary mission of BTE is to prepare people well for the occupations after they are trained. Its mission should not be relegated to preparing students for the next level of education and training.

But those who have performed well must be given the opportunities to progress further. This will provide motivation for students to do well and enhance the attractiveness of the training system. The different pathways will add to the robustness of

the educational system. With proper articulation and experience, more opportunities can be created for up to 25% of DTE graduates to enter the higher-level courses within BTE and the Brunei Polytechnic.

1.11.4 New Scheme of Teaching Service

Unlike school education, vocational training, especially under BTE, will be practice-based, hands-on and experiential. Teachers who can best meet the needs of students in this learning environment are those who not only have the appropriate professional qualifications but most importantly the relevant industrial experience with pedagogic training. As such, the years and value of the experience they bring with them in the context of practical skills training must be recognized. The ability to attract professionally trained and well-qualified teaching staff is the key to upgrading the quality of training and standards.

The present DTE teaching scheme is being reviewed. A new enhanced scheme of teaching service will be introduced to attract, retain and develop the right types and number of staff in meeting the needs of an expanded BTE system. Benchmarked against the relevant industry and public sector schemes, it should be a scheme specially tailored for teachers in TVET. To make the scheme attractive, there will be provisions for staff development through different career tracks such as teaching, leadership, specialist and technologist. The compensation structure will be designed to raise the professional competence and standards of the teaching staff. The goal is to position the teaching service at BTE as a professionally, challenging and rewarding career to support a first-class post-secondary technical and vocational education. Other benefits and incentives may be introduced to ensure the continuity of leadership, expertise and core capabilities in the teaching service.

1.11.5 Other IBTE Staff Capacity-Building Projects

In order to close the skill gap that hinders them from delivering effective lessons and ensure teaching staff to have the relevant competencies and up-to-date teaching skills, from January 2017, a total of 73 staff attended short courses in their respective fields, 38 staff went for industrial attachments, and a total of 25 staff are currently undergoing “Latihan Dalam Perkhidmatan” (LDP) as this is a prerequisite for staff building capacity.

As part of IBTE’s effort to create awareness and understanding of competency-based on training (CBT) and competency-based assessment (CBA) among its teaching instructors, IBTE sent eight teaching instructors from the VTIs and IBTE to attend a two-week competency-based assessment (CBA) training programme entitled “Strengthening Competence Assessment in TVET” at SEAMEO-VOCTECH

from 18 to 30 August 2014. These instructors requested to cascade the information that they had obtained from the two-week workshop at SEAMEO-VOCTECH.

At present, IBTE is continuously committed to expand the number and scope of collaborations in training fields with potential local companies. In 2017, IBTE has signed memorandums of understanding (MOU) with 68 local companies for its training apprenticeship programme. The programmes listed are telecommunication and information technology, engine rating, deck rating, automotive technician, refrigeration and air-conditioning and professional cookery and services.

A five-day "Train the Trainer" (TTT) course for 25 instructors in various fields from seven IBTE campuses were conducted at *Cemerlang* Building, Brunei Asia-Pacific Shell Learning Hub (BAPSLH) on 14–18 September 2016. The course was facilitated in collaboration with BSP, BAPSLH, Adinin Training and Development Centre Sdn Bhd (ATDC), Mashor Group of Companies and IBTE. Its objectives were to raise awareness among IBTE teaching staff on the importance of life skills and change of mindset in the instructors in line IBTE transformations.

1.12 Key Issues and Challenges[17]

The key challenges of IBTE are as follows: Limited capacity (in terms of infrastructure and human resources); Recruitment of teachers with industrial experience;Support from relevant stakeholders and Manpower Data.

Action plan

- To increase current capacity and upgrade the existing infrastructure to open more opportunities for secondary school leavers who wish to pursue their studies in IBTE. To overcome this one of the strategies is to offer "staggered enrolment" where IBTE now offers some courses in January and September intake. Previously, IBTE only offers courses in July.
- To obtain autonomy in managing human resources and finances as well as the relevant scheme of services to enable experts from the industries to become trainers at IBTE.
- To leverage on industry competency framework (ICF) to obtain continuous support and assistance from the relevant stakeholders particularly from the industries for IBTE to collaborate to improve the existing technical education and training. The formation of Industry Steering Committees (the chairman of ISC would usually be someone influential from the industries) will further strengthen the close collaboration/cooperation with the industries especially in creating high-quality programmes that will fulfil the country's human resources needs.

[17]Corporate Affairs Division, IBTE.

To obtain manpower data that will enable IBTE to determine the manpower needs of the industries and to enable IBTE to plan the enrolment and distribution of graduates to the relevant industry sector. IBTE will liaise with MPPU and job centre, Brunei to see the job market trends needed by the country.

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Chapter 2
Technical and Vocational Education and Training in Cambodia: Current Status and Future Development

Sothy Yok, Sesokunthideth Chrea and Ravy Pak

2.1 Country Overview

Cambodia has experienced average annual economic growth of about 7% and became a lower-middle country in 2015 (World Bank 2018). This remarkable growth rate is contributed by industry sector, particularly garment, footwear, and construction, services sector, and agriculture sector. As shown in Fig. 2.1, industry share to economic growth shows an increasing trend, while the contribution by agriculture shows a downward trend. Table 2.1 provides details of Cambodia's demographic and socio-economic data.

Within the industry sector, manufacturing accounts for the biggest share (National Institute of Statistics 2018), 16 out of 29.5% in 2016 (estimated). While the export of garment and textile experiences a small decline, the export of electrical machinery, equipment, and auto parts has shown a significant increase, around 7% between 2010 and 2016 (World Bank 2017). This change implies that Cambodian manufacturing is moving up to the value chain, where manufacturing products are more durable than consumer products and are higher value-added (World Bank 2017). Adjustment of skills equipped by Cambodian youth is, therefore, a result of such an advancement in manufacturing technology.

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Table 2.1 Cambodia's demographic and socio-economic data

Economy/standard of living	Population	In 2016: 15,762,370
	Human development index	0.563 in 2015 (UNDP 2016)
	Purchasing power parity	58,880 (millions of international dollars, World Bank 2018)
	Gini coefficient	2010–2015: 30.8 (UNDP 2016)
	Gross domestic product (GDP)—total	16998172323.71USD, constant 2010 USD (World Bank)
	Gross domestic product (GDP)—per capita	1078.40USD, constant 2010 USD (World Bank)
	Poverty rate	13.5% (World Bank)
	Gender dynamics/human sex ratio	30.8, period 2010–2015 (UNDP 2016)
Education	Education index	Inequality-adjusted education index, 0.333 (UNDP 2016)
	Adult literacy rate (% ages 15 and older)	80.5% (NIS 2016)
	Expected years of schooling	10.9 years in 2015 (UNDP 2016)
	Mean years of schooling (of adults)	In 2015, 3.7 for female and 5.5 for male (UNDP 2016)
	School dropout rate	2014–2015 (MEYS 2015) Primary, 6.2% Lower secondary, 19.2% Upper secondary, 23.8%
Employment	Unemployment rates	(World Bank, accessed January 2018) – National, 0.2% in 2013 – Youth, 1.58% in 2012
	Industry/sector-wise employment	In 2010 (World Bank, accessed January 2018) Services, 29.6%, industry, 16.2%, and agriculture, 54.1%
	Composition of workforce	In 2016 (World Bank, accessed January 2018) – Male, 50.10% – Female, 49.90%

Source Ministry of Education Youth and Sports (MoEYS), National Institute of Statistics (NIS), UNDP, World Bank

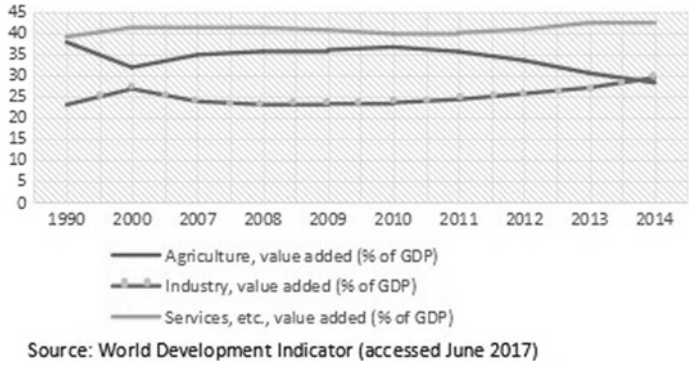

Fig. 2.1 Sector share (percentage of GDP)

2.2 Current Status of TVET in Cambodia

2.2.1 The TVET System in Cambodia

The education system in Cambodia embraces formal and non-formal education. The formal pre-tertiary education structure, under the Ministry of Education, Youth and Sports (MoEYS), consists of three years of pre-school education, six years of primary school education (grade 1–6), three years of lower secondary education (grade 7–9), and three years of upper secondary education (grade 10–12), equalling a total of 12 years from the start of primary school until the end of high school (UNESCO 2013).

Those who drop out from school without completion of the relevant education level have the opportunity to attend non-formal literacy and life skills programmes, thus making it possible for them to enrol in technical and vocational education and training (TVET) programmes offered by various institutions. After completing nine years of basic education, students can either continue to upper secondary education or enter secondary-level TVET programmes (UNESCO 2013). After completing upper secondary education, students who wish to continue with further studies or training may either enrol in university or enter the TVET stream (UNESCO 2013).

Table 2.2 illustrates minimum enrolment requirement to TVET stream by level, from vocational certificate to doctoral degree. Vocational certificate is a short course (less than one year) which includes chicken raising, vegetable planting, pig raising, computer design, and among others. Students who wish to continue to the next level of education in TVET must fully complete its preceding level.

There are 39 public TVET institutes in Cambodia. They have been established through funding from the RGC, and there are 73 private TVET institutes and NGOs not funded by the states (Ministry of Labour and Vocational Training 2018). The objectives are to provide skills, knowledge, and professional behaviour in the workplace.

Table 2.2 Minimum enrolment requirement to TVET stream by level

Level	Technical and vocational education and training	Requirements
8	Doctoral degree	Holding master's degree (technology or business)
7	Master's degree (technology or business)	Holding bachelor's degree (technology or business)
6	Bachelor's degree (technology or business)	Holding high school certificate or holding higher diploma (technology or business)
5	Higher diploma (technology or business)	Holding C3 or complete grade 12 in general education
4	Technical and vocational certificate 3 (C3)	Holding C2
3	Technical and vocational certificate 2 (C2)	Holing C1
2	Technical and vocational certificate 1 (C1)	Completed grade 9 or holding skill bridging certificate
1	Vocational certificate	No requirement

Source Cambodia National Qualification Framework (2014)

At the first initiative, there are intercommittees between the Ministry of Labour and Vocational Training (MLVT) and the Ministry of Education, Youth and Sports (MoEYS) to explore beneficial mechanisms to develop skills. In Cambodia, the MoEYS is in charge with general education and higher education, and the MLVT is responsible for vocational training.

2.2.2 Cambodia National Qualification Framework

To "ensure equivalency within the Kingdom in the standard of national qualification and regional qualification" (RGC 2014: 1), Cambodia National Qualification Framework (CNQF) was established in 2014. The framework provides accepted comparison between general education and TVET; therefore, it is flexible for students to move between them. Specific purposes of the CNQF include (RGC 2014: 1–2):

i. Provide nationally consistent recognition of outcomes achieved in each qualification of education and training;
ii. Help with developing flexible pathways which assist people to move more easily between the education and training sectors and between these sectors and the labour market by providing the basis for recognition of prior learning, including credit transfer, experiences, and current competency;
iii. Offer flexibility to suit diversity of purposes of education and training;

iv. Encourage individuals to progress through education and training by improving access to qualification, clearly defining avenues for achievement, and generally contributing to lifelong learning;
v. Encourage the provision of more and higher quality vocational education and training through qualification that meets individual, workplace, and vocational needs, thus contributing to national economic performance;
vi. Promote national and international recognition of qualification offered in the Kingdom of Cambodia; and
vii. Facilitate the regional mobilization of skilled workforce.

Table 2.3 provides the relationship between each level of technical and vocational education and training and higher education.

Expected learning outcome of each level is divided into five domains, which are applicable to all programmes in technical and vocational education and training as well as in Higher Education. The expected outcomes are as follows (RGC 2014: 6–7):

i. Knowledge: the ability to recall, understand, and present information including

- Knowledge of specific facts;

Table 2.3 Structure of levels in CQF

Level	Technical and vocational education and training (TVET)	Higher education (H.E)	Minimum credit hours
8	Doctoral degree of technology/business education	Doctoral degree	54
7	Master degree of technology/business education	Master degree	45
6	Bachelor of technology/business education	Bachelor degree	120
5	Higher diploma/associate degree of technology/business education	Associate degree	60
4	Technical and vocational certificate 3		30
3	Technical and vocational certificate 2		30
2	Technical and vocational certificate 1		30
1	Vocational certificate		30

Source Cambodia National Qualification Framework (2014)

- Knowledge of concepts, principles, and theories; and
- Knowledge of procedures.

ii. Cognitive skills: the ability to

- Apply understanding of concepts, principles, theories, and procedures in critical thinking and creative problem-solving both when asked to do so and when faced with unanticipated new situations.

iii. Psychomotor skills: the ability to

- Perform one or more skills with ease and become automatic with limited physical or mental exertion;
- Perform a combination of skills in sequence with harmony and consistency;
- Reproduce a skill with accuracy proportion and exactness and independently perform a given task;
- Perform tasks according to instruction rather than observation.

iv. Interpersonal skills and responsibility: the ability to

- Take responsibility for their own learning and continue their personal and professional development;
- Work effectively in groups and exercise leadership when appropriate;
- Act responsibly in personal and professional relationships; and
- Act ethically and consistently with high moral standards in personal and public forums.

v. Communication, information technology, and numerical skills: the ability to

- Communicatively in oral and written forms;
- Use information and communication technology; and
- Use basic mathematical and statistical techniques.

At lower levels, for example, vocational certificate level and technical and vocational certificate levels, knowledge, skills, and responsibility of the students are limited to some ranges if compared to higher levels of education and training. For instance, students at level 1 and 2 learn only basic operating procedure and regulation, and the knowledge includes only little conceptual knowledge. The students also take responsibility for just their own work. However, at level 5 and 6, students have a broader range of knowledge including thorough knowledge of conventions, regulations, and technical requirements, and underlying theories and their relevance for new technologies (RGC 2014: 19–24). In addition, students take responsibility for their own output and that of others in the team (RGC 2014).

2.2.3 Quality Assurance

Quality Assurance of TVET in Cambodia is implemented through self-assessment and external assessment. Self-assessment is conducted within the institutions themselves, while the external assessment is conducted by the Department of Quality Assurance. Both self- and external assessment follow a five-point scale (from zero to four). There are six criteria in the assessment including: (1) management and governance; (2) physical resources; (3) staff and teachers; (4) students; (5) curriculum, teaching, and learning; and (6) research and development. The six criteria were approved by the National Training Board (NTB) on 17 February 2012 (MLVT 2017a). The aim of the Quality Assurance is to ensure quality of TVET provision at each level of the CQF.

According to the Quality Assurance Manual for TVET in Cambodia (MLVT 2017b), there are five performance scores as a result of calculation of the six criteria and their sub-criteria: (1) less than 50% = need for improvement; (2) 50–60% = acceptable; (3) 66–75% = above average; (4) 76–89 = good; and (5) 90% and above = excellent.

2.2.4 TVET Personnel

2.2.4.1 Selection and Incentives

According to the Ministry of Labour and Vocational Training's 2013–2017 Results Report of Labour and Vocational Training Strategic Plan 2014–2018, the number of TVET personnel can be broken down as shown in Table 2.4. From the table, share of female worker is slightly lower at management level than at teacher level (23% vs. 25%. As shown in the table, overall percentage of female TVET personnel does not exceed 30%.

The basic qualification of TVET teachers is that he/she holds a degree or is competent at least one level higher than the level they are teaching. For example, the basic qualification of teacher/trainer of C1 (certificate level 1) is that he/she is competent in level 3 (certificate level 2). TVET teachers are selected amongst Cambodian graduates with minimum age level according to the degree they are holding as shown in Table 2.5.

Below shows main process of the TVET teacher selection:

i. Ministry of Labour and Vocational Training makes a public announcement of the selection;
ii. Application and examination are implemented by National Technical Training Institute (NTTI), which is responsible for TVET teacher training after selection;
iii. TVET teacher training at National Technical Training Institute.

TVET teacher training course at NTTI was normally a one-year course. In new academic year (2017–2018), the training course is extended to one and half year, in

Table 2.4 Number of TVET personnel (in 2017)

No.	Description		Leader/manager	Teacher		
				Permanence teacher	Contract staff	Assistance
1	Public TVET	Total	120	2032	1709	285
		Female	19	494	457	77
2	Private TVET	Total	76	204	526	32
		Female	12	24	33	3
3	NGOs TVET	Total	68	261	69	6
		Female	31	120	18	2
4	Total	Total	264	2497	2304	323
		Female	62	638	508	82
Ratio (%)			23	25	22	25

Source Ministry of Labour and Vocational Training (2018)

Table 2.5 Minimum age level of TVET teacher applicants by degree holding

Degree	Maximum age
Doctor degree or equivalent	None
Master's degree or equivalent	40
Bachelor's degree or equivalent	35
Higher diploma or equivalent	28

Source TVET Teacher Selection Announcement, MLVT (2017)

which this new curriculum is introduced together with the Return to Industry Scheme (RIS) for the trainees. After completing the course, TVET teacher trainees are sent to work in public TVET institutions and/or at the Ministry of Labour and Vocational Training according to their rank in the final examination result and available positions, in which the number is varied year by year. Normally, the first year of work of TVET teachers is considered as their probation period, which they are not paid, but the amount is given soon after the probation.

Salary system for TVET teachers, as well as other government officials, depends on many variables and individual situation and must be stated in context. However, according to the authors' calculation, it can be simplified roughly as below:

> There are two levels of TVET teachers, A and B. The teachers in level A are paid higher wages (around 330 US dollars) and usually have a Bachelor's degree or above, while the teachers in level B are paid around 290 US dollars. Experienced TVET teachers in each level are considered as those who have worked for at least six years in each level. Every two years the basic salary is increased by between 3–4 percent.

2.2.4.2 Professional Development

In a report released in 2013, UNESCO noted that TVET training lacked pedagogical practice due to the lack of teaching materials or those teaching materials had never been used, and training style remained teacher-centred rather than learners-centred (UNESCO 2013). Currently, data on TVET personnel development continues to be limited, despite its significance in conducting evaluation as well as policy-making decision.

The Return to Industry Scheme (RIS), which is currently integrated into the new curriculum for TVET teacher training programme, can be considered as a new initiative in TVET teachers' professional development. The project is supported by Asian Development Bank (ADB), and the aim is to provide opportunity for TVET teachers to enhance their skills (ADB 2014) through working for a designated period in the industry. By this mean, TVET teachers not only be able to redesign their training, but also gain work experience in the industry, particularly for those who immediately participate in the TVET teacher training course after graduation and lack work experience in the industry (ADB 2014).

2.2.5 TVET Graduates

Table 2.6 shows the five most popular programmes amongst students of technical and vocational education and training from certificate levels to Bachelor's degree in the last four academic years. Electricity has the highest number of students enrolled in each academic year, followed by civil engineering, accounting and finance, and information technology (IT). Banking and finance was the fifth most popular in academic year 2013–2014 and 2014–2015. However, it was replaced by automobile in the last two academic years, 2015–2016 and 2016–2017. This changing pattern of courses can be a result of changing in labour market, and this may imply better understanding on TVET among students.

The number of TVET graduates in five consecutive academic years is shown in Table 2.7. From the table, the number of TVET graduates showed a downward trend. It falls from 87,660 graduates in academic year 2012–2013 to 37,058 in academic year 2016–2017. This may be due to high dropout rate among TVET students. However, an empirical study should be conducted to identify causes of the decrease.

It is also noticeable from the table that share of female TVET graduates is around 50%, which implies a success in the government's effort to ensure gender equality in technical and vocational education and training. Nevertheless, the share of female TVET graduates sees a fall in the last two academic years, from slightly over 50% in academic year 2012–2013, 2013–2014, and 2014–2015, to 47 and 43% in academic year 2015–2016 and 2016–2017, respectively.

Table 2.6 Five most popular programs in last four academic years (whole country)

	2013–2014		2014–2015		2015–2016		2016–2017	
1	Electricity	5837	Electricity	7216	Electricity	8838	Electricity	9261
2	Civil engineering	2752	Civil engineering	3477	Civil engineering	4182	Civil engineering	5158
3	Accounting and finance	1216	Accounting and finance	1694	Accounting and finance	1844	Information technology	2360
4	Information technology	744	Information technology	1105	Information technology	1744	Accounting and finance	1887
5	Banking and finance	716	Banking and finance	797	Automobile	1373	Automobile	1600

Source Technical and Vocational Education and Training Statistics, TVET MIS Office

Table 2.7 Total number of TVET graduates by academic year

Academic year	Students graduation		
	Total	Female	% of female
2012–2013	87,660	47,094	54
2013–2014	85,490	44,448	52
2014–2015	53,969	30,125	56
2015–2016	33,025	15,478	47
2016–2017	37,058	15,815	43
Total	297,202	152,960	51

Source Ministry of Labour and Vocational Training (2018)

2.2.5.1 Employers' Satisfaction on TVET Graduates

As shown in Table 2.7, female graduates accounted for over 50% of the total TVET graduates, which indicates a significant role of women in technical work. This is, therefore, a success indicator of the government's policy for poverty reduction and employment, particularly for women (RGC n.d.). However, quality of TVET graduates remains a concern. In the recent Employer Skills Need Survey reports (2012 and 2014), around 90% of employers surveyed reported that TVET graduates, who are first-time job seekers, were well prepared (Bruni et al. 2013; Kouch 2015). However, they still lack some significant skills such as life experience, technical or job-specific skills, poor attitude, foreign language skills, and communication skills. As a result, those firms experienced delay in developing new products or services, increase in workload for other staff, loss of business to competitors, and difficulties in meeting customer services objectives (Bruni et al. 2013; Kouch 2015).

2.2.5.2 Labour Demand and Employment Opportunity

According to Oum's and Ngov's (2017) labour demand forecast for Cambodia, in 2019, the labour demand will remain at the status quo, exceeding supply, particularly for the upper secondary (completed) level. Their forecasted employment by occupations shows that the average annual growth rate of employment of technicians is around 2%, for plant and machine operators is around 6%, while the average annual employment growth rate of professional is the highest, around 15%. By education level, the average annual employment growth rates of post-secondary diploma and pre-secondary diploma show the highest figures, around 16 and 21%. respectively (Oum and Ngov 2017). Notwithstanding the high average annual employment growth rate of TVET graduates, the share of TVET enrolment continues to be low if compared to general education and/or higher education. In Oum's and Ngov's (2017) calculation, the share of TVET enrolment is less than 2%.

When applying the law of supply and demand in skills and employment, an employment outlook report by the National Employment Agency (NEA 2018) revealed that overall job vacancies in business field, such as administration, sales, marketing, economics, and finance, will be easily filled. This implies fewer opportunity for work due to intense competition, since the supply of workforce equipped with these skills exceed the demand. Meanwhile, job vacancies in technical fields, for example, computer, information technology, and multimedia; technical and scientific work; and installation operation and maintenance show a good job opportunity thanks to the balance between supply and demand of workforce in those fields. When breaking down by occupation in each field, there are a number of occupations in technical fields whose employment outlook index scores are at an alarming level (i.e. hard-to-fill vacancies) for employers, yet it implies a great job opportunity for applicants since the supply of workforce with these skills is [much] fewer than the demand. All occupations in other fields, except chefs, companions and valets, radiographers, clearing and forwarding agents, translators and interpreters, and vehicle, window, laundry, and other hand cleaning workers, show either a balance or an excess in supply. Table 2.8 contains a list of occupations with good job opportunity for applicants and their job outlook index.

2.3 Future Development

2.3.1 Challenges for Cambodia's TVET

Technical and vocational education and training in Cambodia is facing a number of problems ranging from student enrolment to quality of education and training. The government of Cambodia has recognized eight main challenges that TVET is facing. They include (RGC 2017: 2–4):

Table 2.8 Good opportunity occupations and their job outlook index

Occupation	Job outlook index	Area of profession
Chefs	3.3	Accommodation and restaurants
Companions and valets	3.3	
Glaziers	3.8	Building and construction
Plumbers and pipe filters	3.6	
Construction supervisors	3.4	
Wood treaters, cabinet makers, and related trades workers	3.3	
ICT user support technicians	3.5	Computer, IT, and multimedia
Software and system developers	3.4	
System analysts and IT architects	3.4	
Graphic and multimedia designers	3.3	
ICT operations technicians	3.3	
Radiographers	3.6	Healthcare
Electrical mechanics and filters	3.4	Installation, operation, and maintenance
Process and control technicians	3.3	
Steam engine and boiler system	4.0	Production work
Mechanical machinery assemblers	3.5	
Welders and flame cutters	3.3	
Bakers, pastry cooks, and confectionery makers	3.3	
Clearing and forwarding agents	3.3	Sales, purchasing, and marketing
Telecommunication engineers	3.5	Technical and scientific work
Industrial and production engineers	3.5	
Chemical engineers	3.4	
Mechanical engineers	3.3	
Vehicle, window, laundry, and other hand cleaning workers	3.8	Other occupations
Translators and interpreters	3.6	

Job outlook index:
i. Below 2.8: fewer opportunities for applicant due to excess in supply of workforce in particular fields/occupations
ii. Between 2.8 and 3.2: medium opportunity due to a balance between supply and demand of workforce in particular fields/occupations
iii. Above 3.2: good opportunity for applicant due to excess in demand in particular fields/occupations

Source Cambodia Job Outlook Index (2018)

i. The quality of technical and vocational education and training is not yet responsive to demands of the labour market. This is due to lack Quality Assurance system, outdated training methodologies, inauthentic experience in the industry by technical trainers, as well as insufficient infrastructure, equipment choices, relevant regulations, industry-accepted assessment system for trainers and trainees including migrants, before and after immigration.
ii. Lack of value attributed to technical and vocational education and training. Some people value only higher education (university) which causes low enrolment in TVET. To date, a number of educational institutions have not yet widely provided guidance to students on the choice of learning and further study as well as the promotion of TVET. Negative perception which is common throughout ASEAN has viewed TVET as "second rank" education for the poor, marginalized group, and school dropout youth. This also poses a big challenge on TVET enrolment to train workforces for existing and new growing industries.
iii. Limited financial resources for technical and vocational education and training system, RGC's budget for this sector is insufficient because providing TVET training to qualified workforce with specific skills in response to the current demand of industry and the long-term economic development, as well as to be competitive with workforce throughout the region requires huge amount of capital investment. The financial contribution from the private sector and respective stakeholders is essential to sustain the development of TVET.
iv. Limited acceptance of connection of technical and vocational education and training across all educational streams. Despite the approval of the Cambodian Qualification Framework (CQF), there are issues including: (1) limited linkage between general education and TVET programmes; (2) lack of a joined effort in training TVET trainers and sharing of learning materials among relevant ministries; (3) skills bridging training programme and certification across ministries and relevant non-public training providers are not widely implemented; and (4) lack of information sharing on the labour market as well as TVET information between stakeholders.
v. Limited foundation and soft skills. Preparation of first-time job seekers is limited as they lack real life and work experience, technical or employable skills, and motivation. Graduate often lack foundation skills such as reading, writing, mathematics, computing, communication ability, teamwork, and problem-solving skills. Technical skills, communication, teamwork, foreign language, and customer relations are the five skills identified by entrepreneurs to be strengthened.
vi. Limited involvement of stakeholders. The limited involvement of stakeholders impacts quality, cost efficiency, and responsiveness required of TVET. As a result, it poses a number of challenges such as limited authentic-experience of trainers, insufficient training programme; and non-compliance of skills standard also causes the training to be less responsive to demand of the labour market.

vii. Inadequate materials and financial supports to trainees. At the present, the lack of financial support, decision-making support, and occupational guidance are the major challenges for youth in education. To continue in TVET, they point out some priority aspects such as dormitories, support for meals, and employment services upon graduation.
viii. Weakness in coordination and governance in the TVET system. Although the Ministry of Labour and Vocational Training is appointed by the RGC to lead and to manage the TVET sector, as described in sub-degree and circulation, the implementation is inadequate as line ministries and institutes have not yet fully complied with the assignment of the RGC. Therefore, the coordination of the National Training Board (NTB) is crucial for implementing this national TVET policy among stakeholders.

2.3.2 National Policy for TVET

To overcome the above challenges, the RGC has set 15 new main policies for improving the TVET system in Cambodia. The new policies respond to four main objectives in TVET development as follows (RGC 2017).

i. To improve TVET quality to meet national and international market standards. The first objective consists of three main policies:

   - Develop and implement Quality Assurance, which is based on the Cambodian Qualification Framework through way of, for example, facilitating recognition between the Cambodia Qualification Framework and ASEAN Qualification Reference Framework, establishing National Centre for Skills Testing (NCST) and evaluating quality of skills training by providing online questionnaire to stakeholders and graduates on a regular basis;
   - Improve trainer's quality and pedagogy and infrastructure including teaching and learning resources in respond to current technology development and market demand of labour through way of, for instance, providing further training to enhance trainers' pedagogical and technical skills, establishing opportunity for trainers to gain work experience from the industry, and setting up incentive mechanism for TVET teachers to work more effectively in provinces based on official nomination; and
   - Establish Technical and Vocational Park (TVP) in industry or economic zones to maximize utilization of equipment and trainers. As a result, a study on TVP needs to be conducted. This policy suggests that Centre of Excellent (CoE), Human Resources Training Centre, and research centres should be established to strengthen the quality of training and to study on skills needed.

ii. To increase equitable access to TVET for employment generation. This objective requires the effort to

- Increase enrolment in TVET system through providing flexible pathways, which include developing and implementing Recognition of Prior Learning (RPL) and Recognition of Current Competency based on the CQF, providing scholarship to target groups especially women, expansion of TVET marketing programmes, Voucher Skills Training Program (VSTP), and Skills Bridging Programs (SBP), as well as long-term training programmes for TVET institutions where the programme is not yet available. In addition, guidance for TVET graduates to become self-employed and developing Human Resources Training Program for skilled workforce to mobilize within the region also play a role in this matter;
- Expand opportunity for people to obtain life skills by special attention to the needs of women, marginalized groups, poor youth, school dropout, migrant workers, and indigenous people by providing scholarships, allowance, and dormitories, enhancing access to skills and certification, especially for low-paid migrant workers, and promoting gender awareness and implementing gender equity and equality mechanisms in TVET institutions and relevant stakeholders;
- Enhance all means and mechanisms to expand CQF-based training for all training institutions and stakeholders. This includes the development of distance learning, continuous learning programmes, mobile training, and so on. The RGC also seeks to support TVET institutions and stakeholders to expand workforce training by linking skills standards to the assessment of the National Test Centre and continue to implement skills competition mechanisms at national and regional level on recent innovative technology among students, technicians, engineers, trainers, and young entrepreneurs;
- Increase awareness of TVET system through providing consultation, career guidance, and vocational skills and through institutional outreach-based marketing at provincial and local community level. In this way, marketing budget will be increased and marketing strategies will reach commune and village level so that dropout youth as well as other marginalized groups can have access to information on TVET. The policy has focused more on students at secondary education in all provinces and cities. In addition, social media, forums, and fairs are recognized as effective means in promoting TVET; and
- Establish one-stop service and provide convenient services related to TVET. The one-stop service aims at providing TVET-related information such as information on short- and long-term training programmes, scholarships, apprenticeships, internships, employment opportunities, and microfinance. To do so, a research study on innovation will be conducted so that the students and workforce are better informed regarding new skills and technology required by the industry. Job centres, which are under the National Employment Agency (NEA), will be expanded in industrial or economic zones to provide consultation on career guidance and vocational skills for citizens.

iii. To promote public–private partnership (PPP) and aggregate resources from stakeholders to support sustainable development in the TVET system. This includes

- Enhancement of PPP and partnership with stakeholders in TVET system via increased collaboration with employers to prioritize applicants with CQF-based certification and the development of PPP model which includes small and medium enterprises (SMEs) in industry sectors as well as other sectors. Besides that, encouraging competition between private and public TVET institutions for quality and effectiveness of the TVET system and encouraging all TVET institution to register with the Ministry of Labour and Vocational Training or municipal and provincial Department of Labour and Vocational Training are considered significant by the government of Cambodia in collecting data, monitoring, and implementation of the CQF framework, national competency standards, and the use of National Skills Testing Centre;
- Expansion of PPP and partnership with stakeholders to develop training curriculum based on market needs in order to strengthen skills that respond to new and existing technology. This requires participation from the private sector and stakeholders to develop curriculum at all levels to respond to the labour market. Entrepreneurship and soft skills will be included in the training curriculum to ensure that students will become either a self-employed or an employee who is equipped with both hard and soft skills. Also, physical education, sports, arts, and culture will be integrated into the training programmes so that students will gain both physical capacity and better understanding of art and culture during the transition of globalization and past culture to maintain their national identity. Furthermore, apprenticeship programmes will be strengthened through increased collaboration, review, and revision of the law related to apprenticeship;
- Establishment of coordination mechanism with stakeholders to set up National Skills Development Fund (NSDF). The fund aims at strengthening skills to workforce based on labour market demands. Together with other sources of fund, the NSDF will support industry-led training of workforce to meet the need of the industry, particularly those that adopt new technology in producing goods and services; and
- Development on a student fee policy for TVET providers and scholarships for poor students, and particularly women and indigenous people. According to the policy, public and private TVET institutions must charge fees according to National Skills Standards (NSS) under the CQF. Those institutions should utilize a proportion of this revenue as a fund for scholarship programmes at their institutions. Another source of scholarship funds can be the donation from development partners (DPs) such as non-governmental organization and the private companies. To facilitate the payment of training fee by the students, the TVET institutions are encouraged to develop coordination with financial institutions to provide loans to students in TVET sector.

iv. To improve the governance of the TVET system.

- Strengthen regulatory framework for TVET to link skills training to labour market demands. This includes strengthening the role of National Training Board when it comes to corporation with relevant ministries and TVET institutions, implementation of decentralization in TVET management, and evaluation of the relevance of TVET system. All TVET institutions will be encouraged to set up working groups that are responsible for coordinating with vocational associations, services provider, factories, enterprises, and intuitions to collect information on skills needed by employers and to follow up on TVET students' employment. In this policy, the RGC will place high attention on human resource development of TVET staff which consists of creating capacity development in management, leadership as well as accountability, and establishing field visits among TVET institutions both local and overseas. The government will also create completion and classification among TVET institutions which will be an incentive for better performance in terms of management and TVET provision quality;
- Develop a result-based funding mechanism for operating TVET institutions. In this policy action, the funds for TVET institutions will be provided according to their performance (including both management performance and TVET training provision). As a result, financial management of TVET institutions needs to be transparent based on income classification index and expenditure index such as construction, maintenance of buildings, equipment, and other incentives for government officers including staffs, teachers, and leaders. At the same time, guidance to ensure that TVET institutions will be able to generate income sustainably will also be provided; and
- Continue to improve TVET Management Information System (TVETMIS) and Labour Market Management System (LMIS) and strengthen Labour Market Forecasting Analysis and Skills Needs Assessment. With the improvement of TVETMIS and LMIS, the government believes that data and information collected will be effectively utilized for research and development of skills training programmes that will ensure the match between skills demanded and supplied. In this case, employers' feedback on workforce's skills is essential. Therefore, regular skills need assessment will be conducted, and it can be done through corporation with Sector Skills Councils (SSC).

2.4 Conclusion and Recommendations

To contribute to information/data sharing among scholars, researchers, and students, this paper brings together TVET-related research findings and latest updates. The information/data from the MLVT shows that there is an ongoing effort to develop a TVET system that can be recognized nationally and internationally. This includes the establishment of the CNQF and the QA, which are two main tools in alignment

process of Cambodian TVET provision to those in the region. While the CNQF determines skills standards of the students at each level, the QA assures that those skills standards are achieved, just as determined in the framework, through way of assessing both internally and externally.

In addition to the CNQF and the QA, despite limited data on TVET personnel development programmes from the past years, the new curriculum of TVET teacher training in this academic year (2017–2018) demonstrates a significant reform that higher attention is paid on quality of TVET teachers/trainers. This allows TVET teachers/trainers to transfer their knowledge and skills to the students more effectively and with confidence. However, ensuring that the students are equipped with skills and knowledge needed by the industry is essential, and curriculum development design plays a significant role. As a result, surveys and forecasts on skills demand have been conducted. The findings of these surveys and forecasting revealed that TVET students have a higher job opportunity in their fields than the students of other fields, as the demand is at a higher rate than the supply in the next few years. This may result in an enrolment increase in TVET stream if the public, especially students and parents, is fully aware of this advantage. In this case, the National Employment Agency has put a great effort in assessing both the skills need and skills training to the workforce.

After the ASEAN Economic Community Integration in 2015, special attention on some reforms has been paid as there is an increase in level of competition in the region. As a consequence, new National TVET Policy for the period 2017–2025 was established in addition to current ongoing development projects, after eight challenges had been recognized. The new policy consists of four main objectives that fully respond to those challenges, and it includes improvement of TVET quality, access to TVET, enhancement of PPP, and improvement of TVET governance.

Notwithstanding current development programmes and the new policy that respond to the challenges in the TVET system, the paper suggests that due to lack of access to TVET-related information/data, it is necessary for regular evaluation or assessment of the development programmes and policy and that the evaluation/assessment results are shared among TVET stakeholders, scholars/researchers, and/or the public. The evaluation/assessment and the result sharing will allow the opportunity for further research on TVET and thus innovative development practices and policies for Cambodian TVET to remain competitive in the changing and globalized world.

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Chapter 3
Technical and Vocational Education and Training and Training in Indonesia

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3.1 Overview/Summary

Based on Statistical Centre Institution (BPS) 2018, the Indonesian economy grew 5.27% compared to the previous year, and it is estimated that in the future Indonesian economy will experience even bigger surges. By 2020–2030, Indonesia will face a demographic bonus, namely the growth of the workforce age (15–64 years) reaching around 70% of the population. This amount of workforce will increase economic value which is very useful as long as skilled and standardized workforce can be managed and prepared. In this period, 5 million skilled workers are projected each year, so that over the next 15 years 75 million workers are needed in accordance with twenty-first century skills. Based on Global Talent Competitiveness Index survey conducted by INSEAD in the year 2017, the rating of Vocational & Technical Skills indicator (65) in Indonesia is still better than the other five indicators, namely Enable (84), Attract (105), Grow (87), Retrain (93), Global Knowledge Skills (91) from 118 countries in the world. This condition shows that mid-level skills in Vocational & Technical Skills are still good even though the fulfillment of low-level workers with employability is ranked 22 of 118 countries or is the world's best 22% (book: Vocational Development Policy Roadmap in Indonesia 2017–2025—Ministry of Economic Affairs Coordinator of the Republic of Indonesia 2017).

This paper uses references from SEAMEO VOCTECH Regional Knowledge Platform and UNESCO-UNEVOC that has been validated by the key informants from Indonesia.
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3.2 Demographic and Socio-Economic Data

See Table 3.1.

3.3 TVET Mission, Legislation, and National Policy or Strategy

3.3.1 TVET Mission/Goals

According to Indonesia's Law No. 20 of 2003 on the National Education System together with the Ministry of Education and Culture (MoEC), the mission of technical and vocational education and training to prepare students for work in industries and continue to study in higher education institutions (colleges and universities), and work independently as entrepreneurs following the principle of *"BMW"* (*Bekerja, Melanjutkan, dan Wirausaha/Work, Continue to higher education and Entrepreneurship*).[1] Also at the higher level (such as polytechnics), Ministry of Research, Technology and Higher Education (MoRTHE) states that technical and vocational education and training (at higher level) "is one of the bridges for supporting the Indonesian golden generation". Thus, Indonesia aims at increasing TVET delivery as one strategy of acquiring economic transition and increasing competitiveness of its graduates and employment performance.[2,3] It aims at increasing the provision of TVET to young people through both private and public institutions, which in turn will have an impact on the development of the economy. The government is emphasising more about TVET in order to reduce high unemployment rates among educated youth and to ensure this the government is committed to providing students who cannot continue for higher education with skills to enable them to find work.

This makes objectives and goals of TVET in Indonesia as:

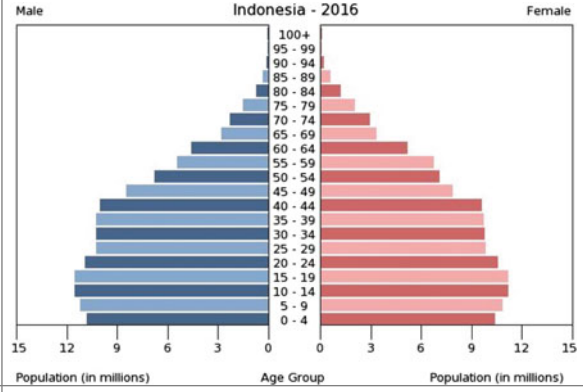
- Increasing quality in the delivery and accessibility of TVET Education
- Improving the employability and participation of graduates in lifelong learning
- To reduce unemployment rate among the young generation
- To shift the enrolment ratio of students in general secondary education to vocational secondary education from 70:30 to 30:70 by 2020
- To boost the competence and competitiveness of vocational school graduates locally and internationally
- To boost job creation through entrepreneurship skills to support higher productivity, competitiveness and growth.

[1] Dit. PSMK (2017).

[2] Ministry of Research, Technology and Higher Education of the Republic of Indonesia (2017).

[3] Unevoc.unesco. World TVET Data Base Indonesia (2013).

Table 3.1 Demographic and socio-economic data

Economy/standard of living	Population (overall v/s workforce participation)	Overall: 261.1 Millions (2016)[a] Workforce: 125.4 Millions (2016) Population pyramid[b]: 
	Human development index	Index: 0.689 Rank: 113 (2016)
	Purchasing power parity	3.031 Trillion USD (2016)
	Gini coefficient	39.5 (2012)
	Gross Domestic Product (GDP)–total	932.4 Billion USD (in 2016)
	Gross Domestic Product (GDP)–per capita	11.700 (2016)
	Poverty rate	10.9% (2016)
	Gender dynamics/human sex ratio	Sex ratio at birth (male births per female births): 1.05 (2015)

(continued)

Table 3.1 (continued)

Composition of economy by	Industry/sectors	Agriculture: 14% Industry: 40.8% Services: 45.3% (2016 est.) *Agriculture—products*: rubber and similar products, palm oil, poultry, beef, forest products, shrimp, cocoa, coffee, medicinal herbs, essential oil, fish and its similar products, and spices *Industries*: petroleum and natural gas, textiles, automotive, electrical appliances, apparel, footwear, mining, cement, medical instruments and appliances, handicrafts, chemical fertilizers, plywood, rubber, processed food, jewellery and tourism
	Contribution of each industry/sector to GDP	Agriculture: 14% Industry: 40.8% Services: 45.3% (2016 est.)
Education	Education index	0.603 (2013)
	Adult literacy rate (% ages 15 and older)	93.9 (2016)
	Expected years of schooling	12.9 (2016)
	Mean years of schooling (of adults)	7.9 (2016)
	School dropout rate	Primary school dropout rate (% of primary school cohort) 18.1 (2016)
Employment	Unemployment rates	5.8% total 19.3% youth (2016)
	Industry/sector wise employment	Employment in agriculture (% of total employment): 32 Employment in services (% of total employment): 47 Employment in industry (% of total employment): 21 (2016)

(continued)

Table 3.1 (continued)

	Composition of workforce	Employment in services, female (% of female employment): 53.3 (2016) Employment in services, male (% of male employment): 45.4 (2016) Employment in agriculture, female (% of female employment): 30.9 (2016) Employment in agriculture, male (% of male employment): 28.0 (2016) Employment in industry, female (% of female employment): 15.8(2016) Employment in industry, male (% of male employment): 26.6 (2016) According to UNDP 2016 Statistics, the percentage of Labor Force Participation rate of Male (84%) higher than that of the Labor Force Participation rate of female (51%) for ages 15–64. This explains the unemployment ratio of male to female of 1:2.[c] In Indonesia, majority of female labor force participation is seen in informal sector. Usually women take up Informal work as it offers incentives of working close to home, particularly for domestic and migrant workers.[c] This indicates the great role of informal sector in Indonesian economy as supported by Suhariyanto—BPS Chairman[d] and ADB report[e]

[a]The World Bank (2017)
[b]The World Fact Book (2017)
[c]United Nations Development Programme (2002)
[d]Indonesia-investments (2002)
[e]Asian Development Bank (2002)

3.3.2 TVET Legislation[4]

Indonesian National Education System Law of 2003 stipulates the overall legal structure of the Indonesian education system including TVET. The Law describes that all levels of education and structure attached to each of them are under the responsibility of MoEC supported by Manpower Act No. 13 which issued in 2003 that regulates the national vocational training system (preparation for work) as well as the Teacher Law in 2005 that regulates the teacher's profession and quality. Indonesia is planning and in progress of establishing new law stipulations about TVET in Indonesia. The latest regulations from the Minister of Education and Culture No. 34 of 2018 about the National Standards for Vocational High School/Vocational High School Madrasah Education. In terms of quality assurance of TVET systems, accreditation authorities were established under decree No 38/2013 for ensuring accreditation standards of TVET providers.

These accreditation bodies include national accreditation board of school/religious school (Bandan Akreditasi Nasional Sekolah/Madrasah/or BAN-SM) for all institutions at the secondary level including TVET (SMK), accreditation authority for training providers (Lembaga Akreditasi—Lembaga Pelatihan Kerja or LA-LPK) for vocational training centers or BLK under MoMT, and Badan Akreditasi Nasional-Perguruan Tinggi or BAN-PT National Accreditation Body for Higher Education responsible for polytechnic accreditation.

3.3.3 TVET Strategy

According to Directorate of technical and vocational education and training—Ministry of Education and Culture (DITVE-MoEC)—Indonesian government is making effort to significantly improve the effectiveness of technical and vocational education and training based on introducing specific curricula that is "Demand driven curricula". This is according to Presidential Instruction Number 9 in 2016 on Revitalizing SMK in the framework of improving the quality and competitiveness of Indonesian Human Resources (Instruksi Presiden Nomor 9 Tahun 2016 Tentang Revitalisasi SMK dalam rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia).[5] This improvement of technical and vocational education and training aims to help learners to be competitive at the global level and meet the challenge of globalization. In ensuring that technical and vocational education and training is based on the labour market needs, MoEC is now directing secondary vocational schools to focus on six priority areas: tourism, maritime programs, food security, creative industries, energy, and construction.[6]

[4]DITVE-MoEC (2017), Flevin (2002), Centre of Educational Data and Statistics, MoEC (2017), GESS Indonesia (2016).

[5]DITVE-MoEC (2017).

[6]See Footnote 5.

Ministry of Industries (MOI) launch a National Industry Development Plan 2025–2035, which focuses on the development of human resources through preparing competent human resources, facilitating Competency Testing Center (Tempat Uji Kompetensi/TUK), human resources certification center, and Indonesian National Work Competency Standards (Standard Kompetensi Kerja Nasional Indonesia/SKKNI) in the field of education.[7] Developing people-based economy through small medium industries (SMI) between 2025 and 2035 as a source of employment and an increase in production generates incomes in economy.[8] In summary, Indonesia TVET strategies can be summarized under the revitalization strategy outlined in the report about the Presidential Instruction Number 9 in 2016 on Revitalizing TVET (SMK) under the framework of Improving the Quality and Competitiveness of Indonesian Human Resources as given below:

1. Development of revitalization of vocational schools that support the development of national priorities such as food security, energy security, business and tourism development, maritime development, especially in underdeveloped areas and border areas, and accelerated development of Papua and West Papua;
2. Development of SMK model that is driven by cooperation with business/industry;
3. The development of skill-based skills/skills programs based on the projected needs of the workforce;
4. Completion of curriculum preparation of competency of technical and vocational education and training skill based on SKKNI (Indonesian National Work Competence Standard), KKNI and other relevant standards;
5. Improving the quality of learning and assessment of learning outcomes, with the application of competency certification for learners;
6. Improvement of quality assessment of education unit through accreditation;
7. Improving the quality of the implementation of entrepreneurship and work skills of SMK (Teaching Factory) graduates;
8. Improving the quality of facilities and infrastructure of learning and working practices of SMK; and
9. Fulfillment of availability, quality, competence and professionalism of technical and vocational education and training personnel (through Teacher Certification—in-service program for TVET teachers and apprenticeship programs).

[7] MoI (2015).

[8] See Footnote 7.

3.4 TVET Governance and Financing

3.4.1 Governance

TVET governance is under the responsibility of many ministries in Indonesia; however, the most prominent ministries include the following:

(1) MoEC through the Directorate of technical and vocational education and training. The MOEC has the responsibility of planning and implementing educational services in Indonesia with the help of the central branches such as the General Secretariat; the National Institute for Educational Research and Development; the General Expectorate; the General Directorate of Basic and Secondary Education; the General Directorate of Higher Education; the General Directorate of Non-formal and Informal Education; and the General Directorate for Quality Improvement of Teachers and Education Personnel.
(2) MoRTHE is the body responsible for higher education and vocational education programs organized by universities and polytechnics through Diploma programs (D1 to D4) in Indonesia.
(3) The Ministry of Manpower and Transmigration (MoMT) is responsible for the national training centres (BLK) that prepares citizens for work. Educational planning is at the central level but the implementation of educational plans should be under the local governments according to the decentralization strategy of Indonesian government.

At the lower level, provincial offices of education were established in each of the 34 provinces (as of June 2009) and district offices in 508 districts and municipalities. These offices manage, adapt, and implement ministerial policies at the local level. For accreditation and competence certification, the following authorities take up the responsibility: National Professional Certification Board (BNSP) is in charge of issuing competence certificates, National Accreditation Board for School/Madrasah (BAN-SM) under MoEC is in charge of accreditation in vocational high school; National Accreditation Board for Higher Education (BAN-PT) under MoRTHE is in charge of polytechnics, colleges, and university accreditation; while Accreditation Board for Training Centres (LA-LSPK) under MoMT is in charge of BLKs.[9]

3.4.2 Financing

Stipulated by the Law on National Education No 20 in 2003 like other educational services, TVET financing is a joint responsibility between the government through MoEC (20% of national budget to finance education services) and other education

[9]Flevin (2002).

stakeholders such as local governments (20% regional budget contribution) and communities.[10] Private TVET (SMK) are privately financed depending on the type of ownership of the institution (individual, faith-based, NGO, and partnership) with operational authorization from the ministry.

Kementerian Koordinator Bidang Perekonomian, 2017. Road Map: Isi Kebijakan Pengembangan Vokasi di Indonesia 2017–2025 (See Footnote 13).

3.5 Education and TVET System

Indonesia's National Education System is coordinated by several ministries according to their levels; for example, the Ministry of Education and Culture (MoEC) is responsible for planning and implementation, monitoring and evaluation of educational services for: pre-school (Kindergarten), basic education, secondary and community education as mandated by the Education Law. The Ministry of Research, Technology and Higher Education (MoRTHE) is responsible for education services in higher levels of learning such as polytechnics, colleges and universities in Indonesia. The Ministry of Manpower is responsible for BLKs.

At the central level, MoEC consists of units like Secretariat General; National Institute for Educational Research and Development; Inspectorate General; Directorate General of Basic and Secondary Education; Directorate General of Higher Education; Directorate General of Non-Formal and Informal Education; and Directorate General for Quality Improvement of Teachers and Education Personnel, while at lower levels, MoEC is represented by Provincial Offices of Education in each of the 34 provinces (as of October 2012) and by District Office in all 508 districts/municipalities. The main task of the provincial and district offices "is to operationalize, manage, adapt and implement ministerial policies with respect to each of their distinctive features and local and environmental needs" (Education Law No 20 in 2003).

Indonesia's formal education starts from kindergarten to higher education and the names of formal education are kindergarten (KG), primary school (PS), junior secondary school (JSS), general senior secondary school (GSS), vocational senior secondary school (VSS) and higher education (HE: polytechnics, colleges and universities). This education is also provided by religious institutions at each respective education level. The length of study in KG (Taman Kanak Kanak/TK) is 2 years, followed by 6 years in elementary school (SD). The next level after this is junior secondary school (SMP) which takes 3 years. After JSS, pupils can continue to senior secondary by joining either general secondary school (SMA) or vocational secondary school (SMK) for 3 years. Graduates from general secondary can continue to higher education institutions such as universities, institutes, schools of higher learning, academies, or polytechnics, while graduates from vocational secondary can either enter the labor market by filling the job vacancies available in industries or

[10]Flevin (2002), Centre of Educational Data and Statistics, MoEC (2017).

work independently as entrepreneurs. Also, SMK graduates can join higher institutions of learning like polytechnics for diploma certificate (DI-DIV) or universities for bachelor's certificate (S1). After undergraduate or DIV, all graduates can continue to graduate (S2) and doctoral (S3) programs and if they choose diploma program, they can continue to specialist I and II programs (See Footnote 11).

3.5.1 Structure of Education System of Indonesia[11]

See Fig. 3.1.

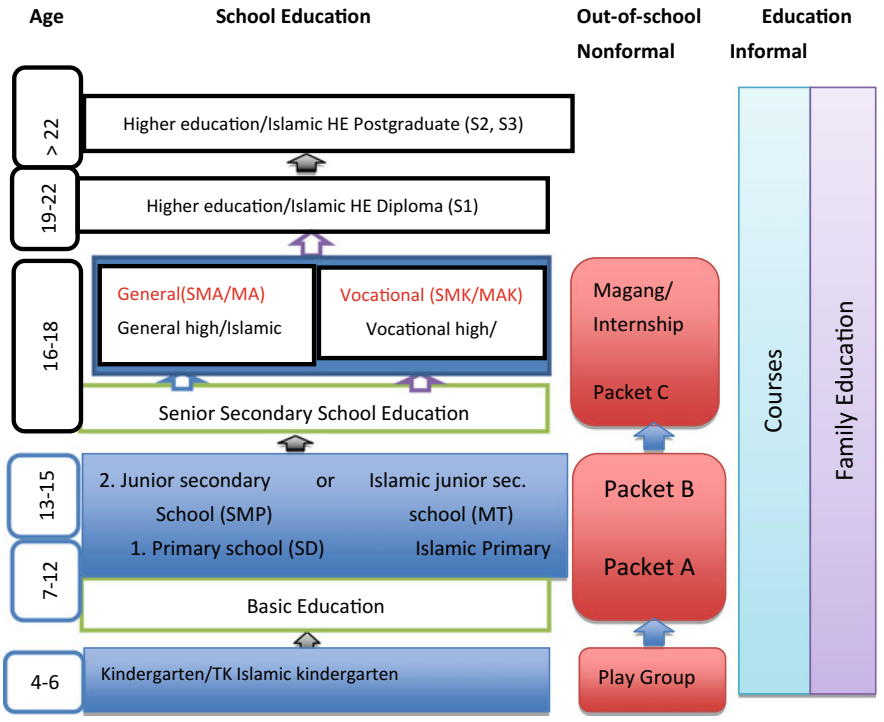


Fig. 3.1 Structure of education system of Indonesia (SD = Sekolah Dasar SMP = Sekolah Menengah Pertama SMA/SMK = Sekolah Menengah Atas/Kejuruan S = Sarajana (S1 = Bachelor, S2 = Master degree, S3 = Doctorate)

[11] Centre of Educational Data and Statistics, MoEC (2017), The World Bank (2011b), The World Bank (2010).

Pre-school Education
According to National Education System Law Article 28, Early Childhood Education (ECE) is provided through formal, non-formal and/or informal education. ECE is also known as pre-school education which refers to non-compulsory education provided to children between 4 and 6 years which takes a duration of 1–2 years. Formal ECE is provided in kindergarten and other similar institutions while non-formal ECE consists of day care centers and playgroups, and the informal ECE consists of infants' family development and integrated health service center. ECE is also provided in Islamic religious preschools with kindergarten.
Compulsory Education

- Primary education is a part of nine years compulsory formal basic education for all Indonesian citizens at the age 7. All learners end their primary education (grade 6) by sitting national examination which enables them to continue to junior secondary level depending on their academic results and psychological tests. Primary education is also provided by religious schools in general secondary education.
- Junior secondary education is the last part of compulsory basic education that takes duration of three years to complete the nine years of basic education program. Learners complete this level (grade 9) by sitting the national examination which leads to an award of lower secondary certificate to those who have successfully passed the examination.

Senior Secondary School
Successful candidates from junior secondary school can continue to study in senior secondary education which consists of general secondary education (SMA) or vocational secondary education–all provided for duration of three (3) years. In general secondary school (grade 10–12), students are prepared to continue to study in higher institutions such as universities, colleges and polytechnics. Students are prepared through general learning for one year at grade 10, after which in 2nd and 3rd year (grade 11 and 12), students can specialize by taking options that are provided in four specializations such as natural sciences (IPA), social sciences (IPS), languages and religious studies. Vocational secondary school (SMK) prepares students with technical and vocational education and training and training to be ready for work. SMK programs are taught to students for three (3) years although some vocational schools can extend to four years with one year for diploma level. There are about 144 programmes were provided in technical and vocational education and training with the more popular programs being information and communication technology; technology and engineering; health; arts, crafts, and tourism; agro-business technology; and business and management. These technical and vocational education and training programs are also provided by religious vocational schools (MAK).

SMA/SMK/MAK graduates will receive a national certificate of secondary education upon successful completion and passing of final national examinations. Upon completion of this level, successful students from general senior secondary school can continue to study in higher education (universities and colleges), while others may opt to start working with respect to their study programs.

3.5.2 TVET System

Indonesian technical and vocational education and training (TVET) is provided in three levels, namely the Training Center for short vocational courses, Secondary education level (for 3 and 4 years), and higher education (for more than 3 years). In Indonesia, the former program or level is called the Job Training Center (BLK) for the Vocational Training Center, while the latter is referred to as vocational education center for Vocational High Schools (SMK) in secondary education, and Polytechnic (Polytechnic) or Vocational Education at the University and other higher education for Education high Vocational High Schools are governed by or vocational education in university and other higher education. Vocational high school is managed by the Ministry of Education and Culture (Kemendikbud), especially Directorate of Technical and Vocational Education (DITVE). Vocational Training Centers (BLK) are institutions for vocational training which is part of the National Training for Regulated Work Systems by the Ministry of Manpower and Transmigration (Kemenakertrans) under the Act on Employment and Government Regulation on National Training for work systems (National Job Training system). Vocational / Vocational Higher Education including Polytechnic vocational including polytechnic is regulated by the Ministry of Research and Higher Education (KemenristekDikti), Ministry of Research, Technology, and Higher Education. Polytechnic is part of the higher education system, regulated by the Ministry of Research, Technology and Higher Education (Kemenristek)

3.5.2.1 Formal TVET System

Formal technical and vocational education and training are provided in vocational secondary schools (SMK) or Islamic vocational school (MAK) both in public and private for three-years even though there are several vocational secondary schools (SMK-Plus) offering four-year program to offer graduates with one diploma certificate (D1) experience industrial work. In addition, the management of vocational education must refer to eight the standard of Vocational Education (Article 2, Permendikbud 34 of 2018 concerning SMK SNP). Corresponding internship experience in the industry. Besides, vocational high school (VHS) management has to align with eight VHS education standards (clause 2, Permendikbud 34 year 2018 on SNP SMK). Also, in accordance with the Higher Education Law (Law No. 12 of 2012 concerning PT and Permenristekdikti no. 44 of 2015 about SN-PT), vocational programs are offered by various tertiary institutions such as community academies, academies, polytechnics, secondary schools, institutes and universities in diploma level and applied bachelor degree. At the secondary level, education and technical and vocational training provided by vocational secondary schools consists of state vocational high schools (State Vocational Schools) and private vocational secondary schools (Private Vocational Schools). Registering at a vocational high school (SMK), a student must successfully complete junior high school level and participate in a

three-year program leading to a secondary certificate award after taking the national examination. In addition, students' TVET is encouraged to register for skills certificates from the industry while they are still at schools to improve their working skills. After completing a three-year study at vocational high school (SMK), a student can immediately join the power market employment (filling out job vacancies available in the industry or working independently as entrepreneurship) or can continue to advance to a higher level of education (such as polytechnics, colleges, and universities) for 4-year diploma certificates (polytechnics) and 4-year courses which leads to an undergraduate certificate (S1) award at a college or university.

There are 144 types of vocational competencies in Indonesia; however, around 60% of the competency proportion is only filled by 10 main competencies, namely computer and network engineering, accounting, office administration, light vehicle engineering, mechanical engineering, motor vehicle engineering, multimedia, marketing, and cooling technique.[12]

According to the 2015 BPS, as stated in the report of the Field Coordinating Ministry of Indonesian Economic Affairs 2017 entitled "Call development policy in Indonesia 2017–2025", there are now 13,337 vocational secondary schools with 3434 vocational high schools country and 9903 private vocational high schools.[13] There are also 172 polytechnics, with 32 state polytechnics (State Polytechnics), 140 private polytechnics (Private Polytechnics), and 1034 academies private sectors. There were 276,099 teachers (134,332 teachers in state vocational schools and 141,737 teachers in vocational schools private), where 49.6% were male and 50.4% were women with a student registration of 4.6 million in all vocational schools.[14] At the secondary education level, MoEC is responsible for designing and developing vocational curricula in consultation with the Ministry of Manpower and Transmigration (Ministry of Manpower) and the Ministry of Industry (MOI).

In general, vocational high schools focus on developing the skills of students in the sector or fields such as technology and engineering; information and communication technology; health; arts, crafts, and tourism; agribusiness technology; and business and management. However, there are many vocational institutions specializing in technology and industry programs (86%) or business and management programs (76%). All of these programs produce a national intermediate certificate award after the students successfully complete and pass the national examination. Also, after completing the study program for 4 years, a diploma certificate is given to students at this level by polytechnics and universities (in the planning process).

[12]Centre of Educational Data and Statistics, MoEC (2017).

[13]Menteri Koordinator Bidang Perekonomian: Kebijakan Pengembangan Vokasi Di Indonesia (2017–2025), Ministry of Research, Technology and Higher Education Republic of Indonesia (2012), Paryono (2015), Flevin (2002).

[14]Paryono (2015).

3.5.2.2 Non-formal and Informal TVET System

Non-formal education means education out of formal education. It is educational provided for community members who need education services which functions as a replacement, complement and/or supplement to formal education in the framework of supporting lifelong education"[15] Non-formal education can be recognized in the following lines:

- As an alternative method to formal education (equivalency method)
- Community education (functional literacy, life skills)
- Commercial courses (vocational skills).

In Indonesia, non-formal education is provided to develop the potential of learners with the acquisition of mastery academic knowledge and functional skills for professional and personality development. Non-formal education includes life-skill education, early childhood education, youth education, women empowerment education, literacy education, vocational training and internship, equivalency program and other kinds of education aimed at developing learners' ability.[16] Under the MoEC, non-formal education is regulated by the Directorate General of Early Childhood Education and Community Education,[17] and it is provided as equality education to those individuals who did not have access to formal education.

It is organized as Education Outside School (*Pendidikan Luar Sekolah* or *PLS*) under several programs among which the commonest ones include:

1. Community Learning Centre (CLC) program, commonly known as *Pusat Kegiatan Belajar Masyarakat (PKBM),* which is lifelong learning right from childhood for those who did not have access to formal education.[18]

Equivalency program is one of the education programs provided by *PKBM* with *pakets* as study groups (*Kejar*) equal to formal education streams; for example Paket [package] A is equal to elementary school/*sekolah dasar* (*SD*), *paket* B is equivalent to junior secondary school/*sekolah menengah pertama* (*SMP*) and *paket* C is equivalent to senior secondary school/*sekolah menengah atas/kejuruan* (*SMA/SMK*). These pakets are a part of equivalency programme that permits those individuals who do not attain access to formal education system to achieve formal qualifications. Paket A and B together equal to basic education, whereas Paket C equals to senior secondary education. These study groups are targeted at majorly for people living in remote areas, although they are also provided in urban areas with the focus to prepare workers and trainees to enter the job market with specific and upgraded skills.

The purpose of this form of education is to: (1) Ensure the completion of quality of basic education for disadvantaged children such as dropouts, never attended

[15] http://desikunatasolin.blogspot.com/2013/05/pendidikan-kesetaraan.html.

[16] http://desikunatasolin.blogspot.com/2013/05/pendidikan-kesetaraan.html.

[17] *Direktorat Jenderal Pendidikan Anak Usia Dini dan Pendidikan Masyarakat*. https://www.paud-dikmas.kemdikbud.go.id/.

[18] Community Learning Centre (CLC) (2002).

school, ethnic minorities, and children residing in backward, poorly, socially, isolated or difficult-to-reach villages due to geographic locations and or with limitations of transportation; (2) Ensure the fulfilment of learning needs for all citizens of the productive age through fair access to learning and life skills programs; (3) Contributing to the increase of the average length of education for the Indonesian community for at least 9 years so as to improve the Human Development Index (HDI) and efforts to erase gender inequalities in primary and secondary education; (4) Provide opportunities for community members who wish to complete education equivalent to elementary/junior and senior high school or equivalent with good quality; (5) Serving learners who need academic education and life skills flexibly to actualize themselves while improving the quality of life.

About education standards as stated in the law regarding national education standards No 19 in the year 2005, PKBM also follows[19]:

(a) content standard as stated in the national education standards (covers basic education framework, curriculum and calendar)
(b) learning process standards, such as the national education standards law No 3 of the year 2008[20] (which covers: planning, implementing learning, evaluating learning outcomes and supervising of learning programs). Graduates are recognized after following the national assessment and certification process conducted by the non-formal and informal education accreditation and certification agencies under MoEC. After that, graduates can either go for employment in the labor market or enroll for further studies as same as graduates from formal education channel.

2. Balai Latihan Kerja (BLK) is a technical and vocational training center commonly used in Indonesia's non-formal education system. Balai Latihan Kerja (BLKs) are vocational training centers regulated by the ministry of manpower (MoMT) which provides technical and vocational education and training and job placement services to formal and informal workers.[21] Through the decentralization process, BLKs are under the responsibility of district governments that provide programmes for poor individuals, especially school dropouts (primary or secondary schools).

The main objective of BLKs is to provide non-formal and informal vocational training skills to individual that enable them to access a qualification in formal education or be able to work in the formal sector.[22]

BLKs offer a variety of programmes provided through the means of community-based training (CBT) and mobile training units (MTU). There are 3 types of BLKs: Type A; Type B; and Type C.

BLK Type A—vocational training provided by larger providers of urban centers providing industrial training and service skills while smaller types provide training in

[19] http://desikunatasolin.blogspot.com/2013/05/pendidikan-kesetaraan.html.

[20] BSNP Indonesia (2002).

[21] ILO Bangkok (2012).

[22] The World Bank (2011a), TNP2K Working Paper (2015), The World Bank (2010).

different technologies and skills for self-employment.BLK Type B–training provided by providers in smaller urban centers involving informal education consisting self-study, family and community education. BLK Type C is the training provided in rural areas by the smallest training providers. For recognition, all BLKs at all levels have to be assessed by the government assessment board.

BLKs provide 4 kinds of training which include institutional training (job training programmes which aim to increase the skills of job seekers); non-institutional training (training programmes for people in remote areas organized through mobile training units); apprenticeship programmes; and demand-based training (training based on the demand of industries).

These programs may include hotel/tourism, telematics/IT, agriculture, institution (Train PNS), construction, apprenticeship, electricity, mechanical technology, and commerce. The most promising employment sectors for BLK graduates are agriculture and hotel and tourism. BLK graduates are awarded with BLK certificate upon successful completion and meeting the assessment standards by the national certification board.

3.6 National Qualification Framework

The Indonesian National Qualification Framework (INQF) or Kerangka Kualifikasi Nasional Indonesia (KKNI) is used in Indonesia. KKNI is an independent system and a bridge between the education and training sectors to establish national qualified and certified human resources through formal, non-formal, informal, job training, or work experience schemes. KKNI provides new vocational qualifications known as Sertifikat Kompetensi Kerja, (SKK) within that provide new pathways for Indonesian citizens to access formal education and skill training. SKK in KKNI is directed at creating a demand-driven system with relevant training outcomes ensuring that it is identified as "competencies" that are systematically packaged into vocational qualifications that aligned to the needs of Indonesian enterprises and entire national economy. KKNI increases the relevance and flexibility of technical and vocational education and training and training programmes by better aligning them to the needs of the labour market.[23] INQF is implemented as a tool for TVET quality assurance.

At the ASEAN level, the KKNI provides a basis, through improved labour mobility, for better regional integration of economies consistent with Indonesia's commitments to the ASEAN Economic Blueprint. It will not only provide a mechanism for improving the ability of workers from Indonesia to find jobs in other ASEAN countries commensurate with their training and experience but also improve the capacity of ASEAN employers to appreciate and benchmark the skills and abilities of Indonesian workers. KKNI also performs the function of a reference tool for both the higher education and the vocational training systems. It provides one measure of

[23]GIZ (2017a), Ministry of Research, Technology and Higher Education Republic of Indonesia (2012).

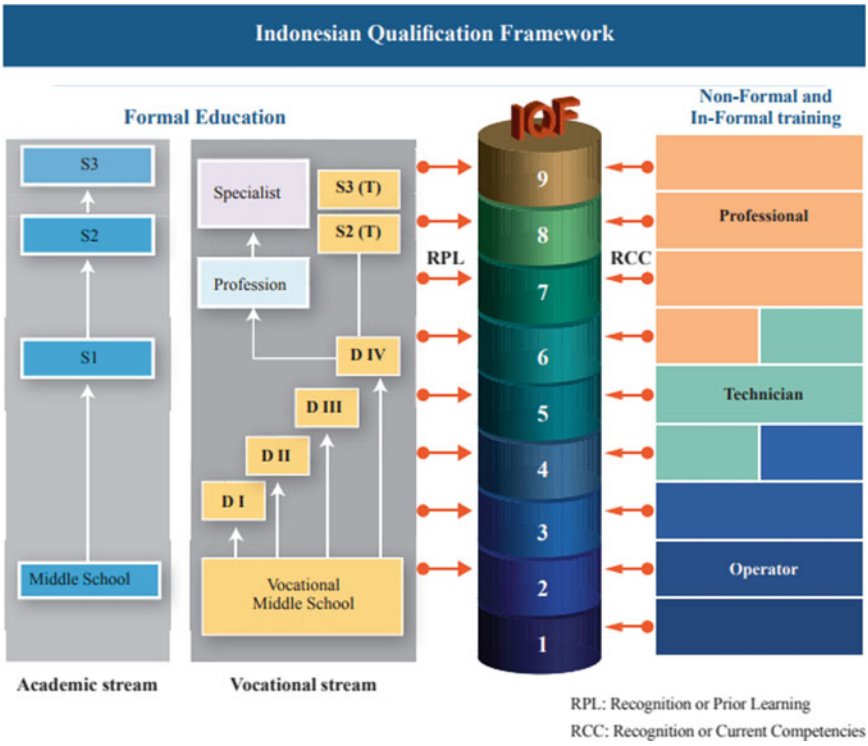


Fig. 3.2 Structure of Indonesia National Qualification Framework (KKNI). *Source* GIZ 2013. Implementing the vocational stream of Indonesian NQF

the approximate equivalence between various vocational and higher education qualifications for a fair determination of credit transfer between programmes or courses for those individuals following a chosen career path that requires them to bridge both sectors.[24] Upon completion of senior secondary level, a graduation certificate is awarded to either continue with tertiary education, upon which successful completion leads to an award of higher education institution certificate as diploma-level qualification when graduating from an academy or polytechnic; and Sarajana (level S1) qualification is awarded after 4 years of full-time studies at a recognised university, institute or advanced school; Magister (S2) is awarded after a period of 2 years of further studies at University level, whereas students in public non-formal vocational training institutions (BLKs) receive certificates upon completion. They may also take a company trainee examination and/or a professional association examination to obtain a certificate from the company or association in question (Fig. 3.2).[25]

[24] UNESCO-UNEVOC Indonesia (2002).

[25] GIZ (2017a), UNESCO-UNEVOC Indonesia (2002), UNESCO-UNEVOC (2011).

3.7 Quality Assurance and Standards

The quality assurance of education services including TVET is crucial for providing more confidence to consumers of the educational output produced by TVET providers. In Indonesia, quality assurance of TVET is under the responsibility of the Ministry of Education and Ministry of Labor. These ministries implement the above responsibility through accreditation bodies and authorities. For example (1) National Accreditation Board for school/madrasah (Badan Akreditasi Nasional Sekolah/Madrasah or BAN-SM) for Vocational High schools (SMK) together with Competency Standardization (STANCOM) institution; (2) Accreditation of training providers (LA-LPK) and Non-formal—National Accreditation Board for Non-formal Education (Badan Akreditasi Nasional—Pendidikan or BAN-PNF) institutions for training centers; and (3) National Accreditation Board for higher Education (Badan Akreditasi Nasional Perguruan Tinggi or BAN-PT) with all certification of profession competency under National Professional Certification Board (BNSP) (See Footnote 30). The function of these institutions is to provide competency tests and certifications of recognition for certain trades and professions. However, coaching, supervision and licensing of professional certification agencies are conducted by BNSP.

Accreditation of vocational schools as an assessment process of quality assurance is undertaken by LA-LPK—an independent institution for ensuring that training institutions implement vocational programs and always apply standards (8 quality standards) set by MoMT to consistent and continuous order to produce competent and competitive graduates.[26] Also, accreditation is done to LPK conducting education/training for graduates to obtain Work Competence Certificate (SKK) according to the level of qualification (KKNI) or SKKNI cluster. Also, LPK conducting education/training based on other standards (such as international standards, special standards and local standards) may also be accredited. The eight (8) quality standards set by the MoMT include (Table 3.2):

Standard 1: Work Competence (Use of SKKNI and other standards);
Standard 2: Structured Curriculum;
Standard 3: Training Materials;
Standard 4: Management System (management of training center);
Standard 5: Staff Qualifications (instructors and training personnel);
Standard 6: Facilities and Equipment;
Standard 7: Financial Feasibility (financial administration);
Standard 8: Assessment.

As a way of quality assurance, accreditation of both formal and non-formal educational programmes and education institutions is being emphasized.[27] Currently, there

[26] GIZ (2017b).

[27] GIZ (2017b), (See Footnote 28) MoRTH (2015), (See Footnote 28) UNESCO Bangkok (2017a, b), (See Footnote 29) TIA, Indonesia (2015).

Table 3.2 Eight quality standards set by the MoMT

Summary of eight standards	
Standard	Purpose/objective
Standard 1: Work competence	Training is based upon national qualifications or units of competency clusters endorsed according to national guidelines set by MoM or upon other standards/training outcomes that are clearly identified
Standard 2: Curriculum	The provider uses structured written curriculum based upon outcomes or SKKNI
Standard 3: Training materials	The provider uses training materials and training processes appropriate for its scope of services
Standard 4: Management system	The provider has a management system that supports its current and intended scope of operations the provider
Standard 5: Staff qualifications	The provider has staff appropriately qualified for their jobs
Standard 6: Facilities and equipment	The provider has access to equipment and facilities to support its scope of operations
Standard 7: Financial administration	The provider is financially viable
Standard 8: Assessment	The provider conducts high quality skills assessment that enables candidates to demonstrate their competency to a LSP or achieving of training outcomes to

Source GIZ (2017b) and http://lemsar.net/filepedoman/pedomanakreditasi2014.pdf Lemsar (2002)

are 327 institutions in Indonesia recognized by BNSP as accreditation and competence test assessors.[28] Also, for ensuring quality assurance, Indonesian policies at the regional level include the following:

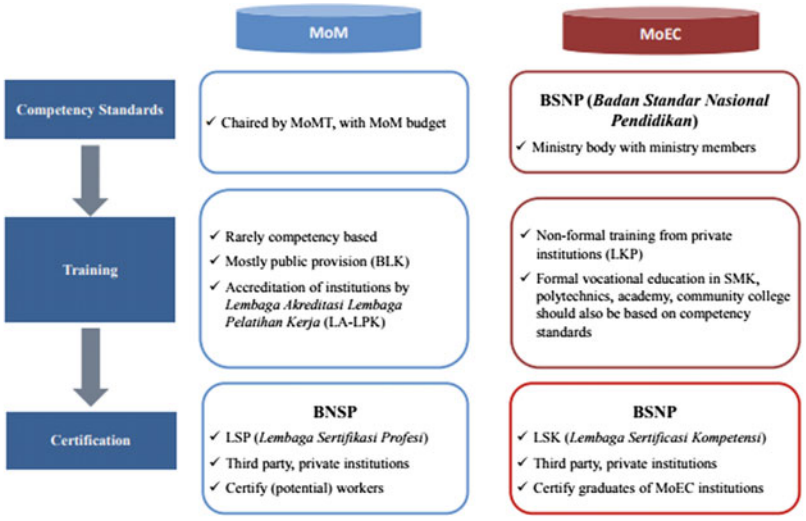
- To develop regional cooperation for developing standards, certification and qualifications, and implement the standards with national bodies responsible for certification and accreditation.
- To accelerate and implement national standards, qualifications and certification by national bodies through involving industries and governments.
- To conduct a benchmarking of regional quality assurance and adopt and adapt the regional quality standards for improving the national quality assurance standards (Figs. 3.3 and 3.4; Table 3.3).

[28] Kabar24.com (2017).

Table 3.3 Quality Assurance Procedure of Assessment and Verification

Quality Assurance Procedure of Assessment and Verification		
STANCOM Quality Assurance of Standardization of Competency & Qualification conducted by Stancom (MoMT)	**LA-LPK** Quality Assurance of Training Provider conducted by Accreditation Authority (LA-LPK)	**BNSP** Quality Assurance of Professional certification conducted by Certification Authority (BNSP)
Procedure of verification	**Procedure of verification**	**Procedure of verification**
Planning stage • Identify technical bureau of trustees • Verify industry association • Validate representation association **Preparation stage** • Verify representative of committee • Verify RMSCS standard on competency draft • Verify of implementation of convention **Standardization stage** • Verify the final result convention • Verify the final draft of SKKNI/competency standard • Verify requirement document for further processing **Establishment stage** • Verify technical institution of trustees • Verify the agenda of convention • Verify the documents for MOMT approval	**Dissemination stage** • Identify the process of dissemination • Verify self assessment of provider **Application stage** • Verify request of accreditation • Verify accreditation document of provider • Verify schedule of accreditation **Desk assessment stage** • Verify completeness of document • Verify assessor examination record • Verify desk assessment result **Visitation stage** • Verify the findings of assessor record • Verify assessor's assessment result **Final report stage** • Verify completeness of report of assessor • Verify the accuracy of assessor report	**Assessment information stage** • Verify dissemination process by LSP **Registration stage** • Verify list of applicant • Verify assessment readiness of LSP **Evaluation of application stage** • Verify completeness of application • Verify pre-/self assessment • Verify sufficiency of evidence **Competency assessment stage** • Verify suitability of assessment place • Verify methods of assessment • Verify result of written test, performance and other portfolios **Assessor recommendation stage** • Verify assessor recommendation • Verify assessor assessment result • Verify completeness of report document

Source UNESCO Bangkok, 2017



Note: MoMT = Ministry of Manpower and Transmigration; MoM = Ministry of Manpower; BLK = public vocational training centre; LA-LPK = Non-formal Accreditation Authority, Ministry of Manpower; LSP = Professional Certification Institution; MoEC = Ministry of Education and Culture; BSNP = Indonesian National Education Standards Board; LKP = private courses and training institutions; SMK = vocational schools; LSK = Competency Certification Authority, Ministry of Education and Culture

Fig. 3.3 Accreditation structure and process

3.8 TVET Graduates

The quality of (SMK) graduates is ideally determined of the mastery of work competency standards (Indonesian National Work Competency Standards or SKKNI). Based on the standard of competence, a system of testing and certification was formulated. Certification schemes for TVET (SMK) graduates that involve professional associations and world of business and industry as well as the implementation of competency tests have been the strategy to minimize the competency gap. Generally, regarding the quality of TVET graduates is still a great challenge especially the low absorption of SMK graduates in the labor market.

According to several reports from several websites (such as: Global Business Guide Indonesia.com, Berita Satu.com, Republika.co.Id and Finance.detik.com), it is indicated that the quality of vocational school graduates in Indonesia is still low without conformity to the needs of the businesses and industries.[29] It is believed ideally that vocational school graduates are meant to be potential employees who can fill the available vacancies in the labor market, become specialist employees in

[29]Global Business Guide Indonesia.com (2002).

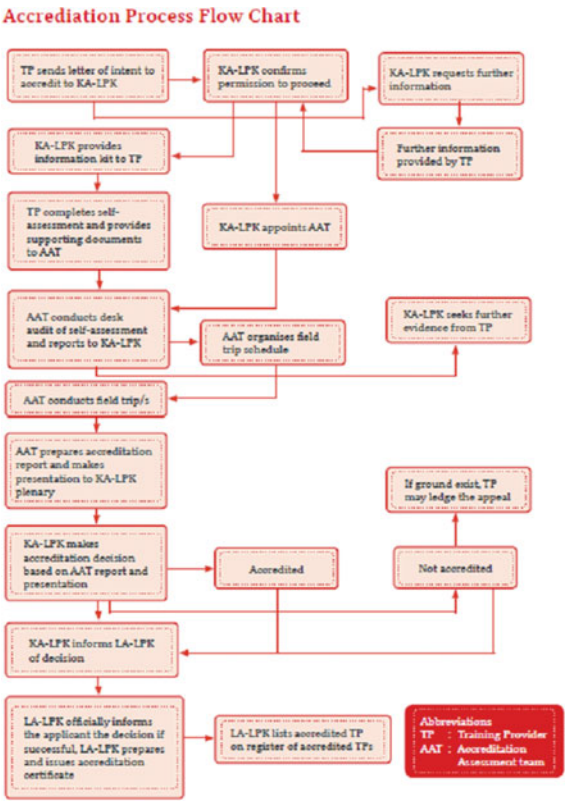


Fig. 3.4 Accreditation structure and process. *Source* GIZ 2017, 12

their professional fields, become job creators as potential entrepreneurs or candidates for higher education.[30]

TVET graduates enrol in many fields which include technology and engineering; information and communication technology; health; arts, crafts, and tourism; agro-business technology; and business and management. According to Indonesian Bureau of Statistics (BPS), the unemployment rate as reported in August 2017 based on the education level, SMK graduates ranked second highest (13.83%) to SMA as seen from the diagram above. This shows the skill gap between the labor market demands with the supply of labor from educational institutions especially in vocational high school (SMK).[31]

[30]Republika.CO.ID (2017), Finance.detik.com 2017), Berita Satu.com (2002).

[31]Lawitta et al. (2017), Kementerian Koordinator Bidang Perekonomian (2017).

3.9 Unemployment Rate by Education Level in Indonesia

3.9.1 TVET Personnel (Teachers)

Based on the law, the minimum educational qualification for teachers at secondary vocational schools (SMK) is Diploma IV (DIV) or Undergraduate Degree (S1). Teachers for secondary vocational and technical schools are prepared by the Educational Institutions for Teaching Personnel (LPTK) such as universities offering vocational and technical teacher education formerly Institute of Teacher Training and Education (IKIP) and Faculty of Teaching and Educational Sciences (FKIP) under, and private STKIPs (Colleges of Teaching and Educational Sciences; Vocational Education Development Centres (Pusat Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan or P4TK/Center for Development and Empowerment of Teachers and Education Personnel). Teacher certification is one strategy intended to ensure the quality of teachers with competencies that lead to the improved quality of TVET education in Indonesia. The Teacher Certification is an in-service program for teachers that expected to improve the quality of education and it is conducted through (1) the direct provision of the certificate, (2) portfolio assessment, (3) education and training of the teacher (PLPG) and (4) teacher professional education (PPG).

3.10 /Percentage of Number of Teacher by Highest Certificate and Level of Education

Source: Center for Educational Data and Statistics-MoEC, 2017.

3.10.1 Salaries of Teachers/Trainers/Instructors[32]

Indonesia adopts a basic salary strategy for all civil servants who are at the level of professionally certified and appointed government worker without taking up any extra responsibility besides their professions. Indonesian basic salary for civil workers upon their first work starts from the range of 2,000,000–5,000,000 rupiah and increases according responsibility undertaken and duration of services. After this level, there is an extra benefit offered depending on the type of other responsibility (ies) that is taken up by any civil worker such as the head of department, supervisor and professor. For example, those who have already been certified will receive increments as much as their basic salary. For professors, the increments can be three times as much as the basic salary.

[32]Unhas (2015).

Sources: Gaji Pokok Indonesia 2015. http://htl.unhas.ac.id/form_peraturan/photo/111003-03.%20PP%20No.30%20tahun%202015%20Perubahan%20Ketujuh%20Belas%20Gaji%20PNS.pdf.

3.10.2 Teachers' Professional Development

To become a qualified TVET teacher, one has to complete a four-year university degree or four years of higher education or Diploma IV from polytechnics obtaining the teacher certificate, and demonstrating professional, pedagogical, personal and social competencies. Also prospective teachers are required to complete teaching practicum at a selected school and obtaining an annual teacher competency-based assessment.

In Indonesia, pre-service and in-service teacher progams are provided for teacher professional upgrade is encouraged by the MOEC through offering scholarships through Institute for Educational Quality Assurance.[33]

Research project as one way of teacher development is also emphasized by MoRTHE. Some professional developments made in Indonesia for improving teacher professionalism include Centre for Teacher Activity or Pusat Kegiatan Guru (PKG); Teachers Working Group or Kelompok Kerja Guru (KKG); and Forum of Teacher-subject or Musyawarah Guru Mata Pelajaran (MGMP) that allow teachers to share their experiences in solving the problem they encounter in teaching activities. According to Paryono, Indonesia has undertaken the following policies regarding teacher development: (1) Teacher certification programme for In-Service Teachers, including vocational teachers; (2) Establishment of Teacher Certification Consortium; (3) National Standard of Education; (4) Qualification and Teacher Competence Standards (legal instruments) being used as the basis for the implementation teacher certification; (5) A teacher will be required to have academic qualification of DIV or Bachelor for secondary TVET or Magister or Doctor for HE lecturers to obtain accredited higher education institutions or relevant subject and to fulfil the requirement of sufficient teaching experience.[34]

3.11 Private Sector Cooperation

As one strategy for improving the quality of technical and vocational education and training public–private partnership (PPP) development by vocational institutions at national, regional and international levels in TVET programmes is emphasized by the government, for example, in 2016, Indonesia's Cabinet Secretariat quoted President Joko Widodo's speech saying "I also think we have to involve the business world and

[33] TVET@Asia (2017).

[34] Paryono. (2015), Allen (2016).

industries because they have a better understanding about the needs of workforce, including in primary sectors such as maritime, tourism, agriculture, and creative economy. The system and demands of the business world and industries must be integrated into the technical and vocational education and training system, such as vocational schools or vocational training center or BLK".[35] Also, Presidential Instruction Number 9 Year 2016 on Revitalizing SMK in the framework of Improving the Quality and Competitiveness of Indonesian Human Resources (*Instruksi Presiden Nomor 9 Tahun 2016 Tentang Revitalisasi SMK dalam rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia*) indicates Indonesia's priority for public–private partnership. PPP between TVET (SMK) and world of business and industries can take several forms, such as student internship placement, supporting institutional refurbishment, "train-the-trainer" programmes and curriculum design to ensure the delivery of demand-driven TVET programs.[36] This is based on the concept of "*Link"* and "*Match*" concept to align the relevance of SMK programs with the labor market needs. The government through MoEC encourages TVET institutions to build cooperation with both local and international industries as a strategy of *link* and *match* between school programs and the industry's needs.

One strategy of the concept of *link* and *match* implementation is the dual education system (*Pendidikan Sistem Ganda* or *PSG*) that systematically integrates and synchronizes educational programs in schools and skills acquisition programs that are gained through direct work in the workplace. A common example of PSG in Indonesia is the internship or industrial work practice program (Prakerin) which involves activities such as synchronization and curriculum validation, guest teachers from industries and competency test.[37] Currently, there is no formalized public–private partnership in Indonesia; however, each vocational institution is encouraged to initiate their cooperation with industries depending on their locations and needs. During National TVET curriculum development, government through MoEC always invites industry representatives to engage and participate in curriculum design and then pass it to the provincial levels for implementation.

DITVE-MoEC 2017. Road Map. *Kebijakan Pengembangan Vokasi di Indonesia 2017–2025* [Development Policy of TVET in Indonesia 2017–2025].

UNESCO Bangkok, 2017. Towards Quality Assurance of Technical technical and vocational education and training and Training.

3.12 Current Trends and Practices

Indonesia has undergone several trends and practices in education especially in TVET among which the following should not go unmentioned.

[35] Setkab Indonesia (2016).
Direktorat Pembinaan SMK Kemdikbud (2017).

[36] Global business guide in Indonesia (2002).

[37] Sarvi et al. (2015), [5] The Jakarta Post (2016).

3.12.1 Revitalization of TVET (SMK) in Indonesia

Indonesia has for long time been lagging behind in terms of human resource development due to the low quality of its labor force as expressed by its ranks (113) in Human Development Index (HDI).[38] This is one of the challenges for economic competitiveness in the global era. The government is, therefore, making efforts to improve the quality of its labor force through improving the quality of education systems, especially through TVET revitalization strategy. This strategy is established to produce quality human resources with relevant skills, competencies and excellent character that increase their global competitiveness. Following the Presidential Instruction Number 9 Year 2016 on Revitalizing SMK in the framework of Improving the Quality and Competitiveness of Indonesian Human Resources (Instruksi Presiden Nomor 9 Tahun 2016 Tentang Revitalisasi SMK dalam rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia), this strategy has:
Vision: *"Terbentuknya Insan dan Ekosistem Pendidikan Kejuruan yang Berkarakter dengan Berlandaskan Gotong Royong, sehingga mampu menghasilkan lulusan SMK yang mampu Bekerja, dapat Melanjutkan dan terampil Wirausaha (BMW)"* ("Establishment of technical and vocational education and training characters and Personnel and ecosystems based on Mutual collaboration, that is capable of producing SMK graduates who are capable of work, can continue for further studies and have skills for Self-employment"), where

B = *Bekerja* (Work): the purpose is that TVET graduates should be able to work in available vacancies in the world of businesses and industries with competency skills;
M = *Melanjutkan* (Continue): the purpose is that TVET graduate can continue to higher levels for learning like polytechnics, colleges and universities and can become professionals in their fields of expertise; and
W = *Wirausaha* (Entrepreneurs), the purpose is that TVET graduates can become potential entrepreneurs creating jobs for others too.

Mission:

1. Refining and harmonizing TVET (SMK) curricula with competencies in accordance with the needs of graduates (link and match) and industries;
2. Increasing the number and competence for educators and educational power in SMK;
3. Improving cooperation with ministries/agencies, local governments and the business/industry;
4. Increase access, certification and accreditation of SMK graduates.

This strategy has the purpose of developing human resources with the twenty-first century skills as a result of rapid technological advancements, changes in business processes as well as changes in the work structures in the workplace which demands soft skills. These skills include (a) skills related to thinking (e.g. creativity and innovation, critical thinking, problem solving, decision making, learning to

[38] Page (2002).

learn/metacognitive); (b) work-related skills (e.g. communication and cooperation): (c) skills that can be used as instruments of action (collection information/data, use of information technology and media devices); (d) skills related to the ability to function well within personal and community life (integrity, discipline, responsibility, adaptability, leadership, nationalism and other insights). After two years of implementing VHS Revitalization (2016–2018), the Ministry of Education and Culture has task through six program objectives, namely; (1) Preparing Vocational Schools road map for the national level development and at 34 provincial levels (provinces must make a vocational education roadmap adapted with the superior potential development in the industrial and services sector in their regions), (2) Improving and aligning the vocational curriculum with the competency needed by graduate users, (3) Improving the number and competency of educators and education staff, (4) strengthening the collaboration between Ministries/Institutions, Local Governments, Business and Industry, (5) Enhancing access to certification for Vocational graduates and Vocational accreditation, (6) Forming working groups for VHS development. The objectives of the improvement and alignment curriculum have been carried out while the other five targets are in the process of completion (Two-year overview of VHS Revitalization, Dit. PSMK of Ministry of Education and Culture 2019).

3.12.2 Increasing More Practical Skills Than Knowledge (Theoretical)

Due to skills gap and mismatches in competencies provided by TVET institutions and those required by industries, the Indonesian government prioritizes skills over knowledge as a new educational goal for Indonesia through its Ministry of Education. This entails application of demand-driven curriculum, involvement of industrial partners in conducting of TVET activities such as curriculum synchronization, certification and assessment of students.

3.12.3 Prioritization of Economic Booster Occupations

As Indonesia is seeking economic transition, the government has identified occupations that can promote its economy towards that objective, some of which aims at reducing imports and increasing exports. According to Indonesia Salary and Employment Outlook 2017 published on Michael Page.com website, outlines sectors such *real estate sector*, *e-commerce sector, digital sector, marketing secto*r. with current occupations in job market demand in fields such as food security and cash crops (for boosting exports), engineering and manufacturing (lean manufacturing, shipbuilding, infrastructure push textiles, fashion industry); food and beverages, steel, mining, transportation services and ICT (such digital professionals, e-commerce

professionals, cybersecurity professionals; account and finance; marketing and sales professionals; procurement and supply chain; health and life sciences and many others and meeting the market demands in these fields calls for the development of new skills in these occupational areas through TVET (SMK) in the country.

Also, a point of consideration is the required qualifications in these occupational trends where employers prefer hiring qualified candidates with managerial, marketing and soft skills and expertise. This means that employers prioritize qualification with potential expertise in hiring employees which require attention by the TVET providers.[39]

In terms of salary trend, Michael Page.com presents an estimated salary projection in all occupational fields with the average minimum salary being: Indonesian Rupiah IDR: 195 (millions) for system analyst until IDR 1495 for chief technology officer.[40]

3.12.4 Shifting the Enrolment Share of General Education to Technical and Vocational Education and Training

The current share enrolment of students in general education has been larger than that of technical and vocational education and training (70:30); however, due to the demand for more human resources with relevant skills and competencies, the government is shifting the share of enrolment in general high school (SMA) to vocational high school from 70:30 to 30:70, respectively, by 2020. In support of this, currently, the number of vocational high school in Indonesia as reported by Bureau of Statistics (BPS) in Indonesia reaches 13,337 SMK, the figure is slightly higher when compared with general high school (SMA) which only reach 12,513 schools (source BPS 2015).

3.13 Current Proportion in number of Vocational high Schools to General High Schools in Indonesia

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UNDP, 2016. Indonesia Human Development Index (HDI). http://hdr.undp.org/en/countries/profiles/IDN

[39] See Footnote 38.
[40] See Footnote 38.

https://www.michaelpage.co.id/content/salary-centre/2017-indonesia-salary-employment-outlook/#Digital.

3.14 Ongoing Reforms/Projects

Some of the ongoing reforms in Indonesian TVET system are part of the current trends in TVET which among others include the following:

- Revitalization of TVET with the objective of developing human resources with the twenty-first century skills in reflection to the rapid technological advancements, changes in business processes as well as changes in the work structures in the workplace which demands soft skills. This ideal strategy is meant to increase the employability and competitiveness of Indonesian labor force at national, regional and the global scenes.
- Shifting of the paradigm on technical and vocational education and training—change the strategy of marketing the produced graduates from vocational schools to producing the vocational school graduates demanded by the market. Indonesia is working towards demand-driven curriculum in order to produce workforce with relevant skills and competencies demanded by the industries. The government is encouraging TVET providers to train students' demand-driven skills especially the twenty-first century skills to enable them to become more employable after their graduations.
- Due to technological sophistication in the workplace and changes in work structure, Indonesia is strengthening digital literacy—utilizing the potential of digital and e-learning technologies in learning and teaching processes to enable TVET providers and learners to cope up with the globalization trend. The ministry of education (MoEC) is working towards the integration of ICT infrastructure in all TVET institutions to ease and foster the teaching and learning process.
- As one way of improving the TVET quality cooperation between TVET institutions and industrial partners is a priority strategy of the government. For example, MoEC is encouraging each vocational high school to initiate cooperation with industries as a way of promoting public–private partnership for increasing quality assurance of TVET services at the same time to skill young innovators in vocational schools enabling them to develop tangible future work skills and competencies that harness full power of ICT.
- The quality of TVET teachers is an aspect of concern for quality improvement. Indonesia has been facing the challenge with the low quality of TVET teachers due to failure of many teachers attaining qualifications, industry experiences and certification as required by Law No 14 in 2005 and No 74 in 2008 about teachers. It is a priority of the government to improving teacher's quality—through training and certification in order to get productive subject teachers by 2020 as stipulated in the revitalization strategy of Indonesia TVET system.

- Indonesia is promoting entrepreneurial skills for e-SME in order to prepare potential entrepreneurs and innovators through local-based creative industry. This is intended to create more jobs in the labor market as well as increasing the economic base through increased production that will spur up more economic growth and development (See Footnote 38).

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Dit. PSMK-MoEC 2016, *Laporan Satu Tahun Impres Nomor 9 Tahun 2016. [*Report on One Year Presidential Order Nomor 9 Year of 2016]
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3.15 Key Issues and Challenges

Key issues among others include how collaboration with business is refining the demanding focus on TVET, and how the technological revolution requires an adequate fit between TVET supply and demand. The challenges includes the following:

- The quality of TVET graduates is still low to meet the industry demands and competencies, and thus many industries always complain of skills mismatch in TVET and opt for not hiring SMK graduates which increases the unemployment rate of TVET graduates in comparison with other education levels. Many SMK graduates have qualifications, but their quality is not satisfactory to the needs of industries, and thus they have to undergo an extra up-skilling in industries hence becoming another cost to be met by industries.
- Matching standards and certification towards mutual recognition of TVET graduates so that they can meet the demands of workplace standards since there is no well-established model of quality apprenticeship established with industries. There has been a link-and-match problem of skills and competencies provided in TVET schools and the needs of the industry especially in soft skills[41]; industry certifications and occupational standards are important to improve the quality of TVET institutions; however, many industries have not fully embraced this because they take this certification to be costly and integration of school activities in industry would disrupt industry's business operations;

[41] Sayuti (2016), I Wayan Ratnata (2013).

- The quality of TVET teachers has been one of the major challenges affecting the quality of TVET graduates in Indonesia because many TVET teachers do not meet the required qualifications as indicated in the Law No 14 in 2005 and No 74 in 2008 about teachers and lecturers. Twelve percent (12%) of TVET teachers had their qualifications below Diploma IV (DIV) or Bachelors (S1), and also many lack the industry experience and certification that makes them incompetent enough in their fields of teaching (See Footnote 14). Due to this challenge, there has been lack of sufficient correspondence between the practical training and skills taught in TVET institutions and the demands of the labour market.[42]
- Inadequate facilities such as up to equipment used in TVET institutions in correspondence to the ever rapidly changing technologies in workplaces. Due to advanced sophistication of technologies in the labor market, vocational schools face a bigger challenge in keeping the pace of technology change workplaces in preparing the students to be ready for work. Furthermore, these equipment may be costly for the TVET institutions to access it and as a result vocational high schools initiate institutional partnership with industries to improvise those advanced equipment. However, due to administrative and financial constraints, sometimes the cooperation is not successful, making it hard for TVET institutions to adequately prepare their graduates with relevant real workplace skills and competence.
- Inadequate better incentives for motivating industries to engage in quality assurance for TVET by the government. There is a need to give the industry some incentives that motivate them to get involved in quality assurance by the government especially easy access to becoming TVET certification body and emphasizing quality certification as a prerequisite for employment. Also the central and local governments allocate only a small budget and subsidies for quality assurance which makes the whole exercise a little harder.[43]

MONE: Ministry of National Education
MoMT: Ministry of Manpower and Transmigration
DDGHE: Directorate General of Higher Education
SMK/MAK/VSS/IVSS: Sekolah Menengah Kejuruan/Madrasah Aliyah Kejuruan/Vocational Secondary school
SMA/MA/GSS/IGSS: Sekolah Menengah Atas/Madrasah Aliyah/General Secondary School
BLK: Balai Latihan Kerja or Vocational Training Centres
MTU: Mobile Training Units
CBT: Community-Based Training
SKK: Sertifikat Kompetence Kerja/Work Competence Certificate
KKNI: Kerangka Kualifikasi Nasional Indonesia
MoMT: Ministry of Manpower and Transmigration.

[42] SEAMEO (2017), BMZ (2015).
[43] UNESCO Bangkok (2017a).

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Chapter 4
Vocational Education and Training in Lao PDR

Phouvieng Phoumilay

4.1 Overview

TVET in Lao PDR is primarily under the Ministry of Education and Sports in collaboration with Ministry of Labour and Social Welfare (MoLSW). Other Ministries also run few training programmes related to their business. In term of future employment, Lao PDR has hydro and mining sectors that employ 22,000 people and is expected to continue besides agricultural, processing, service, and electrical personnel in the next decade or so.

4.2 Demographic and Socio-economic Data

See Table 4.1.

4.3 TVET Mission, Legislation and National Policy or Strategy

4.3.1 TVET Mission/Goals

The main goals for TVET in the Lao People's Democratic Republic are to contribute to the country's socio-economic development, achieve poverty reduction targets and

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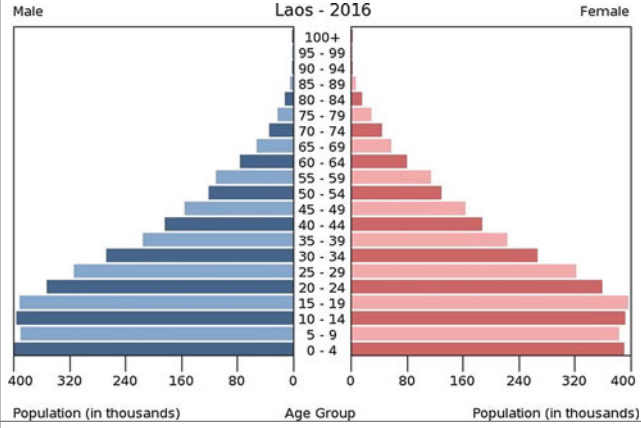
https://doi.org/10.1007/978-981-13-6617-8_4

Table 4.1 Demographic and socio-economic data

Economy/standard of living	Population (overall v/s workforce participation)[a]	Overall: 6.8 millions (2016) Workforce: 3.5 millions (2016) Population pyramid: 
	Human Development Index	Index: 0.586 Rank: 138 (2016)
	Purchasing power parity	40.9 billion USD (2016)
	Gini coefficient	36.4 (2012)
	Gross domestic product (GDP)—total	15.903 billion USD (in 2016)
	Gross domestic product (GDP)—per capita	5.700 (2016)
	Poverty rate	23.2% (2016)
	Gender dynamics/human sex ratio	Sex ratio at birth (male births per female births): 1.05 (2015)

(continued)

Table 4.1 (continued)

Composition of economy by	Industry/sectors	Agriculture: 21.6% Industry: 32.8% Services: 38.9% (2016 est.) Agriculture—products: sweet potatoes, vegetables, corn, coffee, sugarcane, tobacco, cotton, tea, peanuts, rice; cassava (manioc, tapioca), water buffalo, pigs, cattle, poultry Industries: mining (copper, tin, gold, gypsum); timber, electric power, agricultural processing, rubber, construction, garments, cement, tourism
	Contribution of each industry/sector to GDP	Agriculture: 21.6% Industry: 32.8% Services: 38.9% (2016 est.)
Education[b]	Education index	0.436 (2013)
	Adult literacy rate (% ages 15 and older)	79.9 (2016)
	Expected years of schooling	10.8 (2016)
	Mean years of schooling (of adults)	5.2 (2016)
	School dropout rate	Primary school dropout rate (% of primary school cohort) 22.4 (2016)
Employment	Unemployment rates	1.6% total, 4.0% youth (2016)
	Industry/sector-wise employment	Employment in agriculture (% of total employment): 71.3 Employment in services (% of total employment): 20.2 (2016) Employment in industry (% of total employment): 8,3 (2010)

(continued)

Table 4.1 (continued)

	Composition of workforce	Employment in services, female (% of female employment): 19;5 (2010) Employment in services, male (% of male employment): 21 (2010) Employment in agriculture, female (% of female employment): 73,5 (2010) Employment in agriculture, male (% of male employment): 69,2 (2010) Employment in industry, female (% of female employment): 6,7 (2010) Employment in industry, male (% of male employment): 9,9 (2010) "The most recent population census suggests that only around 6% of the population, or around 13% of the active labour force, works in a formal sector. Though public sector jobs outnumber private sector jobs at present, private sector development will be the main engine for growth and poverty reduction, according to the seventh NESDP. With this said, average male and female labour force participation are almost equal (for ages 15–64 at 79.5% for women and 81% for men) and are higher in rural than in urban areas[c]"

References/sources
OECD: http://www.oecd.org/site/seao/Lao%20PDR.pdf
World Bank data on Lao: https://data.worldbank.org/country/lao-pdr
[a]CIA (2017)
[b]UNDP: http://www.hdr.undp.org/en/countries/profiles/LAO
[c]ADB (2010)

help the country to emerge from the group of least developed countries by 2020 (the TVET Master Plan).[1]

Refer to the TVET development Plan 2016–2020, the overall objectives of TVET Policy are the followings[2]:

- Establish vocational schools and vocational training centres in necessary districts; improve and expand the colleges, vocational school, technical schools and vocational training canters; upgrade technical vocational schools in some provinces in order to provide vocational training in the various forms.
- Expand enrolment to vocational education and training to cover approximately 60% of graduate students from general education of the country to also take care of the poor, women, minorities and disabled.
- Develop vocational education and training system in accordance with the national education reform strategy by developing the education qualification framework, occupation standard setting, standardized curricula and using curriculum as a modular/learning element and credits to facilitate the recognition of prior learning (RPL), continuous programme; using the technology of communication, knowledge of SME business management and knowledge about the environment in the curriculum for vocational education and training curriculum.
- Bring in vocational education courses into general education and pilot tests in schools where it is possible.
- Organize career guidance to increase enrolment into vocational education and training and professional counselling and training to prepare to work.
- Build and expand institutes of TVET teacher training as the centre for teacher training in the country and some of the necessary occupation in sufficient quantity and quality; develop teachers training on techniques, skills and pedagogy and develop administrators as well as personnel in vocational education regularly to catch up with the technology information linked to regional and international areas.
- Create quality assurance and assessment system of vocational education and training to ensure efficient and effective building of the workforce.
- Improve and expand the management responsible for vocational education and training at central, provincial, district levels and other parts to support decentralization of vocational education and training.
- Monitor the implementation of the TVET Law and decrees, notices of enforcement, research and improve the principle of the technical income generation, production, administration, billing, public–private partnerships and other necessary regulations (Fig. 4.1).

4.3.2 Key Targets

The key targets of TVET policy in Lao PDR cover the followings:

[1] ILO (2016, p. 14).

[2] Ministry of Education and Sports (MoES) (2015, p. 40).

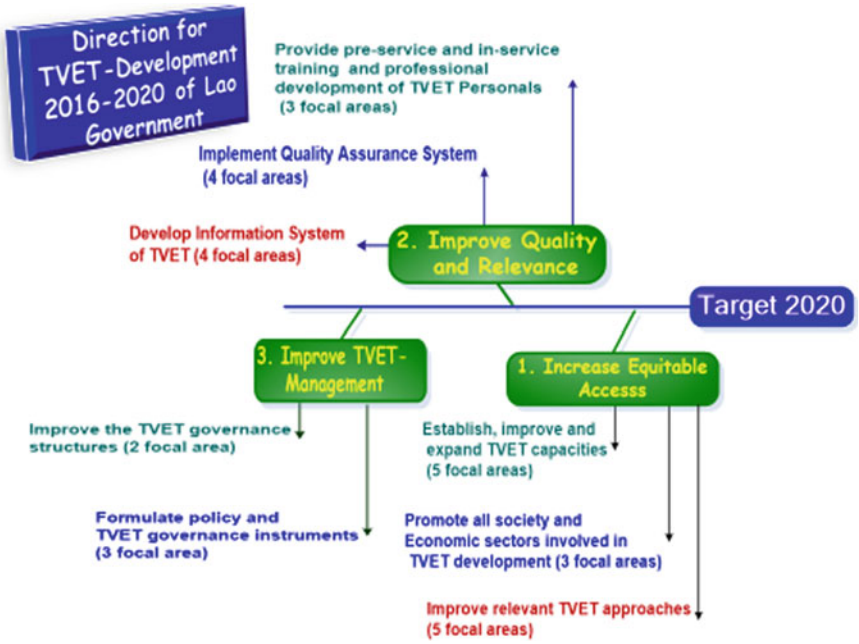


Fig. 4.1 TVET Mission/Goals (Presentation (VEDI_17_10_2017.pptx): "TVET Initiative in Response to Sustainable Development Goal: TVET Teachers Development in Lao PDR")

- Establish technical and vocational school and centres in all provinces and some suitable districts so that all have at least one school and centre.
- Improve and expand the existing technical and vocational school and vocational training centres and labour skill development centres.
- Upgrade technical and vocational in the provinces with potential to become colleges, so they can offer training in different levels with many approaches in line with the vocational qualification framework.
- Expand vocational education and training access to reach 65% of students who completed general education to enrol in vocational education institutes: 25% enrol in MoES vocational institutes and the remaining enrol in private sector and in other vocational institutes.

4.3.3 Additional Key Targets

- At least 10,000 disadvantaged persons receive scholarships for Certificate 1 and 2 courses and vouchers are offered for 1000 persons.
- Forty percentage of students enrolled for Certificate 3 and diploma courses receive scholarships.

- Gender parity ratio in TVET improves to 50%.
- At least 2000 students are enrolled in dual training, where part of the training is delivered by companies.
- At least 20 new occupational standards are developed by the Trade Working Groups and endorsed by National Training Council.
- Legislative documents on Lao Vocational Qualification Framework are endorsed.
- Graduate tracer studies are carried out every three years, and their results are used to inform the TVET course offerings and curriculum upgrades.
- The skills and social competences of the TVET graduates are considered to be adequate by 80% of employers.
- Eighty to ninety percentage of TVET students have access to vocational counselling and guidance services.
- All TVET students complete an entrepreneurship module as a part of their course.
- TVET institutions per year undergo external assessment in accordance with revised quality assurance indicators.
- Annual targets for upgrading the qualifications of TVET teachers: 1 Ph.D., 5 master, 10 bachelor's degrees, 12 higher diploma and 25–30 "expert teachers" certifications.
- Functioning School Advisory Boards involving local industry members are set up in all TVET institution. [3]

The key targets are aligned with regional common development goals. The development plan has been built based on specific guiding principles:

- Alignment with the TVET Strategy 2006–2020 but taking into account socio-economic evolution in Lao PDR;
- Alignment with the Eighth NSEDP (National Socio-economic Development Plan) 2016–2020;
- Alignment with the targets of the ESDP 2016–2020.

4.3.4 TVET Legislation

The laws/acts/reforms/policies that govern the strategy and implementation, among others, are:

- Decree on Approval and Enactment of the Technical and Vocational Education and Training Development Plan 2016–2020 (currently—2017—in force);
- the Education Law of the Lao PDR ref No. 04/NA dated 3 July 2007;
- Pursuance to the Technical and Vocational Education and Training (TVET) Law, ref No. 42/NA dated December 23rd 2013.[4]

[3] Ministry of Education and Sports (MoES) (2015, p. 43–44).

[4] Ministry of Education and Sports (MoES) (2015, p. 40).

Based on the TVET Strategy and Master Plan, training providers are encouraged to target several groups, including new labour market entrants (school leavers), existing workers, young people, older adults and disadvantaged groups (e.g. the poor, the populations of remote rural areas and ethnic minority groups). The government is providing incentives for disadvantaged groups to participate in TVET, through voucher schemes and scholarships. They currently have scholarships, but the amount will be increased to account for inflation, and larger amounts will be allocated for higher levels of TVET and for ethnic groups. The ADB's Strengthening-TVET project (S-TVET) includes support for the development of a training assistance voucher programme.[5]

4.3.5 TVET Strategy

Following the Technical and Vocational Education and Training Development Plan 2016–2020 actions implemented should be based on:

- Linkages to the economic and social priorities as well as national and local needs analysis;
- Either a sector approach (e.g. hospitality, financing, agriculture, garment, wood processing) or transversal approach (curriculum development, qualification system) but with applications through pilot projects and subsequent dissemination;
- Various financing sources: government, private sector, foreign donors and international organizations, individuals when possible;
- Involvement of the provinces for increasing roles in the local implementation of TVET schemes and better alignment with DTVE.

In regard to stakeholders' involvement in youth employability, skills development, there is a need for adaptation of the TVET system to the needs of employers based on labour market information system and in the absence of it, basing on:

- Signals from employers gathered by the NTC and strengthened Trade Working Groups;
- Improved relations between the management of the TVET schools and provincial stakeholders;
- Information from the tracer studies;
- Increased focus on learning outcomes through dissemination of competency-based training, DCT;
- Focus on high demand sectors: construction, mechanics, hospitality, electricity, furniture, automotive and agriculture.

References/sources:

- Compilation of assessment studies on technical vocational education and training (TVET) Lao People's Democratic Republic, Mongolia, the Philippines,

[5]ILO (2016, p. 14–15).

Thailand and Viet Nam (2016): http://www.ilo.org/wcmsp5/groups/public/—asia/—robangkok/documents/publication/wcms_458131.pdf.

4.4 Governance and Financing

4.4.1 Governance

The development plan (Technical and Vocational Education and Training Development Plan 2016–2020 (currently—2017—in force) will be implemented by TVET institutions managed by the TVET Department (DTVE) in partnership with other Ministries, particularly MoLSW and Centre for Education Quality Assurance of MoES. Decree No. 036 on Technical and Vocational Education and Training and Skills Development, the current legal reference for TVET, distinguishes between the functions of the MoES, responsible for (TVET), and the MOLSW, responsible for skills development, certification and testing. By separating TVET and skills development, however, the decree has led to some confusion and duplication of efforts, with the two ministries working on developing standards for the same occupation, for instance.[6]

The current [2013] legislation distinguishes between short-term skills development training (less than 12 months) falling under MOLSW jurisdiction and continuous training of more than 12 months, called TVET, and which falls under MoES jurisdiction. The two ministries are, therefore, the main departments in charge of TVET in the country. However, some skills development and vocational training is also provided under other line ministries such as the Ministry of Industry and Commerce (MOIC) and the Ministry of Health (MOH).[7]

The National Training Council is an interministerial organization and tripartite body of 35 members: representatives of youth, women, unions, employers and different ministries. Its main constituents are the MoES, MOLSW and LNCCI. Its president is from the MoES, and its vice presidents are the vice minister of labour and the president of the LNCCI. The NTC's members are not technical experts but rather high-level representatives. The NTC's budget (for salaries, equipment and other items) comes from the MoES, but its mandate is above the MoES. The NTC is the umbrella organization for all TVET in the Lao People's Democratic Republic, and it plays the role of an advisory body regarding skills development issues.[8]

[6]ILO (2016, p. 12).
[7]ILO (2016, p. 15).
[8]ILO (2016, p. 15).

4.4.2 *Financing*

Overall share of TVET within the MoES budget was planned to double from 2.7% in 2015/16 to 4% in 2019/2020. The budget for TVET is substantially higher than for primary or secondary education mainly due to high equipment cost. Lao TVET development is still dependent on foreign assistance although the ESDP noted that the current international assistance for TVET is already relatively high in comparison to the assistance pledged to other education subsectors (12%). TVET donors support to improve the infrastructure and system elements, as well as building capacity for sustainability. This support is expected to cover a substantial portion of the needs.[9]

The estimated budget for TVET Development 2016–2020 is around 185 million USD. This includes the MoES budget, donor support (current projects) and an estimation of the remaining needs (financing gap). International support including ADB, German, Swiss and Luxembourg cooperation cover equipment, voucher programs, technical assistance, curriculum development and teacher training until 2016, 2017 or 2020 depending on the project. Further assistance with ADB and German cooperation is being discussed which if approved, could support dissemination of developed models and identified investment gaps.[10]

4.5 Twenty-First-Century National Education and TVET Systems

The key components of the formal education system in Lao PDR are[11]:

- Early childhood education covers nurseries (from 3 months to 3 years old) and kindergartens (from 3 to 6 years old) (Fig. 4.2).
- General education which is divided into primary education (5 years from grade 1 to 5), lower secondary education (4 years from grade 6 to 9) and upper secondary education (3 years from grade 10 to 12).
- Vocational education or Technical and Vocational Education and Training (TVET) is divided into three levels: primary or first level (at upper secondary level), middle level and high level (at post-secondary level).
- Higher education (HE) which has different levels including associate diploma (2 years), bachelor (4 years), master (BA + 2 years) and PhD (MA + 3 years).
- Non-formal education through adult education approach (Fig. 4.3).

[9] Ministry of Education and Sports (MoES) (2015, p. 46).

[10] Ministry of Education and Sports (MoES) (2015, p. 1).

[11] SEAMEO VOCTECH Regional Centre Brunei Darussalam (2015).

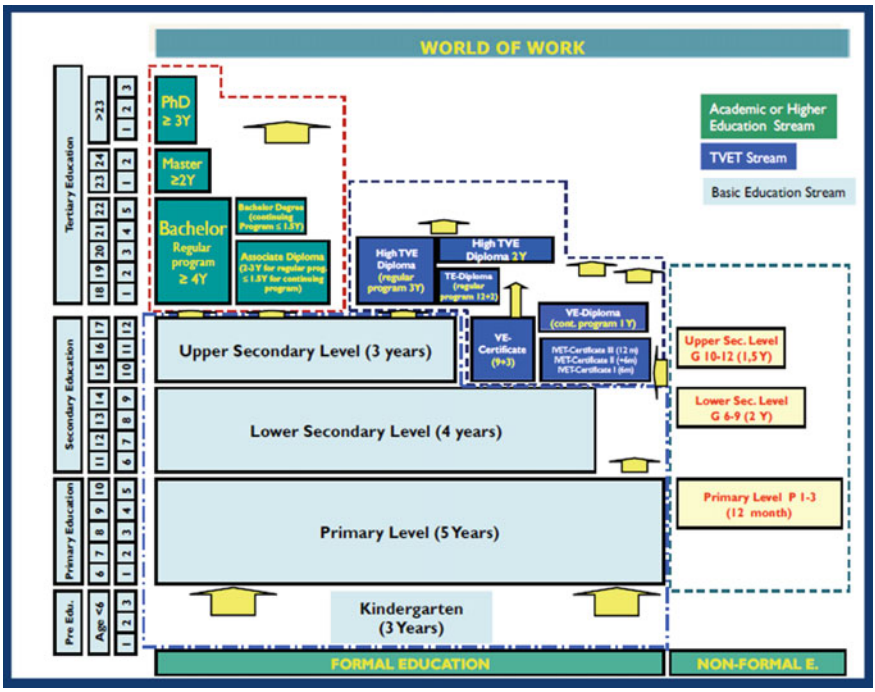


Fig. 4.2 National Education System (twenty-first century/revised system) (UNESCO (2013) "For another diagram of the Lao PDR education system" p. 18)

4.5.1 Formal TVET System

TVET is being provided through various channels[12]:

4.5.2 Public Secondary and Post-secondary TVET Programmes

- Under the MoES, there are 14 TVET institutions and 8 IVET schools. In 2008–2009, 59% of the almost 18,000 students enrolled in MoES public TVET institutions were in high diploma programmes. Only 40% of all TVET students were enrolled in diploma programmes. Less than 1% were enrolled in certificate programmes.
- MoES universities also provide formal accredited TVET programmes. In 2007–2008, 2500 high diploma students graduated in forestry, engineering and

[12]UNESCO (2013, p. 25f).

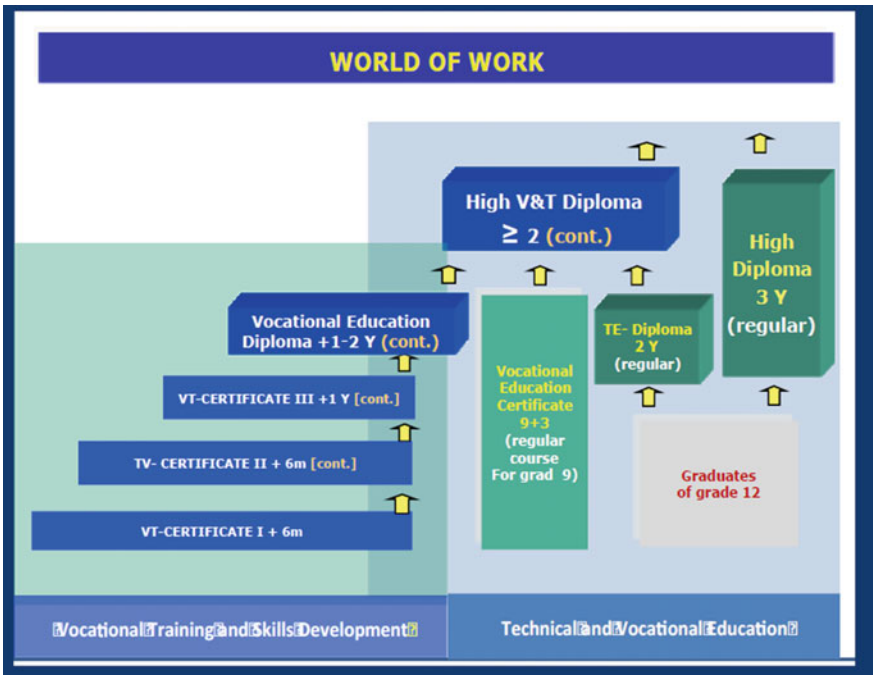


Fig. 4.3 Vocational qualification system

agriculture at the NUOL in Vientiane. A total of 300 high diploma students graduated in agriculture, business and engineering at the University of Champasak.

4.5.2.1 Private Provision

Total student enrolment in private TVET institutions in 2008–2009 was approximately 22,000 across all programmes in 78 national private schools. These schools typically delivered TVET diploma-level courses in English learning, information technology (IT), business, mechanics, food processing, automotive and electrical engineering.

4.6 Non-formal Provision

Non-formal TVET is implemented under the supervision of the MoES in IVET schools and also in three centres in Vientiane, Luang Prabang and Champasak, as well as in 321 CLCs across the country. In 2008–2009, the three centres provided skills training courses of five days to three months for a total of 1154 persons through short

courses providing basic vocational skills in wood processing, construction, chicken, frog and fish raising, mushroom cultivation, cookery and beauty (ADB 2010).

The MOLSW runs four skills development centres offering short and long-term training courses in IT, auto repair, carpentry, furniture, garment, electronics, electricity, hospitality and construction, mainly for school dropouts and unskilled adults. In 2008–2009, a total of 2660 enrolments were registered in short courses provided by skills development centres. Also, some centres like the Lao-Korean VT Centre were providing short fee-based courses in computing.

There are two types of institutions in the formal system: TVET institutions and Integrated Vocational Education and Training (IVET) Schools.[13]

TVET institutions include technical, vocational or technical/vocational schools or colleges where the traditional divisions between vocational and technical or between school and college have been blurred. They offer up to three-year programmes for lower secondary school graduates and a variety of programmes at post-secondary level for upper secondary school graduates. TVET institutions are administered by several governmental bodies (Ministry of Education and Sports, Ministry of Agriculture and Forestry, Ministry of Finance, Ministry of Public Work and Transports and Ministry of Information, Culture and Tourism and Ministry of Public Health).

IVET schools deliver formal TVET and non-formal basic vocational training to different target groups, including adults. They are a new kind of TVET schools in rural areas, developed with the support of KfW. So far, there are eleven IVET schools under the MoES (in 2019). According to the TVET Master Plan 2009–2015, the MoES is planning to further expand the network of IVET schools to cover all provinces. The District Education Bureaus, under the MoES and the Department of Non-Formal Education, are responsible for non-formal education institutions in their own districts. Non-formal education programmes in Lao PDR target three groups: (a) children and young adults aged 6–14 who did not have an opportunity to attend primary school and are willing to follow literacy and continuing education courses (b) adults aged 15–40 who are illiterate and are willing to follow eight literacy and continuing education courses, and (c) youth and adults aged 15–24 who do not have definite vocations and are willing to follow basic vocational training.[14]

There are (were) 22 public institutions (managed by the Ministry of Education and Sports—MoES) providing. Apart from MoES and MoLSW, there are 11 ministries as well as other organizations providing TVET, including[15]:

- Ministry of Public Health with one University of Health Science and 12 Schools for Nurses;
- Ministry of Finance with three training institutes;
- Ministry of Agriculture and Forestry: five specialized training institutes;
- Ministry of Information, Culture and Tourism: five training institutes;
- Ministry of Justice: three training institutes;

[13] UNESCO (2013, p. 26).

[14] UNESCO (2013, p. 26).

[15] STVETLAO (n.d.). http://www.stvetlao.org/images/phocagallery/PDF/Statistic/Brochure%20English.pdf.

- Bank of Lao: one training institute;
- Lao Women's Union: three training centres;
- Lao Revolutionary Youth Federation: ten training centres.

There is also a total of 69 private schools which are delivering TVET education, mainly diploma-level courses in English, on IT and business. The private TVET institutions offer mainly courses for services sectors, which do not require heavy investment in infrastructure. In 2013/2014 the majority of the students in private TVET studied courses for service sector, only 4.5% studied courses for the industry sector and there was no offer related to agriculture.[16]

There are overlaps among short courses provided by IVET schools, Department of Skills Development of the Ministry of Labour and Social Welfare (DSD) and Department of Non-Formal Education (NFE) of the MoES. However, the priorities for NFE are different from those of DTVE. They include literacy, recognition, bridging courses, life skills and skills for income generation. NFE supports several thousand trainees per year with three institutes, 17 centres and 8 community learning centres.

DSD is managing one institute and four skills development centres. The training approach of the MoLSW is based on 30% theory and 70% practice.

4.7 Qualification System of TVET

There are five certificates in upper secondary TVET and five diplomas in post-secondary TVET. At upper secondary level, the following certifications are offered:

- The Vocational Education (VE) Certificate can be obtained after completing 9 + 3 regular programmes by students graduated from lower secondary education;
- IVET Certificate I after 6 months of continuous education;
- IVET Certificate II after an additional 6 months of continuous education;
- IVET Certificate III after an additional 1 year of continuous education;
- There are three diplomas at post-secondary level and a bachelor's degree: The Technical Education (TE) Diploma can be obtained after completing 12 + 2 regular programmes by students graduated from upper secondary education or with the VE Certificate;
- The Vocational Education (VE) Diploma can be obtained after completing 1–2 years of continuous programme by students who already possess the IVET Certificate III;
- The High TVE Diploma can be obtained after completing 3 years of regular programme by students graduated from upper secondary education, or after completing 1–2 years by students who already possess the TVE Diploma either as a regular or continuing programme.[17]

[16] Ministry of Education and Sports (MoES) (2015, p. 19f).

[17] UNESCO (2013, p. 24).

4.8 Non-formal and Informal TVET System

Non-formal TVET is implemented under the supervision of the MoES in IVET schools and also in three centres in Vientiane, Luang Prabang and Champasak, as well as in 321 CLCs across the country. In 2008–2009, the three centres provided skills training courses of five days to three months for a total of 1154 persons through short courses providing basic vocational skills in wood processing, construction, chicken, frog and fish raising, mushroom cultivation, cookery and beauty.

The MOLSW runs four skills development centres offering short- and long-term training courses in IT, auto repair, carpentry, furniture, garment, electronics, electricity, hospitality and construction, mainly for school dropouts and unskilled adults. In 2008–2009, a total of 2660 enrolments were registered in short courses provided by skills development centres. Also, some centres like the Lao-Korean VT Centre were providing short fee-based courses in computing.[18]

4.9 National Qualification Framework (NQF)

To secure equivalency between different academic and vocational qualifications, a comprehensive National Qualification Framework (NQF) is currently under development. A draft NQF proposed by the VEDI covers skills training, TVET and higher education. Currently, it has eight proposed levels, Levels 1–4 are for certificate levels, Levels 5 and 6 for diploma and high diploma, Level 7 for bachelor's degrees and Level 8 for higher degrees.[19] A recommendation from the UNESCO paper:

"With the imminent establishment of an ASEAN Economic Community (AEC) by 2015, Lao PDR should scale up efforts in developing its national qualifications framework in order to harmonize with the Regional Qualifications Framework (RQF) being developed by the ASEAN member states. Increased policy inputs need to be added to the current efforts of the Vocational Education Development Institute (VEDI), with more emphasis on cooperation between the MoES and the MOLSW. However, it is necessary to maintain a balance between efforts around elaboration of key competencies and establishing the right conditions for quality training" (Fig. 4.4).

4.10 TVET Qualifications and Programme[20]

The TVET Law refers to the National Qualification Framework (NQF) and lists five levels of the National Vocational Qualification Framework (NVQF)[28]. However, the detailed design, level descriptors, functions and implementation mechanisms for

[18] UNESCO (2013, p. 25).

[19] UNESCO (2013, p. 36).

[20] Ministry of Education and Sports (MoES) (2015, p. 25).

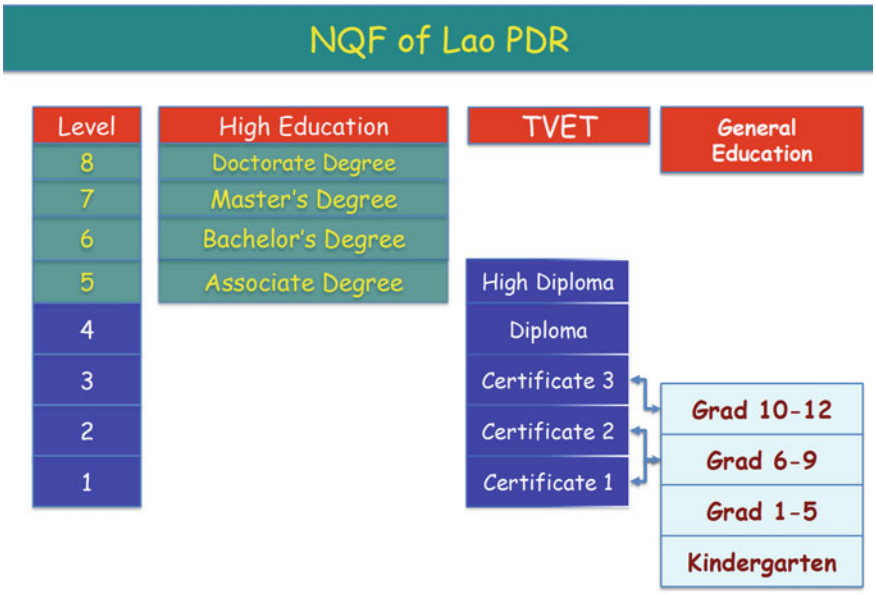


Fig. 4.4 Final draft of national qualification framework (presentation on ASIAN summit on education and skills, 18–19 September, in Mumbai, India

both NQF and NVQF still have to be developed and agreed by a wide stakeholder's representation.

With the support of VELA project a draft design of body managing the frameworks, its main functions and a tentative implementation plan has been developed. The concept includes following functions:

- Strategic and management functions of National Qualification Authority;
- Development of qualification and standards based on competencies;
- Assessment and certification for assessment centres, assessors;
- Accreditation for assessment centres and assessors;
- Registration of qualifications and learners' data (Table 4.2).

Lao PDR is involved in the process of ASEAN skills recognition called "Mutual Recognition Arrangements" (MRAs) which provides guidelines to recognize eight occupations among ASEAN members and is meant as a tool to facilitate labour mobility. However, the impact of MRAs on current employment trends can be limited.30. The overall number of persons working in occupations covered by MRA in Lao PDR is around 38.000, which corresponds to 1.3% of the total employment in the country.[21]

To date, MRAs have been completed for eight occupations:

1. Engineering services;

[21] Ministry of Education and Sports (MoES) (2015, pp. 25–36).

Table 4.2 Vocational qualifications and their relation to the NVQF as specified by the TVET Law

NVQF	Qualification	Entry requirements	Duration of training
Level 1	Certificate 1	Primary education or equivalent and higher	3–6 months
Level 2	Certificate II	Primary education or equivalent and higher	After Certificate 1: 6 months
			1 year
Level 3	Certificate III	Lower secondary or equivalent and higher	After Certificate 11:1 year
			After lower secondary: min. 2 years
Level 4	Diploma	Lower secondary or equivalent and higher	After Certificate III: min. year
			After lower secondary: min. 3 years
			After upper secondary: min. 2 years
Level 5	High diploma	Upper secondary or equivalent or higher or diploma	After Certificate III: min 3 years
			After diploma: **1–**2 years
			After upper secondary: 3 years

Ministry of Education and Sports (MoES) (2015)

2. Nursing services;
3. Architectural services;
4. Surveying qualifications;
5. Medical practitioners;
6. Dental practitioners;
7. Accountancy services;
8. Tourism professionals.

The ASEAN Economic Ministers and Education Ministers have endorsed the ASEAN Qualification Reference Framework (AQRF) in August and September 2014. It has eight levels with descriptors covering knowledge, skills, applications and responsibilities. A Task force has been set up to develop implementation arrangements. Each country has its own development programme to build and strengthen national qualification frameworks supported by donors or their own government. ASEAN will use the concept similar to European Reference Qualification Framework. The AQRF will serve as a reference tool to enable comparison of national qualifications. ASEAN work on standards and recognition is supported by ILO.

Development of occupational and competency standards in Lao PDR, as well as development of curricula and training materials, has been supported by several projects, often implemented in parallel depending on the priorities of the donors:

- Competency-based training packages including standards, curricula, learning materials and assessment tools for construction, automotive, business and furniture sectors have been developed by ADB STVET project.

- Development of standards and curriculum for agriculture mechanics was supported by Francophonie.
- MoLSW developed skills standards and curricula for construction, automotive, tourism and information technology in of ILO and Korean governments.
- Curricula for tourism and hospitality have been developed by LANITH with the support of Luxembourg.
- In 2018, the three diploma programme for the hospitality and tourism were developed with the support of Lao Skills for Tourism Project (Lao 029) in close collaboration with VEDI. At the same year all three programme (Food production and Food & Beverage Service, Front Office & House Keeping, Tour Operation & Tour Agency) have been implemented in 17 TVET schools and colleges.
- Garment Skills Development Centre uses own standards.

4.11 Quality Assurance/Standards

With a view to improving quality in education to meet regional and international standards, and to building trust in education, a specific Strategic Plan for Education Quality Assurance for 2011–2020 was issued via a Prime Minister's Decree in 2010. Among the seven components of the Strategic Plan, six concern with TVET, including examination, assessment, educational competitions and the national qualifications framework. The TVET programme specifies the development of quality standards for TVET institutions, the development of mechanisms for self-assessment, internal assessment and external assessment, the establishment of a QA unit in each institution, the organization of a team of assessors with TVET directors and TVET department staff and the establishment of a council for TVET institution quality accreditation with the support of the Education Standard and Quality Assurance Centre (ESQAC).

ESQAC has a mandate to set up testing and evaluation of students and to develop standards and quality assurance procedures for all types and levels of education provision, including public and private TVET providers. Some of ESQAC's first achievements include the testing of students at the third-grade level as well as the development of a manual for quality assurance for TVET schools. UNESCO provided support towards the development of this manual through the Cap-EFA Laos Programme.

Since 1993, quality assurance criteria in adult education were developed in the following areas: curriculum, teaching/learning methodology and assessment of learning outcomes. As for adult literacy, there are existing quality criteria on curriculum, learning materials, facilitators' training, teaching/learning methodology and assessment of learning outcomes.

Presently, ESQAC activities are limited, due to staffing and resource constraints. During the field missions, the review team was unable to find evidence of a strong TVET quality assurance system of assessment and examinations but received information that the new system would be established during 2011–2012. At present,

each school is conducting assessments at the local level without the involvement of representatives from the labour market.[22]

Enhancing quality assurance of assessments of learning outcomes should be a priority. For instance, the intention to develop new competency-based curriculum objectives and outcomes require new forms of assessment. The launch of a new curriculum without a reformed examination and assessment system often contradicts the intended impact of the curriculum reform. The two issues therefore need to be handled in tandem. There is thus a need to clarify the mandate and responsibilities of ESQAC, particularly the new team of assessors and inspectors.

Finally, the development of the QA manual and its implementation will have little impact if there are no initiatives to actually address the gaps identified through the related evaluation process.

From MoES's "Technical and Vocational Education and Training Development Plan 2016–2020":

"The quality system for TVET institutions, including standards, procedures and training model, has been developed and is implemented gradually through self-assessment reports and internal assessment. It is managed by the Education Standard Quality Assurance Centre (ESQAC) and it includes 12 standards and 45 indicators according to the QA manual revised and approved by MoES in 2016. Workshops on quality for TVET institutions and assessor's trainings are regularly held. It is planned that the QA system has been introduced in 45 private and public institutions since 2016.

ESQAC is the leading organization supporting quality improvement in the education sector. Its capacity has increased from 9–25 staff in 3 years, but the scope of its work is very broad and covers all education institutions in Laos PDR. The "Quality Assurance Manual for TVET Institutions" provides a basis for improvement of TVET institutions, and it is used in TVET sector, particularly when it comes to supporting the preparation of school development plans.

Schools regularly prepare development plans for three- or five-year periods, but the templates used are not consistent. There is an overall perception that training offer in the school is not geared towards the needs of provincial economies. STVET and VELA projects will support the development and implementation of plans taking into account the local context and skill needs of the provinces.

The annual meeting of all TVET public institutions is an important event to present the reports of the past year and to prepare plans for the following year. The annual plan usually follows the structure of the three programmes and seven projects listed in the TVET Master Plan. The TVET Annual Development Plan 2014–2015 lists 42 activities, however, without indicators and precise targets. Proposal for a new NQA includes functions currently performed by ESQAC for quality assurance at the national level.[23]

[22] UNESCO (2013, p. 40).

[23] Ministry of Education and Sports (MoES) (2015, p. 27).

4.12 TVET Graduates

4.12.1 Popular Courses

As of 2008–2009, 60% of the 18,000 students in the institutions under the MoES were in high diploma programmes, with 57% of all students enrolled in business programmes. Only 40% of all students were enrolled in (middle) diploma programmes. Only 83 students were enrolled in mechanics, 113 in carpentry, 899 in construction, 1179 in mining and 883 in hospitality. In total, these priority fields in the Master Plan represented only 4000 students.

In addition, 78 private TVET institutions hosted 22,000 students, almost all of whom were enrolled in business, finance, marketing, English and IT.[24]

4.12.2 Graduates Employment

Vocational education graduates are doing well on the labour market. The findings of a GIZ Tracer Study, conducted in 2013, show that 63% of graduates find employment within six months after their graduation and more than 75% work in the field of their professional education. Almost 70% of graduates perceive their vocational training certificate as extremely useful. Fields of training included mushroom cultivation or small engine and pump repair.[25]

Private TVET schools seem to focus on TVET diploma-level courses in English learning, Information Technology (IT), business, mechanics, food processing, automotive and electrical engineering.[26]

Regarding transition to labour market and pathways from TVET to further learning, according to a recent tracer study for 1752 TVET graduates with higher diplomas or diplomas, 68% graduates found employment after graduation, while 15% were unemployed. A total of 17% pursued further study. The results from the Lao-German school in Vientiane revealed that 85% graduates at certificate level (mainly in mechanical engineering, electricity, welding and car repair) gained employment after graduation. At first sight, these can be seen as encouraging data, but it should be noted that the majority (63%) of employed graduates were working in state-owned institutions and 25% in private companies. This situation may reflect limited job opportunities in the private sector and/or the limited relevance of current TVET programmes to the real needs of the labour market.[27] According to only a small proportion of firms recruit workers directly from TVET institutions, one reason may be that employer and trade association interviews indicated a strong negative image

[24] UNESCO (2013, p. 27).

[25] GIZ (2014).

[26] UNESCO (2013, p. 25).

[27] UNESCO (2013, p. 27–28).

of TVET. It was also repeatedly stressed that TVET graduates at all levels have to be trained again by the economic units.[28]

4.13 TVET Personnel (Specifically Teachers and Trainers)

Formal requirements for being employed by a school also vary from country to country. Thailand follows a strict selection process with a number of criteria. Vietnam counts primarily on the formal degree of the training programme, similar to Cambodia where different school level requires different training programme degrees. In Lao PDR, no such regulation exists. However, teachers are required to be certified at least one level higher than the course they will be teaching at the TVET school.[29]

Candidates for a pre-service teacher programme apply at VEDI which will send the application to all TVET institutions. Those along with the provincial authorities, select the appropriate candidates and submit their appraisal to the ministry department for approval. Approved candidates can then be enrolled in the programme.

After completion of the teacher training programme, the graduated teachers go back to the TVET institution they were selected beforehand. For in-service courses announced by the VEDI, the TVET institutions can select and nominate candidates. Promotion to a position of an experienced teacher is mostly under the responsibility of the school. There are no national regulations to be followed.

Formal requirements as set out by a government decree are not directly linked with a teacher training degree. Rather, the decree stipulated that the candidate must possess a certificate at least one level higher than the level of the course to be taught. Within this frame, the type of qualifications is looked at and balanced against the needs of the TVET institutions.[30]

4.13.1 Salaries of Teachers/Trainers/Instructors

Attracting good quality teachers is at the core of policies aimed at increasing the quality of TVET. However, there is evidence that TVET teaching is not currently seen as an attractive profession. A tracer study carried out by GIZ in 2010 on the career development of TVET teaching graduates suggests that only 42% of graduates are teaching at a vocational school (GIZ 2011). Interviewees highlighted that work conditions, wage structure and career opportunities were not attractive compared to other positions on the labour market where on average, salaries are about three times higher (about USD 200 per month in the private sector compared to around USD 80 for a teacher.) Another study stated that teachers live on the poverty line.

[28] Bohlmann (2013, p. 2).

[29] Euler (2017, p. 28).

[30] Euler (2017, p. 60–61).

According to the study teacher, salaries relative to GDP per capita are low compared to neighbouring countries. For example, secondary teachers' salaries are at 0.965 GDP per capita compared with 2.5 times GDP per capita for teachers in other countries in the region. Improvement of teachers' salaries, selection and recruitment remains a pressing policy issue. One option would be to conduct pre-recruitment procedures, with the objective of training only those applicants who are truly committed to the teaching profession. In addition, incentives for trainee teachers could be established.

The common practice in TVET colleges to enrol substantial numbers of fee-paying students means that teachers can double or even triple their salaries through extra teaching hours. This practice is understandable due to the low levels of basic salaries, but it also has dramatic implications, including "preventing the recruitment of much needed young talent and deteriorating the quality of teaching".

Several stakeholders mentioned during the review that a decree on increasing teacher salaries by 60% is due to be announced. Such increases should come as part of a wider policy approach concerning all issues linked to recruitment, career development and working conditions.[31]

4.13.2 Career Pathways

Career pathways, development and promotion opportunities of TVET teachers compared to those of teachers in general schools and/or employees out-side the educational system with similar qualifications is better, due to income generation, but there are no explicit career pathways.[32]

Upward career growth is not possible for teachers in schools where they are initially employed, so career development is rather static. It is possible for TVET institutions to hire teachers for a short period, but this happens very rarely. Even in non-formal centres almost all teachers are permanent staff, although some courses are organized only for a few weeks or months a year in their teaching field. Career progression is generally limited to a 1.5% salary increase every two years over a span of 15 years.[33]

4.13.3 Teachers' Professional Development

Responsibility for pre- and in-service teacher training is in a phase of transition. In the past, there were some specialized TVET institutions (mainly colleges) offering programmes in areas such as hotel and tourism, construction and agriculture, automotive and electric, accounting and mining. "In the very near future", the Voca-

[31] UNESCO (2013, p. 39).

[32] Euler (2017, p. 63).

[33] UNESCO (2013, p. 39).

tional Education Development Institute (VEDI) located at Faculty of Engineering of the National University of Lao PDR will be responsible for both pre- and in-service teacher training. VEDI will then be in charge of curriculum development and certification. Quality assurance is overseen by the Education Quality Assurance Centre (ESQAC) which was established by the Ministry of Education and Sports. Since 2011, ESQAC has developed quality standards, assessment procedures and guidelines for TVET.[34]

The Vocational Education Development Institute (VEDI) is offering all pre- and in-service programmes for TVET teachers. Interviewees point to the challenges VEDI is facing in taking those responsibilities due to lack of professional teacher trainers, facilities, equipment, etc. Basically, there are two different programmes both lasting two years: (1) one for graduates with diploma level from technical or vocational institutions leading to higher diploma/higher diploma continuous program; (2) one for students with higher diploma qualifications leading to bachelor's degree.

Both vocational and educational practices are a compulsory part of the programmes. Students spend 12 weeks of vocational practice during school vacation. At the end of the internship, students are assessed by the company supervisor on real work assignments. Educational practice is organized as a 16-week internship in the last semester of the programme. At the end of this period, students are assessed by a joint committee from VEDI and related institution on the ability to deliver theory and practice to their students.

Pre-service programmes are concurrent and cover both technical and pedagogical competencies. Time share range: 50–60%; technical competencies; 13–20% didactic competencies; 13–20% pedagogical competencies; 10–15% social/general competencies[35] (Fig. 4.5).

4.13.4 Other Information

Working conditions (including incentives) of TVET personnel (teachers, school managers and trainers) are better than those for teachers at general schools. Resourcing in terms of facilities, manpower and learning materials as well as student–teacher ratio is better at TVET schools as opposed to secondary schools. Reputation of TVET is reported to be lower than academic education, but similar to general education.[36]

[34] Euler (2017, p. 54).

[35] Euler (2017, p. 56–57).

[36] Euler (2017, p. 50).

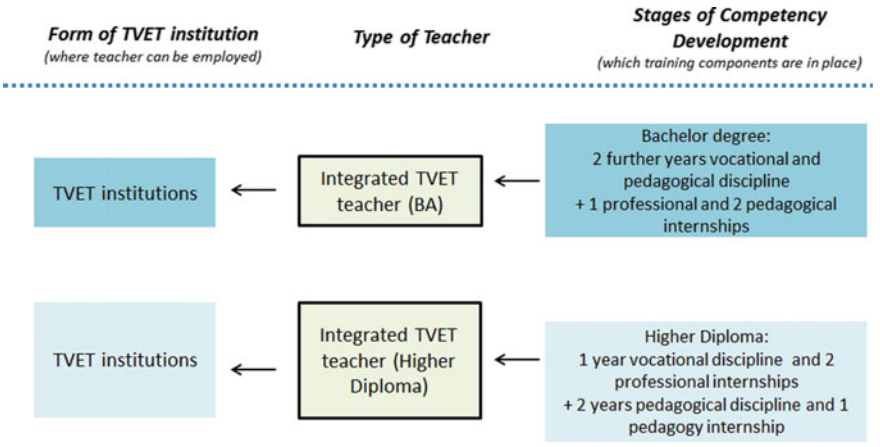


Fig. 4.5 Stages of competency development (Euler 2017, p. 25)

4.14 Private Sector Cooperation

Currently, public–private partnership in TVET is being achieved through two modalities. One is the participation of employers in policy-making and implementation, mainly through the National Training Council (NTC) and Trade Working Groups (TWGs). The other modality involves the supply of TVET by private providers.

In relation to employer participation in policy-making and implementation, the President of the Lao National Chamber of Commerce and Industry is designated as the vice chair of NTC. Also, the two TWGs for furniture and printing are led by employers. In January 2011, three new TWGs were established for priority skill areas including hotel and restaurant, construction and mining industry.[37]

4.14.1 Weak Role of Employers

Most employers in Lao PDR are small- and medium-sized businesses. Except for in a few booming industries such as mining and hydropower, a large number of employers are still relying on recruiting unskilled workers. Thus, it cannot be said that there is currently a strong employer interest in skills development. Despite this limitation, there is much room for enhancing the role of employers in TVET. Private sector intervention will generally not happen without facilitation by another party, whether it be government, donors or NGOs. Employers are more likely to engage in skills development at any level, if the benefits of doing so are apparent, the business envi-

[37] UNESCO (2013, p. 41).

ronment is favourable and there is minimal bureaucracy attached. Their engagement is most effective if it takes place early in the planning process.

At the national level, the participation of employer representatives in the NTC does not seem to be based on a thorough internal consultation process within employer organizations. This may contribute to the limited impact of their involvement. Systematic involvement of employer representatives is absent at the provincial level.

At the sectoral level, there are only a few TWGs. Their main focus has been the design and implementation of specific training programmes in certain geographic areas (e.g. Vientiane). They have had little impact on national policy issues such as curriculum development and qualification system design. Employer involvement in such issues appears to be as a result of individual invitation, implying no collective engagement. In short, there still exists a strong need to improve the role of employers. They should be encouraged to give priority to recruitment of skilled workers holding TVET qualifications and to cooperate with TVET institutions to accept students for internship.[38]

As a wider policy coordination mechanism, the National Training Council (NTC) has been functional since 2002. It is comprised of 34 representatives from relevant ministries and is chaired by the Deputy Minister of Education and Sports. The Deputy Minister of the MOLSW and the President of the Lao National Chamber of Commerce and Industry are joint Vice-Chairpersons. In 2002, three MoES staff are assigned to the NTC-Permanent Office (NTC-PO) for the implementation of its activities. The NTC's responsibilities are in the areas of (i) the development and recommendations of TVET policy, (ii) coordination between public and private sectors in matters concerning skills training, (iii) the establishment, support and monitoring of Trade Working Groups (TWG) for identifying occupational/skills areas with representatives of enterprise associations and the public sector, and (iv) determination and development of occupational standards. This coordination system was expected to play a critical role in the implementation of the TVET Master Plan.[39]

Associations in the garment, furniture, handicraft and hospitality sectors have established their own skills development centres. For example, the Skills Development Centre of the Lao Garment Industry Association provides short courses of up to 35 days to workers following the ASEAN Common Competency Program (ACCP) developed by the ASEAN Federation of Textile Industries and using industrial equipment. As international experience shows, these institutions might have the tendency to extend their training offer in the future, if they feel that the training delivered by MoES does not respond to the needs of their industry.

Another example of the involvement of the private sector but, in this case, with the strong support of donors, is the Lao National Institute of Tourism and Hospitality (LANITH) created with the support of Luxembourg Cooperation. LANITH is expected to receive further support of the Luxembourg and Swiss governments. In addition to organizing pre-service and in-service training for the personnel of hospitality sector (more than 1500 persons for the past three years), LANITH is extending

[38] UNESCO (2013, p. 41).

[39] UNESCO (2013, p. 31).

its support to those TVET schools which offer hospitality courses. This cooperation will to address some of constrains which TVET schools face, namely infrastructure limitation and lack qualified trainers and to support the fast-annual growth of the sector (20%).[40]

4.15 Current Trends and Challenge

The following 4 priority skills areas (based on labor market assessment) have been identified[41,42]:

- Construction and building;
- Mechanical and machinery repair;
- Furniture making;
- Basic business service skills.

The impact of ASEAN Economic Community is uncertain but will definitively affect the evolution of the skills. As recent ILO study shows, the sectors which will see the highest increase of labour force until 2025 are: furniture, vehicles, trade and transportation and services. The priority sectors for Lao PDR are agriculture, tourism and hospitality and construction and infrastructure.[43]

The key challenges in Lao' TVET is following[44,45,46]:

a. Low investment and support in TVET/absence of suitable financing assistance schemes for TVET;
b. Insufficient TVET school's infrastructure and facilities to accommodate increased number of trainees and students;
c. Mismatching between TVET students produced and labour market demand and needs, thus suggesting insufficient integration of TVET with market needs;
d. Insufficient training materials and out-of-date machines and tools for practical training of students/low quality of training (due to poor quality of infrastructure, machines and equipment);
e. Insufficient teaching staff; moreover, they lack teaching skills and industrial experiences, low qualification and low salary of TVET teachers;
f. Most courses stress on time-based and school-based, and not student-centred;
g. Weak inspection system/weak TVET quality assurance system of assessment and examinations;

[40] MoES (2015, p. 21–22).
[41] Lateef (n.d., p. 29).
[42] UNESCO (2013, p. 29).
[43] Ministry of Education and Sports (MoES) (2015, p. 14).
[44] Phoumilay (2012).
[45] SEAMEO VOCTECH Regional Centre Brunei Darussalam (2015).
[46] Phoumilay (2013).

h. Weak linkages between industry and TVET institution;
i. TVET does not provide access for all target groups (especially rural and remote areas);
j. Image of TVET is poor.

The eighth five-year national socio-economic development plan (2016–2020) mentions: "Increase well-regulated and efficient recruitment by collaborating with technical and vocational education and training (TVET) in improving the teaching-learning curriculum, for instance, to be more suitable with the development situation in each period and responding to employers' demand."[47]

The key strategic plans guiding current government initiatives in TVET include the TVET Master Plan, the Education Sector Development Framework, the Education Sector Development Plan (2011–2015). In 2007, the Lao government issued the Master Plan for the Development of TVET for 2009–2015, building on the earlier TVET Strategy 2006–2020.[48]

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Chapter 5
TVET in Malaysia

Razali Hassan, Lee Ming Foong and Asnidatul Adilah Ismail

5.1 Social, Economic and Demographic Background

Basically, Malaysia is a multi-ethnic, multicultural and multilingual society. Many ethnic groups in Malaysia remain separately in their own cultural identities. Malaysia's population comprises 32 million people, and throughout its history the territory has been sparsely populated relative to its land area. Eighty per cent of the population lives on the peninsula. The most important Malaysian demographic statistics are of ethnicity which are 68.8% are classified as Malay, 23.2% as of Chinese, 7% of Indian, and 1% as others races.

The Malays, who account for over half the Malaysian population, play a dominant role politically and are included in a grouping identified as Bumiputera. Their native language, Bahasa Malaysia, is the national language of the country. The Chinese have been settling in Malaysia for many centuries, and also form the second-largest ethnic group maintaining elements of Chinese culture such as their largely Buddhist and Taoist religion. The more common Chinese varieties of Chinese language in Peninsular Malaysia are Cantonese, Mandarin, Hokkien, Hakka, Hainanese and Fuzhou. The Indian community in Malaysia is the smallest of the three main ethnic groups, accounting for about 10% of the country's population. They speak a variety of South Asian languages such as Tamil, Malayalam and Telugu. However, even Malaysia's communities coming from different cultural, faith and ethnic, the communities coexist in relative harmony and peaceful.

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From the economy perspective, in 1970s, Malaysian economy was dominated by the production of raw natural resource materials, such as tin and rubber, but Malaysia today has a diversified economy and has become a leading exporter of electrical appliances, electronic parts and components and natural gas. After the Asian financial crisis of 1997–1998, Malaysia continued to post solid growth rates, averaging 5.5% per year from 2000–2008. Malaysia was hit by the Global Financial Crisis in 2009 but recovered rapidly, posting growth rates averaging 5.7% since 2010.

Malaysia's economic outlook proves favourable with economic growth expanding in the first quarter of 2017.

- The gross domestic product (GDP) growth rate is predicted to rise to 4.9% for 2017, which is slightly higher than the current projection range of 4.3–4.8%.
- Private consumption is projected to remain as the main propeller of growth, backed by ongoing private investments which saw a moderate growth driven by implementations of new and ongoing projects.
- Fiscal consolidation is expected to stay on track with efforts poised to continue well into 2017.

Data are becoming increasingly relevant for economic development. For Malaysia to achieve high-income status by 2020, improving the availability and quality of data can further drive productivity in the private sector and academic research, as well as make public service delivery more efficient.

2016 Brief economic indicators
GDP (purchasing power parity): $863.3 billion (2016 est.) country comparison to the world: 29 $818 billion (2015 est.) *note:* data are in 2016 US dollars
GDP—real growth rate: 4.2% (2016 est.) country comparison to the world: 54
GDP—per capita: $27,300 (2016 est.) country comparison to the world: 70 *note:* data are in 2016 US dollars
GDP—composition by sector: *agriculture:* 8.7% *industry:* 37% *services:* 54.4% (2016 est.)
Labour force: 14.7 million (2016 est.) country comparison to the world: 40

Malaysia is a country that situated at geographic coordinates 2 30 N and 112 30 E, and is a country located in Southeast Asia. Neighbouring regions include Thailand, Borneo, Indonesia, Brunei and the South China Sea. The total land area of Malaysia is 329,847 km^2 (land: 328,657 km^2 and water: 1190 km^2) and is made up of two

regions separated by some 640 mile of the South China Sea; Malaysia is a federation of 13 states and three federal territories. Eleven states are situated on the Malay Peninsula as well as the two federal territories; two states (Sarawak and Sabah) are located on the island of Borneo with one federal territory.

Malaysia is a tropical country, where temperatures fluctuate between 25 and 35 degrees during the year. Located near the equator, Malaysia's climate is categorized as equatorial; Malaysian rich tropical rainforest covers approximately 58.2% of the total land area.

Brief data on Malaysia
• **Full name**: Federation of Malaysia
• **Capital**: Kuala Lumpur
• **Area**: 329,847 km^2 (127,355 mile^2)
• **Main Ethnic Groups**: Malay 68.8%, Chinese 23.2%, Indian 7%, other 1%
• **Population**: 31,381,992 (July 2017 est.)
• **Population growth rate**: 1.37% (July 2017 est.)
• **Life expectancy**: 72.4 years (men), 78.2 years (women) (2017 est.)
• **Birth rate**: 19.1 births/1,000 population (2017 est.)
• **Death rate**: 5.1 deaths/1,000 population (2017 est.)
• **Age structure**: 0–14 years: 27.83% (male 4,493,084/female 4,238,991) 15–24 years: 16.81% (male 2,677,834/female 2,598,958) 25–54 years: 41% (male 6,507,499/female 6,358,762) 55–64 years: 8.27% (male 1,316,331/female 1,277,558) 65 years and over: 6.1% (male 907,850/female 1,005,125) (2017 est.)
• **Median age: total**: 28.5 years (male: 28.2 years, female: 28.8 years) (2017 est.)
• **Urbanization: urban population**: 76.0% of total population (2017)
• **rate of urbanization**: 2.19% annual rate of change (2015–20 est.)
• **Major languages:** Malay (official), English, Chinese dialects, Tamil, Telugu, Malayalam
• **Major religions**: Islam, Buddhism, Taoism, Hinduism, Christianity, Sikhism
• **Monetary unit**: 1 Malaysia Ringgit = 100 c
• **Main exports**: Semiconductor and electronic products, palm oil, liquefied natural gas, petroleum, chemicals, machinery, vehicles, optical and scientific equipment, manufactures of metal, rubber, wood and wood products.
• **GNI per capita**: US $9,850 (World Bank, 2016)
• **Internet domain**: .my
• **International dialling code**: +60

Social indicators	2016 est.
Life expectancy at birth: Male (years)	72.2
Life expectancy at birth: Female (years)	78.0
Infant mortality (per '000 live births)	12.9
Literacy rate (%)	94.6

5.2 Malaysia Education System

The National Education Philosophy of Education in Malaysia is a continuous effort towards furthering and expanding the potential of individuals in a comprehensive and integrated way to create intellectual, spiritual, emotional and physical harmonious human beings based on God's belief and obedience. This effort is to produce Malaysians who are knowledgeable, skilled, noble, responsible and able to achieve their well-being and contribute to the harmony and prosperity of families, communities and countries.

5.2.1 Level of Education

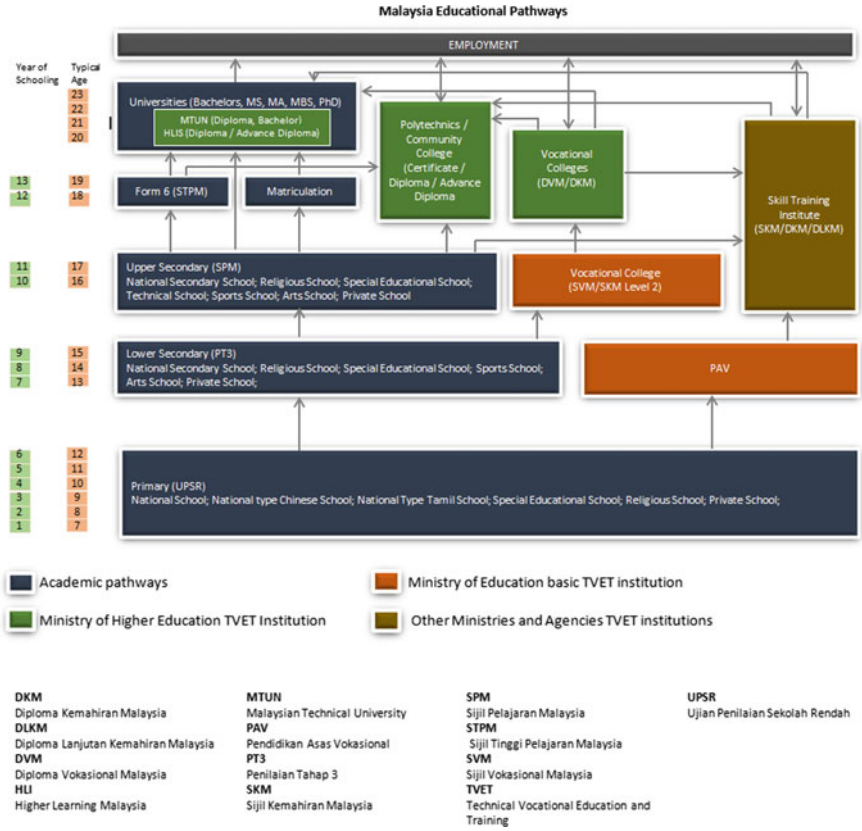
Malaysia has established a strong infrastructure to support learning process at different level of life. Based on Ministry of Education, The National Education System at school level under the category of government education institutions consists of pre-school, primary, secondary and post-secondary education. Other educational institutions established at the school level are special education schools under the responsibility of the Special Education Department and also sports schools under the responsibility of the Sports Division.

From pre-school to secondary education is under the jurisdiction of the Ministry of Education (MOE), while tertiary and higher education are the responsibility of the Ministry of Higher Education (MOHE). Although education is the responsibility of the federal government, each state has an Education Department to coordinate educational matters in its territory. The main legislation governing education is the Education Act of 1996. Education may be obtained from the multilingual public school system, which provides free education for all Malaysians, or private schools, or through home schooling. By law, primary education is compulsory.

The existing formal school system has a 6–3–2 structure. Primary education (a period of 6 years) and secondary education (5 years which encompasses 3 years of lower secondary and 2 years of upper secondary) make up 11 years of free education. The admission age to the first year of primary education is seven. Primary schooling is mandatory for all children between the ages of 7 and 12. Students sit for common

public examinations at the end of primary, lower secondary and upper secondary levels. A student either enters the world of work at the end of the 6–3–2 education structure or proceeds for another two years of post-secondary education, or to other forms of tertiary education at colleges, polytechnics, further education and training institutes and universities.

Education level	Age	Duration (years)	Qualification
Pre-school	4–6	1–2	
Primary school	7–12	1–6	UPSR
Secondary school (lower)	13–15	Lower 1–3	PT3
Secondary school (upper)	16–17	Upper 4–5	SPM
Pre-university	18–19	6 (lower and upper)/matriculation	STPM/A-Level/certificate/diploma
Higher education	20+	3–5	Bachelor/masters /doctorate



i. **Pre-School Education**

In terms of equitable educational opportunities, specific policies are designed to allow children to enjoy pre-school education opportunities regardless of family income, place of residence and ethnic groups. This opportunity also includes children with special educational needs who are given the same opportunity to get pre-school education.

Pre-school is offered to children aged between 4- and 6-years-olds. To ensure the use of the National Pre-school Standard Curriculum, pre-school teachers are encouraged to be trained in pre-school education. Other than that, to ensuring that appropriate physical and appropriate facilities and supplies are provided by pre-schools, an administration and supervisory mechanism is carried out to ensure that all pre-school education institutions comply with the Pre-school Education Regulations 1996 as provided in Sect. 24 of the Education Act 1996.

At present, the majority of national schools have pre-school classes, but enrolment into these classes is open to children of low-income families. Apart from the national schools, other agencies, including the Ministry of Education; the Ministry of Women, Family and Community Development; the Ministry of Health; the Ministry of Rural Development; the NGOs; as well as the private sector, are also involved.

Pre-school statistic 2016	Number of students
Pre-school (government/semi-government)	198,574
Other education agencies	288,380
Private entrepreneurs	328,456
Total	815,410

ii. **Primary Education**

Based on the National Education Philosophy, education in Malaysia is designed to explore the potential of individuals in a comprehensive and integrated manner in producing student that intellectuals in spiritual, emotional and physical aspects.

Primary education refers to formal education that emphasizes the acquisition of strong reading and writing skills as well as a solid foundation in mathematics and basic sciences. Bahasa Melayu and English language are compulsory subjects in the Malaysian education system. Primary education is free and begins from year 1–6. Enrolment is accepted from the age of 7–12. The primary school assessment is based on School-Based Assessment (PBS) with a centralized examination. PBS includes Classroom Assessment (PBD), Physical Activity Assessment, Sports and Co-curriculum (PAJSK), Psychometric Assessment (PPSI) and Central Assessment. The success of this assessment is to ensure that every student has knowledge, thinking skills, leadership skills, bilingual skills, ethics and spirituality and also has a national identity.

Primary school statistic 2017	Numbers
Total government school	7772
Total teachers (government)	239,850
Student enrolment (government)	2,685,403

Level	Description
Level 6	Students are able to systematically applied existing knowledge and skills in new environment, also positive, creative and innovative in new situations in the production of new ideas
Level 5	Students use knowledge and apply new skills to the situation by following procedures or systematically, consistently and positively
Level 4	Students use knowledge and practice skills in a systematic manner or analytically and systematically
Level 3	Students use the knowledge to apply a skill to a suitable situation
Level 2	Students demonstrate understanding by explaining something that they learned to create communication
Level 1	Students know the basics or can do basic skills or respond to basic things

In the final year, a public examination (Ujian Peperiksaan Sekolah Rendah: UPSR) is conducted to assess the children's performance. There are two types of primary schools in Malaysia, the national and national-type (Tamil and Chinese) schools. The medium of instruction in national schools is Bahasa Malaysia, while in national-type schools the medium of instruction is Tamil or Chinese, although Bahasa Malaysia is a compulsory subject. The existence of these two types of schools is built into Malaysia's constitution and meets the needs of the country's multi-ethnic population, with a common school curriculum and a national language ensuring integration. There are also special schools catering for the hearing-impaired and visually handicapped.

UPSR statistic's 2017			
Candidate result	2017	2016	Differences
All A's	8958 2.1%	4896 1.1%	4062 1.0%
1B maximum	10,957 2.5%	8345 1.9%	2612 0.6%
1C minimum	89,201 20.7%	91,366 20.7%	−2165 0.0%
1D minimum	152,100 35.3%	152,825 34.7%	−725 −0.6%
1E minimum	130,027 30.2%	137,262 31.1%	−7.235 −0.9%
Other combinations	603 0.1%	817 0.2%	−214 −0.1%

iii. **Secondary Education**

Secondary education is an extension of the primary school which students are required to study for five years, from forms 1–5. Secondary educations are divided into two levels that are referred as lower secondary and upper secondary. The first three years that is from forms 1–3 are referred to as lower secondary and forms 4 and 5 as upper secondary. At the end of form 3, students will sit for a public examination that is known as form three assessment (PT3). Based on their achievement in the PT3, students will be choosing their path either into science or arts streams. Other than that they also may choose specialized vocational education in technical schools. At the end of form 5 once again, students will sit for the Malaysian Certificate of Education examination (Sijil Pelajaran Malaysia: SPM) before completing secondary school education.

Secondary school statistic 2017	Numbers
Total government school	2408
Total teachers (government)	181,978
Student enrolment (government)	2,188,525
PT3 candidates	425,251
SPM candidates	443,883

iv. **Pre-University Education**

After SPM, students may choose to study in form 6 or matriculation. Students who choose to do form 6 will study for two years at the end of which they sit for the higher school certificate examination (Sijil Tinggi Pelajaran Malaysia: STPM). Those who

choose STPM generally intend to go for further studies at public universities. Additionally, students may apply to enrol in matriculation programmes which will take either one or two years. Some of them may opt to pursue pre-university education at private colleges. They may choose to do a diploma, A-levels, Canadian matriculation programme or other equivalent courses from other countries.

v. **Higher Education**

At the tertiary level, higher education institutions have offered courses at the certificate, diploma, bachelor, master and doctorate levels. The providers comprise two major groups:

Public HEIs (funded by the government) such as public/local universities, polytechnics, community colleges and teacher training institutes;
Private HEIs (private funding) such as private universities, university colleges, foreign university branch campuses and private colleges.

5.3 TVET Education System

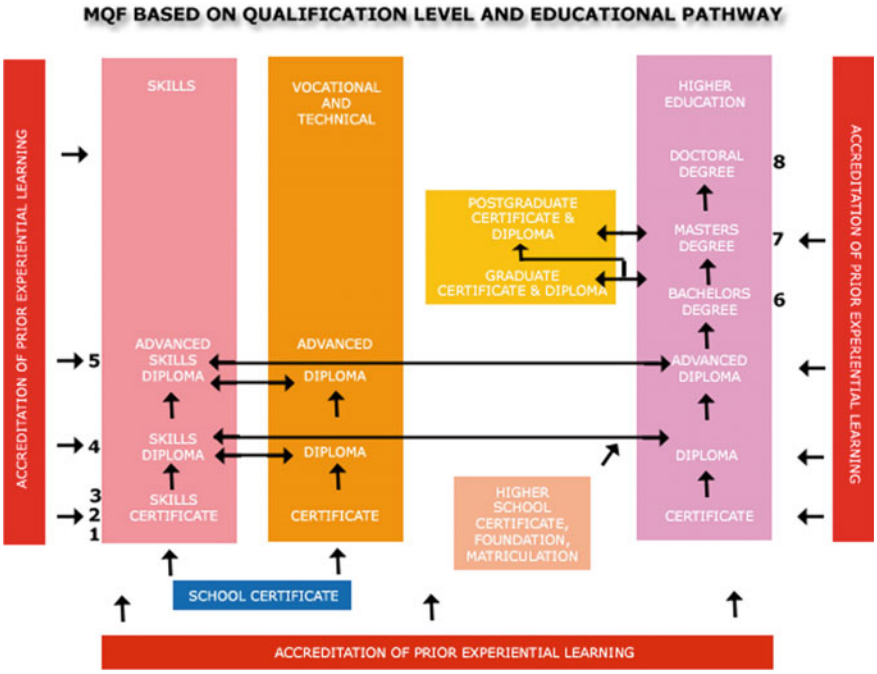
5.3.1 TVET Overview

TVET programmes in Malaysia are offered at certificate, diploma and degree levels by seven ministries that include the Ministry of Higher Education (MOHE), which offers the most TVET programmes to the highest number of students.

Vocational education is offered by educational institutions under MOE which include PAV for UPSR-leavers, vocational colleges, community colleges, polytechnics and MTUN universities. The qualifications offered include certificate, diploma, Diploma Vokasional Malaysia (DVM), advanced diploma (Vocational Skills), bachelor's degree (Technology Based), master's degree and PhD in (Vocational Education).

School-leavers who have completed SPM can enrol at MOHE's Community Colleges, polytechnics and MTUN (Malaysia Technical University Network) for vocational education to pursue certificate, diploma and advanced diploma qualifications. The STPM/Matriculation school-leavers and diploma holders can advance to MTUN's bachelor's degree qualifications.

Empowering the actualization of the policy is Malaysia Education Blueprint 2015–2025 (higher education) which outlines the strategies, plans, key performance indicators, responsible departments, institutions and agencies within a number of strong enabling legal frameworks. The Malaysian Qualifications Framework (MQF), which was approved under the Malaysian Qualifications Agency Act, 2007, has a key role within these complex arrangements, such as to set qualification standards for all qualifications in the higher education and training sectors. A qualification awarded by a registered institution represents what a graduate has acquired, in terms of knowledge, skills, competencies and value, upon successful completion of a named programme of study. It creates an eligibility to seek various benefits from it.



The framework is about post-secondary qualifications within the higher education and TVET sectors that are segments of post-secondary educations. The awarding bodies are mainly Higher Education Providers, public and private, and TVET institutions include the polytechnics, community colleges, vocational colleges and skills training organizations. The skills training institutions are regulated under NASDA Act 2006 while the others are governed by the Education Act 1996 and Private Higher Education Institutions Act 1996. There are also other awarding sectors such as MARA and State Skills Development Centres. Skills certification and qualifications are considered components of the TVET sector.

Level 1–5 gives special focus to TVET or work-type qualifications. Learners from TVET may proceed to higher qualifications in the universities in normally relevant Science and Technology based programmes. The school-based qualifications are considered as entry qualifications, and they may equate to Levels 3 and 4 and this is subject to further verifications.

Each level in MQF is provided with generic statements which describe the learning achievement at a particular level. The MQF has eight levels of learning achievement as currently practised and comparable to regional frameworks. Certificates are at Level 1–3, diploma and advanced diploma at Level 4–5 and degrees at Levels 6, 7 and 8 for bachelor, master and doctoral qualifications. The levels are read together with the levels descriptors which broadly characterize the learning achievement and set the assessment standards at each level.

5.3.2 TVET Provider

i. **Ministry of Education**

The Ministry of Education Malaysia has provided technical education as early as in primary schools when they already introducing pre-vocational subjects which include the aspects required in vocational education such as manipulative skills. When students continue their studies to lower secondary school, pre-technical subject that known as Living Skills (Kemahiran Hidup) and Design Technology (Rekabentuk Teknologi) was introduced, which provides students with exposure to a wide range of basic vocational skills.

After that, students will continue their studies to the upper secondary level in form 4 and form 5. This level is the stage where technical and vocational education formally begins. At this stage, technical and vocational schools offer the same core subjects as regular academic schools such as core subjects of language, mathematics and science but students are required to take selected technical and vocational subjects based on their interests and PT3 decisions at the form 3.

This technical and vocational college has three streams to choose from

Technical Stream—mechanical, civil and electrical engineering, agricultural science and commerce;
Trend—industrial engineering, trade, home and agriculture economics.

A general admission requirement to further in technical and vocational stream in upper secondary school is PT3 certificate. At the end of the Form 5, students are required to sit for a public examination referred to as the Sijil Vokasional Malaysia (SVM) that equivalent to Sijil Pelajaran Malaysia examination from other academic high school. Students from the skills training stream will also occupy the Malaysian Skills Certificate* (Sijil Kemahiran Malaysia) where the qualification of government skills is awarded for Levels 1, 2, 3, 4 and 5. Currently, there are nine Technical schools and 81 vocational colleges. MoE are also implement, the apprenticeship programme (National Dual Training System, NDTS). NDTS was implemented for 2 years in collaboration with the industry. This programme is implemented by the Department of Skills Development.

ii. **Ministry of Higher Education**

There are several TVET institutions which under the jurisdiction of the Ministry of Higher Education. They are:

(a) **Polytechnics**

There are currently 3 premier polytechnics, 25 conventional polytechnics, 5 metro polytechnics in the country conducting technical and vocational education offering 10 bachelor's programmes, 9 advanced diploma programmes and 44 diploma programmes covering study areas like engineering, commerce, food technology, information technology, marine, agro-technology, food technology, hospitality and design. As on October 2016, there is a total student enrolment of 96,069 where 23,937

Definition of skills qualification Level 1–5	
Qualification awarded	Expected competencies
SKM Level 1	Competent in performing a range of various job tasks/work activities
SKM Level 2	Competent in performing a significant range of varied work activities that are being performed in a variety of contexts, either handling activities are routine or non-routine that requiring individual responsibility and autonomy
SKM Level 3	Requires competency in performing a broad range of varied work activities that are performed in a variety of contexts, most of task are complex and different from daily routine
Level 4: Diploma Kemahiran Malaysia, DKM (Malaysian Skills Diploma)	Competent in performing a broad range of complex technical or professional work activities that are performed in a wide variety of contexts, and with a substantial degree of personal responsibility and autonomy. Other than that, the responsibility for the work and allocation of resources is very often present

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Definition of skills qualification Level 1–5	
Qualification awarded	Expected competencies
Level 5: Diploma Lanjutan Kemahiran Malaysia, DLKM (Malaysia Skills Advanced Diploma)	Need to possess the necessary competence so as to be able to apply a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Also include very substantial personal autonomy and responsibility for the work, also for the allocation of substantial resource. This stage, their personal accountabilities for analysis and diagnosis, design, planning, execution and evaluation also needed

Technical schools enrolments (2016)				
Form 4		Form 5		Total
Male	Female	Male	Female	
1,365	1,161	1,242	1,157	4,925

Vocational college enrolments (2016)						
Form 4 (SKM 1)		Form 5 (SKM 2)		First year (SVM 1)		Total
Male	Female	Male	Female	Male	Female	
1,014	330	849	141	10,388	5,600	18, 322

of them are undergoing course at the certificate level while the remaining 26,295 are studying at the diploma level with 7916 academicians where 81 of them are Ph.D. holders.

The primary objective for the establishment of polytechnics is to be Malaysia's main provider of innovative human capital through transformational education and training for the global workforce to become skilled personnel in the various engineering fields, commercial and service sectors, and upon graduation to become qualified technicians, technical assistants (assistant engineers), technologist and technicians at the semi-professional level as well as at the junior and middle executive levels and also with the main mission to:

1. provide access to quality TVET programme and recognized;
2. develop curriculum-led industry and increasing the willingness of graduates through coordinated industry participation;
3. produce graduates balanced and sustainable entrepreneurship through programs that dynamic and sustainable;
4. gain international recognition through cooperation and active participation in community TVET.

(b) **Community Colleges**

In July 2000, the concept of establishing and implementing community colleges in each parliamentary constituency was approved at the ministerial level. The college is an institution that will provide training and skills requirements at all levels in providing educational opportunities to middle-income prior to the labour market or continuing to higher education.

A total of 10 community colleges began operations in mid-June 2001 and now 94 community colleges have been built specifically to create a more dynamic community and also to offer flexible training and retraining programmes as needed by the market as well as the local community.

These colleges conduct technical and vocational education at the diploma and certificate levels, for school-leavers who have previously had at least 11 years of schooling and obtained the Malaysian Certificate of Education (Sijil Pelajaran Malaysia). Other than that, these colleges also offered short-term course for community to improve their skills in various fields.

Community colleges currently already have 19 diploma programmes and 41 certificate courses. Duration of studies for a certificate course is within 16 months to 20 months. Otherwise for diploma level, that usually takes six semesters. Other than that, community college also offered certificate of special skills to help handicapped students who intend to pursue their studies to a higher level.

The courses offered are in areas of agriculture, building, business, electrical engineering, health science hospitality and tourism, human development, arts, food technology and information and communication technology.

(c) **Public Universities**

There are currently a total of 21 public universities which include technical university in the country, that offer technical and technological as well as engineering programmes leading to diploma and degree qualifications. In 1999, government has set up five technical university colleges to focus on higher technical education offering engineering and related technical programmes designed to produce graduates with strong theoretical and cognitive knowledge and who possess high competency in application skills technical order to upgrade the image and professional level of technical and vocational education due to the increasing importance of employment in the industrial sectors. Therefore, the government has set up 5 university colleges since 1999. They are:

Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM) was established in 1999, presently known as Universiti Malaysia Terengganu.
Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) was established in 2000, known as Universiti Tun Hussein Onn Malaysia.
Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM) was established in 2000, upgraded as Universiti Teknikal Melaka.
Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM) was established in 2002, changed to Universiti Malaysia Perlis.
Kolej Universiti Kejuruteraan & Teknologi Malaysia (KUKTEM) was established in 2002, known as Universiti Malaysia Pahang.

But, in 2006, the Technical University Colleges Network (TUCN) was formed and comprised KUiTTHO, KUTKM, KUKTEM and KUKUM as the member. In 2007, all university colleges were rebranding and emerged as full universities. They become Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Teknikal Malaysia Melaka (UTeM), Universiti Malaysia Pahang (UMP) and Universiti Malaysia Perlis (UniMAP). TUCN also was subsequently rebranded to MTUN (or Malaysian Technical University Network) before being redefined as MTU (Malaysian Technical University) in 2015.

(d) **Ministry of Human Resources**

The Manpower Department is one of the Ministry of Human Resources (MOHR) departments that also one of the major providers of skill training programmes ranging from craft skill level to advanced technical skill level in the country. The department's of skills training programme is carried out through the following government institutions:

i. Industrial Training Institutes (ITI)

ITI is an institution that provides formal skill training for school-leavers and industrial workers to help student to acquire skills in specialized fields as well as upgrading the skills of industrial workers to enable them to contribute effectively towards the national development.

ii. The Centre for Instructor and Advanced Skill Training (CIAST)

CIAST, located in Shah Alam, is a training centre that responsible for providing training to produce highly skilled instructors for vocational training institutions as well as providing supervisory and development skills training to upgrade existing skilled instructors in public and private training institutions.

iii. The Japan-Malaysia Technical Institute (JMTi)

JMTi was established in 1993 as a cooperation project between the governments of Malaysia and Japan. The main purpose of this establishment of JMTi is to produce skilled industrial technologists in the fields of advanced technology in manufacturing, electronics, computer and mechatronics to fit the needs of technological industry.

iv. Advanced Technological Training Centres (ADTEC)

Currently, there are four ADTEC in Malaysia. ADTEC was established to provide training opportunities at the pre- and post-employment levels as well as to produce skilled manpower in the area of advanced technology.

iii. **Ministry of Youth and Sports**

The Ministry of Youth and Sports (MoYS) is also a provider of skill training to the youths from ages 17–25. It is an effort from ministry to produce skilled individuals in various skills areas in line with the national youth development policy. This effort subsequently contributes to the national industrial sector of having semi-skilled and skilled workers. MoYS delivered skill trainings through its skill department, various approaches, such as short and long term training as well as institutionalized and non-institutionalized training. Mode of training can be defined as part-time skills training which is conducted at Institute Kemahiran Belia Negara (IKBN) located throughout the country, whereas non-Institutionalized Training can be described as short-term modular skills training which are carried out flexibly in terms of the time duration, approach and premises.

iv. **Ministry of Agriculture and Agro-based Industry**

Ministry of Agriculture has offered certificate in agriculture institutes to upper secondary school-leavers. Those who have obtained the certificate in agriculture can further their studies at diploma level at Universiti Putra Malaysia. There are seven agricultural institutes throughout the country providing agricultural training to meet the demand of skilled workers both in public and private sectors and to provide skills training and specialization to create agricultural entrepreneurs.

v. **Ministry of Works**

Construction Industry Development Board (CIDB)

Construction Industry Development Board (CIDB) was established under the Construction Industry Development Board Act 1994 (Act 520) to regulate, develop and facilitate the construction industry towards achieving global competitiveness. In aspiring to elevate the domestic construction industry in producing better products that are world-class, productive and sustainable, CIDB has put its focus on standards and R&D. Ensuring R&D is carried out in a focused manner; CIDB established

previously known as Construction Research Institute of Malaysia (CREAM). CIDB and CREAM have worked together to bridge the gap of academia and industry, and looked for solutions on relevant construction issues.

Construction Research Institute of Malaysia (CREAM) was incorporated in 2004 as a company limited by guarantee without having a share capital under the Companies Act 1965 on the initiative of CIDB in order to function as a corporate vehicle for carrying out CIDB's research function so as to enable CIDB to concentrate on the performance of its core function. The role and function of CREAM is in line with the strategic thrust 5 (ST 5) as stipulated in Construction Industry Master Plan (CIMP 2005–2015): Innovate through research and development (R&D) and adopt new construction methods. CREAM are intend to be the Centre of Excellence for Sustainable Construction (COE) in Malaysia, provide services and facilities at Makmal Kerja Raya Malaysia (MKRM) on heavy structural testing that focus on structural and IBS components, to develop and stimulate research initiatives together with the Malaysian construction industry players, and also establish R&D collaborations with local and international universities and research institutes,

g. **Ministry of Defence**

Universiti Pertahanan Nasional Malaysia (UPNM) or Akademi Tentera Malaysia (ATMA), or the Malaysian Armed Forces Academy, which was established on 1 June 1995 was an organization that offered bachelor's degrees in the fields of engineering, sciences and managements, with military training. Cadets are educated and graded on their performance in academics, physical fitness and also military leadership.

UPNM has four faculties such as Defence Engineering Faculty that offering civil engineering, electrical and electronic engineering, mechanical engineering includes marine technology engineering and also art defence engineering. Other than that, Defence Sciences Faculty that offered Computer science and Maritime Technology. Two more faculties are Faculty of Defence Management Studies and Faculty of Medicine and Defence Health Sciences.

In ensuring veterans get jobs, the Perbadanan Hal Ehwal Bekas Angkatan Tentera (PERHEBAT) was established by the Ministry of Defence of Malaysia by requiring former Malaysian Armed Forces (ATMs) to follow various courses and skills. PERHEBAT carries out any form of activity in relation to the promotion of socio-economic development of veterans through training. The main objectives of PERHEBAT establishment are to:

i. provide quality training to veterans to take courses in vocational and entrepreneurship, in line with current developments;
ii. ensure PERHEBAT's management, teaching staff and support staff are trained, according to their respective duties and responsibilities;
iii. The training curriculum is of high quality, in line with the industry's needs and the latest technological developments and certifications of domestic and foreign accreditation bodies;
iv. Admitting efficient governance to provide training infrastructure, equipment and training materials are always adequate and meet the requirements of training.

vi. **The Ministry Rural and Regional Development**

Majlis Amanah Rakyat (MARA)
MARA, offers various commercial and skill training programmes which aim in increasing the number of highly trained Bumiputra youth in the fields of business, industry, manufacturing, high technology and entrepreneurship. A total of 13 Institutes Kemahiran MARA (IKM) and 10 Kolej Kemahiran Tinggi Mara are provided by MARA under Bahagian Kemahiran MARA that are responsible for the management of the 'Program Latihan Kemahiran MARA'. Commercial professional qualifications are offered by eight MARA Business Institutes and MARA Infotech Academy. MARA also offered Advanced Skills Training Institutes in German-Malaysian Institute (GMI), British-Malaysian Institute (BMI), Malaysian-France Institute (MFI), Malaysian Institute of Aviation Technology (MIAT) and also Malaysia Spanish Institute (MSI) where these institutes were established as joint venture projects with specific international training agencies in a bid to get technical expertise in high technology skills. Other than that MARA also provides 128 GiatMara centres in the country that offers short-term single-skill specialist training courses in relation various related fields.

vii. **Private TVET provider**

There are also private institution and organization that offered TVET in Malaysia. State governments also provide Skills Training Centres under which institutions such as Terengganu Advanced Technical Institute (**TATI**), Pulau Pinang Engagement Science Technology Engineering English and Mathematics (**ESTEEM**), Skills Johor Hub Sdn Bhd and many more in other state. Other than that the private universities such as Universiti Kuala Lumpur (UniKL), Lim Kok Wing University also provide TVET training in their programmes. In addition, there are institutions such as the Young Women's Christian Association (YWCA) that offers vocational training to the public.

Federal, State and Private Institutions Providing TVET by Skill Level, 2012

Ministry or Agency [a]	No. of Institutions	Total Enrollment	Under the Malaysian Skills Certificate (SKM) System					Bachelor of Eng Tech
			Certificates			Diplomas		
			1	2	3	4	5	
MOE	88	25,000	Technical and Vocational Schools[b]					
MOHE	71	17,000	Community colleges					
	28	88,000	Polytechnics					
	4	30,000[c]	MTUN (UniMAP, UMP, UTeM, UTHM)[d]					
MOHR	22	10,800	Industrial Training Institutes (ITIs)					
	1	3,200				Japan-Malaysia Technical Institute (JMTI)		
	4					Advanced Technical Training Centre (ADTEC)		
	1	538[e]			Centre for Instructor and Advanced Skill Training (CIAST)			
MRRD	1	2,000				German-Malaysian Institute (GMI)		
	12	10,000	MARA Vocational Institute (IKM)[f]					
	9	2,700	MARA Higher Skills College (KKTM)[f]					
	202	19,000	Local Youth Awareness Movement (GiatMara)[g]					
	1	15,300				Universiti Kuala Lumpur[h]		Universiti Kuala Lumpur[h]
MYS	15	8,200	National Youth Skill Training Institute (IKBN)[f]					
	1				National Youth Higher Skills Training Institute (IKTBN)[f]			
MOA	7	700	Ministry of Agriculture Institutes[i]					
MOD	5	805	Institutes of the Armed Forces Ex-Servicemen Affairs Corporation (PERHEBAT)					
MOW	6	37,000	Construction Industry Development Board (CIDB)					
States	31	20,000	State Institutes					
Private	500-600	60,000	Accredited Centers					

5.3.3 TVET Management

In 2015, UNESCO has redefined TVET as 'comprising of education and training and skills development relating to a wide range of occupational fields', production, services and livelihood. TVET as part of lifelong learning can take place at secondary, post-secondary, tertiary and includes work-based learning and continuing training and professional development that may lead to a qualification. It includes a wide range of skill development at national and local context. It needs to consider literacy, numeracy skill, transversal skills and citizen skills which form the integral part of TVET.

TVET in Malaysia's system is one of the government's efforts to empower the people and move the nation to a higher level. Main purpose of Malaysia TVET is to train skilled workers to meet industry demand for technical and vocational workers, especially semi-skilled workers. In addition, TVET also serves to increase the productivity of skilled manpower in the country. A wide variety of TVET institutions in Malaysia provide post-secondary education and training. They include schools,

polytechnics and other publicly funded institutes, private colleges, state skills development centres and binational technical institutes.

A national accreditation board has been set up to strengthen quality assurance of Malaysian TVET. In England, National Vocational Qualifications (NVQs) were work-based awards for those who achieved through assessment and training. However in Malaysia, equivalent qualifications are given through two bodies that responsible to accredited TVET. Firstly, Department of Skills Development (DSD) will award Malaysian Skills Certification (SKM) to a skills training provider that has been approved by the NCC to conduct skills training and offer Malaysian Skills Certification in specific fields and skill levels based on the National Occupational Skills Standards (NOSS). Each ministry owns and operates a varying number of institutes based on the NOSS system.

5.3.4 TVET Teacher Education and Training

As a developing country in the industrial sector, Malaysia needs highly skilled workforce. In order to meet these needs, Malaysia has developed a number of vocational and technical training institutions. However, in general, to produce good and effective TVET quality, teacher's competency is specially emphasized in their field.

The developments of teachers in the field of technical and vocational education are a critical factor to generate and maintain economic growth specifically in the formation to produce skilled workers. The highly skilled workforce is crucial and important in supporting the transformation of the entire economic sector towards activities that are intensified with knowledge, generate labour productivity and attract investments.

Teaching standards as professionals are judged based on their performance. Teacher competency is a pre-requisite for effective teaching and learning because of it's relevancy to learning outcomes especially in developing and strengthen technical and vocational skills. As a TVET educators, the role and responsible is a bit different from academic educators. Teaching in TVET system will need individual hands on skills and practical oriented based in learning. Therefore, MoE has taken an initiative to enhance the quality of TVET educators in Malaysia by introduced Malaysia Teacher's Standard.

To ensure the quality of academic staff in Malaysia, Ministry of Education has come out with Education Development Plan 2013–2025 which have 11 transformation agenda and one of them is to improve teacher quality. Meanwhile, Ministry of Higher Education develops the Malaysia Education Blueprint for Higher Education 2015–2025 that come out with ten shift transformations. The impacts from this transformation to the academician are:

i. enjoying more attractive differentiated career pathways and performance-based rewards that support specializations in teaching, research, institutional leadership;

ii. allowing practitioners and professionals more flexibility in participating in higher education and sharing of expertise;
iii. having the support they need to succeed in their new roles through targeted professional development programmes—from industry and cross-institution mobility programmes, to leadership development programmes;
iv. enjoying greater decision-making rights in areas such as curriculum, financial management and talent management, so as to enable their institutions to move with greater agility and speed in responding to global and local trends;
v. benefiting from closer integration with industry as well as local and international communities, through innovative partnership models on funding, teaching and learning, as well as research, development and commercialization.

In return, the academic community will be asked to stay open to and adopt these new ways of working, to work collaboratively with all stakeholders during this transformation journey, and to model the holistic, entrepreneurial and balanced mindsets, values and behaviours expected of students.

5.4 Issues and Challenge

TVET system in Malaysia was divided into three streams higher education, technical and vocational education and also vocational skills training. The separation TVET agencies under the different ministries target different groups of participants and vocational sectors for their TVET programmes but in highly fragmented administration could sometimes overlap in their implementations.

TVET programmes under the MoE are focused on further education and training for better career opportunities, meanwhile TVET programmes under other ministries more on focusing to primarily on workforce productivity and the different agencies under these ministries provide different entry points of TVET access. For example, the Ministry of Youth and Sports provide programmes to prepare youth with basic TVET skills for their future life as well as for lifelong learning and therefore, their target group is Malaysian youth. Other than that, the programmes under the Ministry of Human Resource are not oriented to particular gender and are focused on preparing trainees to be skilled workers and their target groups are mostly school-leavers. In summary, there exist multiple ministries and agencies providing TVET to meet diverse needs of the people. The diversified of skills training from different ministries are the challenge to the government in term of funding distribution, TVET quality and TVET educators standard (Affero and Hassan 2013).

In terms of accreditation, there were two bodies that accredit, that are DSD, which performs the accreditation for the skills sector, while Malaysian Qualifications Agency (MQA) performs accreditation for the vocational and technical sectors as well as academic sector. The existing two bodies with separate standards and process for accreditation resulted in multiple qualification system. Segregation between skills and technical and vocational sectors by the Malaysian may create confusion among

students and the employers on the value of the certificate. Although there was a platform to coordinate the delivery system through National Skills Coordination Council, the diverse purpose in offering TVET education still will create a wide difference in the policy decision and training delivery.

5.5 Way Forward

On 27 September 2017, Malaysian Prime Minister Datuk Seri Najib Abdul Razak has launched Malaysia TVET and outlined several initiatives to transform technical and vocational education and training in the country, which includes developing a TVET master plan. This master plan will be streamlined by the Ministry of Human Resources with other ministries involved in TVET like the Higher Education Ministry and Education Ministry. Secondly, the prime minister also stated that the government would allocate RM50 million from 30% of Pembangunan Sumber Manusia Bhd's (PSMB) accumulated funds, for TVET as a pool fund to implement strategic programmes as an effort to support achieving of national objectives in raising the level of skilled workers in Malaysia. Also present at the event were Human Resources Minister, Higher Education Minister and Education Minister.

This transformation also included special attention to Industrial Revolution 4.0 so as to create a workforce that is able to compete on the world stage. The prime minister said human capital that was highly skilled was very important in transforming the national economy and function to narrow the skills gap the country was facing, particularly by industry.

As such, he said that with Malaysia heading to become a high-income nation, the government was committed to five core thrusts in transforming TVET, including:

i. training 300,000 Malaysians from the lower income or B40 group from now until 2025. The B40 group also involved rural residents, urban poor, Orang Asli, school-leavers and dropouts, single mothers and unemployed people. The government also plans to introduce TVET to tahfiz students as value added for them, whereby besides memorizing the Quran they would also have skills in TVET. The government will make efforts to train and raise the number of teaching staff in TVET, whereby we are targeting 20,000 more.
ii. Government was committed to strengthen and intensify strategic public–private partnership cooperation between TVET and industry to create synergy in developing quality human capital.
iii. TVET graduates' career opportunities are not only limited in the industry, but also can venture into business, especially technopreneurship or become technopreneurs in technical fields.
iv. In 2017 budget, the government has allocated RM20 million for the purpose of matching grants, where the financial provision is given at the same value of contributions received from industry for high impact TVET programmes where

this grant can be utilized in joint ventures between public agencies and the private sector to train and produce more skilled manpower.

v. Brand the TVET institutions in this country as TVET Malaysia, where all TVET institutions under various ministries are united as a great collaboration to train Malaysians, especially young people to become a highly skilled technical workforce.

Other than that, MQA also has established a new code of practice for TVET Programme Accreditation (COPPA) for new implementation of single accreditation. This Code of Practice for TVET Programme Accreditation shall be the main guiding documents in the implementation of the Single Quality Assurance of TVET system.

In the content of standard development, learning outcome becomes the core of the standard that they are detailed statements describing in explicit terms of what learners or trainees can perform at the end of the learning or training processes. In developing systemic learning outcomes for the whole country, learning outcomes have to be comparable with other similar sectors of educational system. It is therefore imperative that level descriptor of Learning is adhered to when developing learning outcomes. MQA has established a new framework of learning outcome domains that comprised of five main areas:

- Knowledge and understanding (cognitive competence);
- Applied knowledge and skills (cognitive and functional competence);
- Communication/ICT and numeracy skills (functional competence);
- Autonomy, responsibility and accountability (application and responsibility); and
- Personal skills and social values (personal and ethical competence).

The scope of the standard covers the sectors for skills and TVET from Level 1–5 of the MQF. All programmes across all disciplines under the sector of TVET would be required to comply with the seven areas of the standard. Programme developers, providers, assessors and employers would find the standards very useful as a guideline in their respective areas of responsibilities.

The seven areas of the standards include:

Programme Development and Delivery;
Assessment of Students Learning;
Students Selection and Support Services;
Teaching Staff;
Educational Resources;
Programme management; and
Programme Monitoring, Review and Continual Quality Improvement.

The development of the standards document is to ensure that the TVET graduates meet the requirement of industries and professional bodies. It is also expected that the TVET providers, industries, communities and the government will collaborate towards achieving a status of high-income nation.

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Chapter 6
Technical and Vocational Education and Training in Myanmar

Bin Bai and Qiuchen Wu

Myanmar is known as the Republic of the Union of Myanmar, a presidential republic[1] in Southeast Asia with a total area of 676,578 square kilometers and a population of 52.88 million (up to 2016), divided into seven regions, seven states, and one union territory. Myanmar has altogether 135 ethnic groups, more than 85% of the people in the country believe in Buddhism, and about 8% believe in Islam. Myanmar is one of the member countries of ASEAN, with a relatively underdeveloped economy and backward infrastructure. In the 2015/2016 fiscal year, Myanmar's GDP stood at US $67 billion, with the per capita GDP being US $1291.[2] Agriculture will continue to hold a significant share in Myanmar's economy; among the employed in the country, 52.2% work in agriculture, 22.8% in the service sector, and 12.5% in the industry.[3]

6.1 National Education System in Myanmar

Under the influence of British colonial rule in modern times, the Myanmar education system was established on the basis of the British model. The first public high school, established by the British colonial government in 1874, was elevated to Yangon University College two years later. The education system in Myanmar, under the charge of the Ministry of Education, consists of basic education (divided into primary and secondary education), higher education and vocational education. Currently, the 5-4-2 system is adopted for basic education, that is, five years of primary education, four

[1] WB: World Bank Data on Myanmar [EB/OL] (2018).

[2] Ministry of Foreign Affairs of the People's Republic of China: An Overview of Myanmar [EB/OL] (2018).

[3] MOIP (2016).

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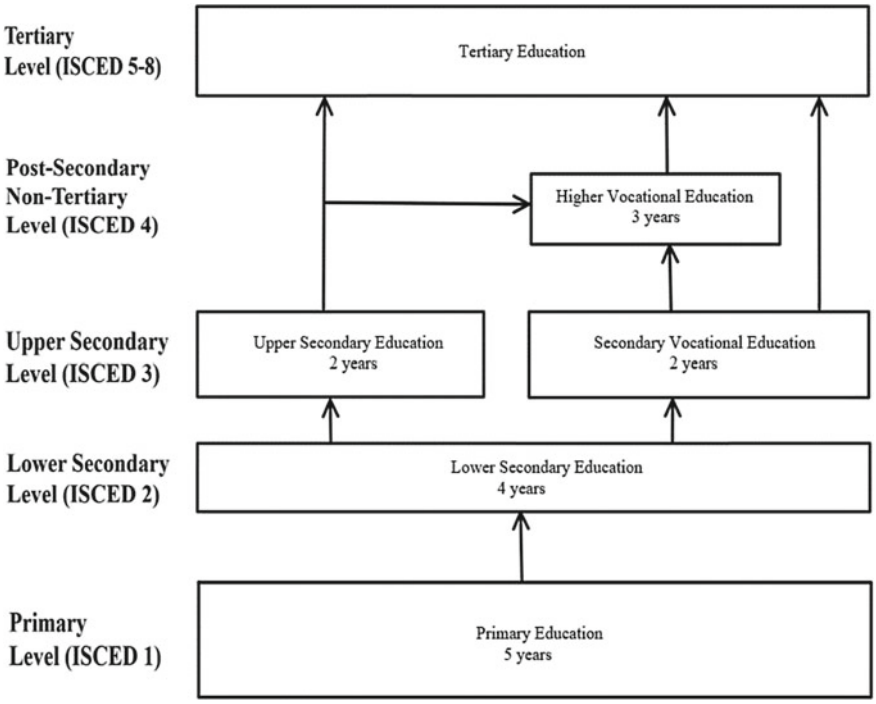

Fig. 6.1 Education system in Myanmar (TVET Country Profiles 2018)

years of junior high school education, and two years of senior high school education (Fig. 6.1).[4]

6.1.1 Primary Education

Primary education in Myanmar is compulsory, at the first stage of basic education. Primary education lasts for five years. It is divided into two parts: the lower (1st through 3rd) and higher (4th and 5th) grades. It offers courses in mathematics, English, Burmese, science, morality, life, art, history, geography, and sports. By 2016, Myanmar had 35,650 primary schools, with 158,176 teachers and 5,184,041 students.[5]

[4]MOE: Education System in Myanmar [EB/OL] (2018).

[5]MOE (2015–2016).

6.1.2 Secondary Education

Secondary education consists of Junior High School (6th through 9th) and Senior High School (10th and 11th) grades. In comparison with primary education, the junior high school stage has included public and vocational courses, such as handcraft and cooking. Upon entering senior high school, the students can opt to take courses of arts or sciences. Burmese, English, and mathematics are compulsory subjects for all students. While arts students study geography, history, and economics, the science students study chemistry, physics, and biology. At the end of the senior high school, the students from government senior high schools and general schools take the college entrance exams held in March each year, and students from private boarding schools must apply for the exams by themselves. The students from international English schools or other private schools are not eligible for college entrance exams and are not allowed to attend universities in Myanmar.[6] Statistics show that in Myanmar during the 2015–2016 school year, there were 6224 junior high schools, with 129,945 teachers and 2,795,607 students; and 3513 senior high schools, with 34,393 teachers and 873,832 students.[7]

6.1.3 Higher Education

Higher education in Myanmar is mainly provided to the students who have completed basic education and passed college entrance examinations, and the number of higher education institutions in Myanmar increased from 32 in 1988 to 163 in 2012. They are under 13 different departments and 66 of them are under the Ministry of Education. The 3-1-2 system is adopted for higher education in Myanmar, namely 3 years of courses for the bachelor's degree, 1 year of qualification courses, and 2 years of courses for the master's degree. Starting from the 2011–2012 academic year, all institutions of higher learning under the Ministry of Education have extended the degree programs by one year, transforming the higher education system into the 4-1-3 structure. In order to ensure consistency of the new degree courses, the professional committees have developed new curricula and syllabi in line with those of the universities of ASEAN countries.[8]

6.2 Overview of Vocational Education in Myanmar

Vocational education is an important component of the Myanmar education system, which covers a wide range of areas related to architecture, electricity, electronics,

[6] Burma Considers Private Education [EB/OL] (2009).

[7] See Footnote 5.

[8] See Footnote 4.

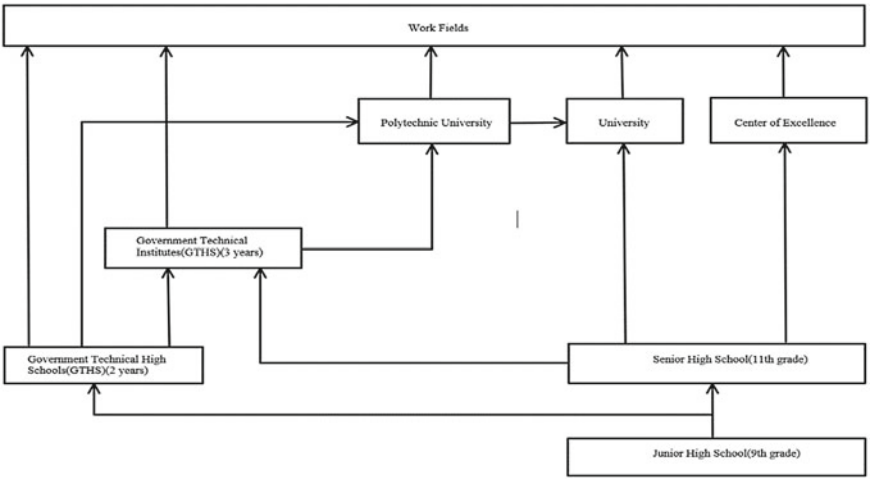

Fig. 6.2 Vocational education system in Myanmar (Planco Consulting on behalf of GIZ 2016)

machinery, hotels and tourism, development of pharmaceuticals and nursing, agriculture, and animal husbandry. The Government of Myanmar has 19 ministries involved in vocational education, and the Ministry of Labor, Employment and Social Security, with the approval of the Cabinet, has set up the National Skill Development Authority (NSDA) to manage vocational education. The vocational education system includes the two levels of secondary vocational education and higher vocational education. At present, there are 36 secondary vocational schools, including the Government Technical High Schools (GTHS) and 22 Government Technical Institutes (GTI), all under the management of the Department of Vocational and Technical Education and Training of the Ministry of Education of Myanmar. Admission to the GTHS requires students to complete the nine-year (covering junior high school) study and to pass the entrance exams. The GTHS study lasts for two years, covering the same basic subjects as in the regular high school in addition to technical courses. After completing the two-year courses, the student will receive a state-recognized diploma (Fig. 6.2).

The GTI, with a three-year system, enrolls the graduates from regular high schools (the 11th graders) or the GTHS. The regular high school graduates are required to pass the college entrance examinations while the GTHS graduates are required to meet the requirements regarding the average score of every subject they have taken. Compared with the regular university, the GTI attaches more importance to the students' practical ability and makes a point of preparing the students for the labor market.

In addition, vocational education in Myanmar represents an important area to receive international assistance. Some countries, in cooperation with the Government of Myanmar, have established vocational education institutions to provide the young people in Myanmar with various training and to create job opportunities for them.

Table 6.1 GTHS distribution in Myanmar

Region	Number of GTHSes	Number of teachers	Number of teachers
Chin	2	48	216
Tanintharyi	3	74	577
Shan	5	147	628
Sagaing	5	210	954
Bago	2	81	706
Kayah	1	53	281
Magway	2	114	645
Mandalay	5	208	1244
Yangon	2	128	415
Rakhaine	1	35	221
Ayeyarwady	3	133	1064
Mon	1	48	248
Kachin	2	93	380
Naypyidaw	1	63	304
Kayin	1	70	309
Total	36	1505	8192

See Footnote 9

6.3 Secondary Vocational Education in Myanmar

Secondary vocational education in Myanmar is mainly offered by the GTHS. At present, Myanmar has 36 GTHS nationwide. Under the Department of Vocational and Technical Education and Training of the Ministry of Education, the GTHS have 1,505 teachers and 8,192 students.[9] The GTHS aim to train skilled workers, engineers and technicians, who constitute the important human resources for the industrial development of Myanmar, and the industrial development is one of the key enabling factors for Myanmar to become a developed country. The GTHS provide professional training in science, technology and business, train skilled workforce meeting the market demand, and encourage the students from rural and remote areas to participate more in education, training and employment related to vocational technology. The professional study helps students to get professional skills, so as to prepare them for related production and work or for entrepreneurship (Table 6.1).

The GTHS offer two-year academic education or short-term training. In the past, the students who completed junior high school (ninth grade) may directly apply to go to the GTHS for two-year academic education. As the number of applicants keeps growing in recent years, the examination system has been introduced for the admission, with the contents of the examination covering English and mathematics

[9]GTC/GTI/THS—Department of Technical and Vocational Education (DTVE) [EB/OL] (2017).

for the 9th graders. Upon the end of the two-year study, the students may choose to enter the GTI for further study or go to work as skilled workers or assistant engineers based on their own conditions. If they cannot go to the GTI, they can apply to take college entrance exams no matter they have passed the GTHS exams or not.

The two-year academic education covers specialized and public courses. Both specialized and public courses are offered 15 h a week, and the yearly total amounts to 600 h.[10] Specialized courses include architectural engineering, electrical technology, electronic technology, automotive repair technology, mechanical processing technology, refrigeration and air conditioning technology, metal processing technology, and information technology. Public courses include Burmese, English, mathematics, physics, and chemistry. The GTHS offer the same public courses as the regular senior high school. All the students must complete the study of all the public courses and certain specialized courses. The students' performance is evaluated through theoretical examination and practical operation evaluation, with the former accounting for 30% and the latter 70% of the total score. The GTHS distinguish themselves with skill training, which takes place partly in the classroom and partly in the workshop within the school. The GTHS curriculum system is composed of theoretical knowledge and practical operation. The teaching is usually conducted in the classroom for theoretical study and the workshop in the teaching building. The GTHS policy makers hope to help students change their attitudes toward vocational education and employment through diversified courses, and to help the students to make the transition from a student to a worker. The GTHS also help students choose areas appropriate for their development, depending on their interests and abilities (Table 6.2).

Table 6.2 Two-year education courses in GTHS

Specialized courses	Theory	Tutoring	Practice	Total
Architectural engineering	5	0	10	15
Electric technology	5	1	9	15
Electronic technology	5	0	10	15
Automotive repair technology	3	0	12	15
Processing technology	4	0	11	15
Public courses	Theory	Tutoring	Practice	Total
Burmese	2	1	0	3
English	2	1	0	3
Mathematics	2	1	0	3
Physics	2	0	1	3
Chemistry	2	0	1	3

See Footnote 10

[10]Theingi (2009).

6.4 Higher Vocational Education in Myanmar

The GTI offer higher vocational education in Myanmar. The country has 22 GTI nationwide, with 1330 teachers and 9453 students.[11] They are under the Department of Vocational and Technical Education and Training of the Ministry of Education of Myanmar. The GTI aim to train skilled workers, engineers, and technicians by imparting theoretical and practical knowledge in two forms: short-term training and three-year academic education. The short-term training covers edge masonry, basic mapping, practical small electronic circuits, sensor automatic control system, solar power generation foundation, electrical safety and base load, electrical safety and line installation, diesel engine overhaul, rewinder operation, computer fundamentals, digitization, and PLC basic training (Table 6.3).

The GTI primarily offer three-year academic education. Upon the end of the three-year study, qualified students will get diplomas and jobs in the government and the public sector. The GTI enroll students for academic education from among the graduates of regular senior high schools and the GTHS. For senior high school graduates, the admission is based on college entrance examination scores, of which the math and English scores are attached with extra importance. The GTHS graduates can also apply for admission into the GTI, and their admission is based on the average scores of all the subjects taken at the GTHS.

The GTI usually offer four or five majors, such as civil engineering, electronic engineering, electrical engineering, mechanical engineering, and information technology. In the first academic year, all students must take all public courses and one major course, including Burmese, English, mathematics, physics, and chemistry. In the second school year, the students need to take mathematics, English, and major

Table 6.3 GTI distribution in Myanmar

Region	Number of GTIs	Number of teachers	Number of students
Magway	5	373	2685
Chin	1	72	507
Kachin	1	54	190
Mandalay	4	263	1734
Ayeyarwady	3	130	1033
Sagaing	2	116	747
Rakhine	2	119	727
Yangon	2	88	698
Mon	1	62	631
Bago	1	53	501
Total	22	1330	9453

See Footnote 9

[11] See Footnote 9.

courses. Upon the end of the three-year study, the students can get A.G.T.I, a diploma from the GTI, and they can choose to go to a polytechnic university for further study. If they wish to go to other universities, they can continue to study by means of distance education. The GTI assessment of the students' performance includes the theory examination and the practical operation evaluation. In each school year, the GTI shall organize two theory examinations, respectively, in the first semester and the second semester; all students must sit and pass the theory examination to meet the graduation requirement. The theory examination and the practical operation evaluation, respectively, account for 30–40% and 60–70% of the total score. For some subjects that do not involve testing in practice, the students' performance in daily assignments shall be taken as the basis for the final scoring.[12]

Take the GTI Yenangyaung for example, its predecessor was GTHS Yenangyaung established on August 1, 1977. The GTHS was elevated to the GTI on December 1, 1998. It offers four majors, including Civil Engineering, Electronics and Communications Engineering, Electric Power Engineering and Mechanical Engineering, with approximately 100 teachers and 606 students at the present period. All these programs last for three years, and upon finishing the programs, the students shall be awarded the corresponding A.G.T.I degrees.[13]

6.5 Vocational Education Institutions Established Through International Cooperation

Myanmar is a less developed country. Many countries have provided assistance to Myanmar in the field of vocational education and established corresponding vocational education institutions. These vocational education institutions offer many types of vocational education and training, including academic and non-academic education, as well as long-term training and short-term training. In terms of the content and structure of the curriculum, the vocational education provided by these institutions is not directly related to the curriculum of government vocational institutions in Myanmar. Their courses are more closely related to the workplace, and the contents of the courses are more in line with the employer's requirements, which makes the trained personnel better meet the needs of the market. In addition, these vocational education institutions have established partnerships with vocational colleges, research institutions, and universities in donor countries, drawing on the latest international curriculum for vocational education. These vocational education institutions provide a training mode different from that of the government vocational education institutions, and they play a significant role in the vocational training of Myanmar.

[12] See Footnote 9.

[13] MOE: Yenangyaung Government Technical Institute [EB/OL] (2018).

6.5.1 Industrial Training Centre (ITC)

The Industrial Training Centre (ITC) is under the Industrial Cooperation Council of the Ministry of Industry of Myanmar. The Ministry of Industry aims to use modern advanced agricultural technology to develop basic agricultural industries, agricultural economy, and agricultural production, and to promote the heavy industry construction. Over recent years, in order to strengthen the country's industrial construction and management, the Ministry of Industry has, based on the 12 economic development goals of Myanmar, developed four policies and two visions, including the construction of ITC.

The ITC aims to equip the workers with core competitiveness through skills training and promoting lifelong learning throughout the country. It takes it upon itself to train excellent technical workers and arrange them in the professional fields of their interest to make them the new force of national industrial development. The ITC provides technical training to the workforce throughout the country and offers young people job opportunities in the industrial field. Additionally, the ITC promotes the up-to-date production and quality control techniques within the factory, sharpens the staff's design skills and develops innovative methods to improve products, and sends trained workers to the National Skill Standard Authority (NSSA) for tests.

The ITC currently offers one-year (1600 h) non-academic vocational training courses, which are mainly about practical operation and consist of 70% of practical courses and 30% of theoretical courses. Statistics show that the ITC has 1000 trainees each year, and the training period will be extended to two years in the future.[14] The ITC requires that the trainees must be citizens of Myanmar, with a senior high school education, aged between 17 and 25, in good health and interested in vocational training (Table 6.4).

6.5.2 Center for Vocational Training (CVT)

The Centre for Vocational Training (CVT) is a non-governmental and non-profit organization, which was registered in Switzerland in 2002. In order to meet the demand of industrial development in Myanmar, it endeavors to eliminate poverty through imparting skills via vocational education and training services. The organization's funding mainly comes from the donors, sponsors, and partners. The CVT's partners in Myanmar include the Myanmar Industries Association (MIA), the Myanmar Timber Merchants Association, the Myanmar Chamber of Commerce and Industry, the Myanmar Engineering Society, and the Myanmar Ministry of Education. The CVT adopts the Swiss dual-system vocational education, and the experts from Switzerland provide free consultation and guidance services at the CVT in their spare time.

The CVT aims to ensure the future employment of the Myanmar youth through vocational education, and to promote national economic development and meet

[14] Myanmar Industry Portal: Industry Training Center [EB/OL] (2018).

Table 6.4 General situation of ITC

ITC	Time of establishment	Partner	Courses	Number of trainees
Sinde	December 1, 1979	Germany	Machine Tool Operator; Cutting And Stamping Tools; Mechanical Installer; Motorcycle Mechanic; Electrical Installer; Motor Manufacturing; Model Worker; Mechanical Drawer	There are 200 trainees at each training session; altogether 4102 people have been trained up to the 35th session
Mandalay	October 16, 2008	China	Traditional Machine Tool Operator; CAD/CAM/CNC; Electrical Installer; Welding, Electroplating and Surface Treatment	There are 140 trainees at each training session; altogether 1253 people have been trained up to the 8th session
Thagaya	August 1, 2009	ROK	Mechanics; CAD/CAM; Electrical Installer; Electronics; Foundry	There are 150 trainees at each training session; altogether 897 people have been trained up to the 7th session
Pakokku	July 15, 2010	India	Machine Tool Operator; CNC; Automobile Mechanics; Heat Treatment; Welding; Electrician; Electronic Engineering	There are 170 trainees at each training session; altogether 1078 people have been trained up to the 6th session
Magway	August 19, 2011	ROK	Automobile Maintenance; CAD/CAM	There are 150 trainees at each training session; altogether 710 people have been trained up to the 5th session
Myingyan	2014	India	Mechanical Turning/Grinding; Tool and Die Manufacturing; CNC; Industrial Electrician; Electronic Engineering; Sheet Metal and Welding Workers; Foundry	There are 180 trainees at each training session; altogether 346 people have been trained up to the 2nd session

See Footnote 14

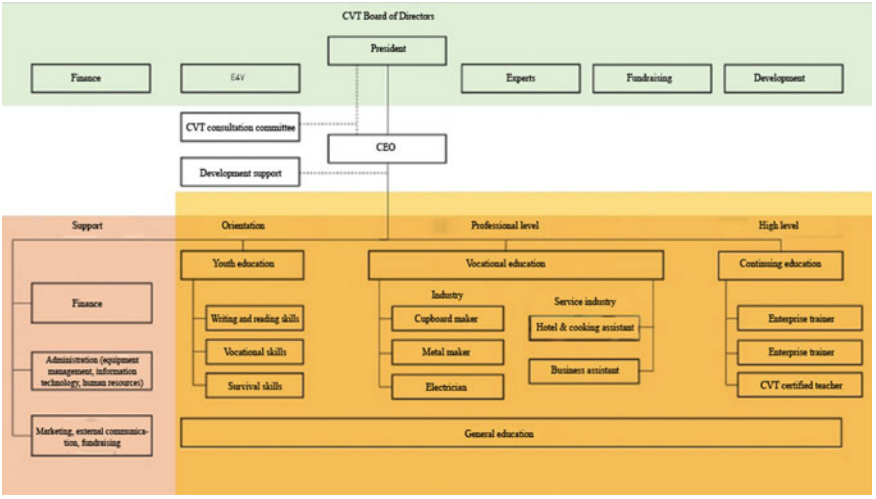

Fig. 6.3 Organizational structure of CVT (CVT: Organization [EB/OL] 2018)

industrial needs through education. The CVT curriculum is designed by the experts in relevant fields. By drawing on the Swiss dual-system vocational education, it provides high-quality vocational education and training to help Myanmar improve its vocational education and provide a path for the Myanmar youth to work or to offer them a way to start building their own careers (Fig. 6.3).

The Myanmar CVT offers three types of vocational education and training programs:

(1) Education for Youth (E4Y)

The Education for Youth (E4Y), an education program which is a career-oriented, providing the disadvantaged youth with opportunities to develop competences in the professional field. The program targets the youngsters who have no access to secondary education after graduation from primary school and the students who drop out of secondary school. The candidates for the E4Y program are required to be 13–14 years old, have the basic ability to read, write and calculate, and to pass the entrance examination for the program.

The E4Y program lasts for 4 years and the students can continue to receive vocational education as apprentices. By providing skill-oriented courses, the program aims to encourage students to engage in learning, to cultivate their creative thinking, and to provide young students with the opportunity to access the higher education system for further study. Teaching cooperation with the Swiss vocational education experts is conducted to guarantee the good quality of the program. The E4Y program is composed of theory and practice courses, and aims to enhance the students' self-confidence by encouraging lifelong learning oriented to solving problems, enhancing critical thinking, and fostering a sense of responsibility among them. Moreover,

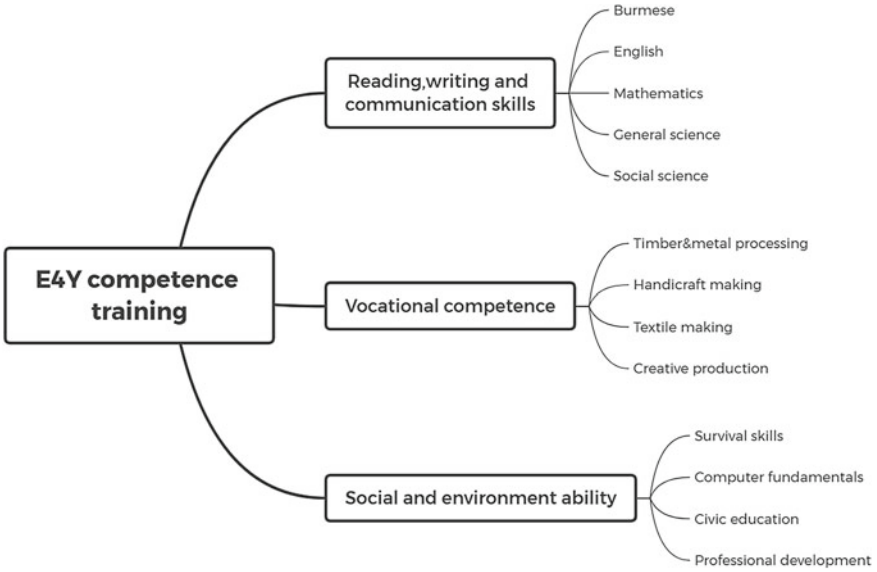

Fig. 6.4 Competence development and curriculum design of the E4Y program (CVT: E4Y [EB/OL] 2018)

diverse sports activities and competitions are held at school for team building, cooperation ability training, and bodybuilding (Fig. 6.4).

The E4Y program provides the students with additional funding, physical examinations and measures to prevent malaria, AIDS, tuberculosis, and hepatitis B. Based on the students' chosen majors, the program facilitates them to work at corresponding duty stations for approximately 3 weeks and subsidizes their short-distance travel, meals, and transportation for that purpose.

(2) Vocational Education and Training (VET)

The vocational education and training (VET) program of the CVT, drawing on the Swiss dual-system vocational education, lasts for three years and is mainly carried out in the CVT and the enterprise. The participants of the program receive training at the CVT one day a week in the public curriculum knowledge and the theoretical knowledge of the specialty provided according to the national skill standard. In the VET program, the students can not only acquire theoretical knowledge and practical skills, but also enhance their own social ability and obtain certain income. Upon completion of all the courses, the students will receive a highly recognized certificate of professional competence which is issued by the Government of Myanmar (Table 6.5).

(3) Continuing Education Program

The CVT encourages young people to start up their own businesses where they can apply the knowledge and skills learned through vocational education and training

Table 6.5 Projects and courses in VET

Project classification	Theory courses	Practice courses
Cupboard maker training	Materials Science; Production Technology; Drawing Technique; Computing Technology; English; Burmese; General Knowledge	Manual Tool Operation; Portable Tool Operation; Heavy Tool Operation; Wood Processing Operation
Metal fabricator training	Business Management; Materials Science; Production Technology; Drawing Technique; Computing Technology; English; Burmese; General Knowledge	Forging and Metal Manufacturing; Casting of Iron and Non-Iron Metals; Machinery Manufacturing and Welding
Electrician training	Electrical Engineering; Materials Science; Instrument Structure; Drawing Technique; English; Burmese; Geography; Economics	Wood & Metal Processing and Simple Electric Light Fittings; Control And Measurement Systems for Household Appliances; Diode Systems, Measuring Techniques 2, Engine Control Systems
Business assistant training	Business Management; Accounting; Political Economy; Information and Communication Technology; English; Burmese	Under the charge of the internship enterprise
Hotel & cooking assistant training	Cooking; Service; Family Affairs; Reception; Basics about Hotels; English; Burmese	Under the charge of the internship enterprise

CVT: VET [EB/OL] (2018)

and create jobs. Since 2014, the CVT has been offering three types of continuing education based on the concept of "ability acquired in learning":

First, it is the In-company Trainers Program (ICTP), which aims to provide trainees with knowledge and skills about enterprise training to improve the training within their own enterprises. The ICTP admission requirement includes that the candidates shall be 25 years old at least, hold relevant diplomas and certificate issued by the CVT, or other equivalent certificates as well as letters of recommendation from their companies. The 10-week program is scheduled to take place from 9 a.m. to 5 p.m. on Saturdays, with a total of 80 class hours, including exams and final evaluations.[15] The ICTP contents include:

The background and basis of the dual-system vocational training

[15]CVT: Post Graduate Programs [EB/OL] (2018).

Skill management concepts and critical competence evaluation
Recruitment process, Myanmar labor law, and apprenticeship contract
The how-how on preparing and implementing internal training programs
Basic knowledge about apprenticeship and staff training, including planning and presentation of the workplace, problem solving, and communication;
Correct and effective teaching guidance and teaching method
Safety in production and health protection.

Second, it is the CVT Certificated Teacher Program, which aims to enable trainees to acquire knowledge and skills in education and teaching as well as other professional fields and to equip them with the competence to become excellent teachers in vocational education. Applicants of the program are required to hold diplomas and certificates issued by the CVT or other equivalent certificates, and have at least three years of working experience in the relevant industry. The program lasts for 3 months (3 days per week), including 90 class hours of teaching method and educational theory training, 250 class hours of professional curriculum training and four-week workplace practice as well as one week of assessment, certification, and graduation exams.[16]

Third, it is the Young Entrepreneurs for Myanmar (YE4M) program, jointly offered by the CVT and Swiss Academy for Development (SAD), targeting the young people who have yet to but plan to start a business and the young entrepreneurs who have started a business and wish to improve their management skills. The YE4M program encourages the participation of young women and gives priority to the applicants under the age of 35. The three-month program offers training in 28 units, totaling 84 class hours. It includes compulsory courses of 6 class hours, such as economic concepts and principles, overview of legal forms of enterprise ownership, basic principles of enterprise organization, and financial accounting, etc. It also includes core courses for 72 class hours, such as entrepreneurship, innovation and creativity, strategic planning, sales and marketing, human resources management, basic accounting and financial management, microeconomics, and business ethics and corporate social responsibility. At the end of the program is a 6-hour practice course, which is devoted to reporting on a business plan.[17]

6.5.3 Singapore–Myanmar Vocational Training Institute (SMVTI)

The Singapore–Myanmar Vocational Training Institute (SMVTI), founded in 2016 in Yangon, is a cooperation program between the governments of Singapore and Myanmar. The program utilizes the equipment and facilities from the Ministry of Education in Myanmar and it is managed by a private education institution of Singapore. The

[16] See Footnote 15.

[17] See Footnote 15.

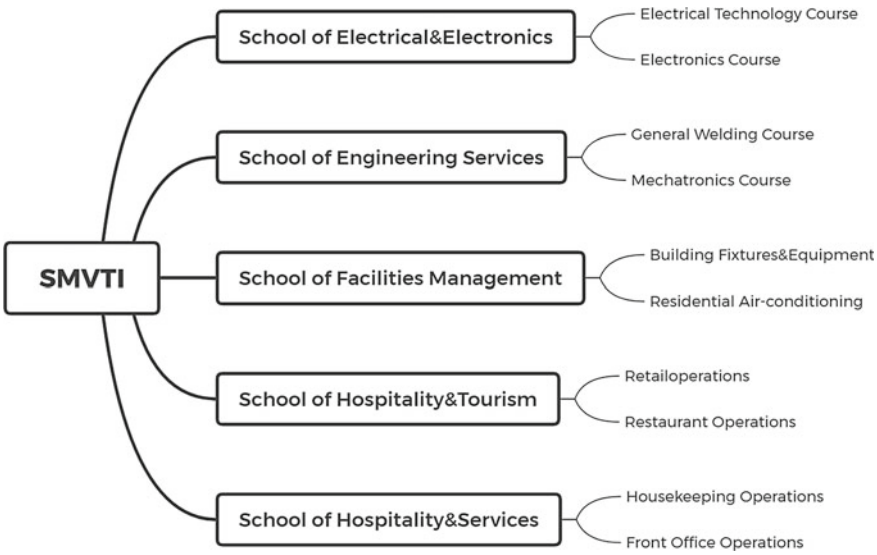

Fig. 6.5 Types of certificates offered by SMVTI

program aims to support human resource development in Myanmar, especially the vocational skill development of the Myanmar youth. The program consists of 10 training projects, each of which lasts for six months and covers such areas as engineering, technology, and services. Upon the end of the training, the trainees will receive the corresponding vocational certificates. At present, the program involves altogether 365 students and 56 teachers (Fig. 6.5).[18]

Take the retail service project for example. The project provides the students with knowledge and skills about working in retail stores, including the commercial management, cashier job, and communication to ensure quality service delivered to customers. The training project consists of five modules:

Effective communication: Communication skills in the workplace, social and cross-cultural environments, including listening, speaking, reading, and writing.
Quality of service: Establish good relationships with customers, understand their needs and ideas, deal with problems in services, and promote products.
Professional image and etiquette: Have a good professional image and observe etiquette in the working environment.
Office software applications: Use word processing, spreadsheets, and presentations to make office documents, manage files, and maintain the hardware.
Store operations: Deal with a range of core retail businesses, such as order receipt, pricing, goods replenishment, and working as a cashier.

[18] SMVTI: HOME [EB/OL] (2018).

6.6 Management of Vocational Education in Myanmar

6.6.1 Vocational Education Policy in Myanmar

Article 366 of the Myanmar Constitution stipulates that: "Every citizen shall, in accordance with the educational policy laid down by the Union: (a) have the right to education; (b) be given basic education which the Union prescribes by law as compulsory; and (c) have the right to conduct scientific research, explore science, work with creativity and write, to develop the arts, and conduct research freely with other branches of culture." The Myanmar education authorities approved the National Education Law (NEL) in September 2014 and passed an amendment to the NEL in 2015. The NEL and NEL amendment provide a framework for the extensive implementation of complementary reforms in the national education system.[19]

The NEL explains the role of vocational education: After the completion of primary education, one can go for basic vocational education; after the completion of secondary education, one can go for medium vocational education; and after the completion of high school education, one can go for higher-level vocational education. Private vocational education institutions provide various technical and vocational skill training in accordance with existing regulations/standards to promote the trainees' skill development, which is accessible to all of any educational level and age.

The Government of Myanmar promulgated the *Technical, Agricultural and Vocational Education Act* in 1974, which was amended in 1983 (Law No. 8) and 1989 (Law No. 20/89). The law further regulates all kinds of vocational education and training. The purpose of the Act is to cultivate technical personnel and experts needed to establish the industries in Myanmar, to train outstanding personnel who can effectively utilize advanced technologies to carry out agricultural and animal husbandry activities, to expand or increase vocational education courses that fit the national political, economic, and social system, and to train technicians and intellectuals with national spirit.

In 2013, the new Employment and Skill Development Law (ESDL) was promulgated in Myanmar, the second important law on vocational education in the country. It stipulates various forms of skill development for current workers and for those who are about to work. The law also provides the establishment and functions of the National Skill Standard Authority (NSSA), as well as the skill development tax initiated by employers to finance training.

[19]MOE (2016a).

Table 6.6 Myanmar National Qualifications Framework (MNQF)

Field				Lifelong education
Grade	Basic education	Vocational education	Higher education	
8			Doctor's degree	Re-recognition of previous learning (evaluation and validation) Informal/informal
7			Master's degree	
			Postgraduate education	
6		Diploma	Bachelor's degree	
5		Associate degree	Associate degree	
		Graduate diploma	Graduate diploma	
4		Vocational Certificate/Skill Certificate (Level 4)		
3	Senior high school	Vocational Certificate/Skill Certificate (Level 3)		
2	Junior high school	Vocational Certificate/Skill Certificate (Level 2)		
1	Primary school	Vocational Certificate/Skill Certificate (Level 1)		

Kyi Shwin (2015b)

6.6.2 National Qualifications Framework (NQF)

The Government of Myanmar, drawing on the ASEAN Qualifications Reference Framework (AQRF), began to develop the Myanmar National Qualifications Framework (MNQF) at the end of 2013. The Government of Myanmar organized a taskforce made up of personnel from 12 ministries to prepare a draft national qualifications framework by July 2014, and the framework was proposed at the end of 2015.[20]

The MNQF consists of eight levels, covering basic education, vocational education, and higher education. Except for basic education, the framework provides details on the qualifications and certificates for each level (Tables 6.6 and 6.7).

[20] Kyi Shwin (2015a).

Table 6.7 MNQF Vocational Certificate/Skill Certificate levels

Qualification certificate system		
Certificate level	Job level	Requirements
Level 1	Beginner	To understand the safety regulations in the work; have basic practical skills and operational knowledge in a specific work area; complete the day-to-day work according to clear requirements; receive, communicate, spread and, record information; bear certain responsibility
Level 2	Skilled worker	Have practical skills and operational knowledge in a number of areas; complete work with skill requirements; take responsibility for the products you produce
Level 3	Highly skilled worker	Have some theoretical knowledge and a range of high-level skills; solve daily problems; interpret a large amount of information; take responsibility for the products produced by others
Level 4	Management	Have a wide range of basic knowledge, apply theoretical knowledge to practice; identify and apply various skills; identify, analyze, and evaluate varied information; have a good understanding of and take responsibility for, quality, safety, and environmental issues

Miriam Amine (2016)

6.6.3 Quality Assurance of Vocational Education in Myanmar

In order to guarantee the quality of vocational education, the Government of Myanmar has established the National Accreditation and Quality Assurance Committee (NAQAC), and all vocational education courses shall be subject to certification by the NAQAC and approval by the National Curriculum Committee. The National Curriculum Committee is a part of the National Education Policy Committee, mainly responsible for the development, improvement, and quality assurance of vocational education courses.

To ensure the good quality of informal vocational education, the National Skill Standard Authority (NSSA) is mandated by the Employment and Skill Development Law (ESDL) to set vocational competence standards of levels 1 through 4, develop curriculum and training materials, conduct skill evaluation, and issue national certificates, in accordance with the ASEAN Qualifications Reference Framework. Since 2007, NSSA has developed 173 occupational competence standards of four levels

for a number of industries and occupations. Among these standards, 93 have been approved by the Cabinet.[21]

6.7 Challenges to Vocational Education in Myanmar

Although Myanmar has made some achievements in vocational education over recent years, it still faces grave challenges. The vocational education is under the management of many departments of in Myanmar, among which there is lacking in effective coordination and unified management, and the management and curriculum of vocational institutions have a lot to be improved.

Myanmar vocational education authorities have yet to set up a comprehensive and well-developed quality assurance system, and vocational education cannot meet the local labor market needs for highly competent personnel. Although some skill standards have been set, the skill standards of some industries are inadequate as they are not closely linked with practice. In addition, local enterprises in Myanmar have a low degree of participation in vocational education. Many vocational education projects have been developed and implemented without enterprise participation, with more than enough emphasis on theory but little connection with practice. In result, the skills and abilities of the graduates from vocational institutions often do not meet the needs of the labor market. In terms of training content, the types of training provided by vocational institutions at present are limited. Public vocational education institutions mainly focus on academic education and pay insufficient attention to short-term informal vocational training needed in the labor market. With regard to funding, there is still a serious shortage of funds and resources in the development of vocational education in Myanmar.

The National Education Strategic Plan (2016–2021) launched by the Ministry of Education of Myanmar in 2016 has planned vocational education in three aspects[22]:

First, it is to expand access to vocational education for all groups. In order to provide more opportunities for all citizens, including disadvantages groups and persons with disabilities, to participate in vocational training, the Ministry of Education of Myanmar will implement the Comprehensive Vocational Education Project. The project will improve access to vocational education at all stages and expand subsidies and scholarships to disadvantaged students through upgrading the existing vocational courses and providing capacity-based modular short-term courses.

Second, it is to improve the quality of vocational education and make it closely connected with practice. Develop a number of skills training programs, including management, teaching and specific skills. Vocational education courses are developed based on the needs of the workplaces in different industries, and a national qualifications framework for vocational education, the national skill standard, the

[21] Government of the Republic of Myanmar: National Employment & Skill Development Website [EB/OL] (2017).

[22] MOE (2016b).

quality assurance system involving capacity-based courses, and institutional and personal certification are established.

Third, it is to strengthen vocational education management, carry out vocational education management system reform in Myanmar, enhance coordination among management departments of vocational education, encourage public–private cooperation, step up the financial management and supervision, build up the monitoring system and information management system of vocational education, and take improving vocational management as the top priority.

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Chapter 7
Technical and Vocational Education and Training in the Philippines: Development and Status Quo

Qiuchen Wu, Bin Bai and Xiaolin Zhu

The Philippines located in Southeast Asia, full name the Republic of the Philippines, is a member of the Association of Southeast Asian Nations (ASEAN), covering an area of 299.7 thousand km^2 and having a population of 104.9 million (2017).[1] Malays as the main ethnic group in the country account for above 85% of the total population, and 85% of the Malays are Catholic. The Philippines is a presidential republic with a GDP of USD 389 billion and per capita GDP of USD 3593 (2017).[2] According to the statistics in 2018, in the labor market of the Philippines, the service industry accounts for 57.5%, agriculture 23.1%, and industry 19.4%.[3] The national language of the Philippines is Filipino based on Tagalog, and English is the official language.[4]

7.1 The National Education System in the Philippines

The modern education system in the Philippines originating from the period of Spanish colonial rule has been significantly influenced by colonial rule, with the deepest influence coming from the period of American rule. The teaching language of Philippine schools is mainly English. Primary and secondary education is under the charge of the Department of Education, higher education under the charge of the Commission on Higher Education, and TVET under the charge of the Technical Education and Skills Development Authority. After the educational reform in 2013, the Philippine government announced to practice 13-year compulsory education, including

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[1]WB (2018).

[2]Chinese Ministry of Foreign Affairs: A Survey of the Philippines [EB/OL]. (2018).

[3]PSA (2018).

[4]See Footnote 2.

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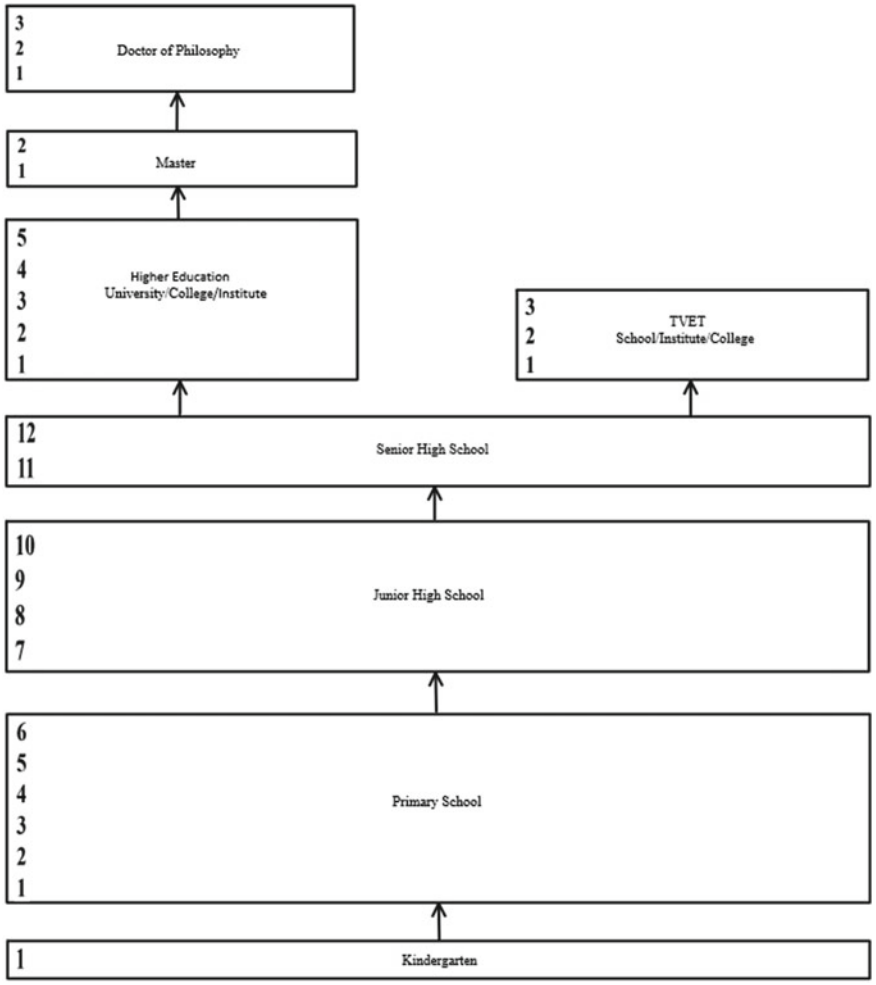

Fig. 7.1 Philippines's education system (WENR: Education in the Philippines [EB/OL] 2018)

1 year of preschool education, 6 years of primary school education, 4 years of junior high school education, and 2 years of senior high school education (Fig. 7.1).

7.1.1 Primary Education

By 2018, the Philippine Department of Education administers a total of 49,209 schools, including 38,648 schools, accounting for 78.54%, and 10,561 private schools, accounting for 21.46%.[5] The main courses offered at primary schools includ-

[5] DepEd (2018).

ing Filipino, English, mathematics, natural sciences, social sciences, sports, arts, etc. The teaching languages at schools are English and Filipino.[6]

7.1.2 Secondary Education

The Philippine Department of Education manages a total of 13,396 regular secondary schools, including 7976 public schools, accounting for 59.54%, and 5420 private schools, accounting for 40.46%.[7] Secondary education consists of two stages, junior high school education, and senior high school education. Since the Philippine K-12 reform in 2013, the education of both junior and senior high schools has been included in the scope of free compulsory education.

Junior high covers four years from grades 7 to 10 for students aged 12–16. Courses in junior high mainly include Filipino, English, mathematics, natural sciences, social sciences, sports, and arts, with English being the main teaching language. Students interested in TVET may start to explore the technical and livelihood education (TLE) courses from grades 7 or 8 and may select this direction at their senior high.

By 2017, the Philippines had 5965 public schools affiliated to the Ministry of Education providing senior high school education. Besides, 4830 other schools including private high schools, universities, vocational schools, and overseas schools provide education at the senior high level.[8] Senior high covers two years from grades 11 to 12 for students aged 16-18. Before enrolling, students choose a specialization track (http://www.officialgazette.gov.ph/k-12). The four tracks are academic track, Technical-Vocational-Livelihood (TVL) track, sports track, arts, and design track.[9] There is a certain correlation between Technical-Vocational-Livelihood (TVL) track and vocational education. At the high school level, students who have completed TLE courses and passed a vocational certificate test of the Technical Education and Skills Development Authority (TESDA) can also acquire a national vocational qualification certificate.

7.2 Higher Education

Higher education of the Philippines is regulated by the Commission on Higher Education (CHED). Universities provide students with academic education from the undergraduate level to the graduate level, conferring bachelor, master, and doctoral degrees. According to the statistical data of 2017–2018, the country has 2353 universities. Specifically, there are 680 public institutions, accounting for 28.90%, which

[6] WENR (2018).

[7] See Footnote 5.

[8] DepEd (2018).

[9] WENR (2018).

include 111 state universities and colleges (SUCs), 447 branch campuses of SUCs, 108 local universities, and 14 other universities. There are 1673 private institutions, accounting for 71.10%, including 350 schools founded by religious organizations and 1323 non-religious institutions. In 2017–2018, 2981,803 students were recruited for higher education, including 1,385,458 students in public institutions, and 1,596,345 students in private ones; 708,445 students graduated, including 358,486 students in public institutions, and 349,959 students in private ones.[10]

7.3 TVET in the Philippines

Recent years has seen rapid development of TVET in the Philippines. From 2000 to 2016, the number of students in TVET increased by 395%, from 574,017 to 2,270,000. Meanwhile, students' graduation rate from TVET also increased substantially from 83% in 2010 to 95% in 2016.[11] In 2016, totally 2,269,665 students were registered for TVET in the Philippines, and 2,151,236 students graduated.[12]

There are four types of TVET in the Philippines, respectively, school-based TVET, center-based TVET, community-based TVET, and enterprise-based TVET (Table 7.1). By sources of funding, TVET institutions can be classified into public TVET institutions and private TVET institutions. According to the length of education, TVET programs can be classified into short-term programs (within 3 months), mid-term programs (3–9 months), and long-term programs (1–3 years). By July 2015, a total of 4609 TVET institutions (including school-based and center-based

Table 7.1 Types of TVET institutions in Philippines

School-based TVET	TESDA Schools Private Technical/Vocational Schools Institutions of Higher Education
Center-based TVET	TESDA Regional Training Centers TESDA Provincial Training Centers Other Government Agencies
Community-based TVET	Community Training and Employment Centers Non-Government Organizations Local Government Units Government Agency Projects
Enterprise-based TVET	Apprenticeship Workplace-based Training Programs Dual Training Programs

TESDA: TVET Program [EB/OL] (2018)

[10] CHED: Higher Education Indicators 2018.

[11] WENR (2018).

[12] TESDA: Philippine TVET Statistics [EB/OL] (2018).

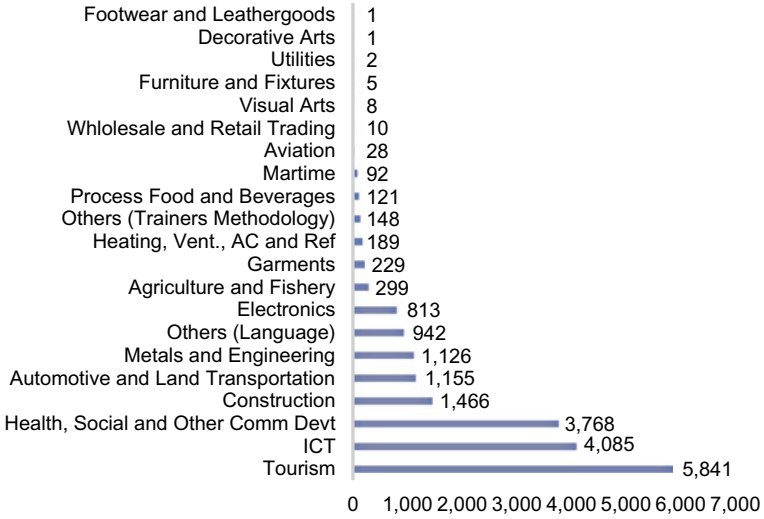

Fig. 7.2 Distribution of program offering of school-based and center-based TVET institutions by sector (Orbeta and Esguerra 2016)

TVET institutions) were certified by the Technical Education and Skills Development Authority (TESDA), offering 20,329 TVET programs (Fig 7.2).

7.4 School-based TVET

School-based TVET in the Philippines includes short-term, mid-term, and long-term programs, of which most programs are long-term programs, while short-term and mid-term programs account for a small part. Long-term TVET programs provided by TVET schools may be classified into one-year, two-year, and three-year programs. Of the long-term school-based TVET, different schools offer certificate programs and diploma programs based on their respective orientations.

(1) TVET schools

Based on sources of funding, TVET schools in the Philippines have two types, namely public schools and private schools. Except for schools directly affiliated to the Technical Education and Skills Development Authority, which are public schools, over 90% of the TVET schools are private ones. By 2018, there are 57 TVET schools affiliated to the TESDA, including 19 in agriculture, 7 in fishery, and 31 in trade.[13]

The Baguio City School of Arts and Trades is an example. This school established in 1994 is affiliated to the TESDA. The school's idea is to provide ability-based

[13]TESDA: School Based Program [EB/OL]. (2018).

Table 7.2 Baguio City School of Arts and Trades TVET programs

Diploma programs	Two-year Diploma in Culinary Two-year Diploma in Restaurant Services
Certificate programs	Bread and Pastry NC II (20 days) Bartending NC II (36 days) Food and Beverage Services NC II (42 days) Housekeeping NC II (55 days) Cookery NC II (40 days) Front Office Services NC II (55 days) Barista NC II (22 days)
Trainers Development Course and Skills Upgrading	Trainers Methodology Course Level 1(20 days) Commercial Cooking NC III (30 days) Food and Beverage Services NC III(30 days)

BCSAT: Program [EB/OL] (2018)

Table 7.3 Kabasalan Institute of Technology long-term TVET programs

Programs	Qualifications
Two-year certificate in automotive technology	Automotive Servicing NC I Automotive Servicing NC II Automotive Servicing NC III Driving NC II Motorcycle/Small Engine Servicing NC II
Two-year certificate in civil construction technology	Carpentry NC II Electrical Installation and Maintenance NC II Masonry NC II Plumbing NC II
One-year certificate in electronics technology	Computer System Servicing NC II Electronics Products Assembly and Servicing NC II
One-year certificate in garments technology	Dressmaking NC II Tailoring NC II

KITTESDA: TESDA Program [EB/OL] (2018)

TVET, featuring a dual system for the training of talents. This school mainly offers long-term programs, besides a small amount of short-term programs (Table 7.2).

Besides, the Kabasalan Institute of Technology is also a TVET school affiliated to the TESDA. Its predecessor was the Kabasalan Junior High School established in 1947, which was changed to the Kabasalan National Vocational School in 1963, and then renamed the Kabasalan Institute of Technology. The main objectives of the school are to provide students with knowledge and skills to be highly competent for employment; to inculcate desirable attitudes, values, and work ethics which are essential to national development; to equip students with increased capabilities for entrepreneurial endeavors for self-employment; and to provide education and training for individuals development and leadership to meet the emerging needs of the

industrial society; and to instill in the students the love for TVET. The characteristic specialties of the school are automobile technology, civil engineering, and clothing technology (Table 7.3).

(2) TVET programs in universities

Many universities in the Philippines, besides providing higher education, also offer TVET programs as well as vocational course training certified by the TESDA. Some bachelor programs and diploma programs of universities are exploring the mode of Ladderized training to offer TVET and academic education to students at different stages of their study. In a four-year bachelor program of the mode of Ladderized training, the first year is mainly dedicated to vocational training, and at the end of the year students may attend a TESDA certificate test to acquire a national certificate; the education in the following three years integrate academic education and TVET; upon graduation students can acquire a bachelor's diploma and degree.

Ilocos Sur Polytechnic State College (http://www.ispsc.edu.ph/) is a comprehensive six-campus institution of higher learning mandated to give professional and technical training both in the undergraduate and graduate levels in the fields of economics, agriculture, fishery, trade, home industry, engineering, education, forest research and conservation, management, finance, accounting and business administration, public administration and other fields as may be relevant, besides providing for the promotion of scientific and technological researches which the college deems necessary in carrying out its objectives. Bachelor's programs in the Ladderized training mode are available in agricultural engineering, information technology, industrial technology, and hotel management. While participating in occupational training, students also study academic courses at the undergraduate level and acquire a bachelor's degree upon graduation (Table 7.4).

Table 7.4 Ilocos Sur Polytechnic State College (http://www.ispsc.edu.ph/) (Santa Maria Campus) TVET programs

Bachelor of Science in Agricultural engineering	1-Yr Certificate in Agricultural Building Construction technology
Bachelor of science in agriculture	2-Yr Certificate of Agricultural Science
Bachelor of science in information technology	1-Yr Certificate in PC Operation
Bachelor of science in hospitality management	Cert.in Housekeeping Cert.in Tour Guiding Cert.in Commercial Cooking Cert.in Front Office Management Cert.in Food & Beverage Service Cert.in Bartending Cert.in Pastry Production

ISPSC: Program Offerings [EB/OL] (2018)

7.5 Center-based TVET

Center-based TVET in the Philippines mainly offer short-term and mid-term courses, ranging from 3 to 6 months, generally not exceeding one year. There are 60 training centers affiliated to the TESDA, including 15 regional training centers and 45 provincial training centers.[14] Regional Training Center-Talisay provide 6 national certificate I programme and 36 national certificate II programme, including Automotive Servicing, Welding, Machining, Commercial Cooking, Massage Therapy, and Heavy Equipment Operation. The training duration ranges from 40 hours to 636 hours (Table 7.5).

Compared with regional training centers, provincial training centers are smaller and provide fewer training programs and contents. In the Bulacan Malolos campus, for example, this training center only provides four training programs for national secondary qualification certificates. According to the requirements of the TESDA, standards and quality requirements for training programs in different regions are completely the same (Table 7.6).

Besides training centers in the charge of the TESDA, some training centers affiliated to state ministries and commissions also provide TVET. The Philippine Ministry of Agriculture has 34 training centers providing training services to farmers and fishermen, aiming to train people working in agriculture and fishery, promote and accelerate the development of agriculture and remote areas through training, and ensure the promotion of research results among agriculture, fishery, and related

Table 7.5 Talisay Training Center Training Programme

Training programme	Qualification	Training time
Flux Cored Arc Welding (FCAW)	NC I	156 h
Gas Metal Arc Welding (GMAW)	NC I	268 h
Automotive servicing	NC I	288 h
Machining	NC I	374 h
Heavy equipment operation (Backhoe Loader)	NC II	216 h
Flux Cored Arc Welding (FCAW)	NC II	268 h
Gas Metal Arc Welding (GMAW)	NC II	268 h
Shielded Metal Arc Welding (SMAW)	NC II	304 h
Machining	NC II	337 h
Commercial Cooking	NC II	436 h
Massage Therapy	NC II	560 h
Automotive Servicing	NC II	636 h

Regional Training center Talisay [EB/OL](2018)

[14]TESDA: Center Based Programs [EB/OL]. (2018).

Table 7.6 Provincial Training Center Training Programme- Bulacan (Malolos)

Training Programme	Qualification	Training duration
Flux Cored Arc Welding (FCAW)	NC I	156 h
Trainers methodology level	NC I	264 h
Shielded Metal Arc Welding (SMAW)	NC I	268 h
Automotive servicing	NC I	288 h
Machining	NC I	374 h

Provincial Training Center—Bulacan (Malolos) [EB/OL] (2018)

fields. Some training centers have a close partnership with the TESDA.[15]

Other government institutions also provide similar TVET services, but these institutions have little cooperation with the TESDA and its training programs. Therefore, training programs are not subject to the TESDA's supervision or management. These training centers include[16]:

- National Maritime Polytechnic (NMP)
- Metal Industries Research and Development Center (MIRDC)
- Philippine Textile Research Institute (PTRI)
- Technology Application and Promotion Institute (TAPI)
- Construction Manpower Development Foundation (CMDF)
- Philippine Trade Training Center (PTTC)
- Cottage Industry Technology Center (CITC)
- Department of Social Welfare and Development.

7.5.1 Community-based TVET

Community-based TVET is an informal form of education in the Philippines, mainly dedicated to the training of vocational skills, and the targets of training are mainly poor people and marginal groups, such as young school leavers and unemployed adults; most community-based training programs are mainly based on local demands and resources, providing trainees with some basic vocational skills. These public programs aim to help marginal groups increase their employment opportunities and also support local government's assistance of poor people to engage in productive work, thus promoting community development.[17] Community-based TVET mainly

[15] Péano, et al. (2008, p. 41)

[16] Péano, et al. (2008, p. 42)

[17] TESDA: Competency Standards Development [EB/OL]. (2018).

has four different types of education providers and types, namely community training and employment centers, NGOs, local governments, and government organs.

7.5.2 Enterprise-based TVET

There are three training modalities being implemented in partnership with companies/establishments. These are Apprenticeship Program, Learnership Program, and Dual Training System (DTS). Enterprise-based TVET aims to combine the training at workplaces and theoretical teaching at schools. Course systems are established according to enterprises' talent demands to train qualified talents meeting enterprise demands.

Apprenticeship Program is a mode of TVET implemented through enterprises providing apprenticeship positions. The length of study for apprenticeship training in the Philippines is four months at the shortest and six months at the longest. Only enterprises whose apprenticeship programs are approved by and registered with the TESDA can employ apprentices. This kind of training aims to provide a mechanism to ensure the training of qualified technical workers meeting the needs of industries and enterprises. Its aim is to provide well-trained skilled talents by the participation of employers, workers, the government, and NGOs to establish a state apprenticeship programs and develop standards for apprentice training.

Learnership Program is an in-service training program. The length of the study generally does not exceed six months, and trainees may be employed by the enterprise after passing periodical assessment and acquiring a qualification certificate. Only enterprises approved by and registered with the TESDA can recruit trainees.

Dual Training System is another form of enterprise-based TVET in the Philippines. Trainees study alternatively between a training center (school) and an enterprise for a period from one and a half years to two years. By close cooperation between enterprises and vocational schools, appropriate employees are provided to enterprises. The advantage of dual system training is that apprentices may shift between enterprise practices and school study, which promote each other.

Dual Training System mainly helps apprentices improve their work style, increase their professional knowledge, and improve their work competency by providing high-quality training and necessary skill training, to offer better opportunities for post-mobilization. Meanwhile, such training helps enterprises to improve workers' skills, work efficiency and quality, and save production cost. The dual system training can help students to be familiar with reducing the sense of unfamiliarity with complex equipment and facilities, maximize the use of equipment and facilities, and provide good employment opportunities for graduates.

7.6 Governance of TVET in the Philippines

7.6.1 TVET Governance Authorities

According to the Law on Technical Education and Skills Development, the Philippine government established the Technical Education and Skills Development Authority (TESDA) in 1994, as a special government agency for supervising and managing TVET in the Philippines. The TESDA plays an important role in establishing standards and systems, providing policy guidance, preparing development plans, and regulating training organizations for TVET in the Philippines. Besides, the TESDA also cooperates with the Philippine government, enterprises, and training organizations to provide the society with industrial information and support young people's employment and entrepreneurship.[18] The main functions of the TESDA are as follows:

(1) Competency Standards Development

The TESDA develops competency standards for targets of education, describing work by way of competency units. Competency units may be integrated into qualifications, corresponding to relevant occupations and key jobs in the society, as well as the relevant grades in the Philippine TVET Qualification Framework. The national training regulations (including competency standards, training standards, and assessment process) issued by the TESDA are the basis for competency assessment, course setup and registration and certification of TVET programs.[19]

(2) Competency Assessment and Certification

The TESDA assesses and certificates applicants' competency mainly through the Philippine TVET Competency Assessment and Certification System, to see if students have met relevant competency requirements. The TESDA has set up a special inquiry system, providing the certification information of people in various vocational fields nationwide. The TESDA has set up an assessment center and appraiser to provide competency assessment services to people applying for certification.[20] According to statistics, the TESDA has conducted competency assessment for 1,521,530 person-times, of which 1,398,780 person times were passed, with a pass rate of 91.9%.[21]

(3) Program Registration and Accreditation

TVET institutions in the Philippines, whether public or private, have to complete compulsory registration with the Unified TVET Program Registration and Accreditation System, which has been set up for the purpose of ensuring that learners reach

[18] TESDA: Mandate [EB/OL]. (2018).

[19] See Footnote 17.

[20] TESDA: Assessment and Certification (2018).

[21] See Footnote 12.

the minimum standards required in the training regulations wherever they receive their training, thus ensuring training quality. Therefore, TVET institutions should be registered with the TESDA before providing learners with training programs. After completing all registration steps, they will acquire a certificate of program registration, and this training program will be formally listed in the TESDA's register. Should any problem arise in this training program or any complaint is lodged against it, the TESDA will regulate and audit it.[22]

7.6.2 Philippines Qualification Framework

In 2012, the Philippine government promulgated the Philippines Qualification Framework, which aims to provide standards for mutual recognition of different learning results, so that learning results can be recognized and mobilized among different educational and training departments in the Philippines. At the same time, the framework also helps the qualification framework in the Philippines to be consistent with the international qualification framework, to promote the mutual recognition of Philippines and international certificates and diplomas. The qualification framework covers basic education, TVET and higher education, and its levels range from Level 1 to Level 8 (Fig. 7.3).

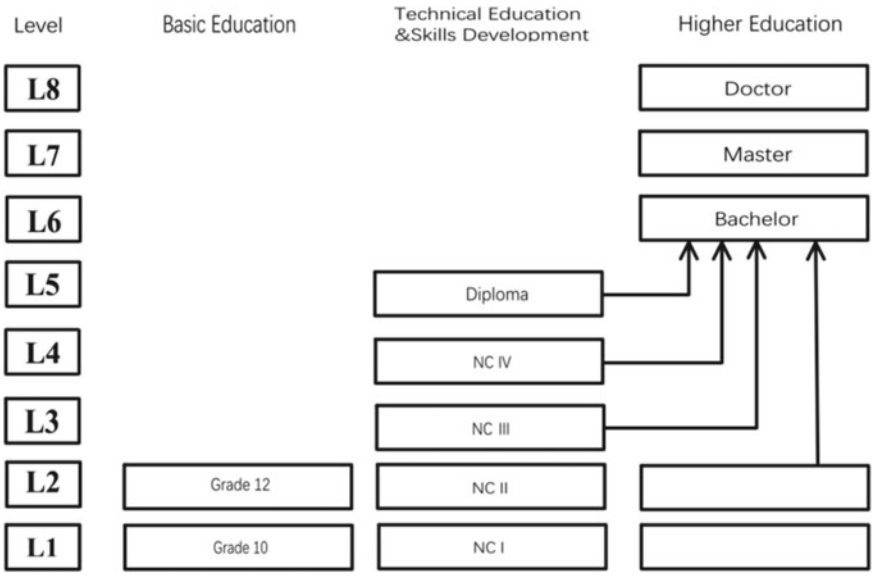

Fig. 7.3 Philippines qualification framework (WENR: Education in the Philippines [EB/OL] 2018)

[22]TESDA: Program Registration and Accreditation [EB/OL]. (2018).

The Philippines Qualification Framework involves five levels of TVET. National certificate NC I and NC II are equivalent to intermediate professional qualifications, aiming to prove that certificate holders have proficient skills to some extent. NC I and NC II are equivalent to Grade 10 and Grade 12 academic degrees in regular education, respectively.

NC III, NC IV, and diploma are equivalent to advanced professional qualifications. To acquire these three professional qualifications, applicants should have NCI and NCII national certificates or high school diploma. Its training involves a higher degree of complexity and theoretical study, aiming to train skilled talents with management capabilities. National certificate programs stress application, mainly reflecting professional qualifications in the working world, while higher education degrees represented by bachelor's, master and doctoral degrees lay more stress on theories, representing academic levels, and are mainly completed and acquired in universities[23] (Table 7.7).

TVET in the Philippines stresses competency-based design, and consequently, some TVET programs tend to have no fixed term or academic year, as they are mainly implemented by way of modularization, and students participating in TVET probably do not have to strictly follow a fixed schedule. To acquire a qualification certificate, a student must complete a relevant TVET program and pass the qualification certificate test.

The effective period of a Philippine national certificate is five years. After five years, the holders of such certificates must apply for the upgrading and registration of the certificates. If the TESDA has upgraded new competency standards on the basis of new competency standards, applicants should apply for re-assessment of their competency based on these new standards.[24]

7.7 Challenges Facing TVET in the Philippines

7.7.1 The Quality of TVET is yet to be Improved

Despite the substantive development of TVET in the Philippines, the infrastructure of TVET is yet to be strengthened. Skilled workers have a low degree of international skills, thus lacking skill advantages among international competitors. People's work tasks often mismatch with their level of skills. Of the ten competitive industries planned to develop in the Philippines, many skilled workers migrate to other industries as their level of skills fail to reach standards.[25]

[23] WENR (2018).

[24] See Footnote 23.

[25] YPT (2018).

Table 7.7 TVET Certificate

	Knowledge, Skills and values	Application	Degree of independence
NC I	Knowledge and skills that are manual or concrete or practical and/or operational in focus	Applied in activities that are set in a limited range of highly familiar and predictable contexts; involve straightforward, routine issues which are addressed by following set rules, guidelines or procedures	In condition where there is very close support, guidance or supervision; minimum judgment or discretion is needed
NC II	Knowledge and skills that are manual, practical and/or operational in focus with a variety of options	Applied in activities that are set in a range of familiar and predictable contexts; involve routine issues which are identified and addressed by selecting from and following a number of set rules, guidelines or procedures	In condition where there is substantial support, guidance or supervision; minimum judgment or discretion is needed
NC III	Knowledge and skills that are a balance of theoretical and/or technical and practical. Work involves understanding the work process, contributing to problem solving, and making decisions to determine the process, equipment and materials to be used	Applied in activities that are set in contexts with some unfamiliar or unpredictable aspects; involve routine and non-routine issues which are identified and addressed by interpreting and/or applying established guidelines or procedures with come variations	Application at this level may involve individual responsibility or autonomy, and/or may involve some responsibility for others. Participation in teams including team or group coordination may be involved
NC IV	Knowledge and skills that are mainly theoretical and/or abstract with significant depth in one or more areas; contributing to technical solutions or a non-routine or contingency nature; evaluation and analysis of current practices and the development of new criteria and procedures	Applied in activities that are set in range of contexts, most of which involve a number of unfamiliar and/or unpredictable aspects; involve largely non-routine issues which are addressed using guidelines or procedures which require interpretation and/or adaptation	Work involves some leadership and guidance when organizing activities of self and others

(continued)

Table 7.7 (continued)

	Knowledge, Skills and values	Application	Degree of independence
diploma	Knowledge and skills that are mainly theoretical and/or abstract with significant depth in some areas together with wide-ranging, specialized technical, creative and conceptual skills. Perform work activities demonstrating breadth, depth, and complexity in the planning and initiation of alternative approaches to skills and knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination	Applied in activities that are supervisory, complex and non-routine which require an extensive interpretation and/or adaptation/innovation	In conditions where there is a broad guidance and direction, where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others. Undertake work involving participation in the development of strategic initiatives, as well as personal responsibility and autonomy in performing complex technical operations or organizing others

7.7.2 Employment Difficulties of TVET Students

As the Philippine society values degrees and diplomas of higher education more than TVET, the latter is generally regarded as inferior education, and the society does not fully realize the importance of TVET to the labor market.[26] Besides, structural unemployment caused by mismatching of supply and demand is found in the Philippines labor market. The qualification rate of TVET graduates reaches 88.0%, but their employment rate is still at a low rate of 60.9%.[27] Graduates of TVET face a limited employment market, which is largely caused by the poor quality of TVET and the irrelevancy of school learning with enterprise work practices.

7.7.3 Obvious Multi-department Non-concerted Regulation of TVET

The regulatory authority of TVET in the Philippines is the Technical Education and Skills Development Authority (TESDA), while the authority regulating K12 regular education is the Philippine Department of Education, and all higher education is under the charge of the Commission on Higher Education. As regular senior high

[26] TESDA (2010).

[27] See Footnote 25.

schools and many universities have courses of TVET nature, the connection of TVET with regular senior high schools and fields of higher education require the coordination and mutual help of different regulatory authorities. Such a multi-department non-concerted way of regulation poses a management challenge to upgrading and development of TVET. Despite the emergence of some stepwise programs inside higher education attempting to integrate TVET and regular education, on the whole, it is difficult for the TESDA to get involved due to the regulatory mechanism, especially with regard to TVET in the fields of higher education. Many challenges are still facing the connection and integration between TVET and regular education.

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Chapter 8
Career and Technical Training in Singapore: Transforming Singapore's Human Capital for the Future Economy

Theresa Tze Yian Thang

Acronyms/Abbreviations

ACTEP	Advanced certificate in technical education programme
AWWA	Asian women's welfare association
CDC	Community development council
CE	Compulsory education
CET	Continuing education and training
CFE	Committee on the Future Economy
CoC	Certificate of competency
CPE	Committee for private education (previously known as council for private education)
DPP	Direct-entry-scheme to polytechnic programme
e2i	Employment and Employability Institute
ECG	Education and career guidance
ELP	Earn and learn programme
ERP	External review panel
EV	External validation
FEC	Future Economy Council
GCE	General certificate of education
GCE A-Level	Singapore-Cambridge General Certificate of Education Advanced Level
GCE 'N(A)' Level	General certificate of education 'normal (academic)' level
GCE 'N(T)' Level	General certificate of education 'normal (technical)' level
Higher Nitec	Higher national ITE certificate
IAL	Institute for Adult Learning

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ICT	Information and communications technology (also known as infocomm technology)
IHL	Institution of higher learning
IQAF	ITE quality assurance framework
ISAR	Institutional self-assessment report
ISC	ITE skills certificate
ITE	Institute of Technical Education
ITM	Industry transformation map
LOC	Letter of collaboration
MER	Minimum entry requirement
MOE	Ministry of Education
MOI	Memorandum of intent
MOM	Ministry of Manpower
MOU	Memorandum of understanding
MRO	Maintenance, repair and overhaul
MTI	Ministry of Trade and Industry
Nitec	National ITE certificate
NP	Ngee Ann Polytechnic
NS	National service
NTUC	National Trade Unions Congress
NYP	Nanyang Polytechnic
PET	Pre-employment training
PFP	Polytechnic foundation programme
PQAF	Polytechnic quality assurance framework
PSEI	Post-secondary educational institution
PSLE	Primary school leaving examination
QAF	Quality assurance framework
QAFU	Quality assurance framework for universities
RP	Republic Polytechnic
SF	Skills framework
SP	Singapore Polytechnic
SSEC	Singapore standard education classification
SSG	SkillsFuture Singapore
SUSS	Singapore University of Social Sciences
TACs	Trade associations and chambers
TP	Temasek Polytechnic
TVET	Technical and vocational education and training
VITB	Vocational & Industrial Training Board
WLTD	Work-Learn technical diploma
WSG	Workforce Singapore
WSQ	Workforce skills qualifications

8.1 Introduction

The Ministry of Education (MOE) is the central authority for both formal TVET and continuing education in Singapore. The key TVET providers at the post-secondary level, comprising the Institute of Technical Education (ITE) and the five polytechnics, are the major suppliers of TVET to support Singapore's economic growth and transformation.

This profile is represented by the Institute of Technical Education (ITE). Information outside the purview of ITE is extracted from the public domain websites of government agencies involved in skills development in Singapore.

The Singaporean economy is driven by its manufacturing, financial and tourism sector that employs skilled personnel trained to perform role-specific tasks. Particularly, in the wake of Industry 4.0, a highly skilled Singaporean workforce—*that is future ready*—is seen as the key contributor in advancing a world-class economy that is diverse, inclusive and globally competitive. With no significant natural oil and gas reserves in its possession, Singapore's real natural resources indeed are its people.

The Technical and Vocational Education and Training (TVET) system, policies and initiatives in Singapore are in line with the needs of industry. TVET along with continuing education and adult and lifelong learning has paved the way for the development and progression of a knowledge- and skilled-based economy.

In particular, the Institute of Technical Education (ITE) and the five polytechnics (Nanyang Polytechnic, Ngee Ann Polytechnic, Republic Polytechnic, Singapore Polytechnic and Temasek Polytechnic) under the Ministry of Education are the major suppliers of TVET in Singapore. These, along with other post-secondary educational institutes (PSEIs), offer a wide range of current and relevant occupation-based programmes that cover various sectors and industries including design, education, engineering, finance, health, hospitality and tourism, IT, law, media and communications, real estate and more.

At the same time, the private sector is an integral part of the TVET system in Singapore. Since it plays a significant role in developing a skilled, future-ready and an employable workforce, the government has forged close partnerships with key stakeholders from the industry.

Of late, SkillsFuture is one of the key national initiatives of the government towards advancing TVET. SkillsFuture Singapore (SSG), a statutory board under the Ministry of Education (MOE), is tasked to implement SkillsFuture initiatives by working with educational institutions and training partners to build a vibrant landscape of high-quality, industry-relevant training. Alongside, Workforce Singapore (WSG), a statutory body under the Ministry of Manpower (MOM), is mandated to drive efforts to help Singaporeans assume quality jobs and careers, while addressing industry manpower needs.[1]

This profile outlines the TVET system in Singapore and provides information on more recent efforts and developments.

[1] MOM (Ministry of Manpower Singapore) (2016).

8.2 Socio-economic Background

Singapore is a city state with a population of 5.78 million in 2017.[2] The population pyramid in Fig. 8.1 shows that close to 51% of the population is in the age group of 25–54 years old and a balanced sex ratio of 0.96 male to female residents.

Singapore's GDP and per capita GDP in 2017 are about US$324,000 million and US$94,000, respectively. Economic growth has slowed from 2012 to 2017 compared to the previous decade, with GDP growth between 1 and 3%, but has recovered at 3.6% in 2017 with better global outlook. The economy relies mainly on exports, particularly of electronics, petroleum products, chemicals, medical and optical devices, pharmaceuticals, as well as its transportation, business, and financial services sectors. In recent years, the government has successfully attracted major investments in advanced manufacturing, pharmaceuticals, and medical technology production, besides reinforcing its reputation as Southeast Asia's leading financial and technology hub (See Footnote 2).

Owing to its low birth rate of 8.7 births/1000 population (2018 est) and a rapidly ageing population, the government has to concentrate effort to increase the skill

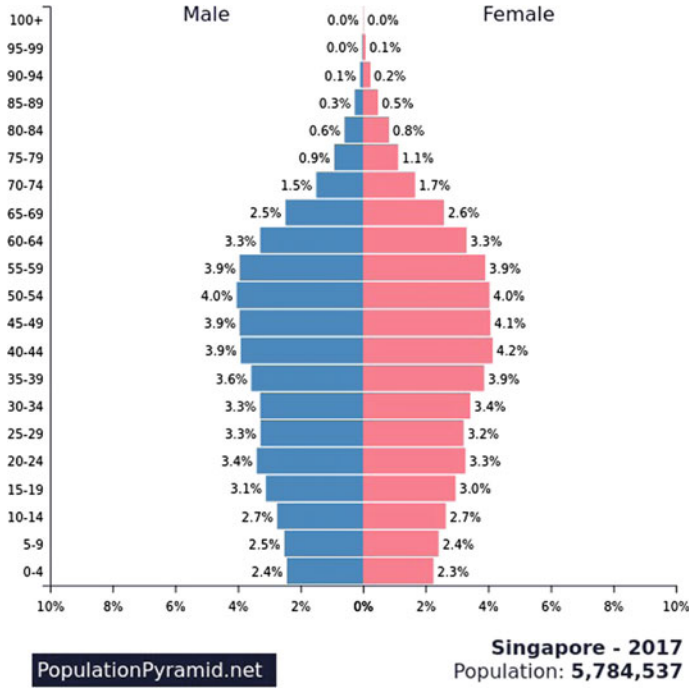

Fig. 8.1 Singapore's population pyramid in 2017 (Population Pyramids of the World from 1950 to 2100. *Singapore* 2017)

[2]Central Intelligence Agency (2018).

level and productivity of its labour force so that it is has the resources to sustain its economy and take care of its elderly residents. Singapore has a highly skilled labour force as 79.4% of the residents aged 25 years and above have secondary education or higher qualifications[3] (2016 est). Total unemployment rate is a low of 2% of the labour force in 2017. The majority of the labour force works in the services sector (73.7%), followed by the industries (25.6%) (See Footnote 4).

8.3 TVET Mission, Legislation and Strategy

8.3.1 Mission

SkillsFuture,[4] a national movement started in 2015 and overseen by the Future Economy Council (FEC),[5] seeks to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points (schooling, early career, mid-career or silver years). With the help of education and training providers, employers or unions, Singaporeans have access to a variety of resources to help attain skills mastery and lifelong learning. Through this movement, the skills, passion and contributions of every individual will help Singapore realise the future it has envisioned.

The SkillsFuture initiative **has four key thrusts**[6]:

1. Help individuals make well-informed choices in education, training and careers.
2. Develop an integrated high-quality system of education and training that responds to constantly evolving needs.
3. Promote employer recognition and career development based on skills and mastery.
4. Foster a culture that supports and celebrates lifelong learning.

8.3.2 Legislation

'SkillsFuture Singapore Agency Act 2016 (No. 24 of 2016)'[7] and 'Workforce Singapore Agency Act (Chapter 305D)'[8] are the two acts that govern TVET strategy and implementation in Singapore.

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[3] United Nations Development Programme (2018).

[4] About SkillsFuture. (n.d.).

[5] About the Future Economy Council (n.d.).

[6] See Footnote 4.

[7] Singapore Statutes Online (2016).

[8] Singapore Statutes Online (2003).

8.3.3 Strategy

Sectoral Manpower Development Plan[9]
SkillsFuture Singapore (SSG) will work closely with employers and other key stakeholders to design and implement a framework to enable individuals to advance in their careers by climbing skill ladders.

In collaboration with sector lead agencies, employers, and unions, SSG will co-develop medium-term manpower and skills plans for each key sector, in order to support industry growth and productivity efforts. These sectoral manpower strategies will identify sector-specific manpower and skills requirements over a five-year period, and outline a holistic package of measures to meet these requirements.

Industry Transformation Maps (ITMs)[10] ***and Skills Frameworks (SFs)***[11]
Under the S$4.5 billion Industry Transformation Programme, road maps have been developed for 23 industries to address issues within each industry and deepen partnerships between government, firms, industries, trade associations and chambers.

The FEC will take overall responsibility for the implementation of the ITMs. To do so, the FEC has six subcommittees, with each subcommittee overseeing a group of ITMs within the same broad cluster of industries. The ITMs are grouped into six clusters,[12] each comprising a group of them from the same broad cluster of industries, namely manufacturing, built environment, trade and connectivity, essential domestic services, modern services and lifestyle. Each ITM will consist of a growth and competitiveness plan, supported by four pillars, i.e. productivity, jobs and skills, innovation, and trade and internationalisation.[13,14]

The Skills Framework,[15] which is an integral component of the Industry Transformation Maps, is co-created by employers, industry associations, unions and the government for the Singaporean workforce. The Skills Framework provides key information on sector and employment, career pathways, occupations/job roles, as well as existing and emerging skills required for the identified occupations/job roles. It also provides a list of training programmes for skills upgrading and mastery.

The Skills Framework aims to create a common skills language for individuals, employers and training providers. This further helps to facilitate skills recognition and support the design of training programmes for skills and career development. The Skills Framework is also developed with the objectives to build deep skills for a lean workforce, enhance business competitiveness and support employment and employability.

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[9] Sectoral Manpower Development Plan (SMDP) (n.d.).

[10] Industry Transformation Maps (ITMs) (2016).

[11] Skills Framework (n.d.).

[12] See Footnote 10.

[13] MTI (Ministry of Trade and Industry Singapore) (2017).

[14] MTI (Ministry of Trade and Industry Singapore) (2016).

[15] See Footnote 11.

8.4 TVET Governance and Financing

8.4.1 Governance

The **National Manpower Council** comprising the Ministry of Trade and Industry (MTI), the Ministry of Manpower (MOM) and the Ministry of Education (MOE), is responsible for national skills manpower planning and training. MOE oversees policy implementations introduced by SSG.

SkillsFuture Singapore [16,17]

SSG will drive and coordinate the implementation of the national SkillsFuture movement, promote a culture and holistic system of lifelong learning through the pursuit of skills mastery, and strengthen the ecosystem of quality education and training in Singapore.

SSG will strengthen the adult training infrastructure by taking on all existing functions of the Committee for Private Education (CPE) and the Institute for Adult Learning (IAL) to enhance the capabilities and professionalism of adult educators. SSG will play a key role in the quality assurance for private education institutions and adult training centres. Together with educational institutions and training partners, SSG will ensure that students and working adults have access to high-quality, industry-relevant training throughout life. SSG will also bring together synergies in continuing education and training (CET) and pre-employment training (PET), so skills requirements will continue to meet the demands of different sectors of the economy.

SSG is committed to high standards of corporate governance. The SSG Board and Management have established a framework to ensure strict adherence to good corporate governance practices. The SSG Board provides guidance and advice to the SSG Management on all matters under SSG's purview, including its policy, regulatory and promotional roles. It also reviews and approves the strategic plans and budgets of SSG. The SSG Board members come from diverse backgrounds such as the unions and the private and public sectors. This allows SSG to tap on their varied experiences and perspectives.

Workforce Singapore [18,19]

WSG oversees the transformation of the local workforce and industry to meet ongoing economic challenges. WSG will promote the development, competitiveness, inclusiveness and employability of all levels of the workforce. This will ensure that all sectors of the economy are supported by a strong, inclusive Singaporean core.

While its key focus is to help workers meet their career aspirations and secure quality jobs at different stages of life, WSG will also address the needs of business owners and companies by providing support to enable manpower-lean enterprises

[16] About Us (n.d.).

[17] See Footnote 1.

[18] See Footnote 16.

[19] See Footnote 1.

to remain competitive. Furthermore, it will help businesses in different economic sectors create quality jobs, develop a manpower pipeline to support industry growth, and match the right people to the right jobs.

WSG is committed to high standards of corporate governance. The WSG Board and Management have established a framework to ensure strict adherence to good corporate governance practices. The WSG Board provides guidance and advice to the WSG Management on all matters under WSG's scope, including its policy and operational and promotional roles.

The WSG Board also reviews and approves the strategic plans and budgets of WSG. WSG Board members are selected from a diverse range of backgrounds, from the unions, and the private and public sectors to tap on their varied experiences and perspectives.

8.4.2 Financing

MOE provides development and recurrent funds to all educational institutions including TVET institutions like the Institute of Technical Education and the five polytechnics.

The total amount of development funds for education fluctuates according to the needs. Figure 8.2 shows Government of Singapore's total development expenditure on education on an annual basis from 1981 to 2016.

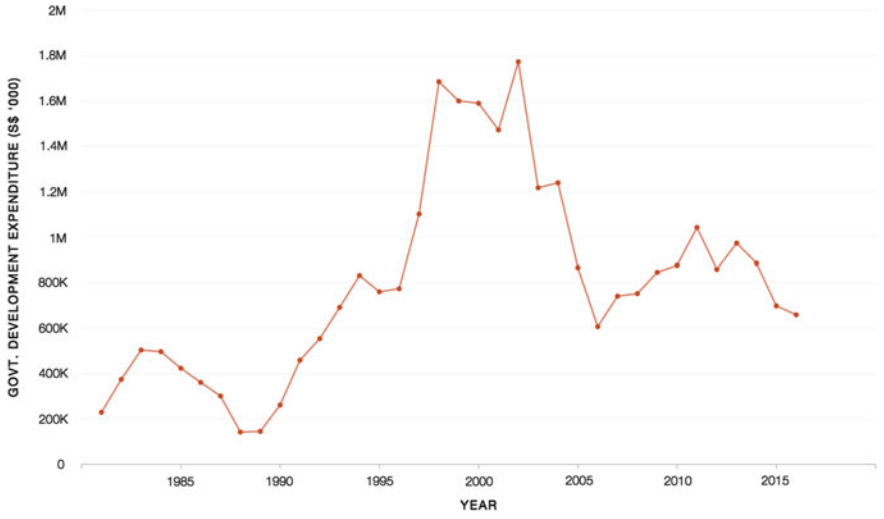

Fig. 8.2 Government development expenditure on education (Government of Singapore 2017a)

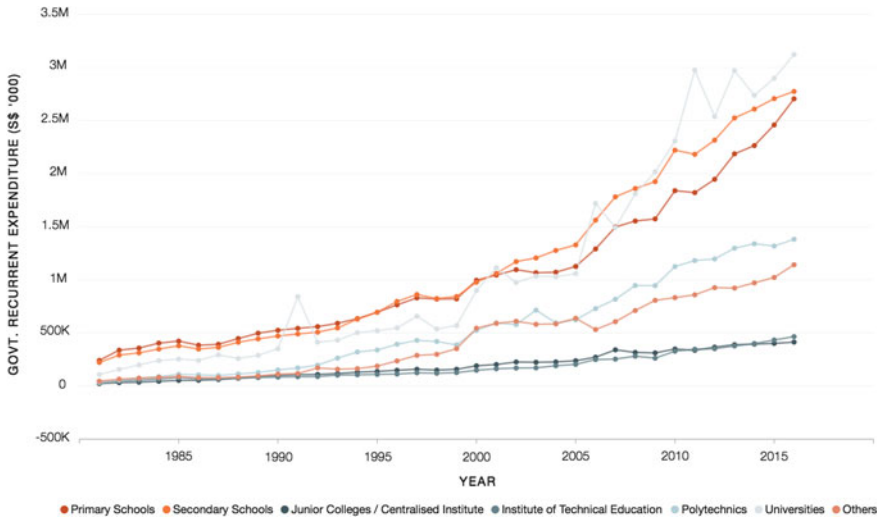

Fig. 8.3 Government recurrent expenditure on education by type of educational institution (Government of Singapore (2017b)

The distribution of government recurrent funds based on type of educational institutions for the period 1981–2016 is shown in Fig. 8.3. The general trend is that the amount has continuously increased each year.

The government recurrent expenditure on education per student for the period 1986–2016 broken down by the type of educational institution can be seen in Fig. 8.4. The general trend is that the expenditure per student at ITE and polytechnics has remained higher than the expenditure per student at primary or secondary school.

8.5 Education and TVET System

8.5.1 National Education System

As seen in the Singapore Education System (Fig. 8.5), Singapore has six years of primary education, four to five years of secondary education, two or more years of post-secondary education, including university. TVET courses are offered at secondary level, as well as at post-secondary level through ITE, five polytechnics, apprenticeship systems and continuing education.

According to the Compulsory Education (CE) Act,[20] a child of 'compulsory school age' is one who is above the age of 6 years and who has not yet attained the age of 15 years. Compulsory Education was implemented in Singapore in 2003.

[20]Compulsory Education (n.d.).

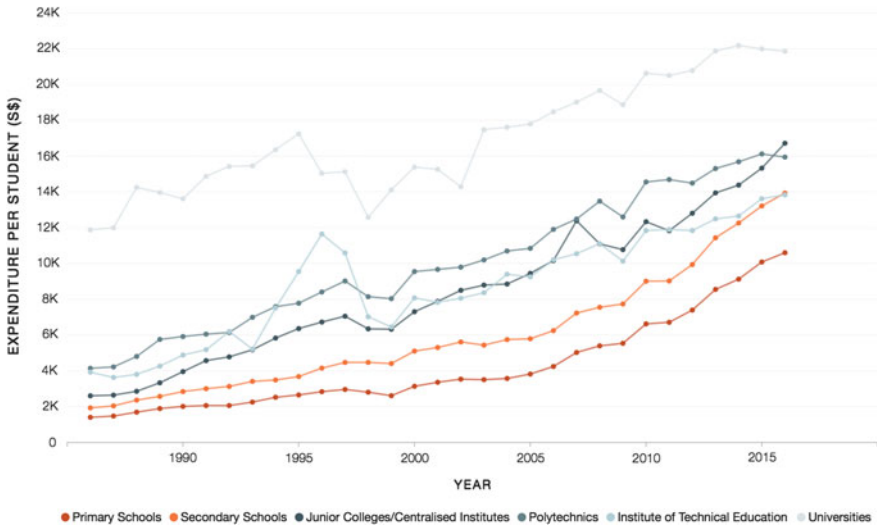

Fig. 8.4 Government recurrent expenditure on education per student (Government of Singapore 2017c)

The first cohort of pupils under CE are Singapore citizen children born between 2 January 1996 and 1 January 1997 who are residing in the country.

8.5.2 Formal TVET System (PET—Pre-Employment Training)

Singapore's education policy is shaped primarily by the global economic landscape and the industry's human resource requirements. Its leaders have a good understanding of how its education system can nurture every citizen to succeed in the knowledge economy.

Progression Pathways

The current education system has both vertical and lateral progression pathways to allow every child to work towards their aspirations according to their strengths and learning pace (Fig. 8.6). After receiving at least ten years of formal education, students have the options to join the following post-secondary educational institutions (PSEIs)[21]:

1. Those who are more academically inclined may opt to study a pre-university course, either at a junior college (2-year course) or at a centralised institute (3-year course) and then take the GCE 'A'-Level examinations in order to gain entry to university.

[21] Post-secondary (Education) (n.d.).

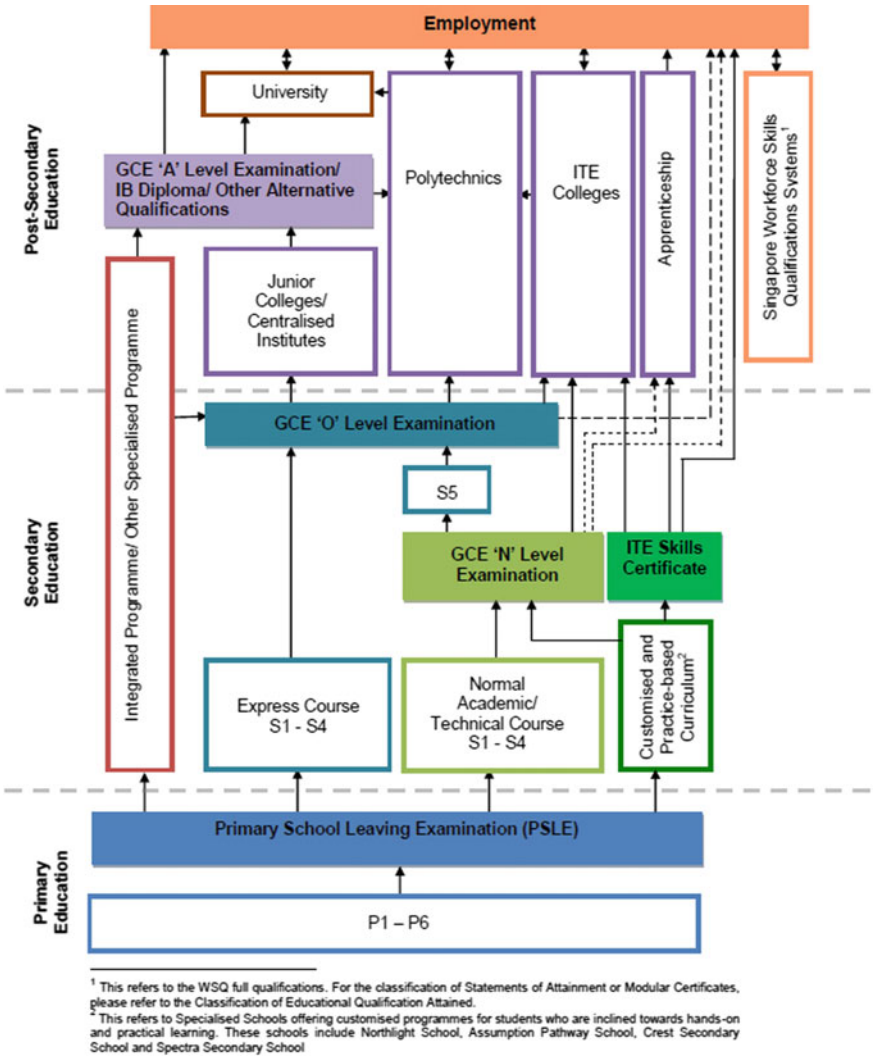

Fig. 8.5 Singapore education system with CET system (Department of statistics (Ministry of Trade and Industry Singapore) 2015)

2. Those who prefer a diploma that focuses on technical skills required of middle-level professionals may pursue a programme at one of the five polytechnics (3-year course).
3. Those who are vocationally inclined may acquire trade skills at the Institute of Technical Education (ITE) and be awarded the National ITE Certificate *(Nitec)* that is industry recognised.

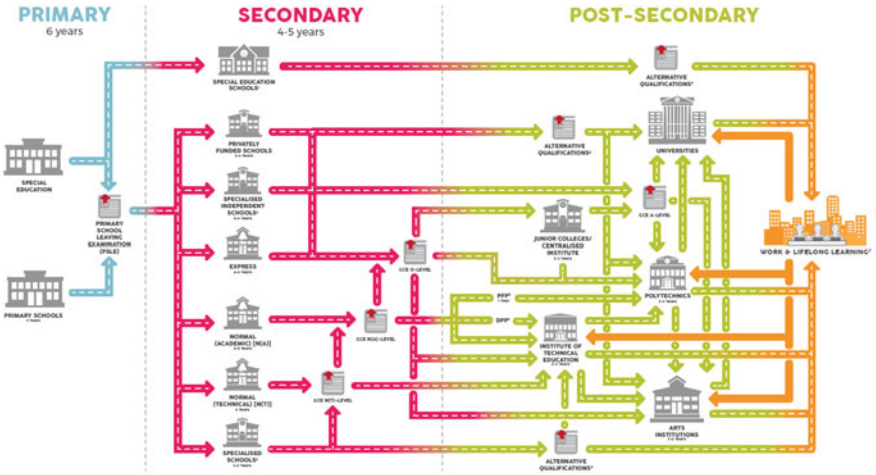

Fig. 8.6 Singapore's education system and pathways (MOE (Ministry of Education Singapore) 2017)

TVET Institutes and Studies

ITE and polytechnics are the key providers of TVET at post-secondary level.

(a) **Institute of Technical Education (ITE)**[22,23]

Institute of Technical Education Act (Chapter 141A)[24] led to the establishment of the ITE on 1 April 1992. As a post-secondary institution, the ITE took over the role and functions of the Vocational and Industrial Training Board (VITB) (1979–1991) and focused its effort on meeting manpower needs at the technician and semi-professional level. ITE offers close to 100 courses across 12 sectors, covering industries in engineering, business and services, electronics and IT, applied and health sciences, design and media, hospitality and tourism. To support lifelong learning and ensure continued relevance, ITE's programmes also cater to ITE graduates and adult learners who enrol in its part-time courses. ITE has three colleges (College East, College West and College Central) that were built one after another since 2005. Together, they have student enrolment of about 28,000 full-time students (2017). With a 'One ITE System, Three Colleges' education and governance model, ITE is able to offer high-quality courses that are delivered consistently across the colleges. ITE's unique 'Hands-on, Minds-on, Hearts-on'[25] education philosophy nurtures students holistically through applied learning in authentic environment, opportunities to apply cre-

[22] About ITE (n.d.).

[23] See Footnote 21.

[24] Singapore Statutes Online (n.d.).

[25] Varaprasad (2016).

ative thinking to solve real-world problems and programmes that imbue sound values towards self, others and the community.

ITE provides pre-employment career and technical training to secondary school leavers. About 25% of secondary school leavers join ITE for full-time career and technical training. ITE courses lead to the National ITE Certificate (*Nitec*) or the Higher National ITE Certificate (*Higher Nitec*).[26] Students are typically between 17 and 19 years old when they enrol in ITE courses.[27] The required educational qualification to enter post-secondary studies at ITE is GCE 'O'- or 'N'-Level certificates for full-time courses.[28]

Apart from full-time institutional training, students can also acquire skills certification through traineeship programmes conducted jointly by companies and ITE. ITE also offers Technical Diploma Programmes (TDPs) in collaboration with foreign partners in niche areas such as automotive engineering and culinary arts, to provide additional pathways for skills upgrading. Those who are interested in furthering their education can also be considered for admission to the polytechnics based on their *Nitec* or *Higher Nitec* qualifications.

The government's 2016 recurrent expenditure on training provided by ITE was around S$465 million.[29]

(b) **Polytechnics**

There are five polytechnics in Singapore,[30] namely Nanyang Polytechnic (NYP), Ngee Ann Polytechnic (NP), Republic Polytechnic (RP), Singapore Polytechnic (SP) and Temasek Polytechnic (TP). They offer a wide range of post-secondary courses in diverse fields which equip graduates with practical knowledge and skills to meet the economy's manpower needs.

GCE 'O'-Level school leavers may enrol in one of the five polytechnics in Singapore to pursue full-time diploma programmes. Most of the polytechnic graduates enter the workforce after graduation, but about four in ten would go on to obtain a university degree within five years of graduation from the polytechnic. Therefore, polytechnic education with its practice-oriented curricular in exciting fields such as biomedical and life sciences, design, hospitality and tourism management, and interactive and digital media has become an attractive alternative to the more academic junior college education for progression to the university.

To enter polytechnics, the required educational qualifications are GCE 'O'-Level certificates, *Nitec* or *Higher Nitec* qualifications for full-time (3-year) diploma courses. Those with other qualifications such as GCE 'A'-Level certificates may also be considered. Students with GCE 'N'-Level certificates may apply for a place in the polytechnics through the Polytechnic Foundation Programme, which admits students to the foundation year of a specific diploma course.

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[26] Progression Opportunities (n.d.).

[27] Ting (2015).

[28] See Footnote 26.

[29] MOE (Ministry of Education Singapore) (2017).

[30] A guide to polytechnic education—Introduction (n.d.).

Students in the polytechnics are given opportunities to immerse themselves in the relevant industries via work attachments that vary in duration from six weeks to six months or longer for selected courses. Such exposure to industry work and culture provides students with on-the-job experiences, as well as opportunities to network with practitioners. Owing to the practice-based learning approach, students acquire valuable life skills and become creative problem solvers. The polytechnics have excellent training facilities, including industry standard laboratories and workshops, well-equipped lecture halls and tutorial rooms, and libraries with comprehensive physical and digital collections.
The government's 2016 recurrent expenditure on training provided by the polytechnics was around S$1.38 billion.[31]

8.5.3 Formal TVET System (CET—Continuing Education and Training)

Every child in Singapore has the opportunity to receive education for at least ten years. This is followed by post-secondary education for more than 90% of the secondary school leavers. For this reason, non-formal and informal TVET is insignificant in Singapore. Furthermore, with SkillsFuture, the government has invested extensively to meet the training needs of adult learners to ensure that their skills remain relevant to the economy.

Mr Ong Ye Kung[32] then Minister for Education (Higher Education and Skills) in his opening address at The Lifelong Learning Festival 2017 outlined the government's plans to ramp up CET delivery capacity via employers, private training institutes and Institutes of Higher Learning (IHLs).

Over the next few years, from 2017 to 2020, MOE will expand CET delivery capacity significantly, by ramping up delivery by IHLs. This will ensure that CET delivery system rests on three equally strong pillars—employers, private training institutes and IHLs—each playing a critical, systemic role.

The government is working with the unions and industry bodies to build up the second CET pillar—private sector training institutions, to offer subsidised training directly to individual workers. Today, there are about 50 private-sector led CET centres offering training for workers across many industries. Community Development Councils (CDCs) and NTUC's Employment and Employability Institute (e2i) have helped connect individual workers to relevant training courses offered by CET centres, making the promotion of lifelong learning a strong tripartite effort. To upgrade their skills and enhance their employability, workers can sign up for the Workforce Skills Qualifications (WSQ) programmes.

[31] See Footnote 29.

[32] See Footnote 29.

Table 8.1 Singapore standard educational classification[a]

Level of education	Benchmark
No qualification 1 Pre-primary/lower primary education	Did not pass primary school leaving examination (PSLE) or equivalent
Primary qualification	Passed PSLE or equivalent
Lower secondary qualification	Did not pass general certificate of education (GCE) at 'Normal' ('N') or 'Ordinary' ('O') level or equivalent
Secondary qualification	Obtained at least one pass at GCE 'N' or 'O' Level or equivalent
Post-secondary qualification (non- tertiary)	Obtained at least one pass at GCE 'Advanced' ('A') level or equivalent or awarded at least an ITE Nitec or higher Nitec certification or equivalent
Polytechnic diploma	Awarded a diploma or advanced diploma by a polytechnic
Professional qualification	Obtained a certificate, diploma or other qualification by a professional body or vocational institution
Bachelor's or equivalent	Awarded bachelor's degree or equivalent by a university
Postgraduate diploma/certificate qualification (excluding master's and doctorate)	Awarded postgraduate diploma or certificate by a university or postgraduate educational or training institution
Master's and doctorate or equivalent	Awarded postgraduate degree or equivalent by a university or postgraduate educational institution

[a]Department of statistics (Ministry of Trade and Industry Singapore) (2015)

8.6 National Qualifications Framework

The Singapore Department of Statistics has developed **the Singapore Standard Educational Classification** (SSEC) for statistical purposes (as shown in Table 8.1). The SSEC distinguishes between various educational levels according to education type (primary, secondary, post-secondary, etc.), but does not set or describe any competency outcomes for these levels.

ITE Certification Framework

The following framework is an example of TVET certification frameworks from the Institute of Technical Education. ITE provides four levels of certification:

- ITE Skills Certificate for courses that require completion of primary school education as an entry requirement;
- National ITE Certificate (*Nitec*) for courses that require completion of GCE 'N' or GCE 'O' as an entry requirement with prerequisites for certain courses;
- Higher National ITE Certificate (*Higher Nitec*) for courses that require GCE 'O' or GCE 'N(A) with prerequisites as an entry requirement; and
- Technical Diploma or Work-Learn Technical Diploma for courses that require relevant *Higher Nitec/Nitec* as an entry requirement in specific industries.

Certificate of Competency (CoC) is a new certification introduced in 2017 to cater to professionals, managers, executives and technicians looking for short courses to help them in their career progression/transition or to keep abreast of changes in skills needed by the markets. CoC courses generally do not have minimum entry requirements (MER) to facilitate access to adult learners. However, prerequisite knowledge of work experience in the relevant areas where necessary will be indicated in the course promotional material as an advisory note to applicants. MER may be stipulated for courses where regulatory requirements have to be complied with. The ITE Certification Framework is shown in Fig. 8.7 as follows:

National Skills Framework

At the national level, the **Skills Framework**[33] is a recent collaborative initiative between the government and employers, industry associations, unions and professional bodies, as part of the Industry Transformation Maps.[34]

A Skills Framework (SF) is outlined below in Fig. 8.8.

Effort is underway to develop Skills Frameworks to support the Industry Transformation Maps. Starting from 2016, the Skills Frameworks are being launched progressively for various sectors. As of March 2018, the SF has already been launched for 21 sectors in total.[35]

The **Singapore Workforce Skills Qualifications** (WSQ)[36] is a national credential system that trains, develops, assesses and certifies skills and competencies for the workforce. As a continuing education and training (CET) system, WSQ supports the SkillsFuture movement to:

- Promote recognition of skills and competencies to facilitate progression, mastery and mobility;
- Promote holistic development of the workforce through technical and generic skills and competencies;
- Support economic development by professionalising skills and competencies to drive industry transformation, productivity and innovation efforts; and

[33] See Footnote 11.

[34] See Footnote 14.

[35] Skills Framework: Which are the Sectors? (n.d.).

[36] Singapore Workforce Skills Qualifications (WSQ) (n.d.).

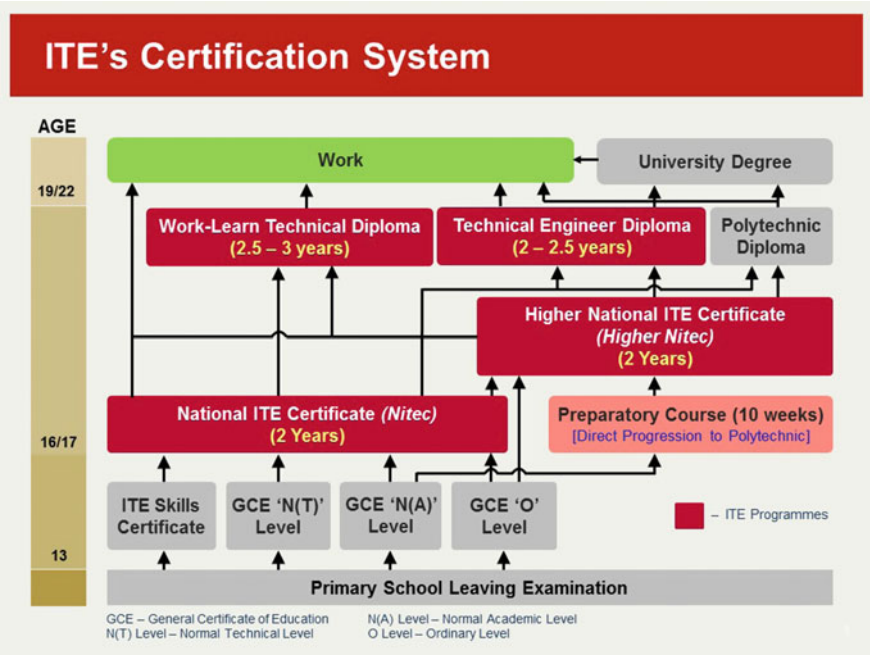

Fig. 8.7 ITE certification framework. *Source* ITE

- Encourage lifelong learning.

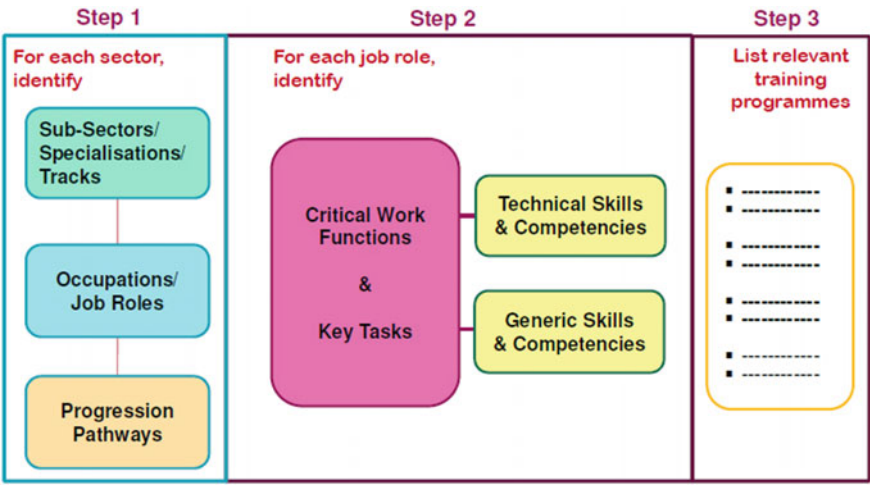

Fig. 8.8 Skills framework (Foo 2017)

Training programmes developed under the WSQ system are based on skills and competencies validated by employers, unions and professional bodies. This process ensures existing and emerging skills and competencies that are in demand are used to inform training and development under WSQ.

8.7 Quality Assurance and Standards

Workforce Skills Qualifications (WSQ)[37]
With the roll-out of the Skills Frameworks in 2016, the WSQ adopts the skills and competencies covered in the Skills Frameworks. The WSQ programmes are funded and quality-assured by SkillsFuture Singapore, which awards the WSQ certifications.
Quality Assurance Framework (QAF)
MOE introduced the ITE Quality Assurance Framework (IQAF) and Polytechnic Quality Assurance Framework (PQAF) in 2007 to ensure that the ITE and polytechnic systems and structures for resource allocation, human resource management and other organisational processes are properly aligned to achieve its mission.

Key features of the QAF include:

- **Assessment Cycle**: 5-year cycle.
- **Review Methodology**:
  - ***Institutional self-assessment***: The institution will submit its Institutional Self-Assessment Report (ISAR) to the MOE prior to the site visit. The ISAR is a self-assessment against 25 institutional goals in five areas: governance and leadership, management and strategic planning, teaching and learning, industry linkages and service.
  - ***External Validation (EV)***: An External Review Panel (ERP) commissioned by the MOE will then conduct a 5-day EV (site visit). The review will culminate in a qualitative report (EV report) that confirms good practices and identifies areas where action for improvement is required or recommended.
- **Quality Improvement Projects**: The institution will then submit action plans with clear milestones to address areas identified for improvement in the EV report. It is also required to submit a progress report on the action plans and issues raised by the EV at the annual Performance Review Forum with the MOE.

8.8 TVET Graduates

According to the Education Statistics Digest 2017 by the Ministry of Education Singapore,[38] engineering is the most popular course among ITE students (Table 8.2),

[37] See Footnote 36.
[38] See Footnote 29.

Table 8.2 Intake, enrolment and graduates of ITE by course (full-time), 2016[a]

Courses	Intake		Enrolment		Graduates	
	Total	Female	Total	Female	Total	Female
Total	14,763	5635	27,519	10,346	12,516	4863
Applied and health sciences	1234	740	2322	1427	988	632
Business and services	4152	2591	7411	4594	3654	2334
Design and media	965	479	1851	921	735	373
Engineering	4488	647	8483	1164	3753	469
Electronics and infocomm technology	3318	859	6324	1638	2858	764
Hospitality	606	319	1128	602	528	291

[a]MOE (Ministry of Education Singapore) (2017)

followed by business and services, and electronics and infocomm technology, respectively. Similar to ITE, the most popular course at polytechnics is also engineering (Table 8.3). The next popular courses are business and administration, information technology, and health sciences, respectively.

According to the Singapore Yearbook of Manpower Statistics 2018[39] for the year 2017, 86.4% of fresh graduates from polytechnics and 89.8% of post-NS graduates from polytechnics were employed either on a full-time or a part-time basis. The median monthly starting salaries for fresh graduates and post-NS graduates engaged in full-time work were S$2200 and S$2480, respectively. On the other hand, 79.9% fresh ITE graduates and 85.3% post-NS ITE graduates, respectively, found either full-time or part-time employment. The median monthly starting salaries for fresh graduates and post-NS graduates engaged in full-time work were S$1700 and S$2100, respectively (while fresh graduates comprise mostly females who are not liable for National Service (NS) after graduation and males who defer NS for further studies, post-NS graduates comprise male graduates who have completed their full-time NS, between April 2016 and March 2017 for 2017 data). Table 8.4 lists out the key statistics on employment outcome of graduates from Institutions of Higher Learning (IHLs) for the period 2007–2017.

[39]MOM (Ministry of Manpower) (2018).

Table 8.3 Intake, enrolment and graduates of polytechnics by course (full-time), 2016[a]

Courses	Intake		Enrolment		Graduates	
	Total	Female	Total	Female	Total	Female
Total	23,121	11,018	73,149	35,128	25,104	12,211
Applied arts	1721	1011	5236	3064	1783	1024
Architecture, building and real estate	623	371	2039	1207	743	420
Business and administration	4646	2846	15,203	9406	5595	3417
Education	586	548	1252	1181	307	277
Engineering sciences	6811	1395	21,334	4721	6939	1601
Health sciences	2537	1894	7806	5704	2556	1895
Humanities and social sciences	342	256	1020	758	353	261
Information technology	2769	906	9198	3175	3305	1275
Law	101	66	357	218	126	68
Mass communication	618	457	1920	1436	701	498
Science and related technologies	1296	789	4302	2634	1457	904
Services	1071	479	3482	1624	1239	571

Note
(1) Intake, enrolment and graduate figures refer to diploma courses only. Intake excludes students on Polytechnic Foundation Programme
(2) Intake includes direct entry to second year
(3) Refer to the Appendix for the classification of courses. Courses are classified according to course content of the highest weighting
[a]MOE (Ministry of Education Singapore) (2017)

8.9 TVET Personnel (Teachers)

8.9.1 Hiring Practices

The polytechnics and ITE recruit lecturers who have professional qualifications and working experience in the relevant industry. They bring with them a wealth of professional knowledge and expertise, as well as their own industry network.

8.9.2 Teachers' Professional Development

To help them stay in touch with the constantly changing industry practices, polytechnics and ITE lecturers can upgrade themselves through industrial and workplace attachment or attend postgraduate courses.

To assist academic staff in their roles as lecturers, polytechnic lecturers usually undergo a short induction course at the time of joining. However, in-service courses

Table 8.4 Key statistics on employment outcome of graduates from institutions of higher learning, 2007–2017 (MOM (Ministry of Manpower) 2018)

Institutions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017
Universities (*NTU, NUS, SMU*)											
Proportion of graduates in the labour force who are employed (%)	94.5	91.3	90.6	90.7	91.4	91.0	89.3	89.1	89.5	89.5	88.9
Full-time permanent	89.8	87.3	84.7	84.8	86.4	85.6	83.4	82.7	83.1	79.9	78.4
Part-time/temporary/freelance	4.7	4.0	5.8	5.9	5.0	5.4	5.9	6.4	6.5	9.7	10.5
Median gross monthly starting salary of graduates in full-time permanent employment ($)	2750	2850	2700	2900	3000	3050	3050	3280	3300	3300	3400
Polytechnics											
Fresh graduates											
Proportion of graduates in the labour force who are employed (%)	93.0	89.8	88.5	91.5	92.1	91.0	89.8	89.2	88.9	90.6	86.4
Full-time permanent	75.3	68.5	62.6	68.5	67.0	65.4	62.7	59.4	57.9	55.8	52.8
Part-time/temporary/freelance	17.7	21.3	25.7	23.0	25.1	25.7	27.1	29.8	31.0	34.8	33.7
Median gross monthly starting salary of graduates in full-time permanent employment ($)	1700	1800	1700	1660	1850	1950	2090	2000	2100	2166	2200
Post-NS graduates											
Proportion of graduates in the labour force who are employed (%)	92.7	87.8	87.7	95.4	94.7	93.1	92.8	92.4	91.5	95.4	89.8
Full-time permanent	82.3	76.0	71.1	81.3	80.1	77.8	74.2	73.0	70.8	79.2	64.0
Part-timer/temporary/freelance	10.4	11.8	16.6	14.1	14.6	15.3	18.7	19.3	20.7	25.2	25.8
Median gross monthly starting salary of graduates in full-time permanent employment ($)	2000	2000	2000	2000	2100	2253	2250	2400	2500	2517	2480
Institute of technical education (*ITE*)											

(continued)

Table 8.4 (continued)

Institutions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017
Fresh graduates											
Proportion of graduates in the labour force who arc employed (%)	92.9	88.2	81.1	84.7	84.1	83.2	81.7	83.0	83.2	86.7	79.9
Full-time permanent	71.1	61.9	57.6	57.8	63.5	51.5	62.4	59.3	48.4	40.3	40.2
Part-timer temporary/freelance	21.8	26.4	23.5	26.9	20.6	31.7	19.4	23.7	34.7	46.5	39.7
Median gross monthly starting salary of graduates in full-time permanent employment ($)	1217	1.300	1200	1.291	1300	1350	1410	1500	1700	1655	1.700
Post-NS graduates											
Proportion of graduates in the labour force who are employed (%)	93.9	90.8	88.4	90.4	89.6	89.6	89.9	89.4	86.8	86.1	85.3
Full-time permanent	79.8	76.4	76.4	78.3	79.7	79.4	80.4	78.6	63.0	67.3	63.7

(continued)

Table 8.4 (continued)

Institutions	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016[a]	2017
Part-time/temporary/freelance	14.2	14.4	10.0	1.20	10.0	10.2	9.4	10.8	23.8	18.8	21.8
Median gross monthly starting salary of graduates in full-time permanent employment ($)	1400	1600	1500	1600	1600	1700	1743	1835	1950	2000	2100

[a]2016 data for Universities have been updated

Notes

(1) Proportion in employment refers to the employed as a proportion of graduates who have entered the labour market as at the reference date, approximately 6 months after completion of final examinations

(2) Full-time permanent employment refers to employment of less than 35 h a week and where employment is not temporary. It includes those on contracts of one year or more. Before 2009, full-time employment refers to employment where normal hours of work is 30 h or more

(3) Part-time/temporary/freelance employment refers to employment of less than 35 h a week and where employment is casual, interim or seasonal. It includes those on contracts of less than one year

(4) Gross monthly starting salary comprises the basic salary, fixed allowances, overtime pay and commissions. Bonuses are excluded

(5) Fresh graduates refer to those who had completed their studies in the year, comprising mostly females who are not liable for National Services (NS) after graduation and males who defer NS for further studies

(6) Post-NS graduates refer to male graduates who had completed their studies about 2 years earlier. For example, 2017 data refers to male graduates who completed their full-time NS between April 2016 and March 2017 for Polytechnics and ITE graduates

(7) Universities refer to Nanyang Technological University (NTU), National University of Singapore (NUS) and Singapore Management University (SMU)

(8) Polytechnics refer to Nanyang Polytechnic (NYP), Ngee Ann Polytechnic (NP), Republic Polytechnic (RP), Singapore Polytechnic (SP) and Temasek Polytechnic (TP)

are normally provided by professional learning designers from the teaching and learning centres to ensure that lecturers are up-to-date with the most current pedagogical practices including the use of educational technologies for teaching delivery.

ITE's Total Organisation Capability initiative encourages its lecturers to enhance their competencies both in their individual and cross-domain capabilities. Besides workplace attachments and training courses, lecturers can hone their skills by participating in projects, consultancy work or experiencing real-world projects in the Technology Development Centres. In ITE, it is mandatory for new lecturers to undergo a rigorous Advanced Certificate in Technical Education Programme (ACTEP) that has duration of 40 weeks. Face-to-face modules are conducted during vacations and interspersed with practicum that is supervised by lecturer mentors. Experienced lecturers who would like to deepen their competencies in designing learning and leading pedagogic practices can attend in-service programmes at the diploma level. Other in-service lecturers can opt to attend courses that are related to the integration of ICT in lesson delivery, pastoral care or educational career guidance.

8.10 Private Sector Cooperation

Private sector plays a significant role in developing a skilled, future-ready and an employable workforce in Singapore and is an integral part of the national TVET system.

In order to (a) identify and promote the enhancement of industry-specific skills, (b) enhance individuals' employability, and (c) increase workforce productivity and improve the international competitiveness of commerce and industry, the *Workforce Singapore Agency Act* (*Chapter* 305*D*) along with other functions mandates the Workforce Singapore to collaborate with and support employers, relevant representatives of commerce or industry and public sector agencies in Singapore.[40]

IHLs foster partnerships with the private sector in myriad ways. For instance, ITE's partnerships with the private sector are established through the following programmes (Fig. 8.9).

ITE's strong engagement with industry can be seen from:

- Over 2600 employers as co-learning partners offering internships and workplace learning for students; and
- Over 200 active industry partnerships for authentic learning, industry and technology update and capability development.

[40] Singapore Statutes Online (n.d.).

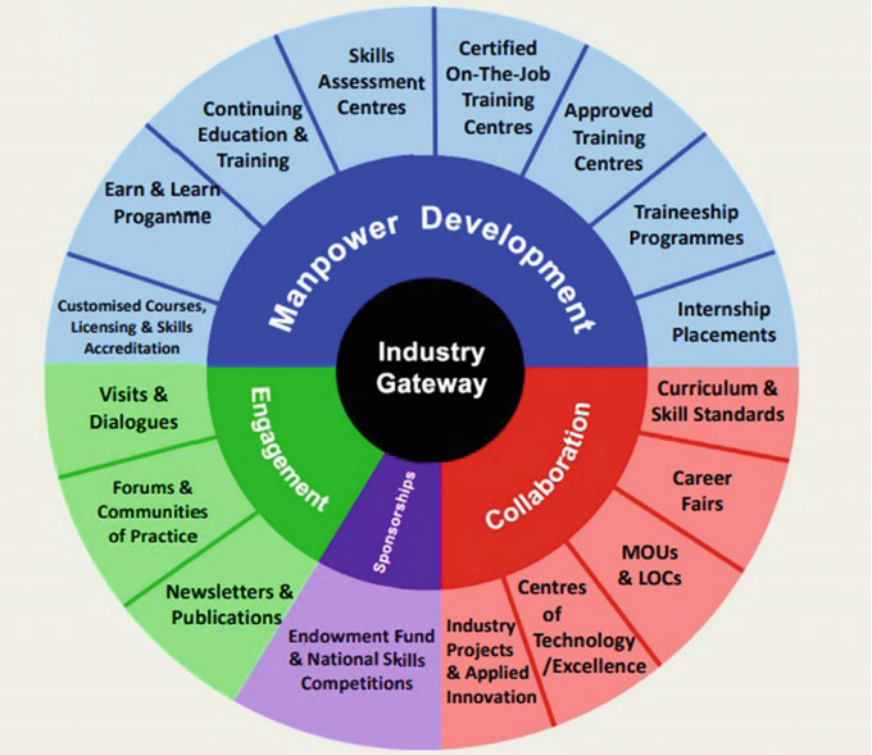

Fig. 8.9 ITE's industry gateways to build partnerships with the private sector (Ting 2015)

8.11 Current Trends and Practices

In the wake of Industry 4.0, a highly skilled Singaporean workforce—*that is future ready*—is seen as the key contributor in advancing a world-class economy that is diverse, inclusive and globally competitive. As a result, the government continues to strengthen and promote practice-based curricula to give learners real work experiences that will add mileage to their career progression. To better prepare our students for the future world of work, schools have introduced career guidance programmes to help them discover and explore their strengths and interests. The following efforts are examples of current trends and practices:

Earn and Learn Programme[41]

The SkillsFuture Earn and Learn Programme (ELP) is a work-learn programme that gives fresh graduates from polytechnics and the ITE a head start in careers related to their discipline of study. It provides them with more opportunities, after graduation,

[41] SkillsFuture Earn and Learn Programme (n.d.).

to build on the skills and knowledge they acquired in school, as well as helps support their transition into the workforce.

Participating employers can recruit local fresh talent, within three years of graduation or the Operationally Ready Date for National Servicemen and prepare them to take up suitable job roles. Participants in the programme can look forward to a structured career progression pathway within the organisation.

This programme is designed in collaboration with the industry to ensure relevance to employers and the growth of the sector. Since 2015, the SkillsFuture Earn and Learn Programme has been introduced in 25 sectors, including aerospace, biomedical sciences, food services, game development, healthcare, hotel, information technology and retail.

Apprentice-based Work-Learn Technical Diplomas[42]

Similar to the SkillsFuture Earn and Learn Programmes, the new Work-Learn Technical Diploma (WLTD) programmes are developed and delivered in close partnership with key employers. Learning takes place both at the workplace and on campus, with 70% of the curriculum time dedicated to On-the-Job Training. The Institute of Technical Education (ITE) will award these WLTDs.

The WLTD programmes last between 2.5 and 3 years. Up to 120 places across the four programmes have been offered for the first intake in April 2018. As a start, employers such as Certis CISCO, ST Electronics, Keppel Offshore & Marine, Sembcorp Marine Ltd, St Luke's Eldercare and AWWA have committed to providing training places for the WLTD programmes, and ITE looks forward to more companies coming onboard. With the new WLTDs, ITE graduates can look forward to career progression opportunities after completion of the programmes.

***Education and Career Guidance* (ECG)**[43]

Education and Career Guidance (ECG) is about equipping students, as well as adults with the necessary knowledge, skills and values to make informed education and career decisions. Through ECG, students and adults will be encouraged to learn more about their own interests, abilities and passions. By exploring the learning or education pathways and career opportunities available across different industries, individuals can take positive steps towards realising their aspirations, as well as embrace learning throughout their life.

A more structured and coordinated ECG system will provide relevant and timely support to individuals at different life stages—starting from the early schooling years and continuing throughout one's working life:

Primary, Secondary, Junior College and Centralised Institute students: A structured ECG curriculum has been in place for primary 3–6 students since 2012 and for students at the secondary level since 2014. On top of other education planning and career exploration programmes and activities, an interactive Web-based MySkillsFuture portal (https://www.myskillsfuture.sg/content/portal/en/index.html) that helps students discover their own strengths and interests will complement the ECG curriculum. ECG Counsellors in MOE schools will provide individual counselling or

[42] SkillsFuture SG (2017).

[43] Education and Career Guidance (ECG) (n.d.).

group guidance for students in education and career choices. Aside from supporting and collaborating with the relevant personnel to drive and facilitate the provision of quality ECG experiences for students, counsellors will communicate and engage with parents and industry partners where required.

ITE and polytechnic students: A minimum of 40–60 h across two years for ITE students and three years for polytechnic students will be set aside for ECG. Students can engage in ECG-related activities and lessons conducted in the classroom and participate in out-of-classroom activities such as industry immersion programmes, learning journeys and career talks. This will help them to continue developing skills to make informed career decisions and prepare them for a smooth transition into the workplace. Students will also be able to meet with ECG Counsellors in small groups or through individual appointments.

Students from the publicly funded universities: Dedicated career services offices or centres on campus offer career counselling services and preparation programmes that will help students identify and prepare for careers related to their strengths, interests and fields of study.

Adults: They may access career and training advisory services through the Workforce Singapore's (WSG) network of career centres. New workforce entrants, mid-career switchers or individuals in career transition can benefit from the suite of services provided by the career centres. The services include career coaching, employability skills workshops, networking sessions and more.

8.12 Ongoing Reforms/Projects

Singapore aims to embark upon the next phase of development towards an advanced economy and inclusive society. The **Future Economy Council (FEC)**[44] drives the growth and transformation of Singapore's economy for the future and foresees five futures for the nation. These are:

1. **Future Jobs and Skills**.
2. **Future Growth Industries and Markets**.
3. Future of Connectivity.
4. Future City.
5. **Future Corporate Capabilities and Innovation**.

In line with this, the FEC has set out three key areas of work,[45] which are to:

- Grow a vibrant and open economy that is connected to the world, and where trade association and chambers (TACs), unions, enterprises and individuals come together to harness opportunities;
- Strengthen the enterprises through industry-specific transformations to help them grow, innovate and scale up; and

[44] See Footnote 5.

[45] About MTI—Future Economy Council (FEC) (2017).

- **Help Singaporeans acquire and utilise deep skills so as to take up quality jobs and seize opportunities in the future economy, and facilitate the building of a resilient and flexible workforce and great workplaces**.

The FEC, comprised of members from government, industry, unions and educational and training institutions, oversees the implementation of the recommendations put forth by the Committee on the Future Economy (CFE).[46,47] It will build on the work of the earlier Council for Skills, Innovation and Productivity, which includes SkillsFuture initiatives and Industry Transformation Maps. TVET in Singapore is positioned to support the five 'Futures', specifically Futures #1, 2 and 5.

The Committee for Future Economy (CFE) was set up in 2016 to identify future global shifts in the economy. This resulted in seven strategies that will prepare Singapore for the challenges in the next lap (see Fig. 8.10).

Programmes, projects and initiatives are being developed as part of ongoing reforms to support the achievement of FEC's goals, as well as implementation of strategies outlined by the CFE.

8.13 Key Issues and Challenges

According to renowned recruitment firm Robert Walters' annual global survey, the top five professionals in demand are technology specialists, digital marketers, investment professionals, skilled contractors, and regulatory and compliance professionals.[48] To tackle the anticipated future skills challenges, the Ministry of Trade and Industry has outlined the following 'Future Skills for Future Growth' strategies (see Fig. 8.11):

[46] Future Economy (n.d.).

[47] Read the Full Report (n.d.).

[48] Tang (2017).

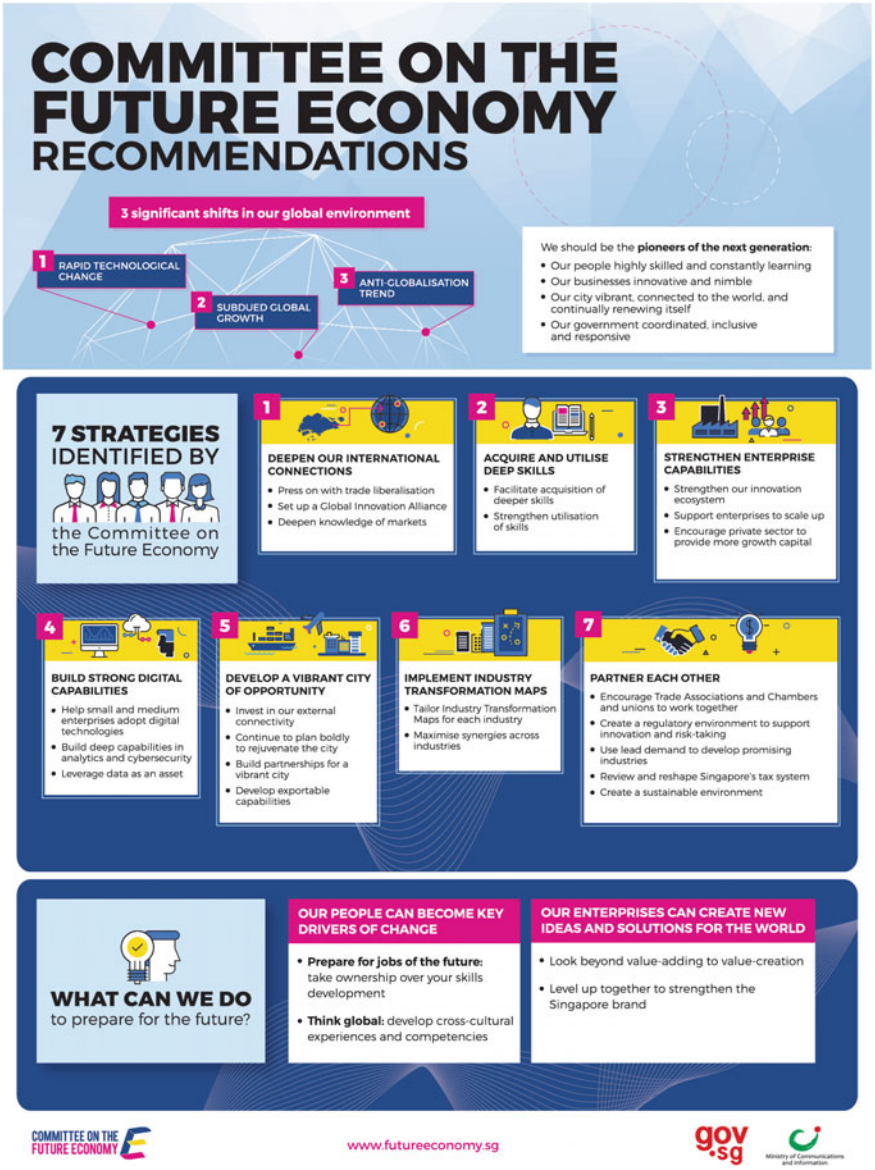

Fig. 8.10 Committee for future economy's recommendations to deal with shifts in global environment (See Footnote 46)

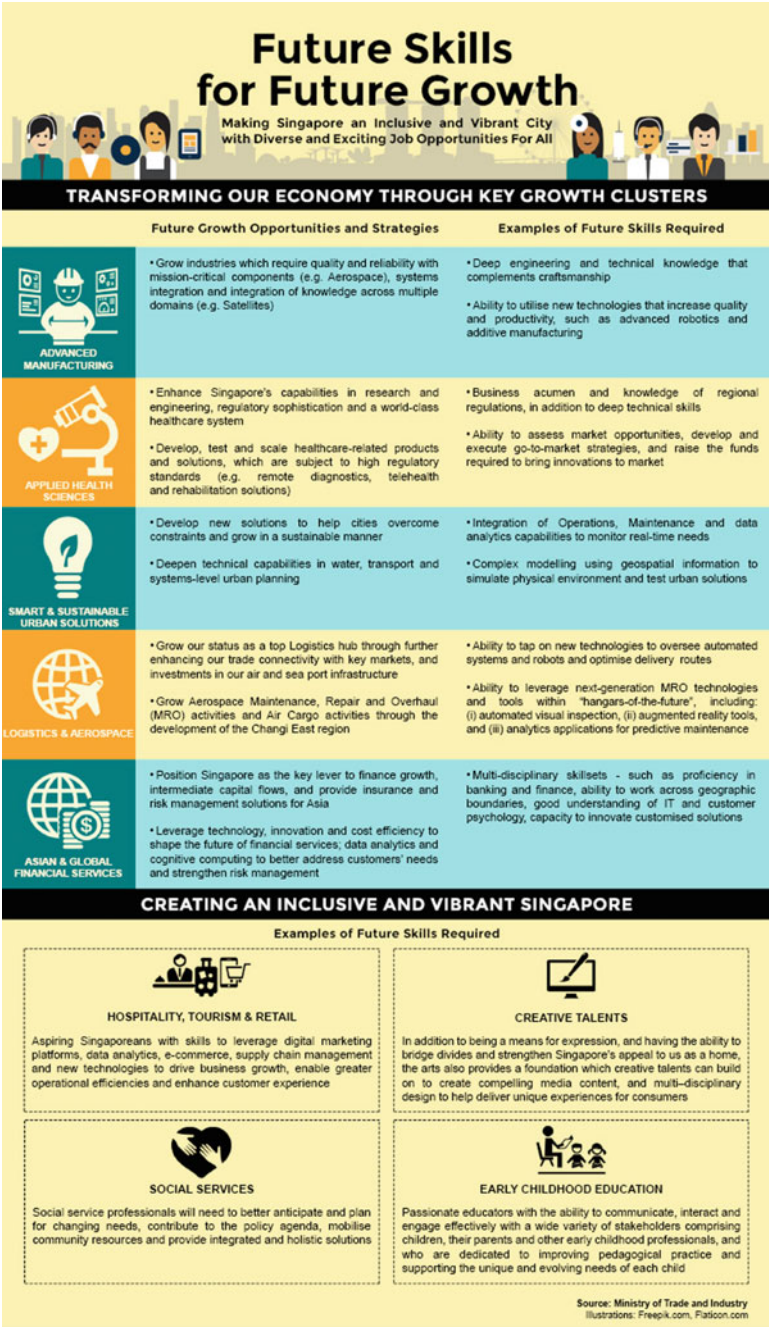

Fig. 8.11 Future skills for future growth (Singapore Industrial Automation Association 2014)

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Chapter 9
Vocational Education and Training in Thailand—Current Status and Future Development

Tiamyod Pasawano

9.1 Introduction

The Ministry of Education in Thailand has engaged in serious strategic scoping about the future reforms in the higher education and TVET sub-sectors so that it can produce capable workforce that is needed in the creation of a knowledge-based economy. These reforms will respond to three major rising problems in the country: (1) declining population of main workforce; (2) ageing population; and (3) critical needs for highly skilled technical workers. In higher education, the improvement of quality is prioritized although there are many other target areas such as performance-based funding in the sub-sectors, and increasing collaboration between the universities and the private sector. Overall, it is planned to increase the ratio of vocational to general academic track at the secondary education level from the current proportion of 40:60–60:40 in the next 10 years so as to produce sufficient numbers of graduates from TVET with technical skills and knowledge.

Nearly 2 million students were enrolled in higher education institutions in 2010, of which almost 90% were enrolled in public higher education institutions. According to the 15-year Long Range Plan on Higher Education (2008–2022) developed by the Thai government, it is projected that demographic changes will result in a decrease of participation in higher education, and the main focus of higher education will shift to quality issues. The Government of Thailand has initiated a program called "One District, One Scholarship" in order to increase the access of disadvantaged groups of students to higher education. This program provides opportunities for outstanding students from remote areas to pursue quality higher education. From a gender perspective, about 64% of the recipients in 2004 and 2006 were females which also reflects the gender gap in learning achievements.

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In 2010, nearly 0.7 million students enrolled in TVET colleges governed by OVEC of the Ministry of Education, and approximately 0.4 million students were studying in private vocational schools and colleges. As Thailand is entering the ageing society, the number of students in basic education is decreasing, and manpower will be in short supply in the future. There is a lack of middle-level skilled manpower. The tendency in the decrease of graduates with vocational certificates can be mainly explained by the negative value and reputation according to vocational education, including wage differentials that are directly associated with level of education.

The higher education sub-sector has to respond to the needs for increasing economic productivity of the working population and put an emphasis on continuing education to respond to changes and creation of new professions. However, employees with college degree or above represented only 10% of total employment in the enterprises surveyed in 2007. Many job vacancies arise because the majority of applicants lack both basic and technical skills required by the enterprises. The government tries to improve the quality of higher education set out in the 15-year Long Range Plan on Higher Education (2008–2022). Specific strategies and intervention programs to improve the quality of higher education developed by the Office of the Higher Education Commission (OHEC) include programs for: (1) new age citizens; (2) new age teachers; (3) educational institutions and new age sources of learning; and (4) new educational management programs.

Vocational education provision must be in line with the National Economic and Social Development Plan and National Education Plan (2002–2016) in order to produce and develop vocational manpower at levels of technical and technological skills that can serve the demands of the labor market. So far, however, it appears that TVET in Thailand has not been able to provide sufficient highly qualified and well-trained technicians for a rapidly changing economy. The qualifications of manpower that are lacking include: communication skills, computer and ICT-using abilities, management, calculation skills, problem solving, teamwork, responsibility, honesty, tolerance, discipline, punctuality, and leadership.

9.2 National Educational System

9.2.1 Educational System in Thailand

See Fig. 9.1.

9.2.1.1 Pre-school

Education in Thailand is largely a government responsibility provided through the ministry of education. Two to three years of kindergarten begins this process, followed by 6 years of primary school. The Thai school year is from May to March for

Education	School/Level	Grade From	Grade To	Age From	Age To	Years	Notes
Primary	Prathom 1 - 3 - Elementary School	1	3	6	8	3	
Primary	Prathom 4 through 6 - Elementary School	4	6	9	11	3	
Secondary	Matthayom 1 - 3 - Secondary School	4	6	15	17	3	
Vocational	Dual Vocational Training (DVT)			15		3	2 year diploma technician level, 3 year certificate for skilled workers
Tertiary	Tertiary						
Tertiary	Bachelor's degree					4	
Tertiary	Bachelor's Pharmacy & Architecture					5	
Tertiary	Bachelor's -Doctor of dental surgery, medicine, and veterinary medicine					6	
Tertiary	Master's Degree					2	
Tertiary	Doctorate Degree						

Fig. 9.1 Educational system in Thailand

primary and middle school, while secondary schools begin one month later. Uniforms are also compulsory during tertiary education.

9.2.1.2 Primary School

Three years of middle school follow, where students continue with core subjects including Thai language, arts and music, math, physical and social science, technology and foreign languages. From here though, vocational students follow a different path.

9.2.1.3 Secondary School

At high school, students who wish to continue academic education move on to elective courses. Of these, the science and math/English programs are most popular—other choices include foreign languages and social science. In this way, they are already preparing for tertiary education that may follow.

9.2.1.4 Higher School

Higher education in Thailand has undergone dramatic changes in the past four decades, reflecting three major global trends: massification, privatization, and internationalization. The country now has a total of 150 higher education institutions and 19 community colleges with approximately 2 million students in 2010.

There are 80 public higher education institutions consisting of 14 autonomous universities, 16 traditional universities, 40 Rajabhat universities, 9 Rajamangala Technical universities, and one Pathumwan Institute of Technology. Besides, there are 71 private higher education institutions and 19 community colleges. Continued efforts have been made to allow traditional public universities to enjoy greater autonomy and academic freedom. The remaining traditional public universities will soon be transformed into public autonomous universities. Rajabhat universities are traditional teacher training colleges in most provinces. Programs include courses in teaching methodology, school administration, special education, optional specialization, supervised practical teaching experience, and the general education subjects of language and communication, humanities, social science mathematics and technology. Rajamangala universities are educational institutions which accept the holders of a diploma/certificate in vocational or technical education. It provides two-year program leading to the higher diploma in technical education.

The administration and supervision of higher education are under the Office of the Higher Education while the Office of the Private Education Commission supervises and subsidizes private educational institutions. Both offices are under the Ministry of Education's administrative structure. In accordance with recent educational reforms, public universities have become autonomous and they exercise greater control over the management of their own affairs to enhance efficiency and accountability.

9.2.2 Integrated by Technical and Vocational Education and Training

TVET in Thailand is provided in three forms: the normal program; the dual vocational training (DVT) program; and non-formal program. Three levels of vocational education are offered: the Certificate in Vocational Education (Por Wor Chor) which is taken during the upper secondary period; the Technical Diploma (Por Wor Sor), taken after the Certificate, and the Higher Diploma upon completion of which admission to university for a Bachelor degree program may be granted. As of 2010, the OVEC of the Ministry of Education administer 415 public colleges, 427 private vocational schools and colleges around the country.

Vocational education is administered by the Office of the Vocational Educational Commission (OVEC). The Commission administers and manages vocational education at the national level by formulating long-term plans and major policies related to TVET. Over 400 public colleges and around 500 private vocational schools and colleges are operating in this sub-sector. OVEC aims to develop a strong partnership with the private sector, mobilize resources, and develop demand-driven programs to meet local needs.

9.3 TVET Education System

9.3.1 TVET Overview

In accordance with the research topic "Development of ITE College East," first comprehensive TVET college developed by ITE specified: there are 4 schools (Applied & Health Science, Business & Services, Engineering and Info-Comm Technology) with more than 25 Nitec and Higher Nitec Courses and 7800 PET students at up to 8000 CET training places.

There is an autonomous College of ITE supported by 500 qualified and competent academic staff and 120 functional support staff and strong industry partnership with more than 80 technology leaders, and global connection with 7 overseas TVET colleges.

Formal TVET programs are offered at the secondary education level. Formal TVET programs at the upper secondary education level are provided in vocational colleges and institutes and last three years. The types of colleges providing formal TVET can be classified as follows:

- Technical colleges
- Vocational colleges
- Agricultural and technology colleges
- Commercial colleges
- Industrial and ship building technology colleges
- Fishery colleges
- Administration and tourism colleges
- Polytechnic colleges
- Automotive industry colleges
- Golden Jubilee Royal goldsmith colleges
- Arts and crafts colleges.

Based primarily on the German model, students are also able to attend dual system and apprenticeship programs. Dual system (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Dual+system)[1] programs are partly organized in vocational institutes under the Ministry of Education, and partly with entrepreneurs or state enterprises and government agencies. Dual system programs also last three years and more than half the time is spent gaining practical experience.

TVET programs in Thailand are linked to national, regional, and community needs. Students can choose between nine specializations offered at the colleges. These specializations are as follows:

- Trade and industry
- Arts and crafts
- Home economics
- Commerce and business administration

[1] International Centre for Training and Vocational Education and Training (2014).

- Tourism industry
- Agriculture
- Fishery
- Textile industry
- Information and Communications Technology (ICT).

In the formal TVET system, students are also able to complete short TVET programs, generally lasting up to 225 h. These TVET programs are targeted at those who have completed at least primary education and aim to provide students with vocational skills for higher education or the labor market (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Labour+market).[2] Students who take three to five years of short courses are awarded a certificate. Short TVET programs are also available to students from the general academic education who have selected a vocational or technical course as their major, minor, or elective.

TVET programs at the tertiary education level are offered in tertiary level colleges and universities. TVET programs are normally provided in two cycles, each lasting two years. However, associate degree programs lasting two years are also offered in universities and colleges.

Students who have completed a two-year post-secondary TVET program are able to switch to the undergraduate program and attend the last year. Upon passing the final examination, students are awarded with an undergraduate qualification.

Non-formal and adult programs are provided in a number of settings, including:

Occupational development programs which aim to develop students' vocational and occupation skills. The programs emphasize the importance of the development of life skills in order to overcome unemployment (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Unemployment)[3] and meet community needs. Programs are organized in: (1) short occupation training programs for life skill development; (2) skills training for job employment; (3) group learning for students of the same occupation or trade; and (4) occupational development through the application of technology such as Information and Communications Technology (http://www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Information+and+communication+technology)[4] (ICT).

Non-formal vocational programs which involve: (1) short training programs; (2) group vocational courses; (3) vocational certificate programs equivalent to lower secondary school; and (4) non-formal occupational certificate programs.

[2] International Centre for Technical and Vocational Education and Training (2014a).

[3] International Centre for Technical and Vocational Education and Training (2014b).

[4] International Centre for Technical and Vocational Education and Training (2014c).

9.3.2 TVET Providers: The Statistic of Different Providers

The provision of vocational education varies according to the types and programs of vocational education and fields of study followed the Act and the Educational Reform. The TVET programs, therefore, are diversified and offered in formal and non-formal in institutions and in the workplace or dual courses as followed: **TVET Level**

(1) TVET at upper secondary level (grade 10–12)

TVET at upper secondary level (grade 10–12) leads to Certificate in Vocational education (Cert. Voc.). This program is offered to those who have completed lower secondary education (grade 9). This program is diversified into the following types:

- Certificate in Vocational Education (Cert. Voc.). The regular course students completing the lower-secondary level are able to study in this three-year formal program in which theoretical and practical subjects are studied in a school setting with a semester spent in the workplace.
- Certificate in Dual Vocational Education (Cert. Voc.-DVT). DVT is a three-year program for students who have completed lower secondary education (grade 9). The learning and training take place at two venues, at a college and a company, with whom students conclude a contract for training. During the training, students receive an allowance from the company. The completion of a certificate is equivalent that the certificated of Vocational Education is awarded.
- Certificate in Vocational Education: Credit Accumulating System (Cert. Voc.-CAS). This program provides 3–5 year courses for adults who are not able to participate in full-time study at an institution. An assessment system to evaluate their knowledge and skills for validation of their experience is provided. In addition, accumulated credit can be transferred within the same or between different institutions.
- Certificate in Vocational Education: Evening Class (Cert. Voc.-EC). This program is similar to the Cert. Voc.-CAS. It is specially designed for those who are in the labor market and wish to study in evening after work.
- Non-formal Program for the Certificate in Vocational Education. Non-formal education activities leading to the Certificate in Vocational Education are available to lower secondary school graduates through distance learning approaches. Both employed and unemployed adults can participate in this program, which requires at least 3 years of study, except when there is a transfer of academic performance or experience. Polytechnic, Industrial, and Community Colleges under OVEC, as well as the Office of the Non-formal Education Commission, basically offer this type of program.

(2) Diploma in Vocational Education (Dip. Voc.)

Admissions are accepted through competitive entrance examination for those who have completed Cert. Voc. or upper secondary education. This program is offered in various types as in Cert. Voc. Level.

(3) Higher Diploma in Technical Education

This three-year program is designed for those completing a Diploma in Vocational Education who plans to teach in vocational education institutions and is offered at the university level, leading to a higher technical diploma or a degree.

(4) Bachelor Degree in Technology/Performance

This two-year program is designed for those completing a Diploma in Vocational Education which focus on dual system and start in 2011.

(5) Short-Course Vocational Training

At present, short-course vocational training programs are offered by both public and private institutions and are designed to serve the needs for self-employment and to articulate with formal program that encourage lifelong learning. Pre-employment training and upgrading courses range from 6 to 255 h, depending on the content and objectives. Types of vocational training are as follows:

- Short Training Course Program (225 h): The only prerequisite for admission is the completion of primary education. No entrance examination is required. The students must complete 225 h, and upon completion, a certificate will be awarded. Starting salary for the graduates of this certificate level depends on their skills and ability.
- Short Training Course (6–225 h): In addition of 225 h program, a variety of short courses are training in different areas. The duration of the courses ranges from 6 to less than 225 h. Course duration and its contents will depend upon the interest and need of local people and community.
- Cooperative Study Training (CST): Training for students from general secondary schools who select vocational subjects as their major, minor, or elective.
- Agricultural Short-Course Training: Each College of Agricultural and Technology provided short-course training (7–8 days) for local farmers. The course contents vary according to the farmers' need.
- A Special Vocational Education Program (for young farmers): The program is designed with the aim to upgrade young farmers between 15 and 25 years of ages. Young farmers with compulsory education can go to any colleges of Agriculture and Technology to study in their spare time. Upon completion of all the subjects acquired, they will be awarded a special certificate, equivalent to Certificate in Vocational Education.

Types of TVET Institution and Areas of Specialty

There are 415 public TVET colleges under OVEC, the main authority responsible for

TVET. TVET is also offered at 412 private vocational schools which have been taking care by the Office of the Permanent Secretary, Ministry of Education. Furthermore, TVET is provided to adults and out of school youths through the non-formal or short-course training. Non-Formal Education Department in the Ministry of Education, Department of Skill Development, Ministry of Labor, and other ministries provide short-course vocational training as required by local areas.

There are more types of colleges under OVEC which are 106 Technical Colleges, 40 Vocational Colleges, 47 Agricultural and Technological Colleges, 144 Industrial and Community Colleges, 54 Polytechnic Colleges, 4 Business Administration and Tourism Colleges, 3 Industrial and Ship Building Technological Colleges, 2 Arts and Crafts Colleges, 3 Fisheries Colleges, 1 Royal Goldsmith College and 11 Technology and Management Colleges.

Types of Courses

OVEC provides nine types of courses which are industry, agriculture, home economics, arts and crafts, commerce and business administration, fisheries, textile, tourism and hospitality and information technology. Under those types of courses, there are many branches which are specific in occupation such as automobile, gem and jewelry, and accounting which are relevant to the markets' need.

TVET's Role for Sustainable Development

TVET takes on a complex and distinctive character with regard to sustainable development. The empirical sustainability of sustainable development is to integrate economic, environment, and social aspects through TVET. Thailand recognizes the important role of TVET as a vital tool for producing manpower with the necessary skills required for employment and/or entrepreneurship as well as for poverty alleviation. TVET by OVEC has made a lot progress and accomplishment during the past decades, especially in terms of providing skills for works, continuing education, raising quality of life, and sustaining labor force. Integration of sustainable development issues in TVE has been considered by agencies provided to strengthen TVET so as to increase the skilled manpower in both production and service sectors. These include the improvement of curriculum and instruction, the establishment of Thai Vocational Qualification, validation of experiences, research and innovation, and career development.

These manage TVET to sustainable development concept by:

(1) Having the unity of policy and various practice by decentralization from the center to colleges and institutions,
(2) Vocational education for youth and workers according to their aptitude and interest generally and continuously to bachelor degree,
(3) Participation of community, social, and enterprise in providing policy on producing and developing manpower and also providing vocational education standards,
(4) Education which is flexible, variety and having transferred system of learning outcomes and transferred system of personal work experience for studying and training on vocational education continuously,

(5) Having incentive systems for enterprise to participate in vocational education and training management,
(6) Collecting source from governmental sector and private sector in vocational education and training management by recognizing cooperated benefit generally and fairly,
(7) Having the system of personal development for OVEC teachers and staff continuously to technological change.

According to the needs and strategy for potential development for the country's competition, the quality and quantity of TVET from the occupational competencies and skill needs are accomplished by the four key strategies: increasing TVET participation, social services, research innovation and entrepreneurship development and quality improvement. According to those strategies, it can be expand to important issue as the following:

- **Increasing TVET Participation** is flexibility, TVE in secondary schools, articulation accreditation and recognition of prior learning, partnership, earning while learning, increasing opportunities, ICT, and distance learning.
- **Social Services** are poverty alleviation, fix it center, learning pathway, social lap, partnership and environment.
- **Research Innovation and Entrepreneurship Development** are strengthening staff capacity, changing paradigm, networking and partnership, and enhancing knowledge management, development linkages with industries and indigenous knowledge, organizing skill development in research and entrepreneur for TVET students.
- **Quality Improvement** is providing three tracks as an alternative of TVE programs, learning by doing, quality assurance, standardization, networking and partnership, knowledge management system, competency-based curriculum, career part/vocational and providing qualification for e-learning.

OVEC provides three main TVET standards, which are: Occupational Standard or Competency Standard, General Vocational Education Qualification, and Institute Standard or Vocational Education Standard. The competency-based curriculum is developed from competency standard and adding life skills and general academic which is become the General Vocational Education Standard. For student internal quality assurance, they will have the General Vocational Standard test by provincial college committee. The system of Quality in Vocational Education and competitiveness of the worker will be better, if Thailand has already accomplished in establishing the National Qualification Standards and the Institute of Vocational Qualification. Each organization is still developing their qualification framework but not completes yet. At this time, OVEC provided Internal Quality Assurance on 6 standards and 34 indicators for institute standard or vocational education standard. The six standards are: the students and the graduators, the curriculum and teaching–learning resources, the student activity developing, the innovation and research, the social services and the leadership. These are the frameworks for the colleges to perform and manage themselves to be qualified and accepted by Internal and External Auditing in Educational Quality Assurance system.

Partnership and Networking

All TVET institutions or providers, both public and private, are required to involve industrial groups, and local agencies in the development of policies, guidelines, and curriculum. Partnership and networking with enterprises are extensively enhanced. In order to make TVE more attractive, guidance and counseling put special emphasis on work-based learning, earning a living during they learn, opportunity for employment as well as furthering education in the higher level. The main objectives of partnership and networking are not only looking for training place for students or direction in producing manpower but also identifying competency required by enterprises. At present, main industrial groups that partnership and networking are well-developed, for example, petrochemical, gems and jewelry, textile and garments, automobile, tourism and hospitality, food. Through partnership system, teacher training, curriculum development, and competency-based training are organized and implemented.

9.3.3 TVET Management

The rationale for strengthening PPPs in Thailand, particularly in TVET, is based on extensive literature reviews, round-table discussions, and in-depth interviews. PPPs seem to offer a viable mechanism for strengthening vocational and technical education and training. The major reasons for promoting PPPs are outlined below: First, in Thailand, improving the quality and efficiency of education has been one of the key priorities for government over the past decade. Amidst rapid industrial growth especially in manufacturing such as the automotive and energy sectors, Thailand has suffered from a serious shortage of skilled workers as well as a skills mismatch between employer needs and the skills of new graduates from the educational institutions. In 2014, the Ministry of Labor disseminated survey questionnaires to 40,431 companies registered with the Social Security Office in twenty-nine industrial sectors in Thailand. The findings indicate that almost all of the key industries (including energy, hospital and health services, logistics, automotive and auto parts, electrical and electronic parts, rubber products, chemical, and food and animal feeds) have faced serious workforce shortages. Over seventy percent of the needed workers in these industries, except hospital and health services, require educational credentials lower than a bachelor degree. For example, in the automotive/auto parts and petrochemical industries, which are the industries requiring high levels of scientific and technological skills, the shortages of labor with vocational and higher vocational/associate degrees accounted for sixty-three and fifty percent of their unmet labor needs. These numbers are not matched by the supply of students graduating from the current education system, with only twenty-nine percent of the total students graduating from vocational and higher vocational education.

The challenge of addressing the shortages in the skilled workforce has been raised by the World Bank and Thailand Development Research Institute (TDRI), which have both made similar recommendations about involving the private sector to alleviate the problem. The World Bank pointed out the urgency of upgrading work-

force skills in Thailand in their recent study "Leading with Ideas: Skills for Growth and Equity in Thailand" which recommends that Thailand strengthens workforce skills and enhances innovation through private sector engagement in order to move toward a more knowledge-intensive, innovation-driven economy which would produce higher incomes and promote greater equality. Their recommendation is aligned with the findings of TDRI which were presented in its annual seminar "Revamping the Thai Education System: Quality for All." TDRI researchers recommended that the mismatch of skills in the workforce needs to be addressed by initiating work-based learning programs. TDRI noted that these programs require the involvement of the private sector to help participants develop skills matching private sector needs.

Second, inefficient management of the current education system is seen by many business leaders as the main obstacle is strengthening career technical education. Inefficiencies have been identified in several areas: the lack of a unified human resources development plan to coordinate efforts of different ministries; an unfair distribution of educational resources across schools with small- to medium-sized schools receiving inadequate resources while larger schools receive more; and a lack of accountability for outcomes which leads to too little attention being directed to the quality of teaching and learning. Lack of collaboration and coordination among different government organizations, especially in terms of education, skill development, and national industrial development are major challenges facing the nation. The lack of coordination of workforce development is reflected in the widening gap between the numbers of students in vocational education programs and those in academic programs; the ratio between the two tracks is thirty-five to sixty-five in spite of the increasing demand for technical workers from emerging industries during the past decade. This gap is exacerbated by low social awareness about the value of vocational education which has discouraged parents and students from pursuing these programs. The low value placed on vocational education is particularly evident among the large schools under the Office of the Basic Education Commission (OBEC) where students focus on being admitted to the universities with minimal understanding of what careers they might want to pursue. Furthermore, many schools administered by OBEC do not encourage students to pursue vocational education unless they are considered ineligible for academic programs due to poor results or family poverty. Even in small extended opportunity schools or medium-sized schools located in high poverty areas, many teachers under OBEC do not encourage students to enroll in vocational education because they believe that the students will not have stable career paths. As a result, most of the current collaboration between OBEC schools and Office of Vocational Education Commission (OVEC) schools arise from local initiatives undertaken by school principals seeking to motivate students who are not interested in academic education and have a high tendency to drop out. Resources are distributed among small- and medium-sized schools in an inequitable and inefficient manner. Schools serving fewer than five hundred students are responsible for fifty-four percent of all students in Thailand. These primary schools and extended opportunity schools (offering courses from kindergarten to grade nine) have inadequate educational resources in all areas including administrators, teachers, equipment, and facilities. These schools face such serious obstacles that their principals

often seek promotion to larger schools. As a result, they lack the dedicated leadership required for school improvement. Many students who attend these schools come from families struggling with poverty and working hard just to survive. Therefore, the students often lack the parental support required to motivate them to learn. Some of these students pursue vocational study after finishing grade nine, and some principals in these schools voluntarily initiate collaboration with local vocational schools to encourage students who are not interested, or judged unable to pursue academic education, to continue their study in vocational education. Teaching and learning in these smaller schools are heavily dominated by rote memorization and are weakly linked with employability skills. Neither teacher training programs nor the available professional development is providing teachers with the pedagogical content knowledge and teaching practices needed to promote critical and analytical thinking of students. Furthermore, the existing incentives for teachers to improve or to reflect on their practice and the educational quality assurance system do not give sufficient weight to teaching practices which are directly linked to better students' learning and performance.

Third, there are some interesting PPP initiatives aimed at strengthening technical and TVET in Thailand that merits close examination. These initiatives fall roughly into three categories: bilateral initiatives, multilateral initiatives, and networks. These patterns of partnership are best defined through examples: Bilateral initiatives are one-on-one partnerships between a school or academic institution and a company or business group. These partnerships may be initiated by either party. One such partnership has been created by Isuzu UNT Co., Ltd and Samutprakarn Technical College to train students in automotive service skills. Multilateral initiatives are partnerships between more than one school and academic institution and one or more companies. This type of partnership often is initiated by a group of companies; for example, General Motors (Thailand) Co., Ltd is collaborating with ten vocational colleges in Thailand to develop the Automotive Service Educational Program (ASEP) that will prepare students at the higher vocational education level to be qualified technicians. A similar program is the collaboration between the Petrochemical Group consisting of SCG Chemical, PTT Global Chemical, UBE Chemicals Asia, Star Petroleum Refinery, the Federation of Thai Industries (FTI) and the Map Ta Phut Technical College to develop the Vocational Chemical Engineering Practice College (V-CHEPC) targeting students at both the vocational and higher vocational education levels. Networks are partnerships between public and private networks. For example, the cooperation between FTI, the Thai Auto Parts Manufacturers Association, the Department of Skill Development, and OVEC to establish a program in automotive and auto parts workforce development would be considered a network. Fifteen vocational colleges are participating in this program together with a group of automotive and auto parts manufacturers led by Mr. Thavorn Chalassathien from Denso (Thailand) Co., Ltd. Moreover, there is a partnership between the National Science Technology and Innovation Policy Office (STI) and OVEC to develop a Science-Based Technology Schools (SBTS) Program. This new program includes five vocational colleges in five regions.

Nevertheless, while concerned educators and far-sighted business leaders have launched these similar initiatives, their efforts are reaching only a small proportion of the countless numbers of Thai students who need employability skills and these initiatives have not yet led to the broader policy reforms needed to replicate these programs and practices such as making adjustments in the core subjects in the *K*-12 curriculum in order to more effectively meet the workforce needs of business and industry or providing more effective career guidance in lower secondary schools or changing the time allocations for subjects. At present, schools and other academic institutions do not have the flexibility needed to adjust their curricula to match the demand side. The existing partnerships are not holistic systems that include all of the components required to provide a quality end-to-end education to employment system. This would require establishment of a committee of advisors and a sub-committee for each industry sector, a public relations campaign to promote a more positive image of vocational education, policy planning by academic institutions for workforce development aligned with the demand from each industrial cluster, development of curricula and teaching materials for the actual jobs in each cluster, teacher development programs, assessment systems, internship programs in companies, a process of credit transfer among academic institutions, the development of occupational standards and professional qualifications and aligned examinations, a recruitment and selection process, and an evaluation of the program. There is a great deal of work to be done to create an effective TVET system in Thailand.

OVEC is a leading organization responsible for developing Technical and Vocational Education (TVET) policy and standards, allocating resources, and coordinating projects to promote TVET. OVEC also produces required TVET manpower for the labor market and self-employment, provides social services, and facilitates poverty alleviation. Important projects and activities of policy of OVEC are based on several main targets which are handled by 415 institutions as follows:

(1) Developing Skills for Employability

TVET programs in Thailand are provided mainly in the areas of trade and industry, business, agriculture, home economics, arts and crafts, fisheries, textile, garments, jewelry, tourism, and hospitality at upper secondary, and post-secondary levels. TVET short-course programs are also offered to younger students and adults. As one of the national strategies is to increase competitiveness capacity, it is necessary to identify manpower demand in some specific areas needed. For TVET, there are urgent requirements especially in the areas of food industry, tourism industry, textile and garments, fashion design, software and petrochemical industry both in terms of quality and quantity.

(2) Strengthening Partnership with Industries

Joint committees between OVEC and industrial clusters are organized under cooperative projects to identify competencies required by each industrial cluster and career path. This is an attempt to develop a sense of ownership in TVET of industrial clusters and encourage them to work closely with OVEC in developing and producing qualified TVE graduates.

(3) Expanding Dual Vocational Training (DVT)

During the 2005–2006 academic years, there were more than 12,000 companies working with OVEC in providing Dual Vocational Training Programs for 40,000 students at both secondary and post-secondary levels. OVEC works closely with all stakeholders to increase the number of DVT students as required by industrial, agricultural, and service sectors.

(4) Enhancing the Changes in Teaching, Learning and Testing Methodologies

Strategies for changing in teaching, learning, and testing methodologies are enhanced in order that students will be provided with required competencies as identified by industrial cluster or occupational groups. Students learn to integrate and apply related subjects through project-based and problem-based assignments. Learning by doing in the real working situation is strongly emphasized.

(5) Making TVE more Attractive

Incentives are provided to attract more TVET students by offering various models of learning as well as providing continuing counseling and guidance in order to make them keep abreast with the changing labor market and career path. The following are different means of TVET process to attract more students.

- Earning while learning in relevant areas of occupation
- Transferring and accumulating credit hours
- Offering TVET program in secondary schools
- Learning through distance program
- Learning in company or work-based learning
- Accrediting all prior learning and experiences.

(6) Promoting Brand "R People"

OVEC has enhanced an important project on improving the character of TVET students. The main objective is to provide good public image and new paradigm of TVET students. A number of TVET students from both public and private institutions are selected as prototype or models to represent other TVET students to the public. They must possess 5R characters which include: Relation, Responsibility, Refresh, Representative, and Rescue: Therefore, they are called "R People" or prototype of TVE students.

(7) Fostering Entrepreneurship or Self-employment

OVEC has implemented the following activities to foster entrepreneurship or self-employment of TVET students—Creating chains of business partnership to support OVEC programs—Providing information in business opportunity—Establishing incubator training centers in the colleges—Developing capacity of staff—Changing teaching, learning, and testing methodologies—Developing pilot projects on "One College One Business." The students who are interested in self-employment will be provided with not only knowledge, skills, and experiences in organizing and implementing small business but also facilitated to funding sources. Teamworking is also encouraged.

9.3.4 TVET Teacher Education and Training

Educational System (http://edglossary.org/education-system/) in Thailand is given mainly by the government of Thailand under the Ministry of Education (http://www.moe.go.th/en/). The education begins from pre-school up to senior high school. The government, under the constitutional act of education, provides free basic education for all for twelve years and nine years of minimum school attendance is compulsory. Formal education in Thailand is divided into basic education of twelve years and further higher education. Basic education comprises elementary education for six years and secondary education also for six years. Secondary education is further separated into lower secondary (for three years) and upper secondary (for three years). The responsibility of formal education lies on the shoulders of the state government. Tertiary education in Thailand is better defined as post-high school education. It is provided in three forms: "Under" bachelor's degree (http://vocationaltraininghq.com/top-22-high-paying-jobs-that-dont-require-bachelors-degrees/), bachelor's degree, and postgraduate degree (http://vocationaltraininghq.com/top-22-high-paying-jobs-that-dont-require-bachelors-degrees/). For "Under" bachelor's degree qualifications, there could be a diploma, a vocational diploma, a diploma in Thai dance, or an art diploma. A bachelor's degree includes a higher diploma in teaching. A postgraduate degree consists of graduate diploma programs, master's degrees, higher-graduate diploma programs, and doctorate degrees.

Vocational training in Thailand (http://vocationaltraininghq.com/vocational-training-in-thailand/)[5] starts from the senior high school. The secondary education is divided into two branches—general and vocational education. There are over 60% of students following general education. However, the government is taking efforts to balance the ratio between general and vocational studies.

Currently, 412 colleges are governed by the Vocational Education Commission (VEC), of the Ministry of Education with more than a million students following the

[5] Vocational Training HQ (2018).

programs in 2004. Additionally, approximately 380,000 students were studying in 401 private vocational schools and colleges.

9.4 Issues and Challenges

9.4.1 Issues

Technical and Vocational Education is designed to offer people the opportunity of improving themselves in their general proficiency, especially in relation to their present or future occupation. Nuru (2007)[6] opined that changes in any nation's economy are required to prepare young people for the jobs of the future of which technical and vocational education have crucial roles to play. May et al. (2007)[7] observed that technical and vocational education are very much still neglected in the aspect of adequate funding, personnel, modern facilities, staff motivation which consequently are robbing the country of the economic development to be contributed by graduates of technical/vocational education.

Most analysts agree that employers of labor today demand more skills than they did in the past (Yang 2008).[8] Oranu (2004)[9] also observed that there are many factors that have contributed to the ever-rising demand for skills in the labor market which include the followings: technological and organizational change, trade, deregulation of key industries and the decline of unions.

The too much emphasis on university education in Nigeria has always reduced the economic opportunities of those who are more work oriented than academics (Ojimba 2012).[10] Not everybody needs a university education. Who would employ them if everybody becomes a university graduate? Many of the so-called expatriate engineers receiving a huge sum of money in dollars for road construction in Nigeria are graduates from vocational colleges but in Nigeria, the issue of technical and vocational education is not taking seriously.

The nation's poverty level has increased to about 70% that many Nigerians now live on less than one dollar a day. As earlier on stated, higher institutions in Nigeria lack the tools and machines to train students to acquire the skills needed by employers of labor. The challenges of vocational and technical education are quite enormous.

[6]Nuru (2007).
[7]May et al. (2007).
[8]Yang (2008).
[9]Oranu (2004).
[10]Ojimba (2012).

9.4.2 Challenges

9.4.2.1 Labor Market Demands and Trends

Following the global financial crisis in 2008 (https://en.wikipedia.org/wiki/Global_financial_crisis_in_2009), labor markets across the world experienced structural changes that influenced the demand for skills and TVET. Unemployment (https://en.wikipedia.org/wiki/Unemployment) worsened and the quality of jobs decreased, especially for youth (https://en.wikipedia.org/wiki/Youth). Gender differentials in labor force participation placed men ahead of women, and skill mismatches deepened. The crisis impacted labor markets adversely and led to deepening uncertainty, vulnerability of employment, and inequality. Furthermore, measures to improve efficiency and profitability in the economic recovery have often led to jobless growth (https://en.wikipedia.org/wiki/Jobless_recovery), as happened in Algeria (https://en.wikipedia.org/wiki/Algeria), India (https://en.wikipedia.org/wiki/India) and post-apartheid South Africa (https://en.wikipedia.org/wiki/Post-apartheid_South_Africa).

In seeking to address the level of vulnerable employment, TVET systems have focused on increasing the employability of graduates and enhancing their capacity to function effectively within existing vulnerable labor markets and to adjust to other labor market constraints. This has meant enhanced coordination among government departments responsible for TVET and employment policies. It has also created the need for TVET systems to develop mechanisms that identify skills needs early on and make better use of labor market information for matching skills demands and supply. TVET systems have focused more on developing immediate job skills and wider competencies. This has been accomplished by adopting competency-based approaches to instruction and workplace learning that enable learners to handle vulnerable employment, adjust to changing jobs and career contexts, and build their capacity to learn and agility to adapt.

9.4.2.2 Migration Flows

Increasing migration is a significant challenge to the national character of TVET systems and qualifications. TVET qualifications are progressively expected not only to serve as proxies for an individual's competencies but to also act as a form of a currency that signals national and international value. TVET systems have been developing mechanisms to enable credible and fair cross-border recognition of skills. In 2007, the ILO (https://en.wikipedia.org/wiki/International_Labour_Organization) identified three types of recognition that TVET system may use: unilateral (independent assessment by the receiving country), mutual (agreements between sending and receiving countries), and multilateral (mostly between a regional grouping of countries). The most prevalent of these are unilateral recognition, which is mostly under the control of national credential evaluation agencies. Countries have been slow to

move from input-based skill evaluations to outcome-based methodologies that focus on competencies attained.

TVET systems are responding to migration by providing qualifications that can stand the rigor of these recognition systems and by creating frameworks for mutual recognition of qualifications. Regional qualifications frameworks such as those in Southern Africa (https://en.wikipedia.org/wiki/Southern_Africa), Europe (https://en.wikipedia.org/wiki/Europe), Asia (https://en.wikipedia.org/wiki/Asia) and the Caribbean (https://en.wikipedia.org/wiki/Caribbean) aim to significantly support the recognition of qualifications across borders. These efforts are further supported through the introduction of outcome-based learning methodologies within the broader context of multilateral recognition agreements.

9.4.2.3 Providing Broader Competencies Alongside Specialist Skills

Skills for economic development include a mix of technical and soft skills (https://en.wikipedia.org/wiki/Soft_skills). Empirical evidence and TVET policy reviews conducted by UNESCO (https://en.wikipedia.org/wiki/UNESCO) suggest that TVET systems may not as yet sufficiently support the development of the so-called soft competencies. Many countries have, however, adopted competency-based approaches as measures for reforming TVET curricula. The HEART Trust National Training Agency (https://en.wikipedia.org/w/index.php?title=HEART_Trust_National_Training_Agency&action=edit&redlink=1) of Jamaica (https://en.wikipedia.org/wiki/Jamaica) adopted this approach, with a particular emphasis on competency standards and balanced job-specific and generic skills. Competency standards aimed to ensure that the training was linked to industry and was up to date, and that competences were integrated into training programs, along with the needed knowledge, skills, and attitudes. The balancing of skill types was to ensure adequate attention was given to job-specific skills as well as the conceptual and experiential knowledge necessary to enable individuals to grow and develop in the workplace, and more generally in society.

9.4.2.4 Globalization

Globalization of the economy and the consequent reorganization of the workplace require a more adaptable labour force, requiring countries to rethink the nature and role of TVET. Globalization intensifies pressure on the TVET sector to supply the necessary skills to workers involved in globalized activity and to adapt existing skills to rapidly changing needs. As a consequence, there is an increasing requirement for more demand-driven TVET systems with a greater focus on modular and competency-based programs, as well as on cognitive and transferable skills, which are expected to help people adapt to unpredictable conditions.

9.4.2.5 Promoting Social Equity and Inclusive Workplaces

Preparing marginalized groups of youths and adults with the right skills and helping them make the transition from school to work is part of the problem faced by TVET in promoting social equity. Ensuring that the workplace is inclusive poses numerous policy challenges, depending on the contextual dynamics of inclusion and exclusion, and the capabilities of individuals. For example, the experiences of exclusion by people with disabilities (https://en.wikipedia.org/wiki/Disability) and disadvantaged women may be similar in some ways and different in others. Many individuals experience multiple forms of disadvantage in the workplace, to different degrees of severity, depending on social attitudes and traditions in a specific context or organization. Approaches to inclusiveness in the workplace will therefore vary according to population needs, social diversity, and context. To give one example, the Netherlands set about the task of making workplaces more inclusive for low-skilled adults by offering programs that combine language instruction with work, and in certain cases on-the-job training.

A review of employer surveys in Australia (https://en.wikipedia.org/wiki/Australia), the Netherlands (https://en.wikipedia.org/wiki/Netherlands), the UK (https://en.wikipedia.org/wiki/United_Kingdom) and the USA (https://en.wikipedia.org/wiki/United_States) reported that employers valued people with disabilities for their high levels of motivation and their diverse perspectives and found their attendance records to be the same or better than those of other employees. Many employers mentioned that being seen as pro-inclusion was positive for the company or organization's image, an advantage that goes well beyond providing employment opportunities to disadvantaged groups. In many cases, however, social and cultural perceptions are an obstacle to make workplaces more inclusive, and this will require sensitive and concerted attention. Some low- and middle-income countries have sought to address this through legislation. In Tanzania (https://en.wikipedia.org/wiki/Tanzania)_Act_of_1982&action=edit&redlink=1), the Disabled Persons (Employment) Act of 1982 (https://en.wikipedia.org/w/index.php?title=Disabled_Persons_(Employment) established a quota system that stipulates that 2% of the workforce in companies with over fifty employees must be persons with disabilities.

The 2012 Education for All Global Monitoring Report (https://en.wikipedia.org/wiki/Education_for_All_Global_Monitoring_Report) concluded that "all countries, regardless of income level, need to pay greater attention to the needs of young people who face disadvantages in education and skills development by virtue of their poverty, gender, or other characteristics." The report found that several barriers and constraints reduced the success of TVET in meeting social equity demands. First, national TVET policies in most cases failed to address the skills needs of young people living in urban poverty and in deprived rural areas. Second, additional funds were needed to support TVET learning opportunities on a much larger scale. Third, the training needs of disadvantaged young women were particularly neglected. The 2012 EFA Global Monitoring Report also noted that skills training alone was not sufficient for the most disadvantaged of the rural and urban poor. Coherent policies that link

social protection, micro-finance, and TVET are considered critical for ensuring better outcomes for marginalized groups.

9.4.2.6 Gender Disparities

Recent years, there have seen rising numbers of young women enrolling in TVET programs, especially in service sector subjects. At times, the challenge is to bring more males into female-dominated streams. However, beyond number games, the real gender parity test that TVET systems are yet to pass is balancing the gender participation in programs that lead to employability, as well as to decent and high-paying jobs. Gender disparities in learning opportunities, and earnings, are a cause for concern. The persistent gender-typing of TVET requires concerted attention if TVET is to really serve a key facilitative role in shared growth, social equity (https://en.wikipedia.org/wiki/Social_equity), and inclusive development (https://en.wikipedia.org/wiki/Inclusive_development).

The absence of work, poor quality of work, lack of voice at work, continued gender discrimination, and unacceptably high youth unemployment are all major drivers of TVET system reforms from the perspective of social equity. This is an area where TVET systems continue to be challenged to contribute proactively to the shaping of more equitable societies.

Gender equality has received significant international attention in recent years, and this has been reflected in a reduction in gender participation gaps in both primary (https://en.wikipedia.org/wiki/Primary_education) and secondary schooling (https://en.wikipedia.org/wiki/Secondary_education). Efforts to analyze and address gender equality in TVET are relevant to other aspects of equity and dimensions of inclusion/exclusion. In almost all parts of the world, the proportion of girls to total enrolment in secondary education defined as TVET is less than for "general" secondary education.

9.5 Way Forward

TVET Teacher Competencies Standard of Thailand in the future must require as the following:

Core Competency
The core competencies mean the ones everybody must be fluent, that is, communication, figure analysis, information technology and communications, systematic problem solution, reactions among people and responsibilities, and continual self-development.

Professional Competencies
The professional competencies refer to the ones all teachers must process. In other words, they have ability of curriculum design and development, of learning manage-

ment, of measurement and evaluation, of psychology for vocational teachers, and of learning measurement and evaluation, of environmental management and administration for learning, of educational research, of development of educational innovation and information technology, of guidance and learning activity management, and of building cooperation between academic institutes and communities for educational management.

Functional Competencies

The functional competencies mean the ones for the vocational teachers of every study field which is about course development and design. These competencies are concerned with teaching aid development for vocational learners. Working in specific study areas, teaching and learning management in technical and skilled levels, working and/or teaching in specific area, such as classroom, workshop and laboratory management, equipment usage and maintenance, innovation and invention building, apprentice supervision, evaluation of professional evaluation, knowledge application to specific study areas for development, together with learning management and self-development in one's specific study field.

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Chapter 10
Technical and Vocational Education and Training (TVET) in Vietnam

Nguyen Dang Tuan and Nguyen Hai Cuong

10.1 Background

Vietnam is a country in Southeast Asia with a total area of 331,114 km^2 and the coast of the East stretches about 3200 km^2 from North to South. North Vietnam borders with China, Laos borders in the West and Cambodia borders in the Southwest.

Vietnam has 54 ethnic groups integrate and live in the development of the country. The average annual population growth rate is 1.21%. Life expectancy is 73.4. The average density is 250 people per square kilometre. Average population in 2017 of the whole country reached 93.7 million peoples, an increase of 979.4 thousand peoples, and equivalent to 1.06% over 2016, of which urban population was 32.8 million people, accounting for 35%; rural population was 60.9 million people, accounting for 65%; male population was 46.3 million peoples, accounting for 49.4%; female population was 47.4 million peoples, accounting for 50.6%.

In 2017, GDP at current prices reached 5006 trillion VND, equivalent to 2242 billion USD; GDP per capita was 53.4 million VND, equivalent to 2,389 USD, an increase of 174 USD over 2016. In terms of 2017 economic structure, the agriculture, forestry and fishery sector made up 15.34%, the industry and construction

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sector accounted for 33.40%; the service sector was 41.26%; the products taxes less subsidies on production accounted for 10.0%.

In terms of FDI attraction, there were 2741 newly licensed projects in 2017 with registered capital of 22.2 billion USD, increased by 4.9% in the number of projects and 40.1% in the registered capital in comparison with 2016. Besides, 1234 turns of licensed projects from previous years registered to adjust investment with additional capital of 8.6 billion USD, an increase of 31.5% compared to the last year. Thus, the total registered capital of new projects and additional capital in 2017 reached 30.8 billion USD, an increase of 37.5% over 2016. Of which, the manufacturing attracted the most registered capital with 14.7 billion USD, sharing 47.6% of total registered capital; the electricity, gas, steam and air conditioning supply achieved 8.4 billion USD, making up 27.2%; the other economic activities gained 7.7 billion USD, accounting for 25.2%. The implementation capital in 2017 gained 17.5 billion USD, an increase of 10.8% in comparison with 2016. Among countries and territories invested in Vietnam in 2017, Japan was the largest investor that gained total newly licensed capital, additional capital and share-based contributed capital with 9.2 billion USD, accounting for 24.8% of total registered capital; the second largest investor was Korea with 8.7 billion USD, accounted for 23.5%; Singapore reached 5.9 billion USD, accounting for 15.9%; China was 2.1 billion USD, making up 5.8%; British Virgin Islands was 1.7 billion USD, accounting for 4.4%, etc.

Living standards are increasingly improved. Human Development Index (HDI) rose from 0.695 in 2016 to 0.700 in 2017. The rate of multi-dimensional poverty household was 7.9% in 2017, a decrease of 1.3 percentage points against 2016, of which the urban areas was 2.7%, a reduction of 0.8 percentage points and the rural areas was 10.8%, a decrease of 1 percentage point. By geographical regions, the Northern Midlands and mountainous areas were the regions with the highest multi-dimensional poverty household rate (21%), and South-east region was the lowest one (0.9%).

The labour force aged 15 years and over of the whole country in 2017 reached 54.8 million peoples, in which male employees accounted for 51.9% and female employees made up 48.1%; the labour force in urban areas accounted for 32.2%, meanwhile this rate in rural areas was 67.8%.

The employed population aged 15 years and over working in the economic activities reached 53.7 million peoples in 2017, of which employees of the agriculture, forestry and fishery sector were 21.6 million peoples, accounted for 40.2% of the total employed population; the industry and construction sector made up 13.8 million peoples with the corresponding share of 25.7%; and the service sector accounted for 18.3 million peoples with the corresponding share of 34.1%.

The percentage of trained employed workers aged 15 years and over with diplomas and certificates reached at 21.4% in 2017 (higher than the figure of 20.6% of the year 2016), of which the percentage of trained employed workers was 37.9% in urban areas and 13.7% in rural areas.

The unemployment rate of labour force at working age was 2.24% in 2017, of which these rates of urban and rural areas were 3.18 and 1.78%, respectively. The

underemployment rate of labour force in working age was 1.62% in 2017, of which the urban areas were 0.82% and the rural areas were 2.03%.[1]

10.2 TVET Mission, Legislation and National Policy or Strategy

10.2.1 TVET Mission/Goals

The Law on Vocational Education and Training (VET) regulates overall objectives of the vocational education and training system which is to train human resources for the businesses, enterprises and service providers. Workers should be well-trained and capable of the jobs in their respective field, having good health and morality, taking responsibility with their career and being creative, adjusting themselves with global standards, providing high-quality services and being able to find jobs on their own, create jobs or move up to higher education.[2]

In addition, the Law provides forward-thinking guidance on flexible provision, quality control, governance and management, financing, the role of enterprises and the rights and duties of organizations and individuals who participate in vocational education and training activities.

Specific objectives pertaining to every level of vocational education[3]:

(i) Elementary level: equip students for abilities to perform simple tasks of a particular job;
(ii) Intermediate level: equip students for abilities to perform elementary-level tasks and some complicated and special tasks; apply technology to their jobs, work independently or work in groups;
(iii) College level: equip students for abilities to perform intermediate-level tasks and some complicated and special tasks; acquire abilities to create and apply modern technology to their jobs, instruct and observe other members in their groups in performing the tasks.

10.2.2 TVET Legislation

The Law on Vocational Education and Training (Law No. 74/2014/QH13, dated 27 November 2014)

[1] Vietnam General Statistics Office (2017).
[2] Article 4 (2014).
[3] See Footnote 2.

- The Law on Vocational Education and Training, consists of eight chapters and 79 articles, has restructured Vietnam's national education system, comprehensively changing the current vocational education and training system. The Law regulates the comprehensive vocational education and training system at three qualification levels: elementary, intermediate and college levels. TVET institutes are vocational education and training centres, vocational secondary schools and colleges. There are three methods to organize training, including time-based training, module accumulation and credit accumulation. The duration of intermediate-level training for a general lower-secondary school graduate is from 1 to 2 years depending on specific occupations. Learners are not required to study general upper-secondary school subjects. The duration of training at the elementary level is 300 hours at the minimum.
- TVET institutions are allowed to design their own training programmes based on the national occupational skill standards and learning outcomes of the respective occupations. College graduates are given the title of Practice Engineer or Practice Bachelor. Private TVET institutions and foreign-funded TVET institutions are given priority by the government to rent facilities and training equipment. All TVET institutions, regardless of their type as private or public institutions, are invited: to participate in bidding for training contracts/orders; to borrow preferential funds from domestic and international projects; to allow TVET teaching and management staff to participate in training programmes financed by the state budget, domestically and overseas. Tuition waiving is applicable for beneficiaries of favourable social policies and state benefits, general lower-secondary school graduates, learners of occupations with low rate of admission but in high demand and learners who want to learn special technical skills. The knowledge and skills accumulated by the learners during their working life and the learning results of those modules, credits and subjects accumulated by them during the learning process are recognized, and learning courses do not have to be repeated. Learners who are beneficiaries of favourable social policies are entitled to boarding school policy when pursuing a vocational education and training programme, and there are special privileges for them to be recruited and paid after completing a vocational education and training programme.

There are clear regulations on the titles of teachers working in TVET institutes. Accordingly, those who teach in vocational education and training centres and vocational education and training secondary schools are called teachers while those who teach in colleges are called lecturers. The Law also regulates policies on honouring TVET teachers and policies for the prolongation of their working time. Meanwhile, enterprises participating in vocational education and training activities are entitled to corporate income tax deduction.

Labour Code (Law No. 10/2012/QH13 dated 18 June 2012)

This Code is adopted by the National Assembly of the Socialist Republic of Vietnam, term XIII, 3rd session on 18 June 2012. Chapter IV Labour Code regulations:

the employees are entitled to choose their vocation and vocational training at workplaces consistently with their demands for employment. The eligible employers are supported by the state to establish vocational training facilities or hold vocational training classes at workplaces to train, retrain, improve the vocational skill and grade for their employees and provide vocational training to other learners as prescribed by law provisions on vocational training.

The employers shall make the annual plan and prepare budget to provide vocational training or vocational skill and grade improvement courses for their employees and train the employees before they change their jobs to be recruited by the employers. The employer must send reports on the results of vocational skill and grade training and improvement to provincial state labour management agencies in the annual labour reports.

When the employer recruits vocational learners and apprentices to work for them, the vocational training registration is not required and school fee collection is prohibited. The vocational learners and apprentices in this case must be 14 years or over and physically capable of the vocational demand, except for the occupations prescribed by the Ministry of Labour, Invalids and Social Affairs. Both parties must sign the vocational training contract. During the vocational training and apprenticeship, if the vocational leaner or the apprentice directly creates or participates in the creation of qualified products, they shall be paid an amount agreed by both parties. When the vocational training or apprenticeship completes, both parties must sign the labour contract when the conditions prescribed in this Code are satisfied. In addition, the employer is responsible to encourage the employee to participate in the vocational skill assessment in order to be issued with the national vocational certificate.

Law on Employment (Law No: 38/2013/QH13 dated 16 November 2013)

Purposes of assessment and grant of certificates of national occupational skills are (i) assessment and grant of certificates of national occupational skills aim to recognize the levels of occupational skills of workers based on their qualifications and (ii) Workers may participate in the assessment and be granted certificates of national occupational skills in order to improve their occupational capacity or seek appropriate employment or employment requiring such certificates.

The assessment of national occupational skills must adhere to the following principles: ensuring voluntariness of workers; being based on national occupational skills standards; conforming with each qualification level of skills of each occupation; and ensuring accuracy, independence, impartiality, equality and transparency.

Contents of assessment of national occupational skills include professional and technical knowledge, work practice skills and occupational safety and hygiene process.

National occupational skills standards shall be developed for each qualification level of occupational skills for each occupation and the national occupational skills qualification framework. The number of qualification levels of occupational skills depends on the complexity of each occupation. Ministers, heads of ministerial-level agencies and heads of government—attached agencies shall assume the prime

responsibility for developing national occupational skills standards for each occupation in the fields under their management and request the Ministry of Labour, Invalids and Social Affairs to appraise and publicize national occupational skills standards. The Ministry of Labour, Invalids and Social Affairs shall guide the development, appraisal and publicization of national occupational skills standards.

A worker who satisfies the requirements at a certain qualification level of occupational skills will be granted a certificate of national occupational skills at that level according to regulations of the Ministry of Labour, Invalids and Social Affairs. Certificates of national occupational skills are valid nationwide. In case of mutual recognition of certificates of national occupational skills between Vietnam and other countries or territories, the certificates of national occupational skills are valid in the countries or territories where they are recognized and vice versa.

Certificates of national occupational skills are required for workers who do jobs that directly affect the safety and health of themselves or of the community.

Vocational Training Development Strategy period 2011–2020 (No. 630/QD-TTg of the Prime Minister dated 29 May 2012)

Human resources development is one of the three strategic breakthrough solutions, in which vocational training quality is regarded as a critical element of socio-economic development. Vietnam adopts the principles of "radical and comprehensive educational renovation", including vocational training, which poses a new opportunity for vocational training development.

By 2020, vocational training will meet the labour market's demands in terms of quantity, quality and vocational structure and qualifications with the quality in some trades reaching the standards of advanced countries to form a force of skilled labourers to help improve the national competitiveness and to realize universalization of vocational training for labourers, contributing to restructure the labour force, raising the income to alleviate poverty in a sustainable manner, ensuring social security.

Solutions of strategy are: (i) Building National Vocational Qualification Framework (NVQF); (ii) renovating state management of vocational training; (iii) planning and developing the network of vocational training institutions; (iv) ensuring the quality of vocational training, including developing vocational teachers, instructors and managers, developing curriculums and syllabuses and enhancing vocational facilities and equipment; (v) control of vocational training quality, including vocational training quality accreditation and assessment and certificates of national skills; (vi) linking vocational training with the labour market and the participation of enterprises; (vii) mobilizing resources for the vocational training sector; (viii) raising awareness of vocational training development; and (ix) promoting international cooperation in vocational training.

Project on Vocational Training for Rural Workers until 2020 (Decision No. 1956/QD-TTg of the Prime Minister dated 27 November 2009)

Beneficiaries of the project are rural labourers of working age with educational level and health status suitable to the trades to be trained. To prioritize those entitled to

incentive policies for people with meritorious contributions to the revolution, poor households and households with income of up to 150% of that of poor households, ethnic minority people, disabled people and people subject to recovery of farmland.

General objectives are to provide vocational training for around one million rural labourers on average per years, including training and retraining of 100,000 commune cadres and civil servants and improving vocational training quality and effectiveness to create jobs and raise income for rural labourers, making contributions to labour and economic restructuring in service of industrialization and modernization of agriculture and rural areas.

Special provisions

- TVET ethnic minority students from economically deprived areas, near-poor TVET students in mountainous areas are allowed to have tuition reduction from public TVET institutions (Decree No. 86/2015/ND-CP of the Government dated 2 October 2015).
- Students from poor and near-poor households and people with disabilities or being permanent resident in socio-economically disadvantaged or ethnic areas or in border and island areas are allowed to receive specific scholarship and other allowances (Decision No. 53/2015/QD-TTg of the Prime Minister dated 20 October 2015).

10.2.3 TVET Strategy

Economic modernization and strong growth are driving Vietnam's demand for vocational skills which the domestic VET sector is currently unable to meet, in both quality and quantity. Vietnam's VET sector is appropriately structured or resourced to deliver services at a level and standard that meets the needs of a modern economy and society.

The Law on Vocational Education and Training came into effect in July 2015. Major changes for the national TVET system are regulated in this Law. Investment in VET will be prioritized in socio-economic development plan.

To implement the Law on Vocational Education and Training in practice, a number of activities have been implemented: (i) responsible state management agencies in TVET sector work together to develop and release new under-law documents (e.g. decrees, circulars, decisions, etc.) which instruct and guide TVET-related entities implement the Law; (ii) continue the implementation of the national TVET policies which are still suitable with the objectives of the TVET system (e.g. The Vocational Training Development Strategy 2011–2020).

Stakeholders involved and their role:

- Line ministries (e.g. Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, Ministry of Construction, etc.), they are partners of the Ministry of Labour, Invalids and Social Affairs (MoLISA)—the Ministry has respon-

sibility to manage the TVET system—for development and approval of national occupational skill standards in their responsible sectors.
- Provincial Department of Labour, Invalid and Social Affairs (DoLISA) is responsible for state management of TVET activities at provincial level.
- TVET institutions (vocational education and training colleges, vocational education and training secondary schools, vocational education and training centres) deliver TVET programmes.
- TVET teacher training institutions: they are university and colleagues that deliver TVET teacher pre-service training programmes.
- Industry (professional associations and enterprises) contribute to development of occupational standards, curricular, training, testing exercises, assessment, tracer and enterprise surveys. Level of participation in each type of activity depends on occupations, willingness of each company or association. Generally, the participation of industry in TVET activities is gradually growing recently, but it is still limited, not systematic and sustainable.

10.3 TVET Governance and Financing

10.3.1 Governance

Directorate of Vocational Education and Training (DVET) of Ministry of Labour, Invalids and Social Affairs (MoLISA) is responsible for state management of the TVET sector in the countrywide. Mr. Nguyen Hong Minh is the current Director General of DVET.

Historical stages of stage management agency on vocational education and training

- From 1955 to 1978:
  - 1955–1969: The Ministry of Labour (Department of Labour Management)
  - 1969–1978: The Ministry of Labour (Department of Workers Training)
- From 1978 to 1987: The Cabinet Council (General Department of Vocational Training—GDVT)
- From 1987 to 1990: The Ministry of Higher Education, Professional Secondary Education and Vocational Training (Department of TVET)
- From 1990 to 1998: The Ministry of Education and Training—MoET (Department of Professional Secondary Education and Vocational Training)
- From 1998 to June 2015: The Ministry of Labour, Invalids and Social Affairs—-MoLISA (General Department of Vocational Training)
- At the meantime, the Department of Professional Secondary Education and Vocational Training of MoET was responsible for the professional secondary education
- From 1 July 2015 to present: MoLISA (Directorate of Vocational Education and Training).

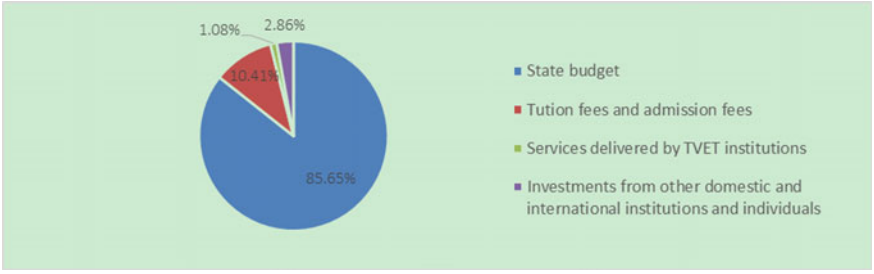

Fig. 10.1 Structure of financial resources for VET during 2011–2016 (%). *Source* Directorate of Vocational Education and Training (DVET)

Resolution No. 76/NQ-CP dated 3 September 2016 by the Government decides that the Ministry of Labour, Invalids and Social Affairs is the state management agency on vocational education and training, and Ministry of Education and Training is the state management agency on pedagogical schools. Since 2017, these schools will admit learners based on the regulations promulgated in accordance with the Law on Vocational Education and Training.

DVET has function of executing the consulting role to assist the MoLISA to exercise the state management role in vocational education and training area, including: programmes, curriculums, contents, planning, quality of training, national skill framework, criteria of TVET lecturers, teachers and managerial staff, procedure of exams, trainee recruitment, system of certificates and degrees, lists of training occupations, physical foundation, training equipment and facilities and execution of state management in vocational training area as specified by laws.

10.3.2 Financing

There are two sources of funding for vocational training: state budget and non-state budget funding.

- State budget: the state budget funds consist of three types: recurrent funding, capital construction investment and fund for national target programmes (programme funding). Only public TVET institutions receive substantial public funding to cover both recurrent and capital costs; and selected VET institutions are eligible for funding from the national target programme VET.
- Non-state budget funding: this includes vocational training admission charges and tuition fees, incomes from services, business and production activities and counselling and technology transfer done by the TVET institutions as well as investment and funds from domestic and international organizations and individuals (Fig. 10.1).

For recurrent funding source: spending is expenditure for the regular operation of TVET institutions.

Regular spending from state budget for vocational training must be allocated in accordance with the principle of publicity and centralized democracy. It is based on the vocational training scale and socio-economic development conditions of each region and demonstrates the state's priority policy for popularization of vocational training and development of vocational training in ethnic and specially disadvantaged areas.

Financial agencies are responsible for allocating adequate and timely funding to vocational training as dictated by the progress of the academic year. The vocational training management agencies are responsible for managing and utilizing the vocational training budget allocated and other income sources efficiently as stipulated by law.

Funding to vocational training institutions is allocated from the budget of provinces and municipalities or industries. This source is usually depending on salaries and insurance for the teaching and other staff on the payroll. Due to insufficient expenditures for purchase of materials for practice, vocational training institutions usually request an additional financial resource called training support fund. Allocations of the training support fund depend on localities.

Under the current mechanism of spending the state budget on vocational training, MoLISA is only allowed to participate in the process of estimating and allocating the state budget for the national target programmes in vocational training. MoLISA is not allowed yet to get involved in the estimation and allocation of the state budget for recurrent expenditures and infrastructure of vocational training.

Private training providers, which have been growing in number during recent years, are usually fully self-financing. The main source is tuition fees. They do not receive any regular state funding. In line with the socialization policy, the Vietnamese Government explicitly encourages the establishment of non-public training providers and has already established a sound legal basis for private institutions (including commercial schools) to develop. Nevertheless, the growth of the private TVET sector appears to fall short of expectations due to ineffective implementation of existing support policies and lack of competitiveness of private.

10.4 Education and TVET System

The Government subsidizes major expenditure for public education institutions and all the education levels such as infrastructure, equipment and salary for teachers and managers. The fund could be provided in form of annual recurrent fund or national target programmes (last for several years and for specific purposes). Tuition fee of students and learners cover part of operational expenditures of the education and training institutions (Fig. 10.2).

Mandatory years of schools start around early September to end of June of next year.

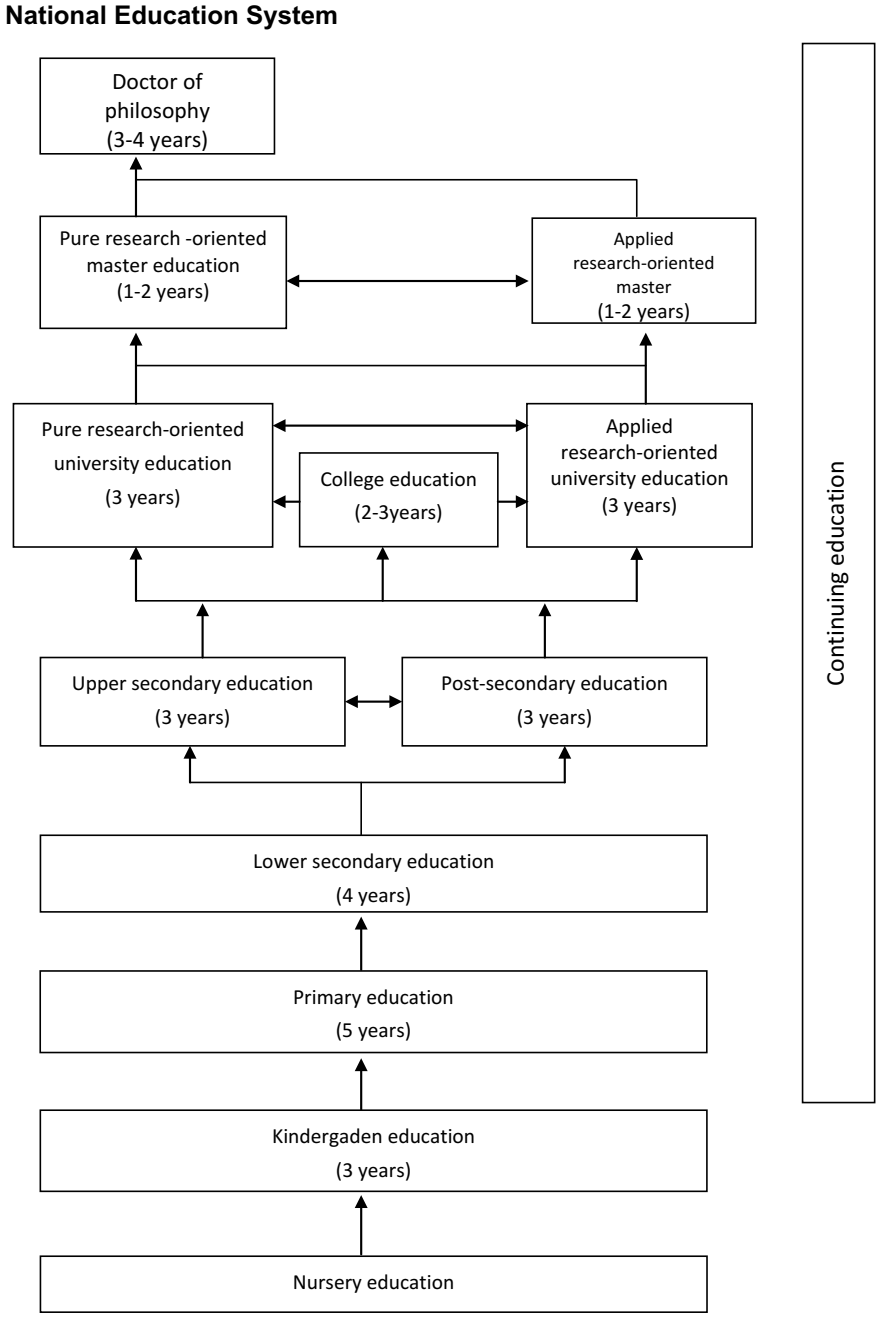

Fig. 10.2 Structural framework of the national education system (Decision No. 1981/QD-TTg 2016)

TVET System

Graduation of primary education is the minimum level to enrol in the elementary vocational training programmes.

Graduates from upper-secondary schools, post-secondary education or vocational colleges are eligible to enter tertiary level of education.

Formal TVET System: there are three main types of TVET institutions: vocational education and training centres (elementary level), vocational education and secondary schools (intermediate level) and vocational education and colleges (college level). The three types of TVET institutions exist in countrywide. There were totally 1.972 TVET institutes in 2017 (Fig. 10.3).

The Law on VET defines three types of TVET institutes according to their ownership: public TVET institutes, private TVET institutes and foreign-invested TVET institutes. The public TVET institutions were subsidized from the Government, while the non-public TVET institutions have to operate their activities by their own fund.

By 30 October 2016, the total number of TVET institutes was 1,972, of which public TVET institutes accounted for 66.3% (1,307 TVET institutes). Among 1,307 public TVET institutes, the number of public colleges accounted for 23.3% (304 colleges), public VET schools accounted for 23.6% (308 VET schools) and VET centres accounted for 53.1% (695 VET centres). Non-public TVET institutes (including private and foreign-invested institutes) accounted for 33.7% (665 TVET institutes) of the total number of TVET institutes (Fig. 10.4).

The main target group of TVET sector is young people (from 15 to 21).

According to Circular 04/2017/TT-BLDTBXH dated 2 March 2017 released by MoLISA on training occupations at intermediate and college levels. There are 784 occupations at intermediate level and 550 occupations at college level.

Vocational training centres offer elementary training programmes, which are under 12 months. Graduates will receive certificate.

Vocational secondary schools (at post-secondary education) offer intermediate training programmes. Depending on input level, graduates of lower-secondary education or upper-secondary education, training duration is 1 year or from 2 to 3 years accordingly. Graduates of vocational secondary schools receive certificate.

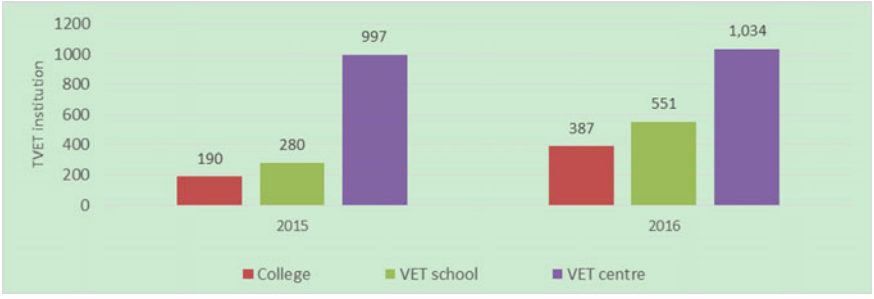

Fig. 10.3 Number of TVET institutions. *Source* DVET Administration Office

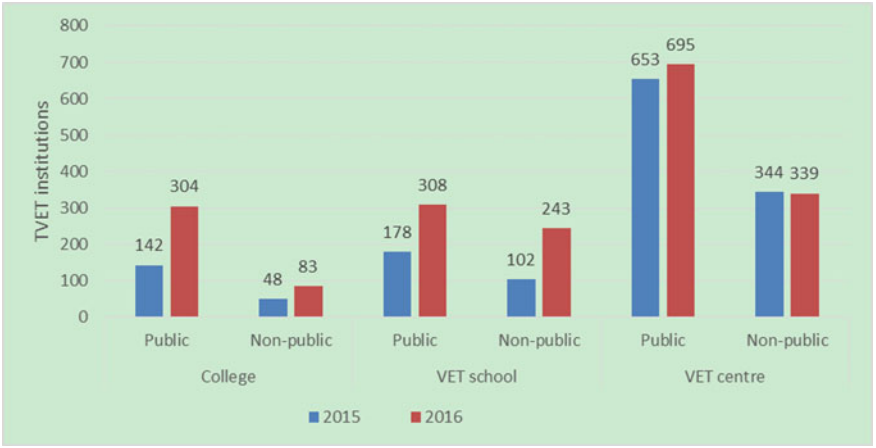

Fig. 10.4 TVET institutions categorized by ownership. *Source* DVET Administration Office

Vocational colleges offer college training programme, depend on training occupation and students, who are graduates of upper-secondary schools or vocational secondary schools, training duration could be from 1 to 3 years. Graduates of vocational colleges receive diploma degree.

At post-secondary education and college levels, curricular are developed and approved under decision of rector of TVET institutions (Circular No. 03/2017/TT-BLDTBXH).

Theory versus practice ratio (Circular No. 03/2017/TT-BLDTBXH):

For intermediate level: depending on training occupations, the theory/practice ratio for programmes is from 25 to 45%/55 to 75%.
For vocational college: depending on training occupations, the theory/practice ratio for programmes is from 30 to 50%/50 to 70%.

TVET students attend internship programme in their last year of training.

10.5 National Qualification Framework[4]

10.6 Quality Assurance and Standards

Vietnam Vocational Training Accreditation Agency (VVTAA) is a unit of Directorate of Vocational Education and Training (DVET), under management of MoLISA, and its major function is to assist the Director General of DVET to perform state function

[4]Decision No. 1982/QD-TTg (2016).

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
1	– Have a narrow range of factual knowledge and basic knowledge about a number of activities in a certain profession – Have basic knowledge about nature, culture, society and legislation serving the life, advanced study and preparation for the future occupation	– Have basic skills to directly carry simple or manual tasks – Have basic communicative skills in familiar contexts	– Carry out a number of simple and repeated tasks with the assistance of instructors – Carry out tasks under strict supervision and guidance – Conduct self-assessment and assessment of tasks with the assistance of instructors	5 credits	Certificate I
2	– Have a narrow range of factual and theoretical knowledge about a number of activities of a profession – Have general knowledge about nature, culture, society and legislation serving the life, profession and advanced study	– Have awareness and skills required to select and apply suitable methods, tools and materials and available information – Have communicative skills required to perform the results or make reports on own work	– Carry out a number of tasks with regularity and limited autonomy in familiar contexts – Carry out tasks in unfamiliar contexts with the guidance of instructors – Have ability to do self-assessment of own tasks	15 credits	Certificate II

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
3	– Have factual and theoretical knowledge of common principles, processes and concepts in the scope of a training profession – Have general knowledge about nature, culture, society and legislation serving the life, profession and advanced study – Have basic knowledge of information technology related to a certain profession	– Have awareness and skills required to carry out tasks or solve problems independently – Have skills required to use effectively professional terms at workplace	– Work independently in stable situations and familiar contexts – Carry out assignments and do self-assessment according to the defined standards – Carry out teamwork with other people and take responsibility for the results of work	25 credits	Certificate III

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
4	– Have a broad range of factual and theoretical knowledge about the training profession – Have basic knowledge of politics, culture, society and legislation answering to the professional and social requirements in the profession – Have knowledge of information technology answering to the requirements of work	– Have awareness and professional skills required to carry out tasks and solve problems by selecting and applying basic methods, tools, materials and information – Have skills required to use professional terms in the field of study to communicate effectively at workplace; get involved in argument and apply alternative solution; assess the quality of work and performance of members of the team – Have foreign language capacity at level 1/6 referencing to Vietnam's framework of foreign language proficiency	– Work independently in changeable contexts, take personal responsibility and take partial responsibility for teamwork results – Guide and supervise the ordinary tasks of others – Evaluate the performance of the team	35 credits, for people with the certificates of completion of upper-secondary education, or 50 credits, for people with the certificates of completion of lower-secondary education	Associate degree

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
5	– Have comprehensive, factual and theoretical knowledge of the training profession – Have basic knowledge of politics, culture, society and legislation answering to the professional and social requirements in the profession – Have knowledge of information technology answering to the requirements of work – Have factual knowledge about the management, principles and methods for planning, performing, supervising and evaluating the work within the boundaries of the training profession	– Have awareness and creativity to determine, analyse and evaluate broad-range information – Have practical skills required to abstract problems within the boundaries of the training profession – Have awareness and creativity to determine, analyse and evaluate broad-range information – Have skills required to transfer information, ideas and solutions to other people at workplace – Have foreign language capacity at level 2/6 referencing to Vietnam's framework of foreign language proficiency	– Work independently or work in teams, solve tasks and complicated problems in changeable contexts – Guide other people to perform defined tasks and supervise their performance; take personal and shared responsibility – Evaluate the task results and performance of members in the team	60 credits	College degree

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
6	– Have an advanced theoretical and factual knowledge in the field of study – Have basic knowledge of social science, political science and legislation – Have knowledge of information technology answering to the requirements of work – Have knowledge about planning, organizing and supervising processes of specific fields of work – Basic knowledge of the management and control of professional activities	– Have skills required to solve complex problems – Have skills to be a leader and create own jobs or for other people – Have argument skills and skills to criticize and apply alternative solutions in unpredictable or changeable contexts – Have skills to evaluate the task results and performance of members in the team – Have skills to transfer information about problems and solutions to other people at workplace; transfer and disseminate knowledge and skills in performance of defined or complex tasks – Have foreign language capacity at level 3/6 referencing to Vietnam's framework of foreign language proficiency	– Work independently or in team in changeable contexts, take personal responsibility and take partial responsibility for teamwork results – Guide and supervise the ordinary tasks of others – Make self-orientation and produce professional conclusions and have ability to protect own viewpoints – Draw up plans, direct and manage resources, evaluate and find solutions to improve the task performance	120–180 credits	Undergraduate degree

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
7	– Have advanced specialized knowledge; have a thorough grasp of basic principles and theories in a field of study – Have relevant knowledge in multidisciplinary field of study – Have general knowledge about administration and management	– Have advanced and specialized skills including analysation, synthesis and evaluation of data and information to solve problems in a scientific way – Have skills to transfer knowledge depending on researches, discuss professional and scientific issues with other people – Have skills to organize, administrate and manage advanced vocational activities – Have skills to develop and apply technology creatively in a field of study or work – Have foreign language capacity at level 4/6 referencing to Vietnam's framework of foreign language proficiency	– Carry out research and produce essential ideas – Adapt to the context, have self-orientation and guidance skills – Make professional conclusions for the field of work or study – Manage, evaluate and develop professional activities	30–60 credits	Master's degree

(continued)

(continued)

Level	Learning outcomes Requirements for learners completing the course			Minimum academic load	Qualification type
	Knowledge and understanding	Skills	Autonomy and responsibility		
8	– Have the most advanced and intensive knowledge in a field of work or study related to science – Have the essential and basic knowledge in the field of the training profession – Have knowledge about organization of scientific research and development of new technology – Have knowledge about administration and organization	– Have skills to master scientific theories, methods and tools serving the researching and development – Have skills to consolidate and extend professional knowledge – Have skills to reason and analyse scientific issues and produce creative and original solutions – Have skills to carry out management and professional direction in terms of research and development – Have skills to join in domestic and international discussion regarding the field of study and disseminate the research findings	– Research and create new knowledge – Create new ideas and knowledge for different complex situations – Adapt to, make self-orientation and provide guidance for other people – Make professional conclusions and decisions – Manage researches and have high responsibility in study to develop professional knowledge and experience and produce new ideas and process	90–120 credits	Doctor's degree

in the area of accreditation and quality management for vocational education and training at national level.

Purpose of accreditation for vocational education and training is to evaluate and determine level of achievement of objectives and training programmes of TVET institutions (vocational colleges, vocational secondary schools and vocational training centres) in a certain period that helps TVET institutions continuously improve quality and effectiveness of training.

The organization and management of vocational training quality accreditation activities are regulated by Article 66 of the Law on Vocational Education and Training as follows:

1. The organization for education quality accreditation shall assess and recognize the vocational training institutions and vocational training programmes satisfying the requirements pertaining to vocational education quality.
2. Organizations for vocational education quality accreditation include:
   (a) Organizations for vocational education quality accreditation established by the state;
   (b) Organizations for vocational education quality accreditation established by organizations or individuals.
3. An organization for vocational education quality accreditation established according to projects must:
   (a) Have facilities, equipment and finance meeting the requirements pertaining to the organization for vocational education quality accreditation;
   (b) Have administrative official and assessor staff meeting the requirements pertaining to the organization for vocational education quality accreditation.
4. The organizations for education quality accreditation shall have legal status, take legal responsibility for their operation; and they are eligible to collect accreditation fees as prescribed in regulations of law.
5. The Head of vocational education authority shall provide guidance on: requirements, procedures and periods of vocational education quality accreditation; conditions and competence in establishment, permission for establishment, dissolution of the organizations for vocational education quality accreditation; rights and obligations of organizations for vocational education quality accreditation; recognition of accreditation results of the organizations for vocational education quality accreditation; issuance and revocation of certificate of vocational education quality accreditation; criteria, rights and obligations of assessors; and management and issuance of vocational education quality assessor's cards.

There are two types of accreditation: an accreditation circle starts with self-accreditation of TVET institutions. It happens once per year for all TVET institutions in countrywide.

1. Self-accreditation: TVET institutions must conduct self-accreditation once a year.

2. External accreditation is conducted once every five years for any TVET institutions, which express their need.

Accreditation for TVET institutions is based on eight criteria (for vocational education training centres) and nine criteria for vocational colleges and vocational secondary schools. The criteria cover aspects of, e.g. mandate and objectives of the institutions; training activities; TVET teachers, managers and staff; training curricular, teaching and learning materials; training facilities and equipment; financial management; services for trainees; monitoring and quality assessment, etc. The criterion training curricular, teaching and learning materials reflect a link with NQF. The NQF of Vietnam is very similar to the AQRF.

10.7 TVET Personnel

Composition of Personnel

For instance, three core groups are viz. (i) teachers (trainers/instructors), (ii) school management and (iii) in-company trainers. Please provide a small paragraph on each group and preferably a basic pie chart depicting proportions.

Composition of Teaching Workforce

The male/female ratio in 2016 was 70.82:29.18 (draft of Vocational Education and Training Report Vietnam 2016).

According to Circular No. 08/2017/TT-BLDTBXH dated 10 March 2017 on standards on qualifications of TVET teachers/instructors.

At vocational college level:

For theoretical teachers: obtain at least a Bachelor Degree in specialized field or Bachelor's in specialized pedagogy in line with the vocation as assigned.

For practical teachers/trainers: obtain one of certificates of vocational skills in line with the vocation as assigned for practical teaching at college level as follows: at least a national certificate of vocational skills level 3, or a worker's certification level 5/7, 4/6, or a certificate of people's artisan, people's artist, or people's doctor, or a vocation college's degree or a certificate of vocational practice at vocational college level or equivalent.

At intermediate level (vocational secondary school):

For theoretical teachers: obtain at least a Bachelor Degree in specialized field or Bachelor's in specialized pedagogy in line with the vocation as assigned.

For practical teachers/trainers: obtain one of certificates of vocational skills in line with the vocation as assigned for practical teaching at intermediate level as follows: at least a national certificate of vocational skills level 2, or a worker's certification level 4/7, 3/6, or a certificate of meritorious artisan, meritorious artist, or meritorious

doctor, or a certificate of vocational practice at vocational college level or vocational college's degree or junior college's degree or equivalent.

At elementary level (vocational training centre): teachers need to obtain at least a diploma of professional secondary school or vocational intermediate school in major appropriate to the vocation to be taught or obtain one of certificates of vocational skills in conformity with the vocation to be taught equivalent to elementary level as follows: at least national certificate of vocational skills level 1 or worker's certification level 3/7, 2/6 or artisan certificate of province or central-affiliated city.

The pre-service teacher training model of Vietnam is a consecutive model that the students first get a bachelor qualification in a technical–technological field. They are then trained in vocational pedagogy in a designated course programme for getting the Vocational Pedagogy Certificate.

The Ministry of Education and Training (MoET) is responsible for all university-level training programmes and thus for the pre-service teacher training programmes. Inputs of the pre-service programmes are graduates of upper-secondary school. The pre-service training programmes are delivered at five Universities of Technology Education (UTE) and at Faculty of Technical Education of some other universities.

Novice teachers start their job by having a formally structured induction phase. The induction phase is 6 months for teachers teaching at the elementary level and 12-month teacher teaching at the intermediate and college level.[5] During this phase, the novice teachers are mentored by experienced teachers while participating in lessons of other teachers, developing lesson plans, giving lessons themselves, etc. Responsibility of preparing content belongs to TVET institutions.

The Ministry of Labour, Invalids and Social Affairs (MoLISA) is responsible for in-service teacher training programmes which are delivered by 39 Departments for Vocational Pedagogy at vocational colleges.

There is the national TVET teacher's standard,[6] which released in March 2017 that comprises of:

Professional competency: technical, foreign language, ICT
Pedagogy competency: qualification, teaching time, teaching preparation, teaching conducting, assessment, training profile management, curriculum/learning material development, training planning, learner's management and maintain the learning environment
Career development, scientific research: participating in further qualification, development of employability skills for learners, participating at research.

This standard is an important basis for designing and conducting of training programmes: professional skills training (updating, upgrading), pedagogy training (certificate course design), i.e. the national pedagogy standard training programme for certificate of vocational pedagogy comprises of vocational psychology, vocational education, teaching skills and teaching methodology, teaching media, curriculum

[5]Circular No. 06/2017/TT-BLDTBXH (2017).

[6]See Footnote 5.

development, internship. The duration of the programme is 400 h. This is the pedagogy in-service certificate (by MoLISA). Universities or colleges can use it as a top-up programme in pre-service training. At the moment, there are both teachers with and without it in the system.

Beside the pedagogy training programme, MoLISA/DVET and provincial Department of Labour, Invalid and Social Affairs also offer practical training programmes with duration of 480 h (for graduates of TVET teacher training universities) and 960 h (for graduates of engineering programmes). Objective of this programme is to improve practical skills for TVET teachers in order to make them meet the national practical standards which are regulated in the Circular No. 08/2017/TT-BLDTBXH on standards and qualifications of TVET teachers.

TVET teachers come from different sources as follows: graduates of UTE or other universities; graduates of vocational colleges and vocational secondary schools and skilled workers and technicians from industries and skilled artisans.

Salaries of Teachers/Trainers/Instructors

It depends on teachers working at public or non-public TVET institutions who will get different starting salary levels. For public TVET institutions, salary is calculated based on qualification level of teachers. Starting salary level is around USD 175. For non-public TVET institutions, starting salary is a negotiation, but not less than the regulated minimum salary, which is regulated differently in regions of the country.

Teachers' Professional Development

MoLISA and provincial Department of Labour, Invalids and Social Affairs (DoLISA) organize further training courses to improve practical skills for TVET teachers with aim to make the teachers meet the skill standards (regulated in the Circular No. 08). Besides, MoLISA and DoLISA also provide vocational pedagogy programme for novice teachers, further pedagogy training programmes on topics of developing integrated teaching plan, competency-based training and training on new technologies for TVET teachers. Pre-service training programmes are conducted by universities. That could be offered in kind of training credits or time-based curricular. In-service training programmes are structured in modules.

TVET Graduates

In 2016, the percentage of graduates is hired by the industry upon completion of course was over 70%, in which graduates of vocational colleges and vocational secondary schools were 69 and 72% accordingly. The average starting salary for graduates is VND 4.2 million/month (Fig. 10.5).

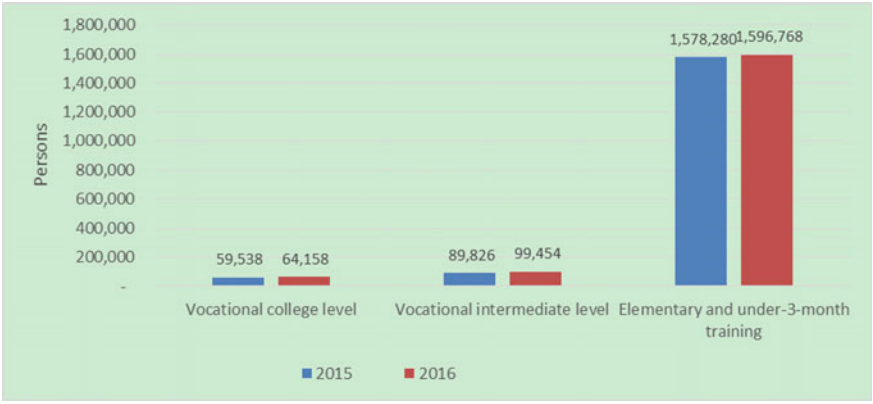

Fig. 10.5 Graduates from vocational college, intermediate and elementary levels and under 3-month training during 2015–2016 *Source* Department of Formal Training—DVET

10.8 Private Sector Cooperation

There are quite a number of professional associations. They are potentially relevant to engage in TVET activities; however, in general, many of them have not yet or little involving in TVET sector.

In some specific professions, participation of the association is very active for development of occupational standards, delivery training programmes, etc. (e.g. Vietnam Water and Sewage Association worked with GIZ bilateral programme in Vietnam on pilot of cooperative training). Besides, there are also some cooperation between DVET and

- Collaboration with the Embassy of Australia, Taipei Economic and Cultural Office in Ho Chi Minh City, Vietnam Chamber of Commerce and Industry (VCCI) organized seminars on promoting the participation of enterprises in TVET, cooperate TVET institutions and enterprises between Vietnam and Taiwan, model of linking enterprises with TVET institutions.
- Signed a cooperation programme between DVET and VCCI and big corporations such as BigC, Vingroup, BIM Group, FLC Group, etc., to enhance the role, responsibility and efficiency of the cooperation of the DVET and VCCI and the enterprises in strengthening the connection between TVET institutions and enterprises. Organized workshops to seek for effective models for cooperative training. TVET institutions have changed in cooperation with enterprises in training and job placement for their graduates and organized visits for their teachers in enterprises.
- Collaborate with Japanese enterprises in assessing and certifying skill standards based on Japanese standards in some TVET institutions for some occupations.

10.9 Current Trends and Practices

Areas of greatest demand are sales, information technology, business development, accounting, marketing, engineering, human resources, manufacturing, quality control, administration/secretarial, medical and health.

By Sector: manufacturing, health care/pharmaceuticals, finance, IT.

Skills in Demand.

The most-needed soft skills in Vietnam include communication skills, problem-solving ability, ability to work in teams, ability to interpret, analytical skills, creative decision making, adaptability, ability to think ahead, organizational skills and ability to delegate.

Key skills needed for the next five to ten years in Vietnam, as well as throughout the Asia-Pacific region, according to Oxford Economics, include Digital business skills, Agile-thinking skills and Global-operating skills.

Vocational courses are not preferred over academic courses. Graduates of academic courses (bachelor degrees) earn more money than graduates of TVET institutions.[7]

10.10 Ongoing Reforms/Projects

At macro level, MoLISA is working on different policies to encourage involvement of business sector in TVET, empower TVET institutions by giving more autonomy in terms of developing strategic plans, human resources and finance to TVET institutions, improve QA mechanism as well as to continuously provide further training courses to TVET institution teachers and managers for upgrading their competence to meet the national standards.

At implementation level, depending on self-capacity, TVET institutions organize open days, career fairs which are in collaboration with local enterprises. Quite number of TVET institutions has developed good collaboration with enterprises for their internship courses as well as for conducting tracer surveys for their graduates.

With the technical cooperation of GIZ's "Programme Reform of TVET in Vietnam", at policy level, DVET/MoLISA has installed mechanism for developing yearly national TVET report—TVET sector monitoring tool—into the TVET system, it is also piloting topics of criteria for selecting high-quality TVET institutions, autonomy of TVET institutions. At TVET institution level, topic of Centre of Excellent for TVET and greening TVET are piloted. Besides, cooperative training has been carried out and it got initial success.

[7]Newsletter—Labour market update—quarter II 2017. Retrieved from http://ilssa.org.vn/en/news/launching-workshop-on-vietnam-labour-market-update-newsletter-no15-quarter-iii-2017-226.

10.11 Key Issues and Challenges

Lack of effective collaboration with industry: the Government and TVET institutions are aware of the importance of having collaboration with industry in TVET, there are law and other policies to encourage enterprises to work with TVET institutions; however, there are not so many close and effective collaboration models between enterprises and TVET institutions. Generally, the enterprises are not very much interested in involving in TVET activities for the time being.

Low image and awareness of TVET in society: TVET is considered as the second choice of education pathway in understanding of many people. Generally, in quite many occupations/sectors graduates of vocational training programmes are paid lower than graduates of academic programmes (who held bachelor degree).

Inadequate reward and social status for TVET teachers/trainers: value and role of personnel in TVET system (teachers/instructors and school managers) are not duly considered.

Limited competence of TVET teachers and managers: many TVET teachers still do not meet the national standards. They lack practical skills and industrial experience as well as competence for delivering training programmes in a student-centred approach. Only small percentage of TVET institution managers received training on management knowledge. Recently, the Government has paid attention to provide training to TVET institution managers. However, at national scale, competence of the managers is still remained at low level.

No effective Labour Market Information System (LMIS) exists: Vietnam is making effort to shift the TVET system from supply-driven to market-oriented; however, the LMIS is not really existed at national level. The lack of LMIS could lead to mismatch of training demand and supply in terms of quantity and quality.

There are quite a number of policies and plans that help to overcome some of the mentioned above challenges.

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