TVET Country Profile

SINGAPORE

June 2020

Compiled in collaboration with SEAMEO VOCTECH & the Institute of Technical Education, Singapore

Contents

TVETipedia Glossary

In case of further clarification and definitions of terms contained herein, please refer to UNESCO-UNEVOC's online TVETipedia Glossary, which provides definitions and background information from various trustworthy sources on terms commonly used in the area of technical and vocational education and training. Find out more at www.unevoc.unesco.org/l/68.

Acknowledgements

The following report has been compiled in collaboration with SEAMEO VOCTECH and Institute of Technical Education, Singapore. Further details of the contents contained herein can be found at the TVET Platform for South East Asia https://sea-vet.net/.

UNEVOC Network in Singapore

UNEVOC Centre in Singapore includes the Temasek Polytechnic.

Statistics[1]

General information (2019) [2]

Category	Indicator	Statistics
Demographic	Total population	5.7 million
	Population growth (annual %)	1.2%
	Median age of population	41
	Population aged 15-24 years (in thousands)	471.3

Category	Indicator	Statistics
Socio-economic	GDP growth (annual %)	0.7 %
	GDP per capita (current US$) [3]	63,987
	Unemployment rate (%)	2.1 % (2018)
	Youth literacy rate, population 15 years and above, both sexes (%)	97.3% (2018)

Participation in education by level and by programme orientation (2017)

Category		Gross enrolment ratio (%)		Gross enrolment ratio Female (%)	
Primary education (ISCED 1)		100.6%		100.6 %	
Secondary education, all programmes	Lower secondary (ISCED 2)	107.6%	104.3%	107%	103.1%
	Upper secondary (ISCED 3)		110.7%		110.7%
Tertiary education, all programmes (ISCED 5-8)		84.8%		91.2%	

Indicator	Both sexes (%)	Students who are female (%)
Percentage of students in post-secondary non-tertiary vocational education (ISCED 5)	78,1 % (2016)[4]	45.9 %

Education finance

Category	Indicator	Statistics
Expenditure	Expenditure on education as % of total government expenditure (%)[4] *(Includes both operating and development expenditures)*	17.2% (2018)
	Government recurrent expenditure on Education per student in (S$ '000)[4]: ITE Polytechnics	S$14,743 (2018) S$16,408 (2018)

Other useful statistics related to TVET and skills development

	2018
Total TVET Institutions	**8**
Institute Of Technical Education	3
Polytechnics	5
Total Students	**113,553**
Institute Of Technical Education	28,367
Polytechnics	85,186
Male Students	***62,508***
Institute Of Technical Education	17,660
Polytechnics	44,848
Female Students	***51,045***
Institute Of Technical Education	10,707
Polytechnics	40,338
Total Teachers	**7,303**
Institute Of Technical Education	1,698
Polytechnics	5,605
Male Teachers	***4,284***
Institute Of Technical Education	1,073
Polytechnics	3,211
Female Teachers	***3,019***
Institute Of Technical Education	625
Polytechnics	2,394

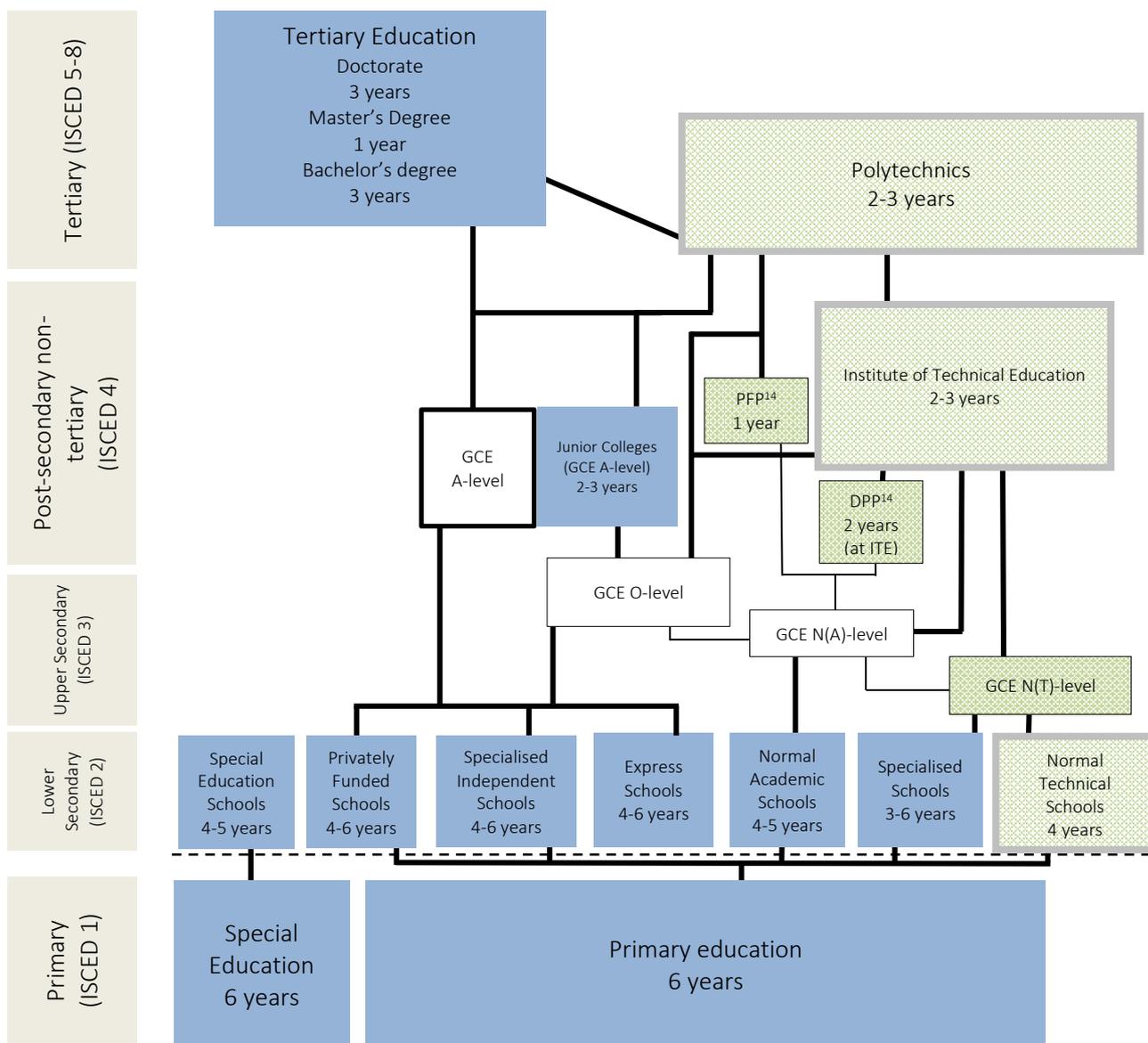[1] Unless otherwise indicated, all statistics have been gathered from the UNESCO Institute for Statistics (UIS). http://uis.unesco.org/
[2] Singstat – Department of Statistics Singapore https://www.singstat.gov.sg/
[3] IMF World Economic Outlook 2020
[4] Statistical Year Book 2019 – Government of Singapore https://www.singstat.gov.sg/-/media/files/publications/reference/yearbook_2019/yos2019.pdf

1. TVET Systems

TVET in Singapore's education system[13]

Tertiary (ISCED 5-8)	**Tertiary Education** Doctorate 3 years Master's Degree 1 year Bachelor's degree 3 years	**Polytechnics** 2-3 years

Post-secondary non-tertiary (ISCED 4)

- Institute of Technical Education 2-3 years
- PFP[14] 1 year
- GCE A-level
- Junior Colleges (GCE A-level) 2-3 years
- DPP[14] 2 years (at ITE)

Upper Secondary (ISCED 3)

- GCE O-level
- GCE N(A)-level
- GCE N(T)-level

Lower Secondary (ISCED 2)

- Special Education Schools 4-5 years
- Privately Funded Schools 4-6 years
- Specialised Independent Schools 4-6 years
- Express Schools 4-6 years
- Normal Academic Schools 4-5 years
- Specialised Schools 3-6 years
- Normal Technical Schools 4 years

Primary (ISCED 1)

- Special Education 6 years
- Primary education 6 years

▨ (blue)	General education	- - - -	Compulsory education
▨ (green)	TVET	▬▬▬	Education Pathway
☐	Additional education / qualifications	———	Additional education / qualification pathways
[14]DPP/PFP	Direct-Entry-Scheme to Polytechnic Programme/ Polytechnic Foundation Programme (further explanation below – Formal TVET System)	— —	Alternative Qualifications (not traditionally offered at main schools in Singapore). Marked path not leading to an education level indicates access to labour market

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[13] Compiled by UNESCO-UNEVOC International Centre. For a detailed overview and exact mobility between various programmes, please visit https://www.moe.gov.sg/education/education-system and see below.

Education System Snapshot – Ministry of Education

Source: https://www.moe.gov.sg/education/education-system
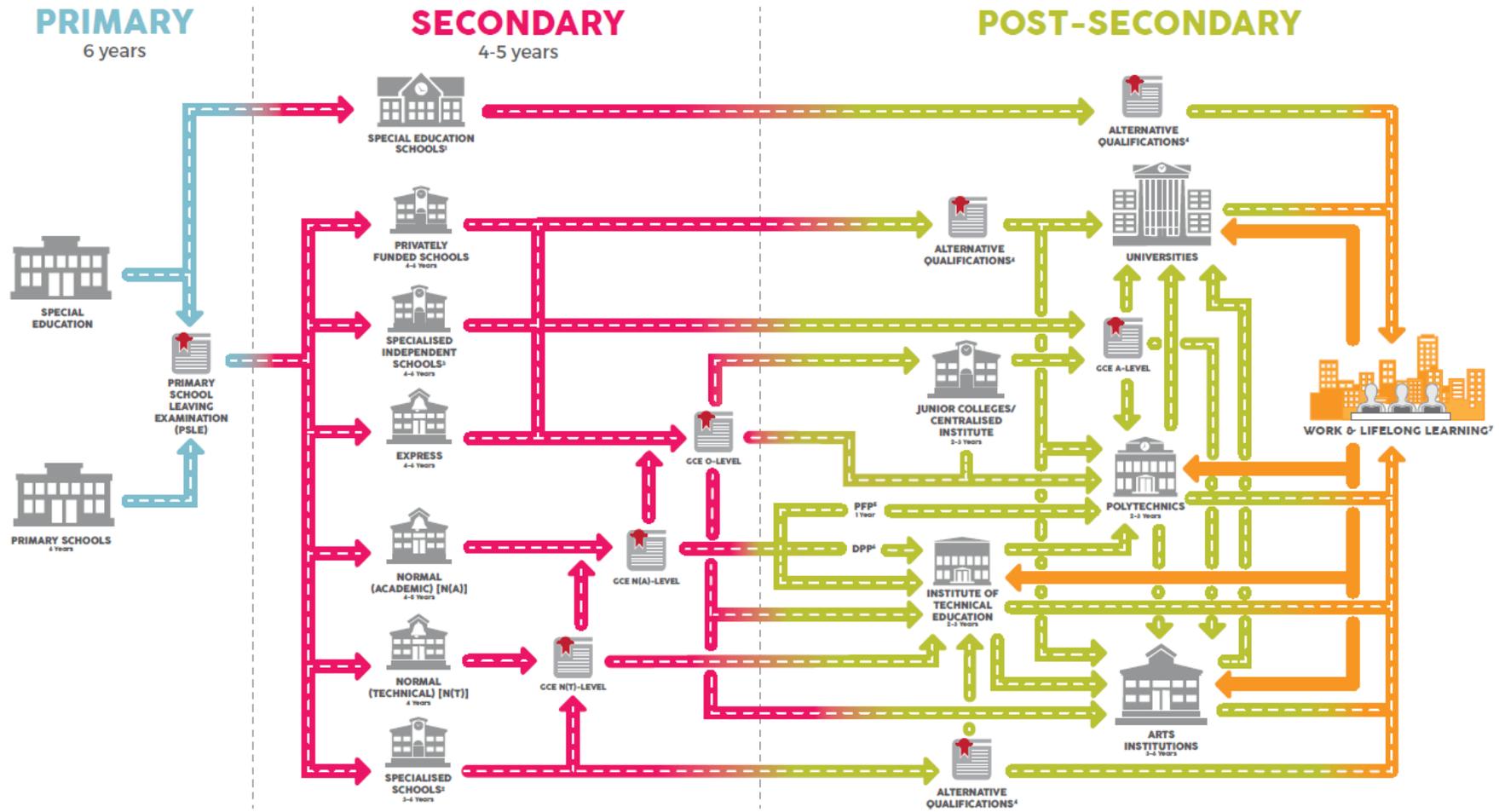
Formal TVET system

The formal TVET system in Singapore is structured as follows:

Technical courses are initially offered at the secondary education level (ISCED 2 and 3).	
Duration:	4 years
Admission requirements:	Completion of primary education with the Primary School Leaving Examination
Taught in:	Normal Technical Schools

In the Normal (Technical) course, students are offered 5-7 subjects including English language, mathematics and computer applications as compulsory subjects. Graduates of the technical course can advance on to courses taught in the Institute of Technical Education. Students graduating from the Normal (Technical) can also move to the GCE Normal (Academic) track to acquire the GCE O-Level qualifications. This enables them to advance into higher academic or vocational tracks, including direct entry into Polytechnics.

TVET programmes are also are provided at the post-secondary non-tertiary education level (ISCED 4).	
Duration:	2-3 years
Admission requirements:	Completion of secondary education with the respective qualification (GCE O-Level, GCE N(A) Level, GCE N(T) Level or Alternative Qualifications) See Section 5 for further details.
Taught in:	Institute of Technical Education (ITE) and Polytechnics

The ITE offers courses leading to National ITE Certification (Nitec) or Higher National ITE Certification (Higher Nitec). 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 in collaboration with foreign partners, in niche areas such as automotive engineering and culinary arts, to provide additional pathways for further skills development. Those who are interested in further education can also be considered for admission to the Polytechnics based on their Nitec or Higher Nitec qualifications.

TVET programmes at tertiary level at Polytechnics (ISCED 5-8)	
Duration:	3 years
Admission requirements:	GCE O-Level, GCE A-Level, PFP, or a completion of a programme at the ITE
Taught in:	Polytechnics

The Polytechnics offer a wide range of courses that equips students with industry-relevant skills, to prepare them for careers in fields such as engineering, applied sciences and biotechnology, ICT, health sciences, early childhood education, business studies, accountancy, social sciences, mass communications, and digital media. Polytechnic

graduates who wish to further their studies may be considered for admission to the universities based on their diploma qualifications.

Fresh polytechnic and ITE graduates also have access to SkillsFuture Earn and Learn Programmes (ELPs) which are work-learn programmes featuring both workplace-based learning and institution-based instruction. The ELPs provide polytechnic and ITE graduates with more opportunities to build on the skills and knowledge they acquired in school after graduation, and to better support their transition into the workforce.

Apprenticeship-based Training Programmes : Work-Learn Technical Diplomas

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 per cent of the curriculum time dedicated to on-the-job Training. The Institute of Technical Education awards these WLTDs that typically last between 2.5 and 3 years.

With the new WLTDs, ITE graduates are also eligible for career progression opportunities after completion of the programmes.

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. 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.

Since 2017, the Ministry of Education is expanding CET delivery capacity significantly, by ramping up delivery by Institutions of Higher Learning (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.

2. TVET strategy and key policy documents

The main strategy and policy documents guiding Singapore in the context of skills development and TVET are as follows:

Name of document	Skills-Future Singapore Agency Act 2016 (No. 24 of 2016)
Date entered into force	2016
Website link	https://t1p.de/t7bx

Key points and objectives
SkillsFuture Singapore Agency Act was promulgated in 2016, to establish the SkillsFuture Singapore (SSG) - a statutory board under the Ministry of Education (MOE). It drives and coordinates the implementation of the national SkillsFuture movement, promotes a culture and holistic system of lifelong learning through the pursuit of skills mastery, and strengthens the ecosystem of quality education and training in Singapore.

SSG strengthens the adult training infrastructure by taking on all existing functions of the Committee for Private Education (CPE), as well as guiding the Institute for Adult Learning (IAL) to enhance the capabilities and professionalism of adult educators. SSG plays a key role in the quality assurance for private education institutions and adult training centres. Together with educational institutions and training partners, SSG ensures that students and working adults have access to high quality, industry-relevant training throughout life. SSG also brings 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. Further details can be found here: https://t1p.de/1ecl

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

Name of document	Workforce Singapore Agency Act (Chapter 305D)
Date entered into force	2003
Website link	https://t1p.de/900i

Key points and objectives

Under the Workforce Singapore Act, the Workforce Singapore Agency (WSG) was established to help workers to meet their career aspirations and secure quality jobs throughout their life. The Act also addresses the needs of business owners and companies by providing support to enable efficient human capital utilization to remain competitive. It aims to support businesses across various sectors to create quality jobs. Furthermore, the Act serves as the guiding document for developing a skills supply that supports industry growth and matches people with jobs that correspond to their skills.

Name of document	Industry Transformation Maps (ITMs)
Date entered into force	2016
Website link	https://t1p.de/luyn

Key points and objectives

Under the S$4.5 billion Industry Transformation Programme, roadmaps have been developed for 23 industries to address issues within each industry and deepen partnerships between Government, firms, industries, trade associations and chambers.

The Future Economy Council (FEC) will take overall responsibility for the implementation of the Industry Transformation Maps (ITMs). To do so, the FEC has six sub-committees, with each sub-committee overseeing a group of ITMs within the same broad cluster of industries. The ITMs are grouped into six clusters - 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 & skills, innovation, and trade and internationalisation.

The Skills Framework, 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 a highly skilled and lean workforce, enhance business competitiveness and support employment and employability.

The Future Economy Council (FEC) for the implementation of the ITMs. To do so, the FEC has 6 sub-committees, with each sub-committee overseeing a group of ITMs within the same broad cluster of industries. The ITMs are grouped into six clusters, each comprising a group from the same industrial cluster. These include manufacturing, infrastructure development, trade and connectivity, essential domestic services, modern services, and lifestyle.

3. Governance and financing

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 (SSG)

SSG drives and coordinates the implementation of the national SkillsFuture movement. 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, the private and public sectors. This allows SSG to tap on their varied experiences and perspectives.

Workforce Singapore (WSG)

WSG oversees the transformation of the local workforce and industry to meet ongoing economic challenges. WSG promotes the development, competitiveness, inclusiveness, and employability of all levels of the workforce.

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, 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 experience and perspective.

Financing

The Ministry of Education (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 fluctuates according to the yearly needs of the respective institutions. These needs vary greatly depending on type and level of education. However, the general trend is that the expenditures of TVET institutions, as well as the expenditures per student, are continuously increasing. In 2015, for example, the amount spent on one TVET student per year was equal to about S$ 12,000 (about US$ 8,830).

In general, trainees enrolled in TVET courses ought to pay fees. Under certain programmes, such as the Continuing Education and Training Pillar 3, courses at Institutes of Higher Learning (IHL) will be subsidised up to 70% of the course fees for Singaporeans and Permanent Residents. The remainder net fee can be paid through the SkillsFuture Credit, a government-supported initiative that supports individuals in their pursuit of lifelong learning.

4. TVET teachers and trainers

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.

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 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.

5. Qualification system and quality assurance

National Qualifications Framework (NQF)

The Singapore Department of Statistics has developed the Singapore Standard Educational Classification (SSEC) for statistical purposes. The SSEC distinguishes between various educational levels according to the education type (primary, secondary, post-secondary, etc.), but does not set or describe any competency outcomes for these levels. It has ten levels as follows:

Level	Level of Education	Benchmark
1	No Qualification / Pre-primary / Lower Primary Education	Did not pass Primary School Leaving Examination (PSLE) or equivalent
2	Primary Qualification	Passed PSLE or equivalent
3	Lower Secondary Qualification	Did not pass General Certificate of Education (GCE) at "Normal" (N) or "Ordinary" (O) Level or equivalent
4	Secondary Qualification	Obtained at least one pass at GCE "N" or "O" Level or equivalent
5	Postsecondary Qualification (Non-Tertiary)	Obtained at least one pas at GCE "Advanced" (A) Level or equivalent, or awarded at least an ITE Nitec or Higher Nitec certification or equivalent

6	Polytechnic Diploma	Awarded a diploma or advanced diploma by a Polytechnic
7	Professional Qualification	Obtained a certificate, diploma or other qualification by a professional body or vocational institution
8	Bachelor's or Equivalent	Awarded bachelor's degree or equivalent by a university
9	Postgraduate Diploma/Certificate Qualification (Excluding Master's and Doctorate)	Awarded postgraduate diploma or certificate by a university or postgraduate educational or training institution
10	Master's and Doctorate or Equivalent	Awarded postgraduate degree or equivalent by a university or postgraduate educational institution

The Institute of Technical Education (ITE) developed a TVET certification framework. It provides four levels of certification as follows:

- ITE Skills Certificate for courses that require completion of primary school education as an entry requirement;
- National ITE Certificate (Nitec) for courses that require the completion of GCE "N" or GCE "O" as an entry requirement with pre-requisites for certain courses;
- Higher National ITE Certificate (Higher Nitec) for courses that require GCE "O" or GCE N(A) with pre-requisites as an entry requirement;
- Technical Diploma for courses that require relevant Higher Nitec / Nitec as an entry requirement.

At the national level, the Skills Framework has been developed as a recent initiative between the government, employers, industry associations, unions and professional bodies. It provides an overview on the various competencies and skills that different jobs require and helps to identify relevant courses for students and workers.

Quality assurance

In 2007, the Ministry of Education introduced the ITE Quality Assurance Framework (IQAF) and the Polytechnic Quality Assurance Framework (PQAF) to ensure that ITE and Polytechnic systems and structures for resource allocation, human resource management and other organizational processes are properly aligned to enable them to achieve their mission.

The key futures of the Quality Assurance Framework are as follows:

- Assessment cycle: 5 years period.
- 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.

o External validation: 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.

6. Current reforms and policy discussion

In 2014, the SkillsFuture national movement was launched to focus Singapore's education on skills gained through job-experiences. With this movement, a range of initiatives aimed at fostering skills mastery and lifelong learning was introduced. The Earn and Learn Programmes, for example, allow recent polytechnic and ITE graduates to work, study and gain qualifications at the same time, thus smoothening the transition into the workforce. The Skills Future Study Award is another scheme to encourage young and mid-career workers to continually upgrade their skills.

Further reforms focus on adapting to the significant shifts in the global environment, including rapid technological changes, subdued global growth and the anti-globalisation trend.

Challenges

According to the Committee on Future Economy, Singapore is facing the following challenges which are also affecting the TVET system:

Deepen international connections	Singapore aims at pressing on with trade liberalism, deepening its knowledge of markets and setting up a Global Innovation Alliance.
Build strong digital capabilities	Small and medium enterprises need to be enabled to adapt to the rapid digitalization and global technologies. This also requires new learning and teaching methods to better prepare the learners for emerging new technologies.
Implement industry transformation maps	There is a need to develop tailored industry transformation maps for each industry, and maximize industrial synergies. This could also include the identification of relevant skills that need to be taught and learnt in order for graduates to meet the requirements of the market.
Partner each other	Encouraging trade associations, chambers and trade unions to work together. Creation of a regulatory environment to support innovation and risk-taking.

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