Applied Education

A Holistic and Flexible Education System for the Digital Age

OUR HONG KONG FOUNDATION
團 結 香 港 基 金

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Executive Summary

Purpose

This report reviews Hong Kong's examination-centric education system, which hails academically capable students but stifles students' development in non-academic areas. Such system not only bars non-academic talents from developing on a level playing field, but also limits future socio-economic advancement which is driven by the population's creativity and innovative capacity.

The importance of a holistic education system that caters for diverse learners and facilitates lifelong learning has been raised since the education reform 20 years ago. As society evolves, it would be timely to review whether these goals have been truly attained. Specifically, an education system should be:

i. **Holistic and flexible:** minimising stigmatisation, providing a level playing field, and celebrating diverse talents with a flexible system of multiple pathways;

ii. **Socially-relevant and forward-looking:** matching evolving social needs; nurturing creativity, innovation and critical thinking.

This report examines the limitations of the education system in achieving the above goals; it further proposes key policy recommendations targeted to enhance the system for our next generation.

Context

Imbued with cultural biases and parental expectations, Hong Kong students are under the pressure to obtain an academic degree and are advised against undertaking blue-collar jobs. These biases limit the opportunities for Applied Education. The combined upper secondary participation (between 10—15%) is far behind the Organisation for Economic Co-operation and Development (OECD) average (42%), calling for an examination of the education system's ability to cope with diversity and future needs.

This report identifies a number of issues in the education system that limits the development of future talents. Whilst university education has become increasingly accessible, with 33,000 degree intakes each year covering 48% of the age cohort, salary has not kept up.

Moreover, technological advancements in the digital ecosystem have brought about sweeping changes to many sectors. An estimated 65% of primary school entrants will end up in new job types that do not exist today, as technology transforms and reshapes the future job market. However, students' interests and capabilities in science-related subjects have waned over years while employers experience mounting difficulties in finding human resources with the right skills.

With the objective of providing multiple pathways for students, this report proposes a series of recommendations to strengthen Applied Education, which bridges the school and industry by focusing on practicality and impact.

Educational institutions in Hong Kong have recognised the need for applied degrees with a focus on practicality. However, the formal classification of a "University of Applied Sciences" does not exist. In the absence of a holistic strategy as well as targeted policies, the current funding mechanism and governance structure fail to provide sufficient resources for developing top-notch applied programmes driven by an industry-led curriculum. This report discusses policy and financial support to bring Applied Education to the next level, with the following three key areas:

i.   **To strengthen industry collaboration through dual education integrating theory and practice**, this report recommends enhancing both top-down governance through inter-bureau efforts under the Human Resources Planning Commission, and bottom-up involvement through Industry Training Advisory Committees to maximise the influence of industry expertise in the process of talent development. Inter-bureau efforts can link socio-economic, manpower and skills planning, and allocate resources accordingly to help develop targeted courses and address future social needs.

ii. **To enhance the financial sustainability and competitiveness of applied programmes**, particularly in the self-financing sector, this report recommends integrating and enhancing current funding schemes to address the imbalance of resources between universities funded by the University Grants Council and the self-financing sector. Moreover, the Committee on Self-financing Post-secondary Education should take a more active role in the process of funding support and quality assurance.

iii. **To ensure that the right talents are admitted under a flexible and inclusive system**, this report recommends prioritising aptitude in the admission process through measures such as increasing aptitude-based quotas and accepting relevant professional qualifications as part of the admission criteria.

As the sub-degree system continues to expand, the **Higher Diploma can be strengthened as a progression pathway towards applied degrees**, further differentiating it from the Associate Degree.

Applied Education also needs to be **reinforced in secondary schools to unleash diverse talents since an early age**. This report views Applied Education as an inter-disciplinary concept that should not be confined to Applied Learning courses; instead, relevant content should be applied to all key learning areas and should incorporate updated industry knowledge. This report recommends a broadened Applied Education functional committee under the Curriculum Development Council, and an intermediary to enhance the existing Business-School Partnership Programme. Applied Learning should be revamped to be on par with other academic subjects.

Finally, this report recommends **an institutionalised career exploration programme since junior secondary school years**, with designated teaching hours. Industry exposure should be incorporated as an integral part of the career education curriculum. This report further suggests strengthening parent involvement and equipping career teachers through industry training placements, as both are key stakeholders in students' growth.

Recommendation 1: Industry involvement—improving governance and integrating employer expertise to strengthen industry-led Dual Education

i. Strengthening the Human Resources Planning Commission's role in integrating future economic, manpower and educational planning; with targeted efforts and enhanced resource allocation to facilitate industry-led programmes

ii. Magnifying Industry Training Advisory Committees' (ITACs) influence on skills demand / supply by creating a more accessible Specification of Competency Standards (SCS), and translating them to dual-education programmes

Recommendation 2: Funding mechanism—incentivising Dual Education through a revamped and integrated subsidy scheme

i. Strengthening the Committee of Self-financing Post-secondary Education in resources allocation and strategic planning, including the integration of Study Subsidy Scheme for Designated Professions / Sectors (SSSDP) and Non-means-tested Subsidy Scheme for Self-financing Undergraduate Studies in Hong Kong (NMTSS) into a new funding model

ii. Providing financial support to institutions for developing dual-education programmes with high market relevance and with industry collaborations (e.g. workplace internship / apprenticeship)

iii. Adding a mature student scheme targeting profession transfers and school returners

iv. Establishing a goal-based funding approach based on a) job conversion rate, b) industry accreditations/qualifications attained, and c) future-ready skills

Recommendation 3: Admission system—gravitating towards an aptitude-based admission mechanism that accepts industry qualifications

i. Increasing self-financing institutions' (SFIs) non-standard admission quota from 5% to 15%; re-naming it as "aptitude-based admission"

ii. Allowing local direct admission to the SSSDP simultaneously with Joint University Programmes Admissions System (JUPAS); removing or relaxing the 10% quota

iii. Increasing principal nomination quota and allowing unconditional offers to be made before the release of the Hong Kong Diploma of Secondary Education Examination (HKDSE) results

iv. Accepting professional accreditations under the Qualifications Framework (QF) as a part of degree admission criteria (coupled with language requirements)

v. Lowering age requirement for mature applicants from 25 to 21; listing out accreditations considered

vi. Exploring degrees for working professionals

vii. Introducing course-based subsidy for those developed with close alignment with SCS and manpower needs

Recommendation 4: Strengthening the Higher Diploma by building an Applied Education progression pathway

i. Formulating a clear division between Associate Degree and Higher Diploma with an option for further progression to academic and applied degrees

Recommendation 5: Reinforcing Applied Education in secondary schools through governance structure and curriculum design

i.   Establishing an intermediary to broaden the Business-School Partnership Programme (BSPP) and to strengthen industry connection in Applied Education; setting up a funding scheme for non-profit organisations, e.g. "Big Education" Platform

ii. Broadening the manifesto of Committee of Applied Learning under the Curriculum Development Council to include inter-disciplinary delivery of STEM / Applied Education across key learning areas

iii. Raising standard-based grading of Applied Learning (ApL) to level 5, allowing for the possibility to reach level 5** under enhanced assessment methods and more extensive curricula

Recommendation 6: Institutionalising career exploration in secondary schools

i.   Mandating career education as a compulsory teaching component with designated teaching hours

ii. Implementing intensive career programmes with less academic burden to facilitate greater career exposure in junior secondary level

iii. Involving parents in their children's career development process through career counsellors

iv. Boosting industry exchange opportunities for both current and prospective teachers to strengthen their ability to provide career support

Nurtured under Hong Kong's examination-oriented system, students from a young age are compelled to strive for academic excellence. **Figure 1** shows the academically capable students striving under the Hong Kong Diploma of Secondary Education (HKDSE) in 2018; those eligible for degree entrance are highlighted in blue in the bell-shaped distribution below.

(Figure 1) **HKDSE 2018 distribution of day-school candidates (%), non-cumulative**
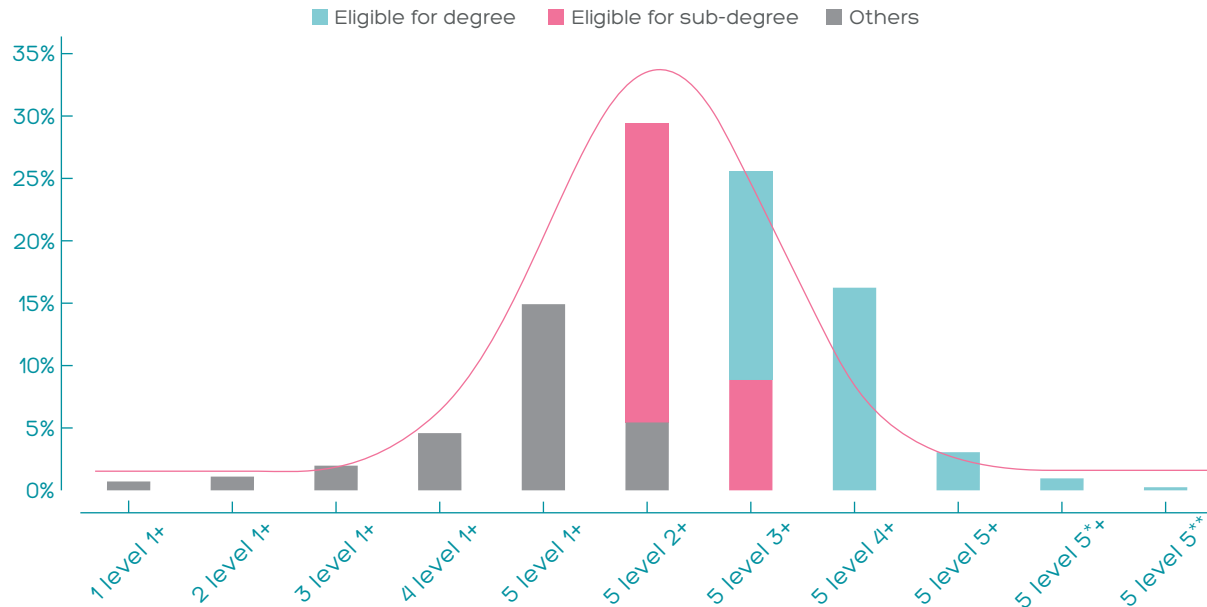
Source: Hong Kong Examinations and Assessment Authority
Note: Each bar implies candidates attaining specified level or above, but excludes candidates already included in the next level. For illustration,
a candidate obtaining a mix of level 5* and 5 will be categorised under the "5 level 5" category. Key omissions:
1. Students attaining level 4+ in 5 subjects, but not eligible for degrees;
2. Students attaining level 3+ in 5 subjects, but not eligible for sub-degrees; and
3. Students attaining level 1+/2+ in 5 subjects, but eligible for degrees.

However, not everyone is fit for the same examination system; nor is such system effective in measuring the various attributes of talents. An education system should be all-encompassing to unleash learners' potential and allow them to flourish. Based on this premise, our report seeks to review whether the education system in Hong Kong is effective in achieving the following two critical goals:

(Figure 2) **Reimagining our education system**

What are the goals of an education system, and how to achieve them?

1. **Holistic and flexible:**
Minimises stigmatisation, provides a level playing field, and cultivates diverse talents with a flexible system of multiple study pathways

2. **Socially-relevant and forward-looking:**
Matches evolving social needs; nurtures creativity, innovation and critical thinking

Can the education system in Hong Kong address the above goals?
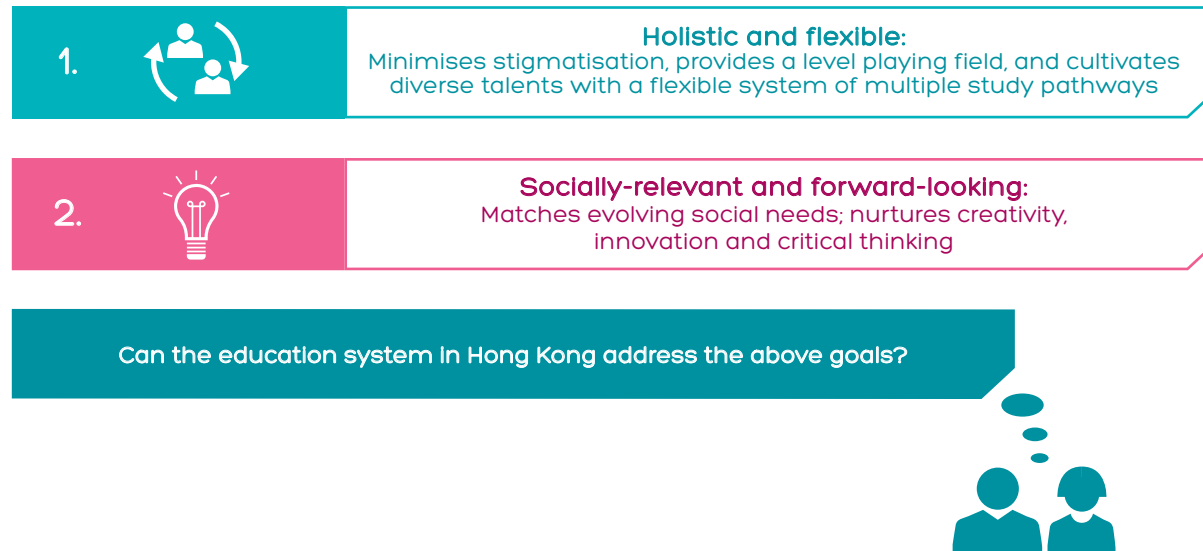
The aforementioned educational goals are not new to the community. In September 2000, the Education Blueprint for the 21st Century, *Learning for Life, Learning through Life: Reform Proposals for the Education System in Hong Kong*, had already emphasised the importance of a holistic education system that caters for diverse learners' needs as well as life-long learning **(Figure 3)** (Education Commission, 2000).

(Figure 3) **The Government's vision and implementation of education reform in the past 20 years**

	Major Changes
1 To build a lifelong learning society	
2 To raise the overall quality of students	• Termination of entrance tests for primary and secondary school
3 To construct a diverse school system	• New academic structure: "3+3+4" system
4 To create an inspiring learning environement	• New curriculums and exams (e.g. HKDSE)
5 To acknowledge the importance of moral education	• Development of teacher and leadership training
6 To develop an education system that is rich in tradition but cosmopolitan and culturally diverse	• School management reform • Expansion of the scale of post-secondary education

This framework forms the cornerstone of the education system as we know today. Since then, a series of policy changes has been made. The Government of the Hong Kong Special Administrative Region (the Government) introduced new curricula and assessment mechanisms, a new progression structure (the "3+3+4" system), development plans for teacher training, as well as expansion strategies for post-secondary education.

Upon the 20-year mark of these sweeping reforms, it would be timely to review whether these measures have successfully created a holistic and flexible education system with multiple pathways. More importantly, as society evolves, the volatility and uncertainty give rise to the need for continuous review to ensure that our next generation is well-equipped to face future challenges.

This educational philosophy largely resonates with the Government. Since 2017, the Government has launched seven Task Forces in relation to education, such as home-school cooperation, self-financing post-secondary education, and school-based management policies **(Figure 4)**. The Task Force on Promotion of Vocational and Professional Education and Training (VPET) and the Task Force on Review of School Curriculum launched their consultations in May and June 2019 respectively.

Many issues in education are closely intertwined. Whilst this report attempts to address a series of critical issues raised during these consultations, it would inevitably touch on other aspects.

(Figure 4) **Task Forces established by the Government since 2017**

Promotion of VPET

School-based Management Policy

Review of School Curriculum

Professional Development of Teachers

Home-school Cooperation and Parent Education

Review of Research Policy and Funding

Review of Self-financing Post-Secondary Education
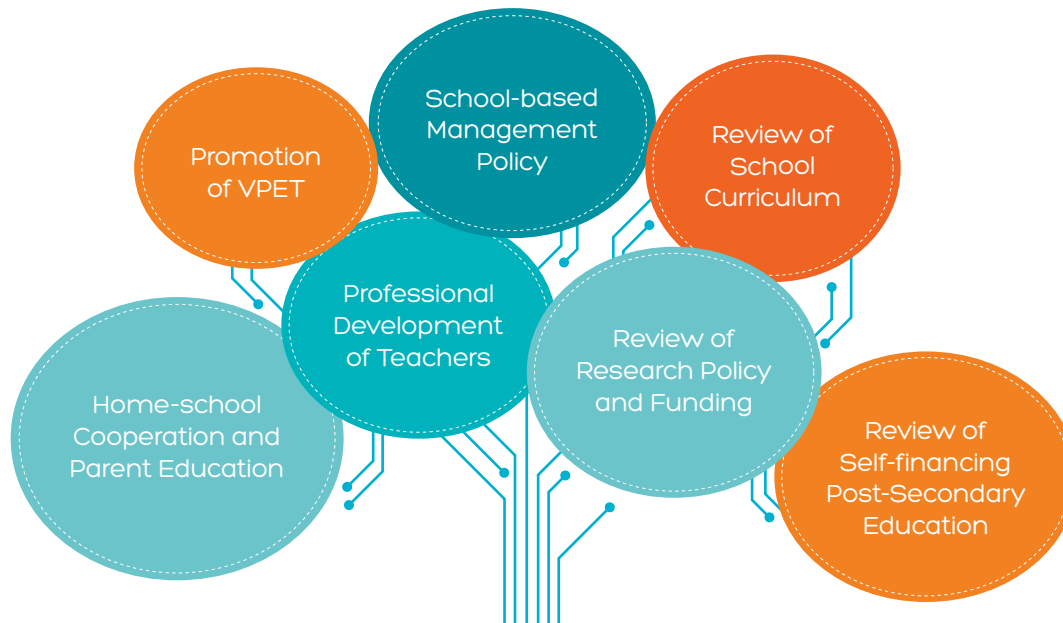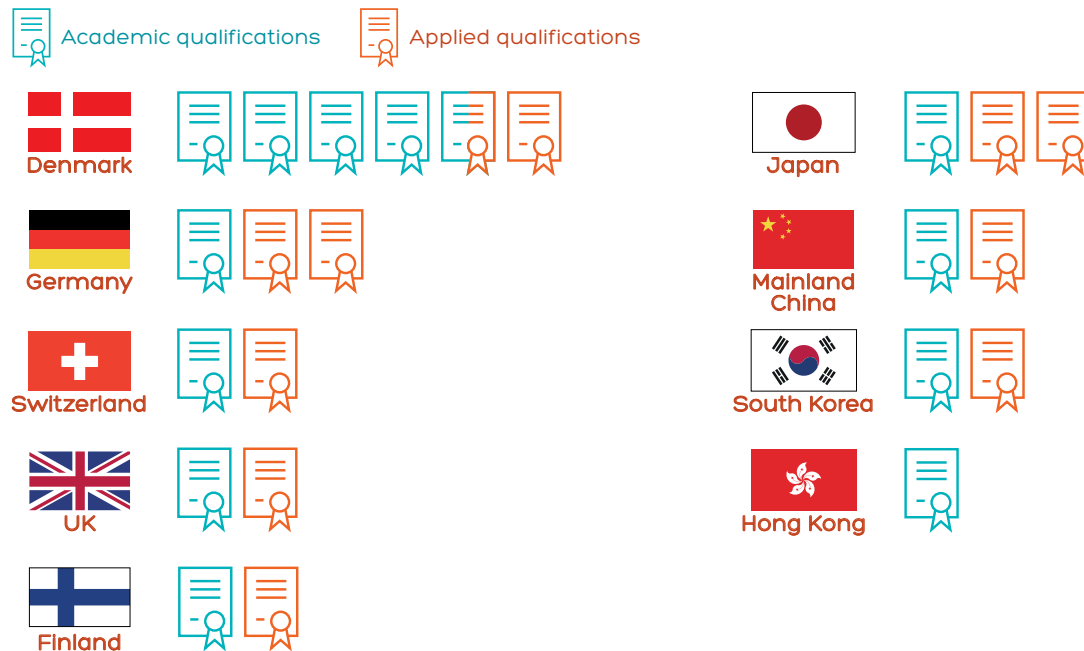
Source: Education Bureau

In Hong Kong, most parents have a deep-rooted insistence for their children to obtain an academic degree with the goal of ultimately landing a white-collar job. This cultural bias limits the opportunities for students to pursue Applied Education. Against this backdrop, we propose a series of recommendations to strengthen Applied Education, with the objective of providing multiple pathways for students.

(Figure 5) The importance of developing Applied Education—focusing on applied knowledge and practical skills

A holistic and flexible education system is critical in addressing the following issues:

① **Deep-rooted insistence** for children to obtain a university degree

② **Cultural stereotype** of blue-collar industries against the white-collar

- Allowing students to explore their careers as an integral part of education
- Building an applied learning pathway on par with the traditional academic route
- Ensuring a flexible applied education system that can seamlessly progress to tertiary level
- Enabling flexible and life-long learning

Junior Secondary: Career Exploration

Senior Secondary: Applied Education

Tertiary: Applied Degrees

Lifelong Learning

In view of global economic and technological transformations, many developed countries have reformed their education systems over the past few decades. In particular, some have formalised Applied Education as an integral part of the education system. Whilst there is only one secondary qualification that leads to degree entry in the local education system, other countries have developed multiple academic and applied qualifications for students with different interests and development goals **(Figure 6)**.

(Figure 6) **Hong Kong has fewer secondary qualifications that can lead to degree level education**

Academic qualifications   Applied qualifications

Denmark
Germany
Switzerland
UK
Finland

Japan
Mainland China
South Korea
Hong Kong

Sources: Respective government websites

In Hong Kong, secondary school students can pursue Applied Education through three routes, including the HKDSE Applied Learning (ApL) courses, Diploma of Vocational Education (DVE) or other diplomas / programmes by schools and industry providers, and the Vocational Baccalaureate (VB) programme at Youth College (International). However, they are limited in scale due to the following reasons:

1. Lack of recognition for ApL subjects

Whilst best-performing students in the HKDSE can attain Level 5**, the highest grade attainable for ApL (Category B) subjects is "Attained with Distinction (II)", the equivalence of Level 4 in Category A subjects. This imparity of subject recognition not only discourages students from taking ApL subjects, but also schools from offering them.

2. Lack of progression pathways for DVE candidates and students enrolled in other diplomas

Students can opt for the Diploma of Vocational Education (DVE) at Youth College, an institute under the Vocational Training Council (VTC), or other programmes under providers such as the Construction Industry Council. However, graduates of these programmes are not eligible for direct entry into degree programmes in Hong Kong, making this pathway a suboptimal choice for interested students.

3. VB programmes' impact is yet to be observed

The Vocational Baccalaureate (VB) was introduced as a pilot programme in academic year 2018/19. The curriculum comprises a combination of language subjects under the International General Certificate of Secondary Education (IGCSE) and the Business and Technology Educational Council (BTEC) Level 3 Extended Diploma in either Design or Engineering. Both IGCSE and BTEC are internationally recognised qualifications which could be used to apply for degree programmes at both local and overseas universities. With 150 students in the first cohort, the impact is yet to be observed.

The combined participation in Applied Education at the upper secondary level in Hong Kong (ranging from 10 to 15%) is far behind the Organisation for Economic Co-operation and Development (OECD) average of 42% **(Figure 7)** (OECD, 2018).

The low participation in Applied Education has critical implications for long-term social development; this calls for a review to rejuvenate Applied Education across all stages of the education system.

(Figure 7) **Percentage of upper secondary graduates enrolled in applied / vocational programmes**

Legend: Vocational | General | —— OECD Average (Vocational)

Bar chart data:
- UK: 63%
- Finland: 55%
- Netherlands: 54%
- Germany: 45%
- Denmark: 30%
- Japan: 23%
- South Korea: 18%
- Hong Kong: 7% / 5%

OECD Average (42%)

Applied Learning under HKDSE:
- Grades capped at Level 4
- Unable to attract top-notch technological talents

Diploma of Vocational Education:
- No direct entrance to undergraduate level study
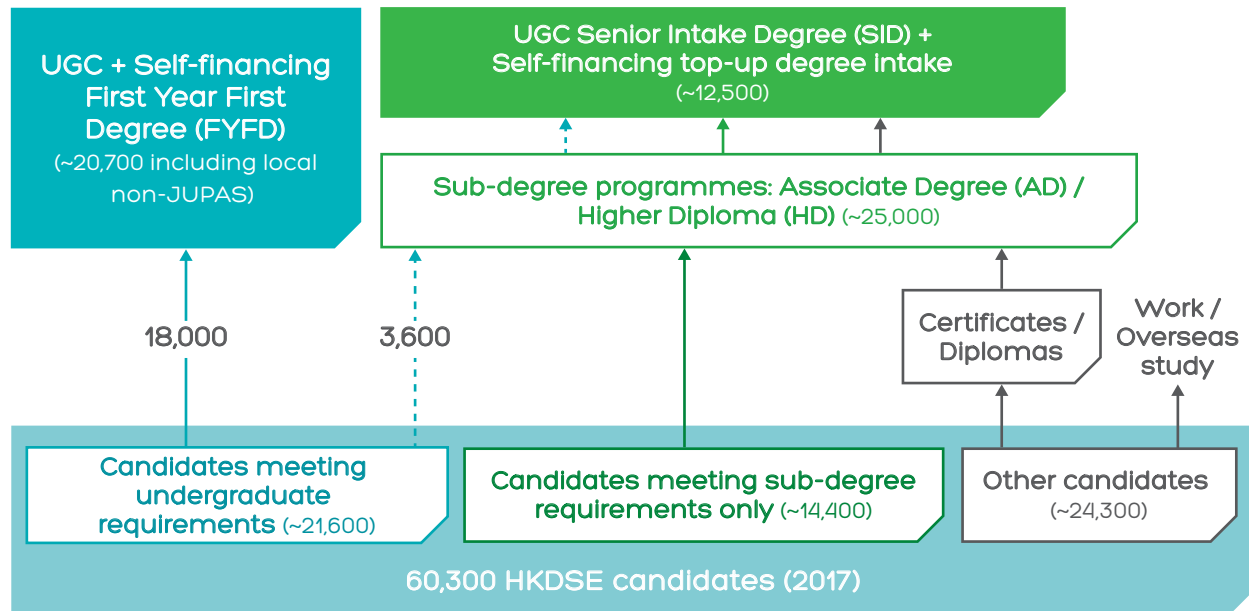- Considered as a suboptimal choice

Sources: OECD, Hong Kong Examinations and Assessment Authority

3.1. A mismatch between university graduates and social needs

University education has become increasingly accessible in Hong Kong. An average of 58,000 school candidates sat for the HKDSE in the last five years, of which about 15,000 secured a First-Year-First-Degree (FYFD) place at University Grants Committee (UGC)-funded universities. Whilst this ratio appears low (in the 2017/18 intake, there are about 15,200 students, including 2,700 local non-JUPAS students), undergraduate-level education in Hong Kong is not scarce after including i) self-financing FYFD places (about 5,500 students); ii) UGC Senior Intake Degree (SID) (about 4,800 students); and iii) self-financing top-up degrees (about 7,800 students), which in total admitted more than 33,000 students in academic year 2017/18 **(Figure 8)**.

(Figure 8) **Degree intake has been on the rise**[1]

UGC + Self-financing First Year First Degree (FYFD) (~20,700 including local non-JUPAS)	UGC Senior Intake Degree (SID) + Self-financing top-up degree intake (~12,500)

Sub-degree programmes: Associate Degree (AD) / Higher Diploma (HD) (~25,000)

18,000   3,600   Certificates / Diplomas   Work / Overseas study

Candidates meeting undergraduate requirements (~21,600)   Candidates meeting sub-degree requirements only (~14,400)   Other candidates (~24,300)

60,300 HKDSE candidates (2017)

Sources: Education Bureau, Hong Kong Examinations and Assessment Authority, Legislative Council
Note: [1] All figures are rounded up to the closest 100, as of 2017/18. Sub-degree figures are graduate numbers.

According to the Education Bureau, more than 70% of the relevant age cohort have access to post-secondary education, including 48% with access to degree education. Meanwhile, the OECD average of first-time degree entrant rate for students under 25 years old currently stands at 45% **(Figure 9)** (OECD, 2018).

(Figure 9) **International comparison of university admission rates**
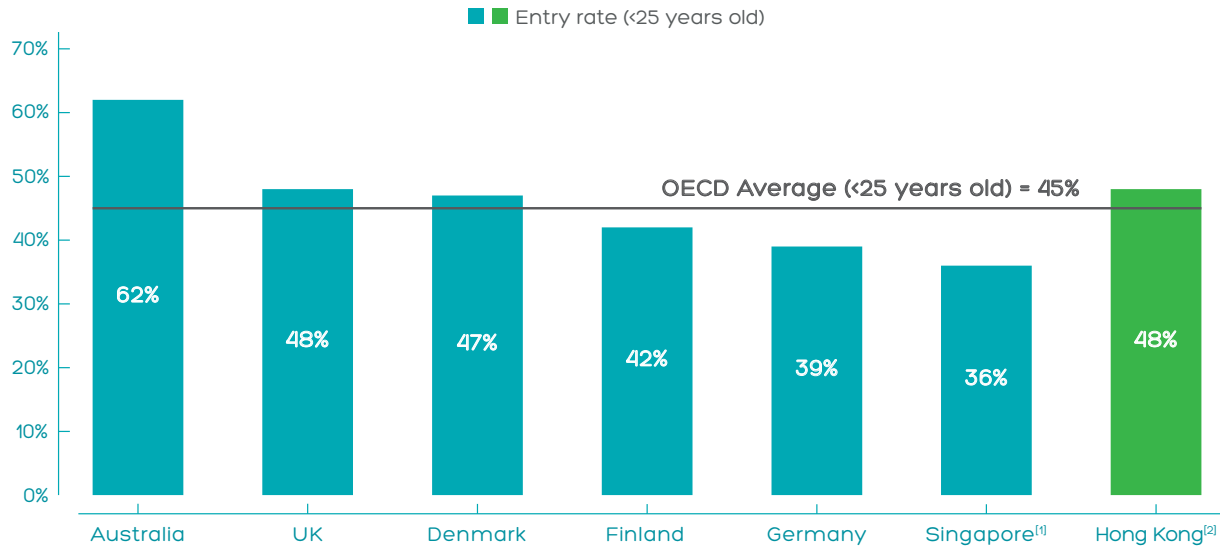
Sources: OECD, Singapore Department of Statistics, Education Bureau, New Century Forum
Note: [1] Singapore participation rate as of 2017, calculated by P1 cohort from 12 years prior (43,492).
    [2] Hong Kong's participation rate as of 2017/18, calculated by the total of the 4 types of intake places, divided by the mid-year resident population of the relevant age cohort.
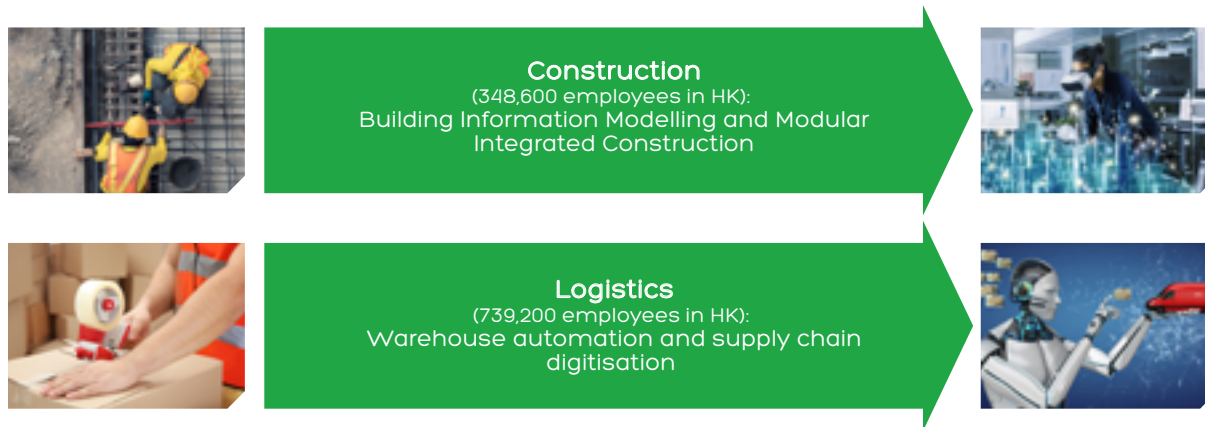
Whilst the number of bachelor's degree graduates has been increasing, a survey has indicated that the inflation-adjusted median monthly salary of fresh graduates has dropped from $15,457 in 1997 to $14,395 in 2017, suggesting a mismatch between graduates and the job market (New Century Forum, 2018). As such, the issue facing Hong Kong is not necessarily a lack of access to degree-level education, but rather, the ability of our education system to provide sufficient support and training for students in order to satisfy social needs.

3.2. Technological disruptions give rise to the need for applied practitioners, for which Hong Kong is ill-equipped

As society evolves, along with the job market, an estimated 65% of primary school entrants will end up in new job types that do not exist today. From 2018 to 2022, existing work tasks performed by machines will rise from 29% to 42% (World Economic Forum, 2018).

As the digital ecosystem continues to progress, all sectors in Hong Kong are already feeling the impact. Two examples are the construction and logistics sectors: both are major pillars of the local economy with an estimated 348,600 and 739,200 employees respectively, making up nearly one-third of the local workforce (Legislative Council, 2019).

(Figure 10) **The rapidly transforming industries give rise to the demand of (and opportunities for) applied practitioners**

Construction
(348,600 employees in HK):
Building Information Modelling and Modular Integrated Construction

Logistics
(739,200 employees in HK):
Warehouse automation and supply chain digitisation

Sources: World Economic Forum, Report on Manpower Projection to 2027 (2017 figures)

Construction

Building Information Modelling (BIM) is an intelligent, digital 3D modelling process which generates and manages building data during the design and construction processes. It is widely known as the "current expression of digital innovation" in the construction industry.

In Hong Kong, the usage of BIM is becoming more popular. The Government has laid out regulations requiring contractors and consultants to use BIM for major public infrastructure and housing projects in accordance with formalised standards. BIM can foster stakeholder collaboration, reduce rework costs, and improve construction safety. Examples of construction projects using BIM include the Shatin to Central Link, Kai Tak River Improvement Works, and the Hong Kong International Airport Midfield Concourse.

Logistics

"Smart Warehouses" incorporate robotics and automation technology into operations. The Hong Kong Science and Technology Parks Corporation (HKSTP) and RV Automation opened the city's first fully automated smart warehouse, the RobEx Centre, in 2018. This centre provides two types of services, including self-serviced logistics delivery and short-term storage, with a variety of technological features boosting the efficiency of warehouse operations.

Despite the clear and irreversible trends, Hong Kong students show declining interest in studying science. According to the latest Programme for International Student Assessment (PISA) report by the OECD, the percentage of Hong Kong students who expect to work in science-related occupations when they are 30 is lower than the OECD average **(Figure 11)**. The average science score fell sharply from the second place in 2009 to the ninth place in 2015, whilst Singapore topped the charts **(Figure 12)**.

(Figure 11) **Percentage of students who expect to work in science-related / technical occupations when they are 30**[1]
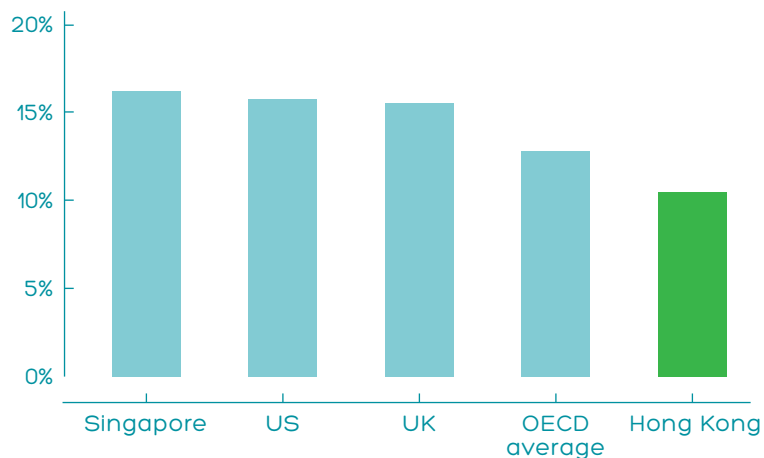
(Figure 12) **PISA mean science score for 2009, 2012 and 2015**
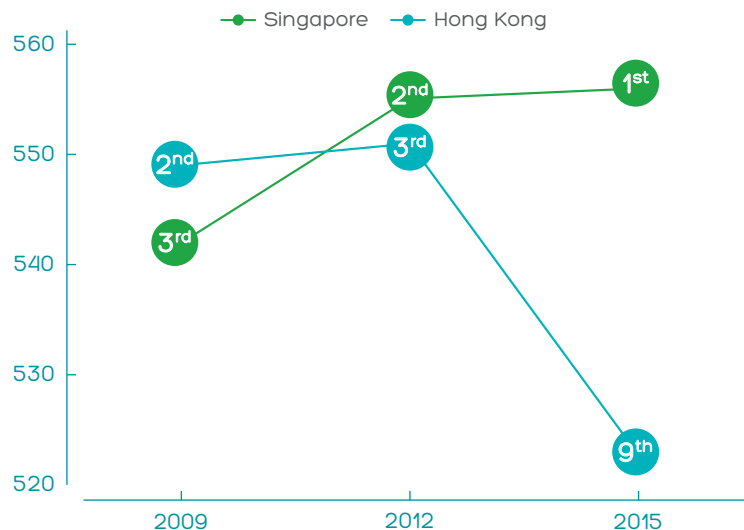
Sources: OECD, PISA 2015 Database (Table I.3.10a.)
Note: [1] Including science and engineering professionals, information and communication technology professionals and science-related technicians and associate professionals.

A decline in student interest and ability has translated into increasing difficulty for employers to find the right talents. A survey has shown that a record 76% of employers experienced difficulties in finding staff with the right skills (Manpower Group, 2018) **(Figure 13)**. Similar observations have been made in other areas such as arts, design, and cultural industries.

(Figure 13) **A record 76% of employers experienced difficulty finding staff with the right skills**
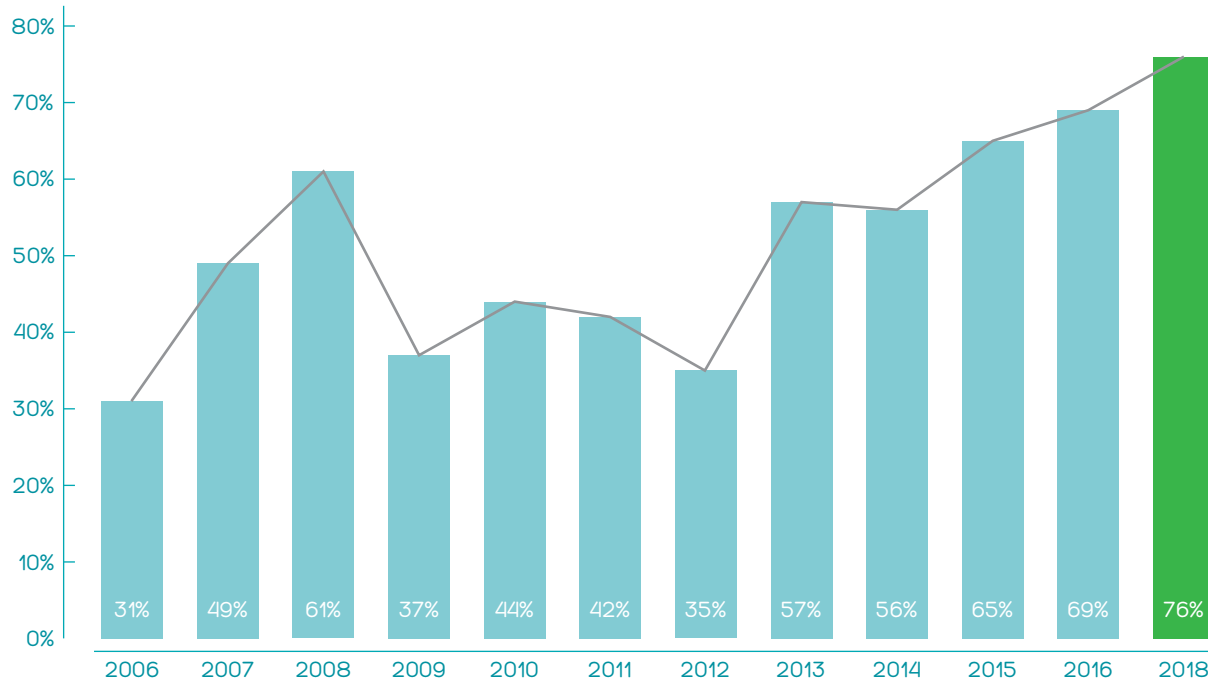
Source: Manpower Group 2018 Talent Shortage Survey

This is where Applied Education comes into play. With its focus on industry practicality and impact, Applied Education could take a central role in avoiding a mismatch between school and workplace. The latest industrial breakthroughs and requirements can be directly applied into the teaching and learning process, giving students an edge over academic graduates. Setting up a viable alternative pathway also helps attract interest from students and ultimately reduce cultural biases.

(Figure 14) **In the era of technological innovation, Applied Education could avoid the mismatch between school and workplace**

School

Workplace
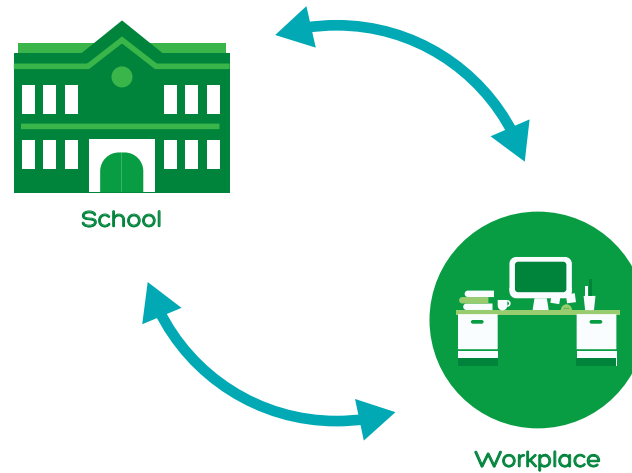
In the following sections, six recommendations are presented to strengthen Applied Education across all stages of education.

(Figure 15) **Policy recommendations in respect of Applied Education**

1. Industry Involvement

2. Funding Mechanism

3. Admission System

On **degree** level

On **sub-degree** level

Ready for the digital age

Cater for diverse student talents

On **secondary** level

4. Higher Diploma

5. Applied Education

6. Career Exploration
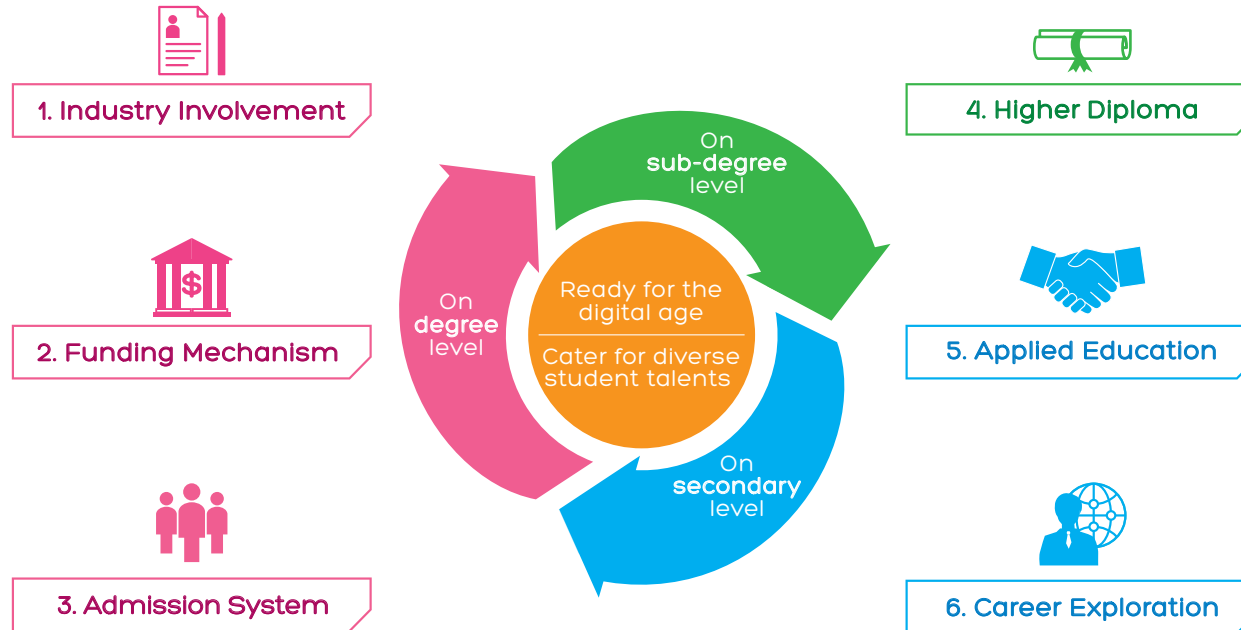
University of Applied Sciences (UAS) is the key to delivering Applied Education at tertiary level. UAS is a practically-oriented, degree-offering institution. Applied degrees focus on the practical implementation of scientific techniques and provide both professional accreditations and degree qualification to prepare graduates for future employment. The focus on hands-on practice offers a practical angle to nurture problem-solving skills, creativity and innovation, which are critical for the 21st century.

The formal classification of a "UAS" does not exist in Hong Kong. The closest institution with a stated manifesto for Applied Education is the Technological and Higher Education Institute of Hong Kong (THEi) under the Vocational Training Council (VTC), admitting about 3% of the total undergraduate student intake each year. This compares with 17% in Singapore and up to 70% in some European countries **(Figure 16)**.

(Figure 16) **Proportion of admission into institutions offering applied degrees as opposed to academic degrees**
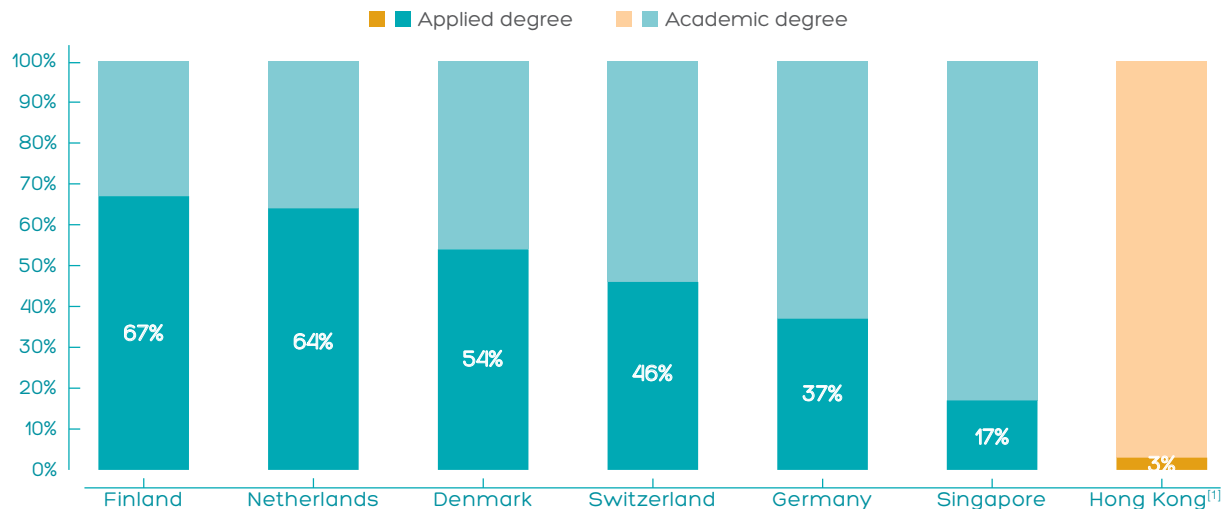
Sources: Respective government websites
Note: [1] In Hong Kong, Technological and Higher Education Institute of Hong Kong (THEi) under the Vocational Training Council is the only organisation that publicly positions itself as a "professionally / vocationally-oriented degree" provider. There are a handful of other degree-offering institutions with specified professional focus apart from academic aims (e.g. the Hang Seng University of Hong Kong, the Open University of Hong Kong, Tung Wah College, Caritas-Hong Kong, etc.); if these are included, the proportion would be closer to 15% to 17%. However, there is no official number/classification available.

Switzerland and Singapore have both established UASs (known as University of Applied Learning in Singapore) in the last 20 years, and the proportion of student enrolment (versus academic degrees) has been on the rise **(Figure 17)**. The ability to translate theory to impact, thus to drive technological development, is the key reason for governments worldwide to promote UAS as an alternative in Higher Education. With its unique pedagogy of work-study integration targeting growth sectors of the economy, UASs have attracted interest from students globally. For example, the number of students at Singapore Institute of Technology (2019) has grown from 500 in 2009 to over 7,000 today, across 42 degree programmes.

(Figure 17) **Percentage of UAS enrollment in Switzerland and Singapore**
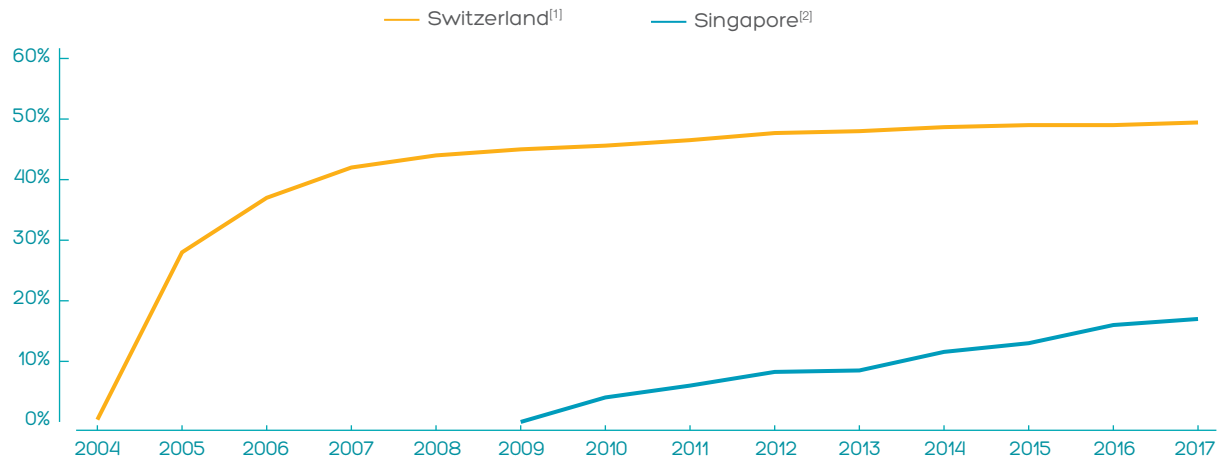
Sources: Respective government websites
Note: [1] UAS in Switzerland started offering bachelor degree programmes from year 2005/06.
[2] Singapore established its first UAS in 2009.

In Hong Kong, educational institutions have recognised the need for practically-oriented degrees. Self-financing degree providers (including universities and other institutions) have designed professionally-oriented programmes (such as electrical engineering and creative arts) tailored to market needs in order to differentiate themselves from UGC-funded universities. Meanwhile, UGC-funded universities also offer programmes targeting specific professions such as Physiotherapy **(Figure 18)**.

(Figure 18) **Examples of institutions offering practically-oriented degrees in Hong Kong**

Existing practically-oriented degree providers	Self-financing universities	UGC-funded universities
e.g. • THEi • Caritas Institute of Higher Education • Tung Wah College	e.g. • The Hang Seng University of Hong Kong • The Open University of Hong Kong	e.g. • Hong Kong Baptist University • Lingnan University • The Hong Kong Polytechnic University
Programmes:	Programmes:	Programmes:
e.g. • Aircraft Engineering • Fashion Design • Culinary • Nursing	e.g. • Applied computing • Cultural / Creative Industries • Digital Marketing	e.g. • Physiotherapy • Hotel Management • Electrical Engineering

Many of these programmes (~3,000 intakes / year) are covered under the Study Subsidy Scheme for Designated Professions / Sectors (SSSDP)

However, Applied Education has not been sufficiently acknowledged from a policy perspective. In the absence of a holistic strategy as well as targeted policies to develop UAS, academic and applied degree programmes share the same admission procedures and funding mechanisms. This hampers the ability of applied degree providers to find the right talents. Moreover, the current funding mechanism and governance structure fail to provide sufficient resources for developing top-notch programmes and to incentivise an industry-driven curriculum.

In our view, **industry involvement**, **funding mechanism**, and **admission system** are three important building blocks to construct quality UASs in Hong Kong, forming the basis of our first three recommendations:

1. Improving governance and integrating employer expertise to strengthen industry-led dual education;

2. Gravitating towards an aptitude-based admission mechanism that accepts industry qualifications;

3. Incentivising dual education through a revamped and integrated subsidy scheme

Industry Involvement
Improving governance and integrating employer expertise to strengthen industry-led Dual Education

Funding Mechanism
Incentivising Dual Education through a revamped and integrated subsidy scheme

Admission System
Gravitating towards an aptitude-based admission mechanism that accepts industry qualifications

4.1. Recommendation 1: Industry involvement—improving governance and integrating employer expertise to strengthen industry-led Dual Education

One core element of UAS is an industry-led curriculum that combines academic study with practical training. Internationally, numerous practices exist to offer us a glimpse of what creates a successful and integrated applied education: In Germany, Volkswagen partners with UASs to offer dual-study programmes where a student can earn an undergraduate degree along with a professional certificate within a study period of 4 to 4.5 years (Volkswagen, 2019). Students are remunerated whilst studying and would receive a job offer upon graduation.

(Figure 19) **An industry-led dual programme combining study with industry accreditation at Volkswagen, Germany (duration: 4 to 4.5 years)**

Study at University of Applied Sciences

Work experience at Volkswagen

+

=

Students receive:
1. Undergraduate degree
2. Professional certificate
3. Remuneration while studying
4. Job offer from Volkswagen upon graduation

stock_photo_world / Shutterstock.com   josefkubes / Shutterstock.com
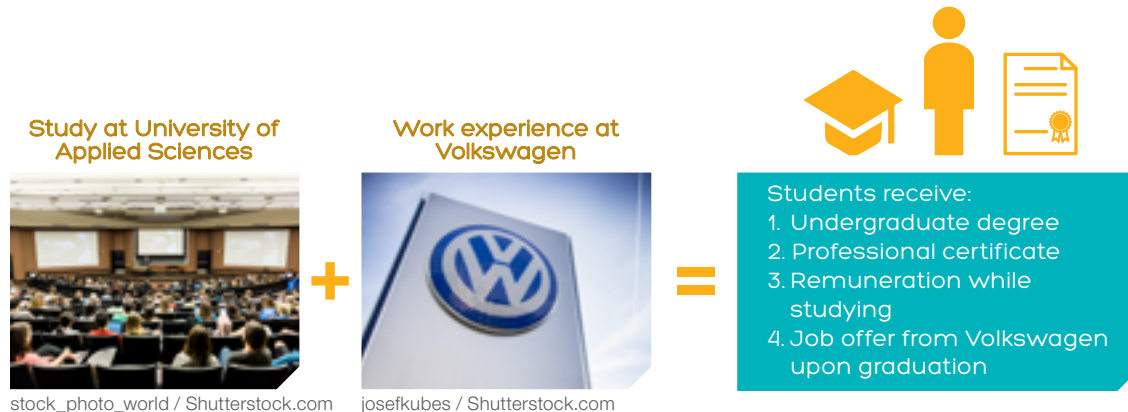
Source: Volkswagen

(Figure 20) Greater Bay Area industry collaboration is key to developing applied degrees in the context of Hong Kong

Zhaoqing

Guangzhou*

Huizhou

Foshan

Dongguan

Zhongshan

Shenzhen*

Jiangmen

Zhuhai

Hong Kong*

Macao*

* Core cities

Such partnership programmes are currently limited in Hong Kong. One important reason is the lack of industry diversity locally. To develop Applied Education, the Greater Bay Area will play an important role with its breadth of technological and manufacturing enterprises.

In fact, a few industry-school partnerships have already been forged in the area, offering insights into what Hong Kong institutions can do. Shenzhen Polytechnic signed a strategic cooperation framework agreement with Shenzhen AEE Aviation Technology in 2018 to establish an air drone training centre, an innovation centre as well as an off-campus training base—a move in line with Shenzhen Polytechnic's integrated industry-school approach (YouUAV, 2019). Tencent's collaboration with Shenzhen Technology University in May 2019 is another example, where joint-laboratories and talent training programmes are established (Qcloud, 2019).

The education gap in producing talents fit for employment has driven corporates to build their own academies. These efforts materialised into the **Corporate Tech Academy Network (CTAN)** to "promote VPET as a means of developing a skilled and qualified workforce" (MTR Academy, 2019). The primary goal of these efforts is to produce talents they need, either by building or influencing schools. The following are three such models currently in practice:

1. **Natural monopoly / oligopoly:** Some sectors in Hong Kong are dominated by a handful of corporates, such as railway as well as aircraft engineering. Economies of scale allow corporates to scale up their talent development programmes through partnerships with educational institutions. Four such examples are CLP, MTR, Police College, and the Airport Authority.

2. **Levy-based model:** The Construction Industry Council collects the "Construction Industry Levy" under the Construction Industry Council Ordinance (Cap.587) and Construction Workers Registration Ordinance (Cap.583). Levies enable industry organisations to develop schools of their own. Whilst this is an industry-specific practice in Hong Kong, it is not necessarily the case in other regions. In the UK, apprenticeship levies are applied across all industries, and levies collected are managed by the government to develop apprenticeship programmes.

3. **Professional recognition:** Through the Washington Accord, engineer associations internationally (including the Hong Kong Institution of Engineers) can cross-recognise accredited engineering programmes, giving them leverage over institutions' curriculum development. The Hong Kong Institute of Certified Public Accountants also follows a similar approach.

Figure 21 and **22** are two detailed case studies.

(Figure 21) **Case study 1: CLP Power Academy**

Tradesman

Technician

Senior Technician

Engineer

Engineering Manager

Engineering Director

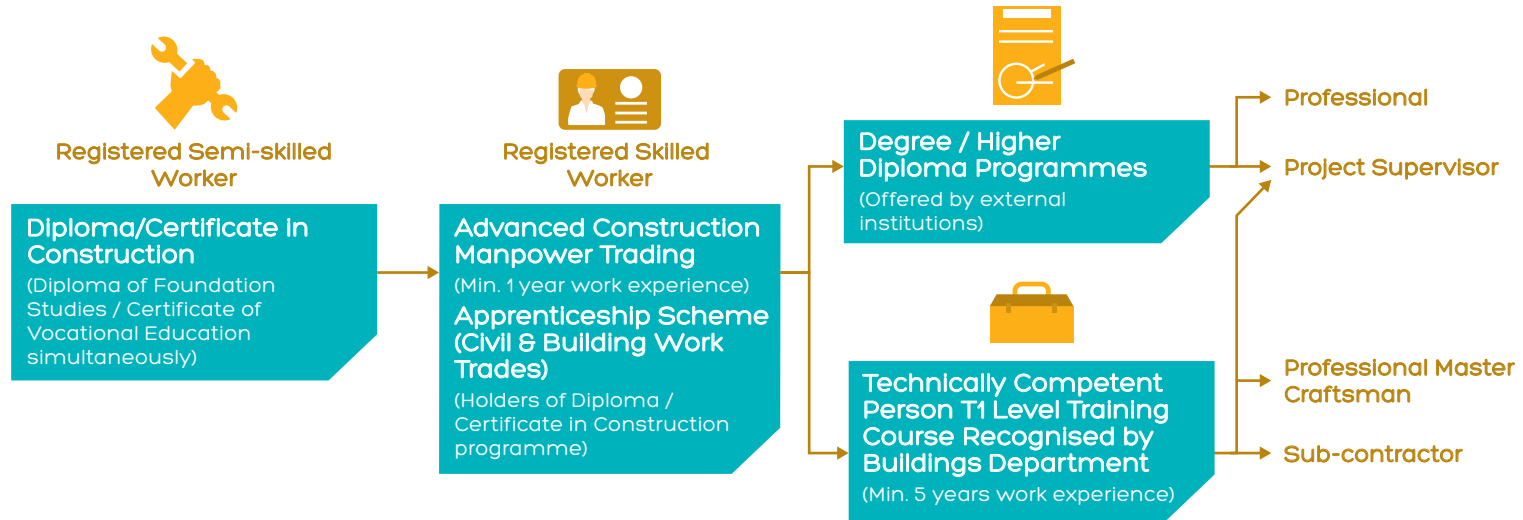| 2 Years	1 Year	4 Years		2.5 Years
Diploma in Power Engineering (for S3 or above school leavers without E&M experience)	Professional Diploma (PD) in Power Engineering (for DSE / Diploma graduates with E&M experience)	Bachelor of Engineering (Honours) in Electrical Engineering (for PD/HD graduates)		Dual Master's Degree - MPhil and MSc

Source: CLP Power Academy

CLP Power Academy offers a parallel academic/professional qualification ladder where diplomas and/or degrees correspond to respective corporate ranks.

(Figure 22) **Case study 2: Hong Kong Institute of Construction**

Registered Semi-skilled Worker

Diploma/Certificate in Construction
(Diploma of Foundation Studies / Certificate of Vocational Education simultaneously)

Registered Skilled Worker

Advanced Construction Manpower Trading
(Min. 1 year work experience)
Apprenticeship Scheme (Civil & Building Work Trades)
(Holders of Diploma / Certificate in Construction programme)

Degree / Higher Diploma Programmes
(Offered by external institutions)

Technically Competent Person T1 Level Training Course Recognised by Buildings Department
(Min. 5 years work experience)

Professional

Project Supervisor

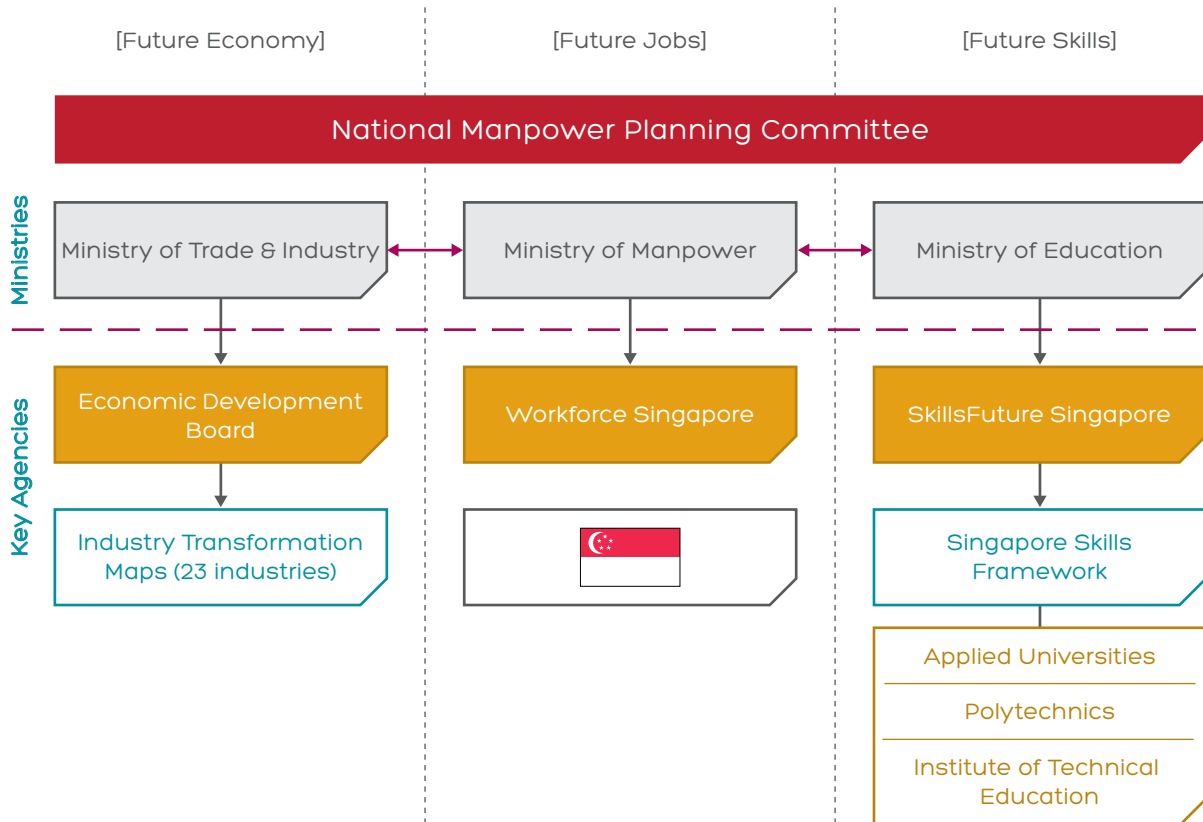**Professional Master Craftsman**

Sub-contractor

Source: Hong Kong Institute of Construction

Through the Hong Kong Institute of Construction, students can progress from semi-skilled workers, skilled workers to master craftsmen / supervisors through either academic or skill-based training.

Whilst it is encouraging to see corporates establishing initiatives to nurture talents, such programmes are limited to large organisations with sufficient resources. Some schools have taken steps to develop more industry-led programmes. One example would be the Testing and Certification degree programme offered by the Open University of Hong Kong which incorporates industrial training and placement into the integral curriculum; however, such programmes remain limited in cohort size and industries coverage. The above raises questions on the Government's role in response to the skill demands of the society.

Singapore may offer insights into how governments carry out educational planning **(Figure 23)**. Under the central coordination of the National Manpower Planning Committee, inter-ministerial cooperation ensures that economic planning feeds into manpower and skills planning, with agencies to implement ministry-specific policies.
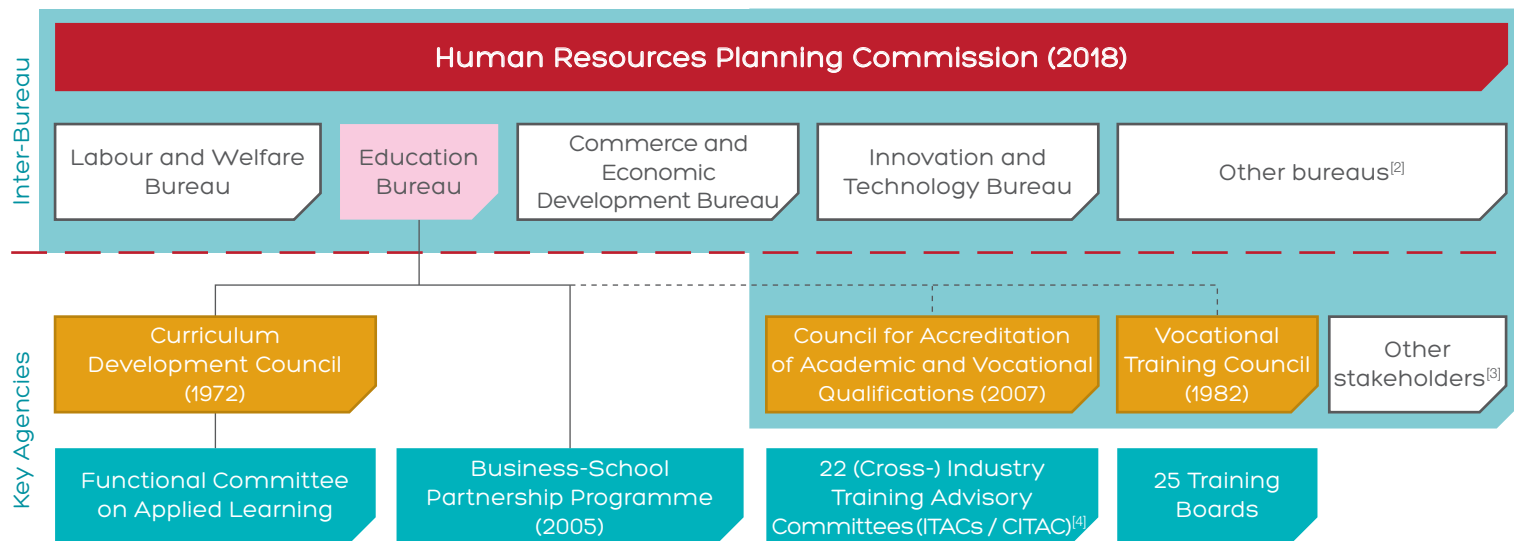
(Figure 23) **Educational policies often involve inter-ministerial planning due to their significance to future workforce**

[Future Economy]	[Future Jobs]	[Future Skills]
National Manpower Planning Committee		

Ministries

Ministry of Trade & Industry	Ministry of Manpower	Ministry of Education

Key Agencies

Economic Development Board	Workforce Singapore	SkillsFuture Singapore
Industry Transformation Maps (23 industries)		Singapore Skills Framework
		Applied Universities
		Polytechnics
		Institute of Technical Education

Source: Institute of Technical Education, Singapore

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In Hong Kong, whilst a similar high-level Human Resources Planning Commission (HRPC) was established under the Chief Secretary for Administration in 2018, the only policy decision made is to set up "a new integrated portal on manpower information" (GovHK, 2018). **Figure 24** maps out relevant stakeholders in the education policy-making process, either under the HRPC or the Education Bureau.

(Figure 24) **Building on the existing government infrastructure for manpower planning and development[1]**

Source: The Hong Kong SAR Government
Note: [1] Illustrations are non-exhaustive.
      [2] Other bureaus include Constitutional and Mainland Affairs Bureau, Financial Services and the Treasury Bureau, Food and Health Bureau, and Security Bureau.
      [3] Other stakeholders include Commissioner for Census and Statistics, Government Economist, and Employees Retraining Board.
      [4] Industry Training Advisory Committees (ITACs) are set up by the Qualifications Framework Secretariat under the Education Bureau, to serve as a platform for stakeholders to put the Qualifications Framework into implementation, and to exchange views on the training needs and manpower development for respective industries or sectors.

Recommendation 1.1: Strengthening the Human Resources Planning Commission's role in integrating future economic, manpower and educational planning; with targeted efforts and enhanced resource allocation to facilitate industry-led programmes

The HRPC should help the Government step up its inter-bureau efforts to translate economy and manpower planning into skills planning. It can match industries where skills are demanded with schools where talents are developed. This not only brings bureaus closer to each other, but also businesses and schools to facilitate cooperation and to develop programmes for a future-ready workforce. Specifically:

1. The HRPC should act as a platform where the Labour and Welfare Bureau's reports on manpower projections can be enhanced with inputs from the Commerce and Economic Development Bureau as well as the Innovation and Technology Bureau, to influence the Education Bureau's strategic planning process. Such official collaborations are critical to ensure that manpower projections reflect current and future industry needs, as a result of market dynamics and government policies.

2. The HRPC should exert greater influence on degree places allocation in relation to manpower requirements (including UGC-funded and self-financing institutions). This aligns policy objectives and funding with the Government's planning parametres. For example, only about one-sixth of the UGC-funded programmes are currently allocated with specific manpower needs in mind, the ratio of which can potentially be increased. The UGC should also be included in the HRPC.

3. The HRPC should make targeted efforts on industries that represent the future economic development focus, creating more degree-level dual programmes that can produce graduates suited to socio-economic needs. It should review new business developments and consolidate efforts from different stakeholders, including the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ), Industry Training Advisory Committees (ITACs, see Recommendation 1.2), VTC and its training boards, the Employees Retraining Board, and the UGC.

Recommendation 1.2: Magnifying Industry Training Advisory Committees' (ITACs) influence on skills demand / supply by creating a more accessible Specification of Competency Standards (SCS) and translating them to dual-education programmes

In the UK, industry representatives in the Sector Skills Councils influence the design, development, and delivery of skills solutions, covering over 80% of the workforce. However, in Hong Kong, only half of the workforce has been covered by similar Industry Training Advisory Committees (ITACs) under the Qualifications Framework. ITACs in Hong Kong are tasked to draw up Specification of Competency Standards (SCS) for the relevant sectors, which set out the skills, knowledge and outcome standards required of employees in different functional areas, and provide a basis for course providers to design training courses that meet the sectors' needs.

To strengthen the role of ITACs / SCS in the skills system, the Government can consider revamping them to gear towards easily accessible (often web-based), easily updated (instead of every several years), and broad-based competency standards covering more job roles in the labour force. This should be supplemented by funding incentives for educational institutions to set up industry-led education programmes and to teach according to the SCS (this will be discussed further in Recommendation 3.7). ITACs should also involve in creating assessment methods that businesses can use to assess both interviewees and current employees.

Specification of Competency Standards (SCS) should be:

1. Easily accessible	2. Up-to-date	3. Broad-based

4.2. Recommendation 2: Funding mechanism—incentivising Dual Education through a revamped and integrated subsidy scheme

The Study Subsidy Scheme for Designated Professions / Sectors (SSSDP) was established in 2014 targeting students in self-financing institutions (SFIs). The policy goal is to nurture talents in support of specific industries with urgent demand for human resources. Under the SSSDP, 3,000 students per cohort are subsidised to undertake degree programmes for selected industries, with another 2,000 students undertaking sub-degree programmes.

In 2017, the Non-means-tested Subsidy Scheme for Self-financing Undergraduate Studies in Hong Kong (NMTSS) was introduced for students undertaking full-time self-financing undergraduate programmes (including top-up degrees) accredited in Hong Kong, except for students already supported under the SSSDP. Students are eligible for the NMTSS if they obtained "3322" in the HKDSE or locally accredited sub-degree qualifications (Concourse for Study Subsidy Scheme for Designated Professions / Sectors, 2019) **(Figure 25)**.

(Figure 25) **Study Subsidy Scheme for Designated Professions / Sectors (SSSDP) and Non-means-tested Subsidy Scheme for Self-financing Undergraduate Studies in Hong Kong (NMTSS)**
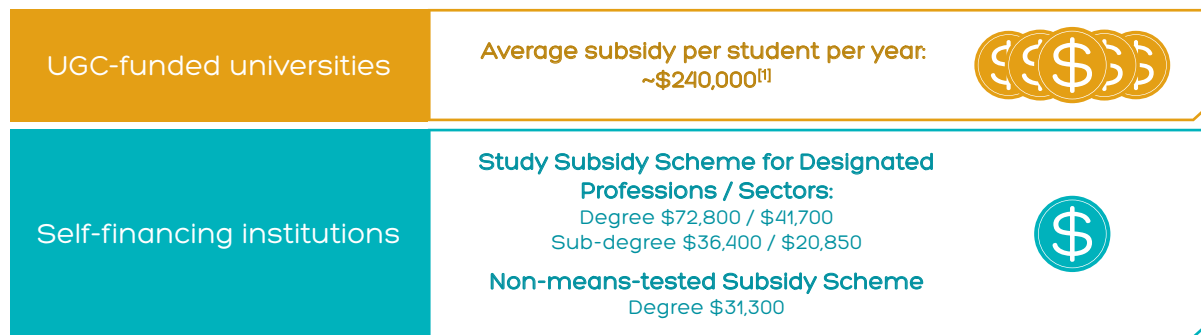
	SSSDP	NMTSS	
2015	SSSDP subsidised **1,000** students to undertake degree programmes for selected industries[1]		
2017	Regularisation of SSSDP	NMTSS provided an annual subsidy of **$30,000** for each student undertaking self-financing degree programmes	
2018	Under SSSDP, the number of subsidised degree places increased from **1,000** to **3,000** per cohort	The annual subsidy under NMTSS increased to **$30,800**	
2019	SSSDP subsidised **2,000** students to undertake **sub-degree** programmes	The annual subsidy under NMTSS increased to **$31,300**	

SSSDP expenditure: $189 million per cohort for degrees and $58 million for sub-degrees, summing up to $872 million (assuming subsidised places are unchanged for the next 4 years)

Source: Concourse for Self-financing Post-secondary Education
Note: [1] Selected industries include health care, architecture, engineering, logistics, creative industry, tourism and hospitality, etc.

Nonetheless, the imbalance of resources between SFIs and UGC-funded universities remains significant. Currently, the average subsidy per student at UGC-funded universities amounts to about $240,000 per year (unit cost of approximately $280,000 less the tuition fee of $42,100) (Audit Commission, 2016). By comparison, the subsidies available for SFI students are substantially less. Under the SSSDP, the annual subsidies for laboratory-based and non-laboratory-based undergraduate programmes are $72,800 and $41,700 respectively. Sub-degree students, meanwhile, can receive an annual subsidy of $36,400 and $20,850 if admitted to a laboratory-based and non-laboratory based sub-degree programmes respectively. Eligible students enrolled in self-financing degree programmes not covered under the SSSDP could receive, under the NMTSS, an annual subsidy of up to $31,300. Although the subsidies are inflation-adjusted, they remain at a level far below that of UGC-funded programmes **(Figure 26)**.

(Figure 26) **Degree programmes funding comparison**

UGC-funded universities	Average subsidy per student per year: ~$240,000[1]
Self-financing institutions	**Study Subsidy Scheme for Designated Professions / Sectors:** Degree $72,800 / $41,700 Sub-degree $36,400 / $20,850 **Non-means-tested Subsidy Scheme** Degree $31,300

Sources: University Grants Committee, Education Bureau
Note: [1] Approximate unit cost of $280,000 subtracting the standard UGC school fee of $42,100
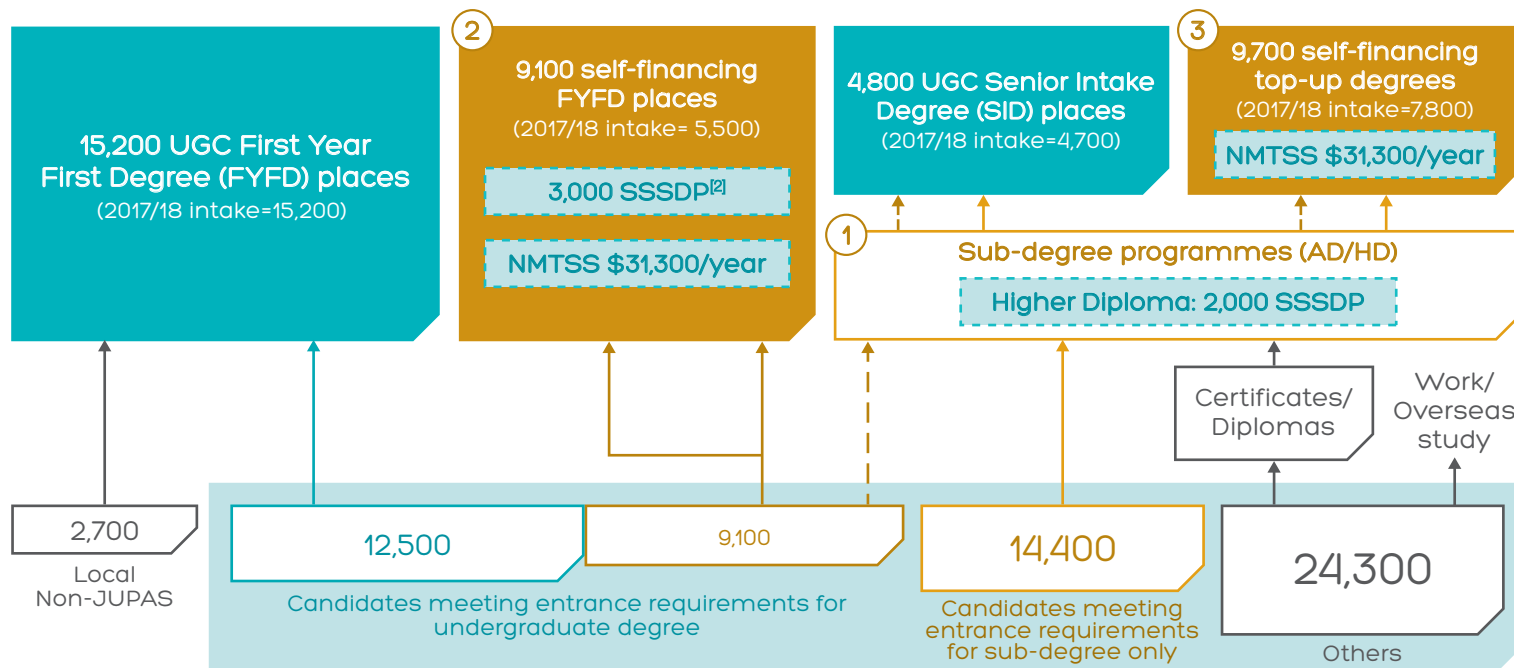
Furthermore, as both the SSSDP and the NMTSS are subsidies targeting to reduce students' tuition fees, SFIs do not receive any additional financial resources under both schemes. The gap in financial resources limits the ability for SFIs to raise their programmes' competitiveness.

The gap extends beyond programme quality to education inequality. Traditionally, UGC-funded universities are more sought after by students due to perceptions of higher quality, as reflected by higher average admission scores. As a result, students with better results who end up in UGC-funded degree programmes enjoy more resources than their peers who are often more in need of government support. Raising the competitiveness of self-financing programmes and gearing them towards Applied Education therefore not only contribute towards the sustainability of SFIs, but also promote education equality.

Any funding mechanism that involves taxpayers' money, in our view, should have a clear policy goal; in this case, the sustainability and competitiveness of self-financing programmes should be prioritised. The self-financing nature of institutions does not mean that there is no need for direct financial subsidy to support their development. With an increase of direct financial and policy support from the Government, SFIs would be better positioned to enhance their programmes' quality, infrastructure, and governance.

(Figure 27) **Illustration of Higher Education admission in Hong Kong and related subsidies[1]**

15,200 UGC First Year First Degree (FYFD) places
(2017/18 intake=15,200)

② **9,100 self-financing FYFD places**
(2017/18 intake= 5,500)

3,000 SSSDP[2]

NMTSS $31,300/year

4,800 UGC Senior Intake Degree (SID) places
(2017/18 intake=4,700)

③ **9,700 self-financing top-up degrees**
(2017/18 intake=7,800)

NMTSS $31,300/year

① Sub-degree programmes (AD/HD)

Higher Diploma: 2,000 SSSDP

2,700
Local
Non-JUPAS

12,500

9,100

Candidates meeting entrance requirements for undergraduate degree

14,400

Candidates meeting entrance requirements for sub-degree only

Certificates/Diplomas

Work/Overseas study

24,300

Others

Sources: Education Bureau, Hong Kong Examinations and Assessment Authority, Legislative Council
Note: [1] All figures rounded to the closest 100, as of 2017/18.
[2] SSSDP is administered by a two-tier arrangement in which a subsidy of up to $72,800 and $41,700 per academic year will be provided to each student admitted to a laboratory-based and non laboratory-based programmes respectively in academic year 2019/20.

Figure 27 shows three groups of students relevant to the current funding schemes: 1) sub-degree students; 2) first-year-first-degrees in SFIs; and 3) students pursuing top-up degrees. Each has its own issues:

1. **Less than half of sub-degree students are subsidised**

   The majority of sub-degree students are not subsidised. In academic year 2017/18, about 28,000 students were admitted into sub-degree programmes; however, only about 10,000 sub-degree places are subsidised through subvented programmes (along with 2,000 SSSDP places to be introduced in 2018/19)—a stark contrast against the multifarious subsidy schemes available to most undergraduate students.

2. **Cannibalisation of better-quality programmes for FYFD students**

   Under the current arrangements, each self-financing FYFD programme charges a different programme fee, supplemented by various layers of subsidy (SSSDP or NMTSS). Students are incentivised to cherry-pick a programme with the least overall cost (programme fee less subsidy). Not only does this affect SFIs' fee-setting decisions, it may also hinder students from selecting the programmes that match future society needs and suitable for their personal development if it bears a higher overall cost.

   Students admitted under non-standard admission quotas are not eligible for the NMTSS (if not already covered by the SSSDP), which defeats the purpose of building a more flexible, aptitude-based admission mechanism. Whilst the SSSDP aims to nurture talents for strategically targeted industries, it does not necessitate industry collaboration.

3. **Top-up degrees are not covered by the SSSDP**

   The only subsidy scheme available to students pursuing top-up degrees is the NMTSS. Such scheme does not incentivise programmes to develop in accordance to future market needs.

To tackle these issues, a few recommendations are proposed as follows:

Recommendation 2.1: Strengthening the Committee of Self-financing Post-secondary Education in resources allocation and strategic planning, including the integration of Study Subsidy Scheme for Designated Professions / Sectors (SSSDP) and Non-means-tested Subsidy Scheme for Self-financing Undergraduate Studies in Hong Kong (NMTSS) into a new funding model

There should be a holistic plan for subsidy schemes targeting SFIs, covering first-year-first-degrees, top-up degrees, and higher diplomas. The revamped funding scheme should include school-based subsidy (and not just student-based); possible mechanisms include subsidy-matching schemes for students / schools, or fixed subsidies linked to the unit cost of these programmes, with possible reference to the Direct Subsidy Scheme (DSS) in secondary schools. An integration of SSSDP and NMTSS would encourage the development of quality applied degrees and promote Dual Education (as discussed in Recommendation 1).

The role of the Committee on Self-financing Post-secondary Education (CSPE) should be strengthened to advise the Government on subsidy matters and contribute to SFIs' governance, expanding its role to provide "strategic and policy advice on the development of the self-financing sector", as advised in the Task Force on Review of Self-financing Post-secondary Education (2018). Ultimately, an increase in resources contributes to the long-term competitiveness of self-financing programmes and allows the Government to take a greater role in the overall governance and strategy (especially in Applied Education) of SFIs. The CSPE should act as a funding advisor or even allocator under the integrated subsidy scheme.

Strengthens the Committee on Self-financing Post-secondary Education (CSPE)'s role:

1. Long-term development strategy

2. Funding advisor / allocator (with an increase in financial resource support)

> **Recommendation 2.2: Providing financial support to institutions for developing dual-education programmes with high market relevance and with industry collaborations (e.g. workplace internship / apprenticeship)**

Drawing on international examples such as degree apprenticeships in the UK and dual-degree programmes in Germany and Singapore, we recommend introducing "industry collaboration" as a criterion for the integrated subsidy scheme's funding allocation. Degree apprenticeships in the UK combine university study and workplace learning; two-thirds of the cost are contributed by the government (subject to a cap) and the remaining comes from the employer.

> **Recommendation 2.3: Adding a mature student scheme targeting profession transfers and school returners**

To encourage lifelong learning in the form of profession transfers and adult education, mature students should be included and incentivised to participate via the integrated subsidy scheme (this will be discussed further in Recommendation 3.5).

> **Recommendation 2.4: Establishing a goal-based funding approach based on a) job conversion rate, b) industry accreditations/qualifications attained, and c) future-ready skills**

Instead of an input-control mechanism (controlling the admission scores), the subsidy scheme should employ a goal-based funding approach, considering criteria such as industry accreditations obtained upon graduation and preparation of future-ready skills, with an independent quality assurance mechanism set up under the CSPE. This provides a strong incentive for SFIs to raise their programmes' quality in pursuit of more financial support.

4.3. Recommendation 3: Admission system—gravitating towards an aptitude-based admission mechanism that accepts industry qualifications

As discussed in Section 2, Hong Kong has an admission mechanism different from most of its international counterparts, many of which have created multiple assessment methods for students with different aptitudes, in order to provide equally well-connected progression pathways to higher education. A few examples are illustrated as follows:

UK

Reformed the T Level to be on par with the A Level, with high acceptance rates of degree programmes among holders of technical upper secondary qualifications

Germany

Provided multiple pathways at upper secondary level with clear pathways leading to Higher Education

Mainland China

Established a pilot scheme to allowed direct entry into degree programmes upon completion of technical senior secondary examination
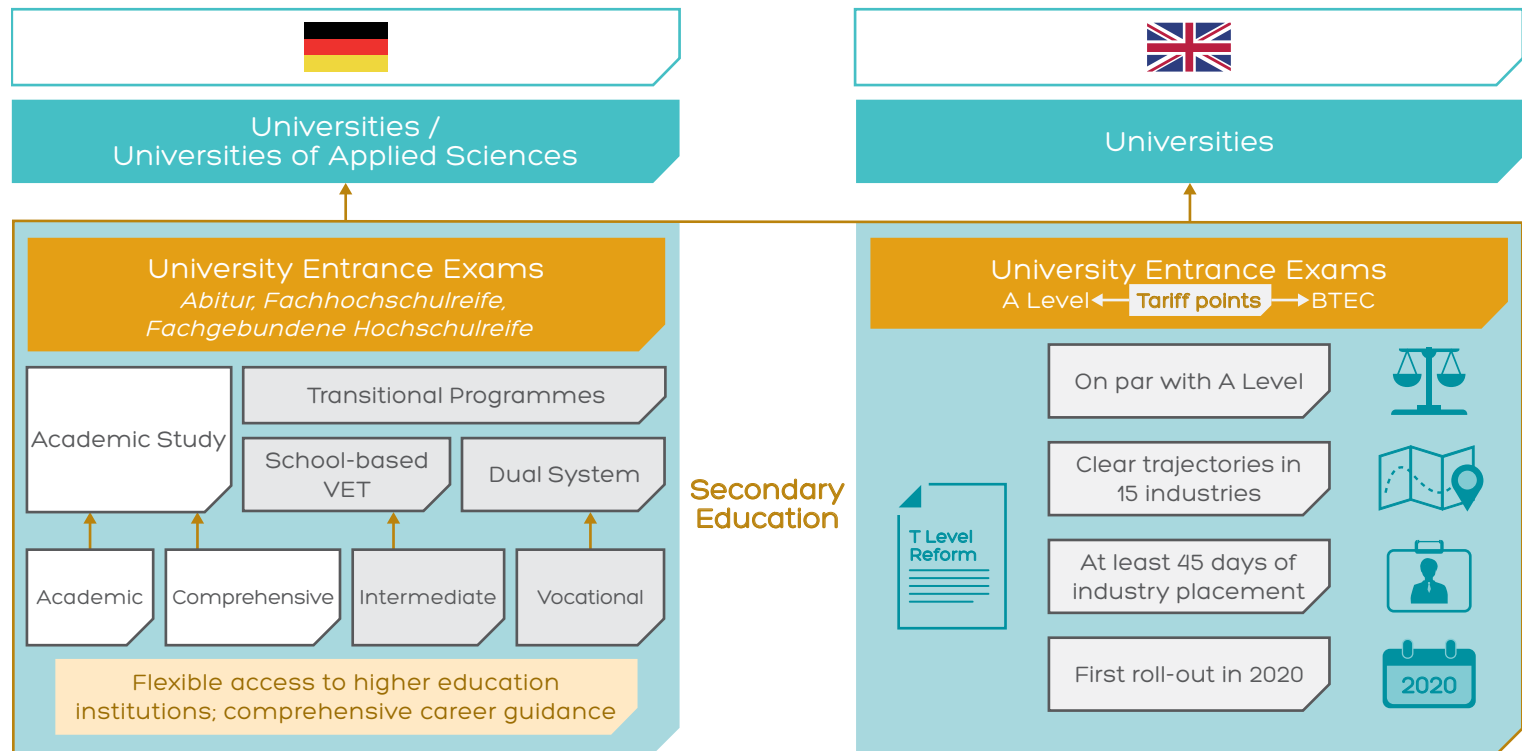
Singapore

Introduced subject-based banding to allow for more flexible admission into Higher Education

Sources: Respective government websites

In Germany, students are divided into academic, vocational, intermediate, and comprehensive schools as early as the age of 10. At the upper secondary level, there are three school-leaving qualifications (including *Abitur*, *Fachhochschulreife, Fachgebundene Hochschulreife*) to provide students with flexible access to either universities or UASs.

In the UK, the government has recently introduced a new technical-based qualification called the "T Level" to revamp technical education and to create an alternative study pathway on par with the A Level. The T Level curriculum combines classroom theory, practical learning, and an industry placement lasting 45 to 60 days, spanning over 15 occupation routes. The first three routes are set to be rolled out in year 2020.

(Figure 28) Germany and the UK—multiple qualifications and pathways

Universities / Universities of Applied Sciences

University Entrance Exams
Abitur, Fachhochschulreife, Fachgebundene Hochschulreife

Academic Study

Transitional Programmes

School-based VET

Dual System

Academic — Comprehensive — Intermediate — Vocational

Flexible access to higher education institutions; comprehensive career guidance

Secondary Education

Universities

University Entrance Exams
A Level ← Tariff points → BTEC

T Level Reform

On par with A Level

Clear trajectories in 15 industries

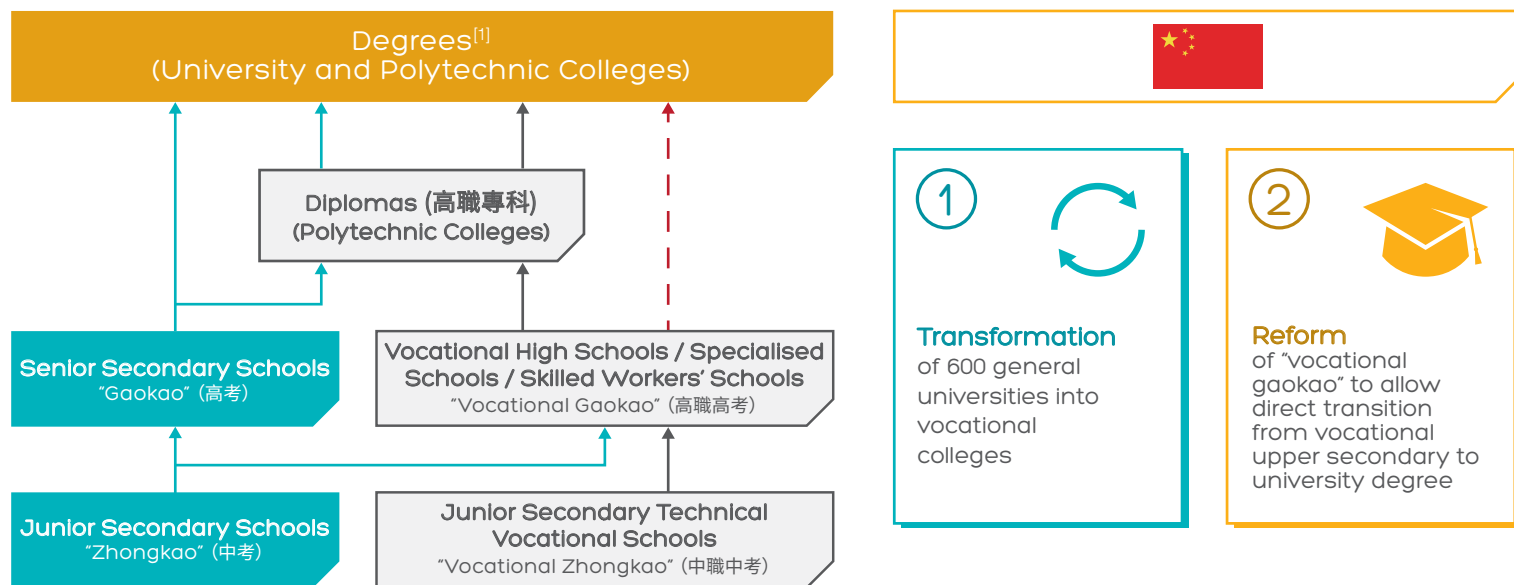At least 45 days of industry placement

First roll-out in 2020

2020

Sources: Cedefop, the UK Parliament

As for mainland China, the government unveiled plans in 2014 to ramp up resources to develop a modern vocational education system. At the 2014 China Development Forum, Education Vice Minister Lu Xin announced the decision to turn 600 general universities into vocational colleges, imposing far-reaching changes (Grijs, 2017).

On the provincial level, mainland China is piloting a scheme that allows students to pursue a four-year undergraduate degree programme upon graduation from the higher vocational college entrance examination. This is an active step towards creating an equivalent qualification within the existing National College Entrance Examination, known as "Gaokao", for students with non-academic attributes to obtain direct degree admission.

(Figure 29) **Mainland China—reform to bring vocational students to degree programmes**

Degrees[1]
(University and Polytechnic Colleges)

Diplomas (高職專科)
(Polytechnic Colleges)

Senior Secondary Schools
"Gaokao" (高考)

Vocational High Schools / Specialised Schools / Skilled Workers' Schools
"Vocational Gaokao" (高職高考)

Junior Secondary Schools
"Zhongkao" (中考)

Junior Secondary Technical Vocational Schools
"Vocational Zhongkao" (中職中考)

① **Transformation** of 600 general universities into vocational colleges

② **Reform** of "vocational gaokao" to allow direct transition from vocational upper secondary to university degree

Source: China.org.cn
Note: [1] Reform practice differs with each province as undergraduate level vocational courses are mostly pilot schemes.

Singapore has an early streaming system in place for 40 years. Their recent policy reform, the Subject-Based Banding (SBB), will be implemented from 2020 to restructure the post-secondary admission mechanism. Under SBB, students take a combination of subjects at different levels based on their Primary School Leaving Examination (PSLE) scores: General 1, General 2, and General 3 (G1, G2, G3). This policy provides greater flexibility in student learning and reduces stigmatisation at schools. In 2027, Secondary 4 students will sit for one common examination and receive a new national certification (Ministry of Education, Singapore, 2019).

(Figure 30) **Singapore—reforms with subject-based banding to be rolled out**
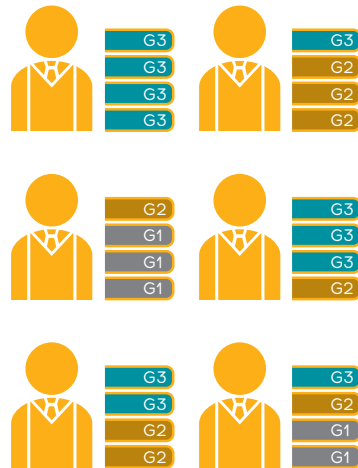
Subject-Based Banding

Subjects are divided into different levels (G1, G2, G3) and students will take a combination of subjects at different levels based on their PSLE scores to reduce stigmatisation
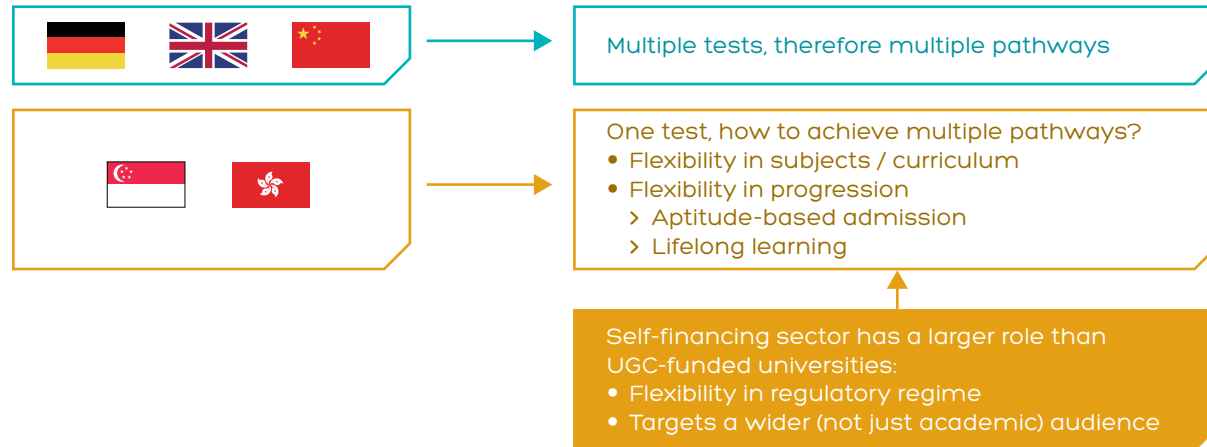
2027 In 2027, students will sit for one common national examination in S4 and receive a new national certification

Source: Ministry of Education, Singapore

Whilst an integrated assessment system reduces stigmatisation, it limits flexibility for students. As such, maximising flexibility within the integrated assessment system is of paramount importance; this can be achieved by designing a more flexible curriculum (which will be discussed in Recommendation 5), or a more flexible mechanism for further progression.

Two important pillars to enhance progression flexibility are:

1. **An aptitude-based admission system**, which reduces the reliance on one public exam result; and

2. **Lifelong learning**, which enhances the ability for students to enter or leave the education pathway at any given point in time.

Multiple tests, therefore multiple pathways

One test, how to achieve multiple pathways?
- Flexibility in subjects / curriculum
- Flexibility in progression
  > Aptitude-based admission
  > Lifelong learning

Self-financing sector has a larger role than UGC-funded universities:
- Flexibility in regulatory regime
- Targets a wider (not just academic) audience

In the discussion of admission mechanism, the self-financing post-secondary sector has a more significant role compared to UGC-funded universities. UGC-funded universities operate according to its own ordinance and governing council, with a well-established admission mechanism; on the other hand, SFIs are subject to more stringent but less developed regulations, hence the need to adjust their regulatory regime. Moreover, as research-based universities target 20,000 more academically-focused students only, institutions focusing on Applied Education should target a wider audience beyond traditional academic segments.

To build an aptitude-based admission mechanism that offers enhanced flexibility from HKDSE core subject requirements, and places greater weight on related experiences (including but not limited to learning profiles, interviews and personal interest), three policy recommendations are proposed as follows:
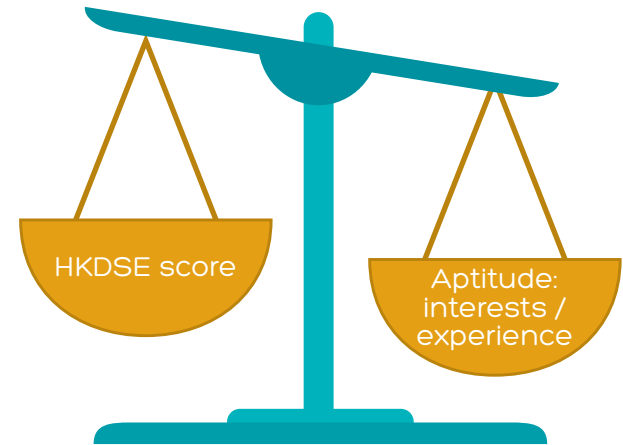
Recommendation 3.1: Increasing self-financing institutions' (SFIs) non-standard admission quota from 5% to 15%; re-naming it as "aptitude-based admission"

SFIs are subject to stringent requirements limiting non-standard admission to 5% of the programme cohort (Federation for Self-financing Tertiary Education, 2014). This creates a misalignment between admission requirements and targeted applicants. In Singapore, universities set aside 15% of the cohort intake quota for aptitude-based admission in order to reduce the reliance on scores; the ratio at their polytechnics is even higher (close to 20%). Relaxing this requirement allows schools to develop aptitude tests of their own and to admit fitting students, particularly for applied degree programmes aligned with future manpower needs.

Recommendation 3.2: Allowing local direct admission to the SSSDP simultaneously with JUPAS; removing or relaxing the 10% quota

SSSDP-subsidised programmes are put under the Joint University Programmes Admission System (JUPAS). This is a constraint for aptitude-based admission, which often involves local students applying for direct admission based on alternative qualifications. Programmes under the SSSDP are only allowed to consider these applicants after all admission rounds under the JUPAS process are completed; these admissions are further limited to 10% of the subsidised places (Concourse for Study Subsidy Scheme for Designated Professions / Sectors, 2019). To seek talents with greater flexibility, the Government could allow these programmes to directly admit students whilst the JUPAS process is ongoing, on a relaxed or even removed quota.

It is important to note that, as discussed in Recommendation 2.4, a relaxed direct admission quota reflects an ideology of flexible entrance but vigorous quality assurance; hence, it does not represent a compromise of quality for graduates of self-financing programmes.

Recommendation 3.3: Increasing principal nomination quota and allowing unconditional offers to be made before the release of the Hong Kong Diploma of Secondary Education Examination (HKDSE) results

The School Principal Nomination (SPN) scheme in JUPAS and other principal nomination schemes in the self-financing sector allow secondary school principals to nominate suitable students for specific programmes. Increasing the quota of these schemes can enhance the admission flexibility of degree-offering institutions by providing fresh, informed perspectives.

The Task Force on Review of School Curriculum discussed a revamped SPN scheme which allows for aptitude-based admission to be granted without being bounded by HKDSE results. We welcome this recommendation and believe that aptitude-based admission allows for a more holistic approach in the student selection process.

To facilitate lifelong learning, there is a need to construct a parallel academic / professional qualification ladder where there can be free transfer between academic and professional pathways, or even between professions.

Under the Qualifications Framework (QF), there are various schemes facilitating lifelong learning. For example, diplomas and certificates are classified into different QF levels to construct a Vocational Qualifications Pathway (VQP); the Recognition of Prior Learning (RPL) allows practitioners' experiences to be recognised in the form of QF; and the Recognition of Professional Qualifications (RPQ) broadens the amount of agencies recognised to provide professional qualifications, and therefore the variety of qualifications recognised.

That said, the connectivity between adjacent QF levels remains unsatisfactory. Degree admission (to QF5) is a good example as most institutions only consider HKDSE admission or sub-degrees amongst local qualifications available, but not other professional qualifications under the QF. Similarly, a number of sub-degree programmes only consider part of the QF3 qualifications (the DVE or other school-based diplomas, such as the Diploma of Creative Arts by Shau Kee School of Creativity, may not be considered).

Recommendation 3.4: Accepting professional accreditations (under QF) as part of degree admission criteria (coupled with language requirements)

For University of Applied Sciences, it is imperative to consider professional qualifications not only to better connect QF levels, but more importantly, to allow non-academic learners to take an alternative development pathway in the professional world before returning to school to supplement their practical knowledge with a theoretical or managerial perspective. Initiatives mentioned above (VQP, RPL, RPQ) have laid down a foundation for schools to accept professional qualifications as part of their admission criteria.

Recommendation 3.5: Lowering age requirement for mature applicants from 25 to 21; listing out accreditations considered

With a stated goal to support lifelong learning, degree-offering institutions allow mature applicants above the age of 25 to apply for their programmes on a case-by-case basis. With reference to the UK practice, we recommend lowering the age requirement for mature applicants from 25 to 21. Besides, clear criteria and guidelines should be laid out for mature applicants. Students should be clearly informed of the specific qualifications considered and the admission process involved in order for them to perceive this as a viable study pathway.

Recommendation 3.6: Exploring degrees for working professionals

Working professionals who return to school need a different kind of education; for example—less general education content, and more practical knowledge that can be applied directly at work. This is not confined to hands-on skills, but also theories and management skills critical for them to develop their careers. For example, the transition from a head chef to a restaurant owner requires knowledge of business management, which is a skillset different from the culinary profession. Exploring specialised curricula and degrees for working professionals is a step in the right direction, allowing practitioners to extend their learning paths in close alignment with their work. Funding support for these school returners has been discussed in Recommendation 2.3.

Recommendation 3.7: Introducing course-based subsidy for those developed with close alignment with SCS and manpower needs

The SCS-based / SGC-based Courses Development Grant Scheme under the Qualifications Framework provides one-off grants for course development. To incentivise students to take these courses, however, a course fee subsidy scheme could be set up for courses that are deemed to meet future social development needs. By coupling course accreditations with funding implications, the Government can strategically support and strengthen lifelong learning.

4.4. Recommendation 4: Strengthening the Higher Diploma by building an Applied Education progression pathway

Recommendation 4.1: Formulating a clear division between Associate Degrees and Higher Diplomas with an option for further progression to academic and applied degrees

As sub-degree education continues to expand, the roles of the Associate Degree (AD) and Higher Diploma (HD) should be better differentiated. Under the current binary system, AD is positioned as a bridging qualification for articulation to academic degree education, whilst HD connects graduates to VPET-related degrees or employment on a para-professional level in certain industries (Task Force on Review of Self-financing Post-secondary Education, 2018).

By developing applied degrees, the role of HD as a key pathway to VPET-related degrees could be strengthened. This formulates a clear distinction between the two sub-degree qualifications leading to academic and applied degrees respectively. The availability of an alternative pathway alleviates the supply-demand gap of having more Associate Degree graduates than Senior Intake Degree (SID) places.

5.1. Recommendation 5: Reinforcing Applied Education in secondary schools through governance structure and curriculum design

Applied Education is not confined to any single subject. It is an interdisciplinary concept that spans a spectrum of key learning areas, allowing secondary students to combine learning with hands-on practice, engage with the industry, and explore career interests. Given its importance to nurturing technological and innovation talents, it is critical that governance structure and curriculum design remain relevant in order to deliver education aligned with 21st century skills.

Recommendation 5.1: Establishing an intermediary to broaden the Business-School Partnership Programme (BSPP) and to strengthen industry connection in Applied Education; setting up a funding scheme for non-profit organisations, e.g. "Big Education" Platform

The Business-School Partnership Programme (BSPP) was established in 2005 to "promote better cooperation and closer alliances between the business sector and schools" (Education Bureau, 2019). Most of their activities take the form of talks, workshops, and site visits. In our view, business-school partnership should also involve strategic knowledge transfer between academia and industry, such as bringing industry knowledge into the curriculum and assessment processes, and supporting industry professionals to take the role of Applied Education assessors. To ramp up these efforts, we recommend setting up an intermediary tasked to incorporate strategic knowledge transfer into the BSPP's existing elements.

Furthermore, there could be a funding scheme set up under the intermediary to support non-profit, non-governmental organisations that share the same purpose. This helps involve efforts from various sectors, pooling together ideas and resources to enhance business-school partnerships.

(Figure 31) **An intermediary can enhance business-school collaboration through knowledge transfer and funding administration**

Academia

Intermediary

1. Strategic knowledge transfer
2. Funding scheme administration

Industry

Ahlau / Shutterstock.com

1. Curriculum design
(Both ApL / inter-disciplinary)
2. Provision of exam assessors

1. Assessor training
2. Administrative support

(Figure 32) **Examples of international best practice in business-school partnership intermediaries**

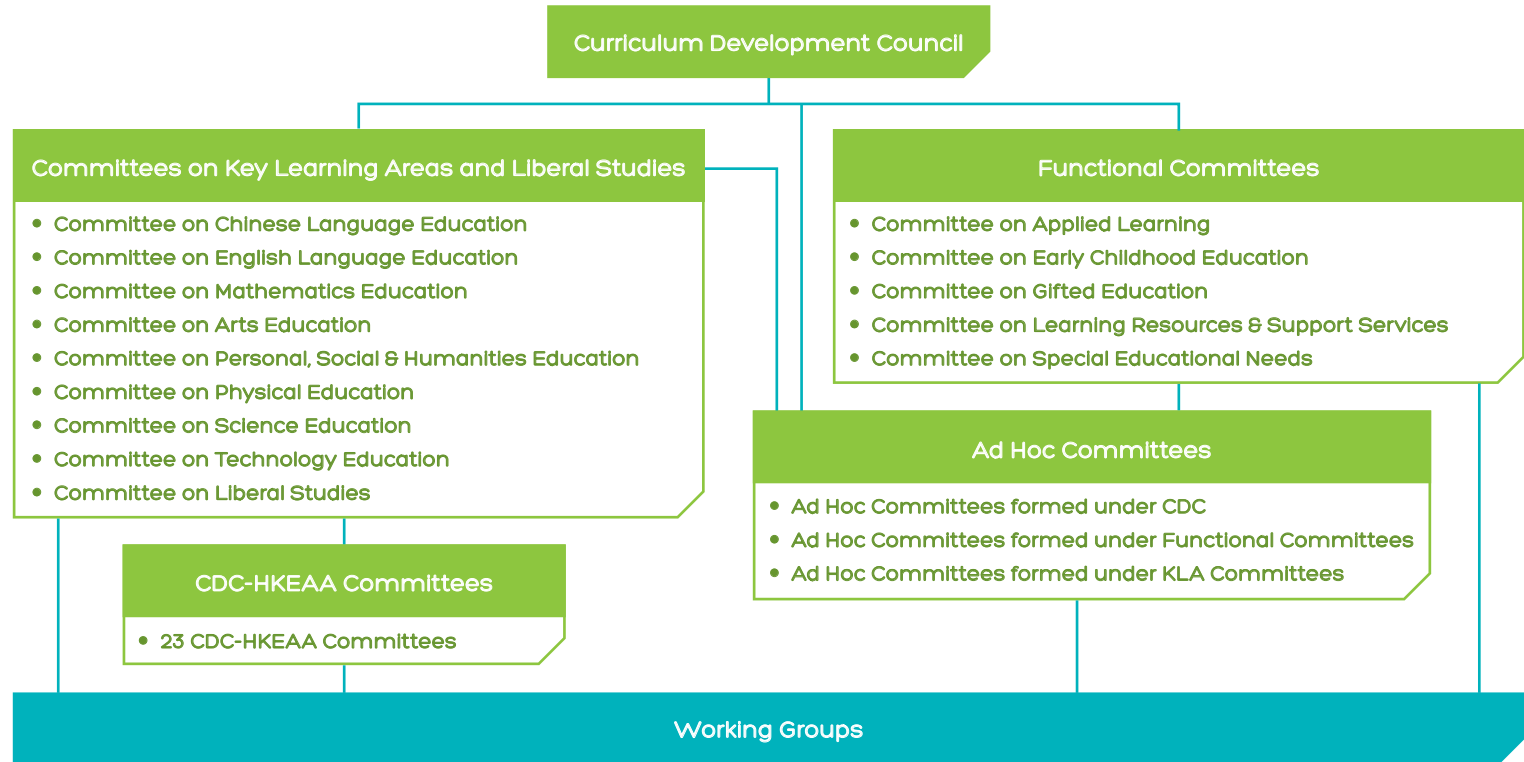|	State Secretariat for Education, Research and Innovation (SERI)
Switzerland	Coordinates stakeholders to be jointly responsible for: • Designing curriculums and qualifications • Formulating VET ordinances and exam regulations • Providing training to VET professionals
	National Advisory Council for Initial VET (REU)
Denmark	In its advisory capacity, the REU contributes in: • Reviewing labour market trends relevant to VET • Recommending establishment of new VET qualifications • Monitoring and improving existing programmes

Sources: SERI, Cedefop

Figure 32 shows two examples in Switzerland (State Secretariat for Education, Research and Innovation, n.d.) and Denmark (Cedefop, 2016), where intermediaries are set up in the same spirit as embodied in our recommendation. Their functions include curriculum design, labour market trend assessment, and regulatory review; all of which are critical in fostering a sustainable and successful partnership between schools and businesses.

Recommendation 5.2: Broadening the manifesto of Committee of Applied Learning under the Curriculum Development Council to include inter-disciplinary delivery of STEM / Applied Education across key learning areas

Under the Curriculum Development Council (CDC, 2019), there is a functional committee for Applied Learning to "plan and coordinate Applied Learning curriculum development", and to advise on "education policies and strategies related to Applied Learning". In our view, the manifesto of this committee can be extended to interdisciplinary Applied Education, so that learning components combining hands-on practice with theoretical learning can be applied across key learning areas, including but not limited to STEM. This helps gear curriculum development towards future skills requirement.

(Figure 33) **Curriculum Development Council Structure**

Curriculum Development Council

Committees on Key Learning Areas and Liberal Studies
- Committee on Chinese Language Education
- Committee on English Language Education
- Committee on Mathematics Education
- Committee on Arts Education
- Committee on Personal, Social & Humanities Education
- Committee on Physical Education
- Committee on Science Education
- Committee on Technology Education
- Committee on Liberal Studies

Functional Committees
- Committee on Applied Learning
- Committee on Early Childhood Education
- Committee on Gifted Education
- Committee on Learning Resources & Support Services
- Committee on Special Educational Needs

Ad Hoc Committees
- Ad Hoc Committees formed under CDC
- Ad Hoc Committees formed under Functional Committees
- Ad Hoc Committees formed under KLA Committees

CDC-HKEAA Committees
- 23 CDC-HKEAA Committees

Working Groups

Source: Curriculum Development Council

Recommendation 5.3: Raising standard-based grading of Applied Learning (ApL) to level 5, allowing for the possibility to reach level 5** under enhanced assessment methods and a more extensive curriculum

Given the grading limitations, ApL courses are seen as a suboptimal choice. However, with its significance to long-term talent development, it needs to be upgraded and made equal to Category A subjects. This involves building more vigorous assessment methods and an extensive curricula which justifies a higher grading, possibly with the involvement of international panels.

(Figure 34) **State-of-the-art facilities and international standards are two key components to upgrade Applied Learning**
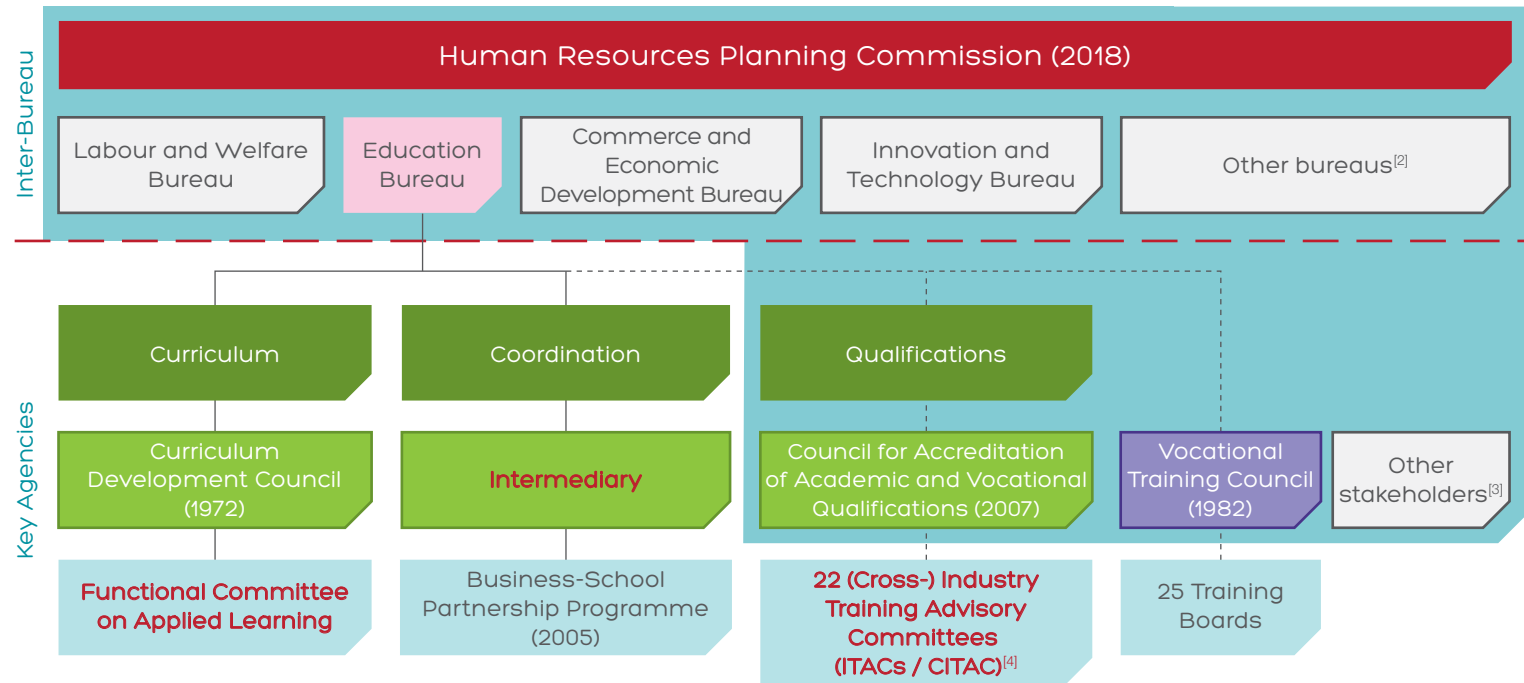

Aerospace hub, Institute of Technical Education, Singapore

WorldSkills Competition 2017

Source: Development Bureau

Below provides a summary of governance-related recommendations laid out in Recommendations 1 and 5[1].

Human Resources Planning Commission (2018)

Inter-Bureau

| Labour and Welfare Bureau | Education Bureau | Commerce and Economic Development Bureau | Innovation and Technology Bureau | Other bureaus[2] |

Key Agencies

- Curriculum
  - Curriculum Development Council (1972)
    - Functional Committee on Applied Learning
- Coordination
  - Intermediary
    - Business-School Partnership Programme (2005)
- Qualifications
  - Council for Accreditation of Academic and Vocational Qualifications (2007)
    - 22 (Cross-) Industry Training Advisory Committees (ITACs / CITAC)[4]
  - Vocational Training Council (1982)
    - 25 Training Boards
  - Other stakeholders[3]

Source: The Hong Kong SAR Government
Note: [1] Illustrations are non-exhaustive.
[2] Other bureaus include Constitutional and Mainland Affairs Bureau, Financial Services and the Treasury Bureau, Food and Health Bureau, and Security Bureau.
[3] Other stakeholders include Commissioner for Census and Statistics, Government Economist, and Employees Retraining Board.
[4] Industry Training Advisory Committees (ITACs) are set up by the Qualifications Framework Secretariat under the Education Bureau, to serve as a platform for stakeholders to put the Qualifications Framework into implementation, and to exchange views on the training needs and manpower development for respective industries or sectors.

5.2. Recommendation 6: Institutionalising career exploration in secondary schools

To step up government efforts in promoting career exploration (referred to as "Career and Life Planning" by the Education Bureau), it is proposed to institutionalise career exploration programmes in secondary schools.

Recommendation 6.1: Mandating career education as a compulsory teaching component with designated teaching hours

Career education should be a compulsory teaching component with designated teaching hours. Nowadays, countries are putting greater emphasis on students' career planning and development, having established statutory frameworks that set out career education provision standards (e.g. curriculum and guidance). For instance, in Austria, career education (known as "Berufsorientierung" or "BO") is a mandatory subject totalling 32 hours per year (Cedefop, 2019). Lessons are provided to 7th and 8th-grade students (aged 12-14). In the UK, although career education is not a compulsory subject, schools start delivering it to children since primary school.

Recommendation 6.2: Implementing intensive career programmes with less academic burden to facilitate greater career exposure in junior secondary level

The Government can consider implementing intensive career programmes in schools to broaden students' career exposure. It is important to lessen their academic burden, so as to create space for students to explore their interests and career opportunities. In South Korea, for example, all middle schools have implemented the Free Learning Semester (FLS) since 2016. During that period, students are exempted from exams; they attend classes only in the morning, and engage in career exploration activities in the afternoon (The International Centre for Career Development and Public Policy, n.d.).

Recommendation 6.3: Involving parents in their children's career development process through career counsellors

More emphasis should be placed on parental engagement in students' career counselling processes. Parents play an important role in their children's career development, and several countries have established career counselling systems targeted at parents. In Germany, the government established agencies for parents to access career guidance services. Career counsellors provide information on possible learning pathways, and labour market updates; they also offer psychological counselling services to parents for them to better understand their children.

Recommendation 6.4: Boosting industry exchange opportunities for both current and prospective teachers to strengthen their ability to provide career support

As teachers are already suffering from heavy workload at schools, they may have limited access to knowledge on the latest landscape and development of industries. However, this is an important prerequisite for delivering career education. Provision of industry training for teachers can help bridge the gap between education and industry. In the UK, a non-governmental organisation called STEM Learning (n.d.) has launched "Project ENTHUSE", a placement programme providing STEM secondary school teachers with one-to-two-week placements at universities and/or industries. During the programme, teachers receive mentorship and training to learn new STEM-related knowledge, career opportunities, as well as the latest market developments.
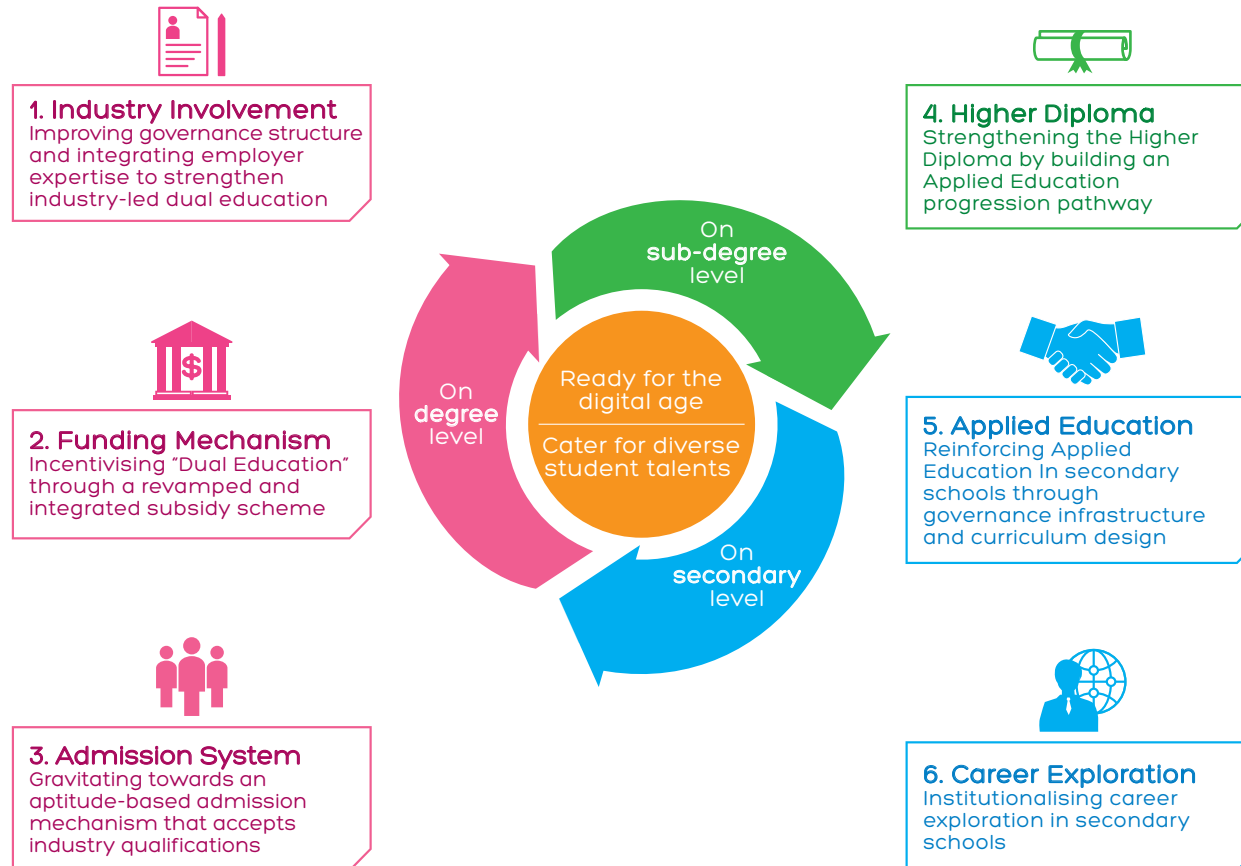
As traditional jobs are slowly replaced by artificial intelligence and technology advancement, education models have to be reinvented to provide updated, functional and versatile content. Education should cater for learners' diversity and unleash the potential of every individual. Learning needs to move from standardised to personalised; from route-learning to forward-looking; and from prescribed curriculum to a flexible system. In addition, it should equip talents with socially-relevant skills to thrive in the 21st century.

We view Applied Education as the catalyst to take our education system to the next level. We envision a future where students are provided with Applied Education of exceptional quality and flourish under a multi-disciplinary system that embraces divergent pathways; educators and industry experts join hands to co-develop top-notch applied programmes; the Government provides the financial and policy support to continuously enhance and assure programme quality; and the entrenched stereotype against non-academic talents eventually abates.

Under six strategic themes across degree, sub-degree and secondary levels, this report has put forward 21 policy recommendations for the Government's consideration. It is our belief that these recommendations are crucial in building a holistic and diverse system that offers socially-relevant and forward-looking education for our future generations.

(Figure 35) **Policy recommendations in respect of Applied Education**

1. Industry Involvement
Improving governance structure and integrating employer expertise to strengthen industry-led dual education

2. Funding Mechanism
Incentivising "Dual Education" through a revamped and integrated subsidy scheme

3. Admission System
Gravitating towards an aptitude-based admission mechanism that accepts industry qualifications

4. Higher Diploma
Strengthening the Higher Diploma by building an Applied Education progression pathway

5. Applied Education
Reinforcing Applied Education In secondary schools through governance infrastructure and curriculum design

6. Career Exploration
Institutionalising career exploration in secondary schools

On **sub-degree** level

On **degree** level

On **secondary** level

Ready for the digital age
Cater for diverse student talents

(Annex 1) **Degree intake from HKDSE candidates**

Overall undergraduate participation rate of the relevant cohort (%)[1]
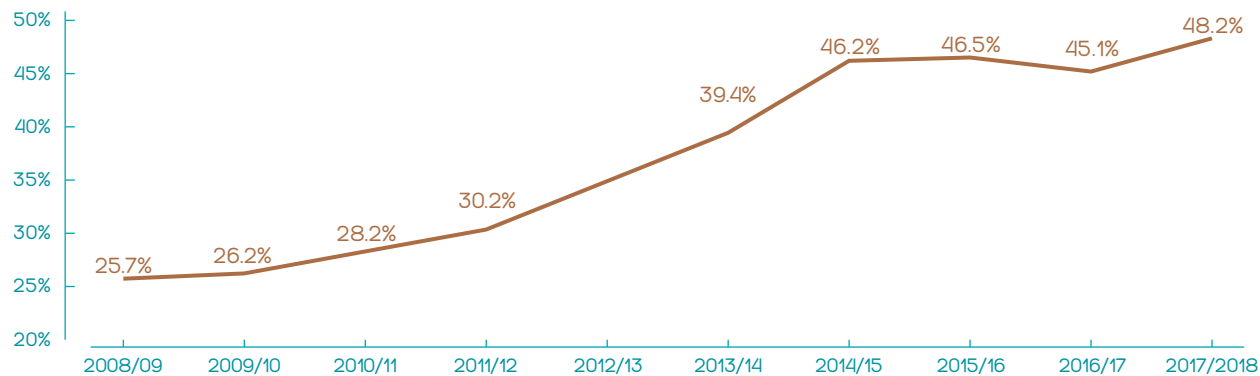
Breakdown of degree intake figures

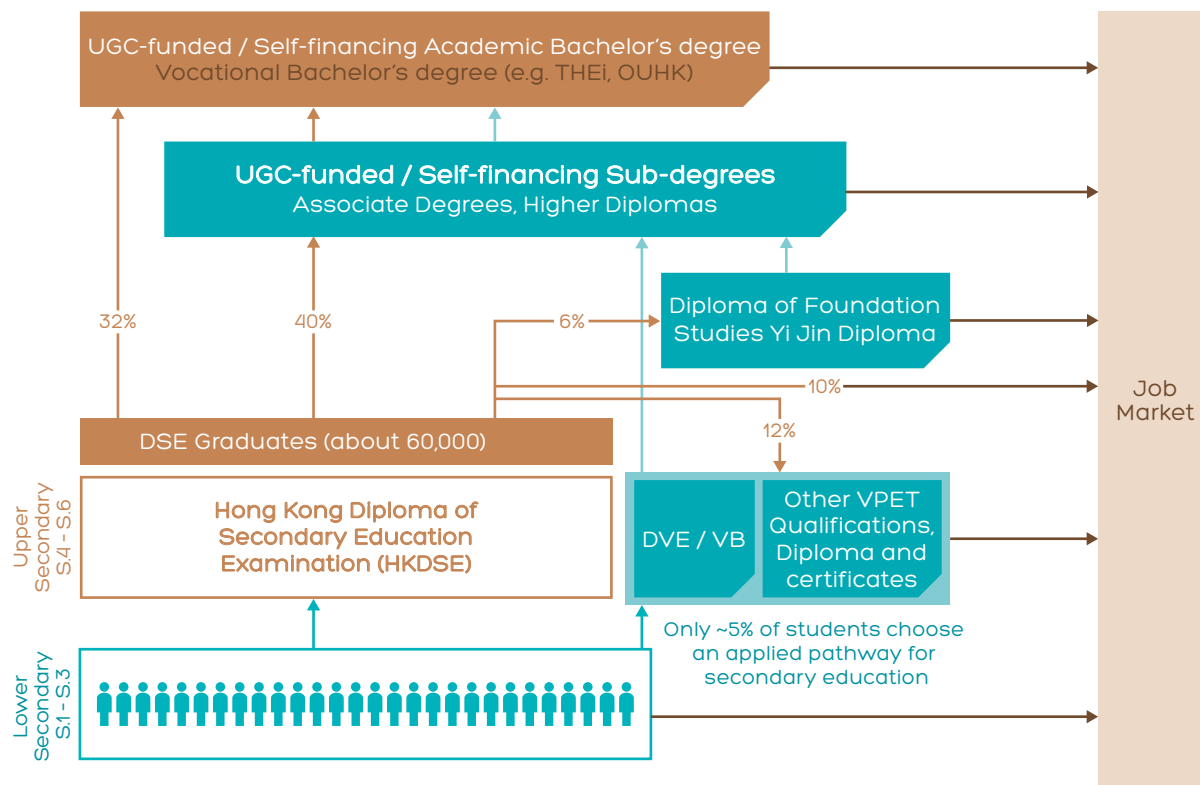| Type	Number of students (2017/18)
UGC-funded FYFD	15,153 (22%)
UGC-funded SID	4,705 (7%)
HKAPA FYFD	170 (-)
Self-financing FYFD	5,530 (8%)
Self-financing top-up degree	7,775 (11%)
Total	**33,333 (48%)**

Sources: Education Bureau, Census and Statistics Department
Note: [1] 2012 data is not comparable due to double-cohort under the 334 reform.

(Annex 2) Higher Education admission statistics[1]

15,200 UGC First Year First Degree (FYFD) places
(2017/18 intake = 15,200)

Non-JUPAS UGC FYFD

9,100 self-financing FYFD places
(2017/18 intake = 5,500)

SSSDP | **Others**

4,800 UGC Senior Intake Degree (SID) places
(2017/18 intake = 4,700)

9,700 self-financing top-up degree places
(2017/18 intake = 7,800)

Associate Degree (AD) graduates to further studies = 84%, more than half of them take publicly-funded places

Higher Diploma (HD) graduates to further studies = 46%

HD graduates 16,100

AD graduates 8,600

UGC-funded sub-degree places

Self-financing sub-degree places

Subsidised school fee | $30,800

SSSDP

DSE candidates meeting entrance requirements for undergraduate degree programmes (3322)

DSE candidates meeting entrance requirements for sub-degree programmes but not undergraduate degree programmes (22222)

Sources: Education Bureau, Legislative Council
Note: [1] All figures are rounded to the closest 100. Graduate numbers are as of 2016/17.

(Annex 3) Illustration of current education pathways in Hong Kong[1]

UGC-funded / Self-financing Academic Bachelor's degree
Vocational Bachelor's degree (e.g. THEi, OUHK)

UGC-funded / Self-financing Sub-degrees
Associate Degrees, Higher Diplomas

Diploma of Foundation Studies Yi Jin Diploma

32%

40%

6%

10%

12%

DSE Graduates (about 60,000)

Upper Secondary S.4 – S.6

Hong Kong Diploma of Secondary Education Examination (HKDSE)

DVE / VB

Other VPET Qualifications, Diploma and certificates

Only ~5% of students choose an applied pathway for secondary education

Lower Secondary S.1 – S.3

Job Market

Note: [1] 2017 data from Education Bureau.

(Annex 4) Education Task Forces / Committees and Consultation Papers (1998–present)

Release Date	Topic
June 2019	Review of School Curriculum
May 2019	Promotion of Vocational and Professional Education and Training
July 2018	Home-school Co-operation and Parent Education
July 2018	School-based Management Policy
July 2018	Professional Development of Teachers
June 2018 (interim report)	Review on Research Policy and Funding
June 2018	Extension of Retirement Age for Newly-joined Aided School Teachers
June 2018	Self-financing Post-secondary Education
October 2015	Promoting and Upholding Teachers' Professional Conduct
July 2015 (final report)	Promotion of Vocational Education
July 2015	Disclosure of Teachers' Registration Information
February 2015	Self-financing Post-secondary Education: Code of Good Practices on Governance and Quality Assurance
October 2012	Post Secondary Colleges Ordinance (Cap. 320) and Post Secondary Colleges Regulations (Cap. 320A)
December 2011 (final report)	Direct Subsidy Scheme
September 2011	Development of Education Services in Hong Kong
May 2011	Moral and National Education Curriculum

Release Date	Topic
December 2010	Review of the Pre-primary Education Voucher Scheme
January 2008	Developing a Supplementary Guide to the Chinese Language Curriculum for Non-Chinese Speaking Students
October 2007	Third Strategy on Information Technology in Education
March 2006 (final report)	Review of the Post-Secondary Education Sector
December 2005	Medium of Instruction for Secondary Schools and Secondary School Places Allocation
June 2005	Pre-primary curriculum
May 2003	Academic Structure of Senior Secondary Education
April 2002	Harmonisation of Pre-primary Services
February 2002	Continuing Professional Development for School Excellence
May 2000	Review of Education System: Reform Proposals
February 2000	Transforming Schools into Dynamic and Accountable Professional Learning Communities
September 1999	Framework for Education Reform
January 1999	Review of Academic System: Aims of Education
November 1998	Establishment of a General Teaching council
July 1998	Review of the Education Department
June 1998	Information Technology for Quality Education
May 1998	Education - Related Executive and Advisory Bodies

Source: Education Bureau

(Annex 5.1) **The UK—academic / vocational students are treated equally for university admission**
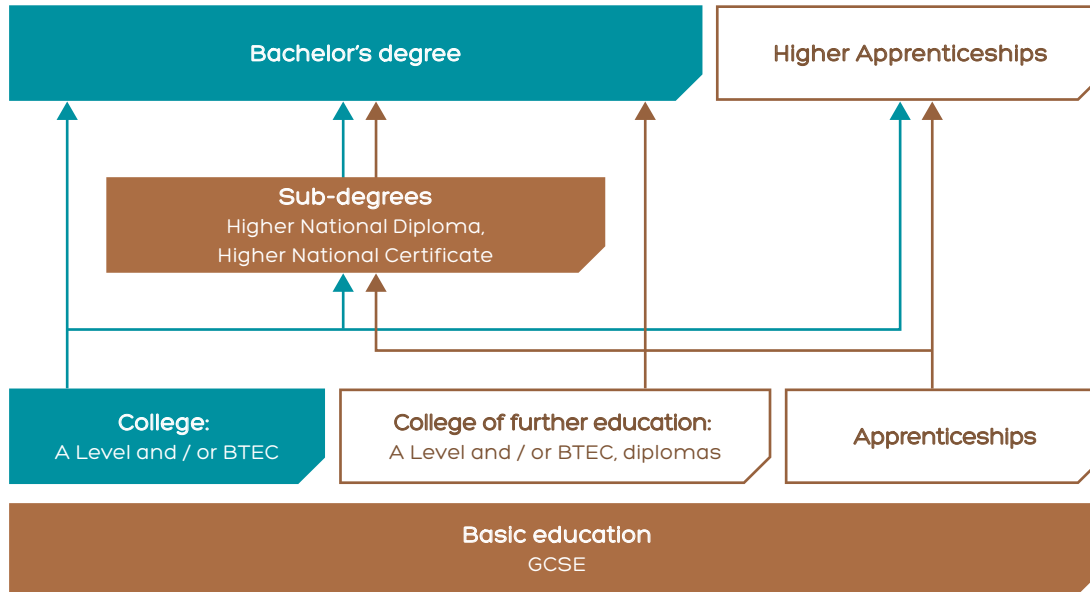
Source: OECD

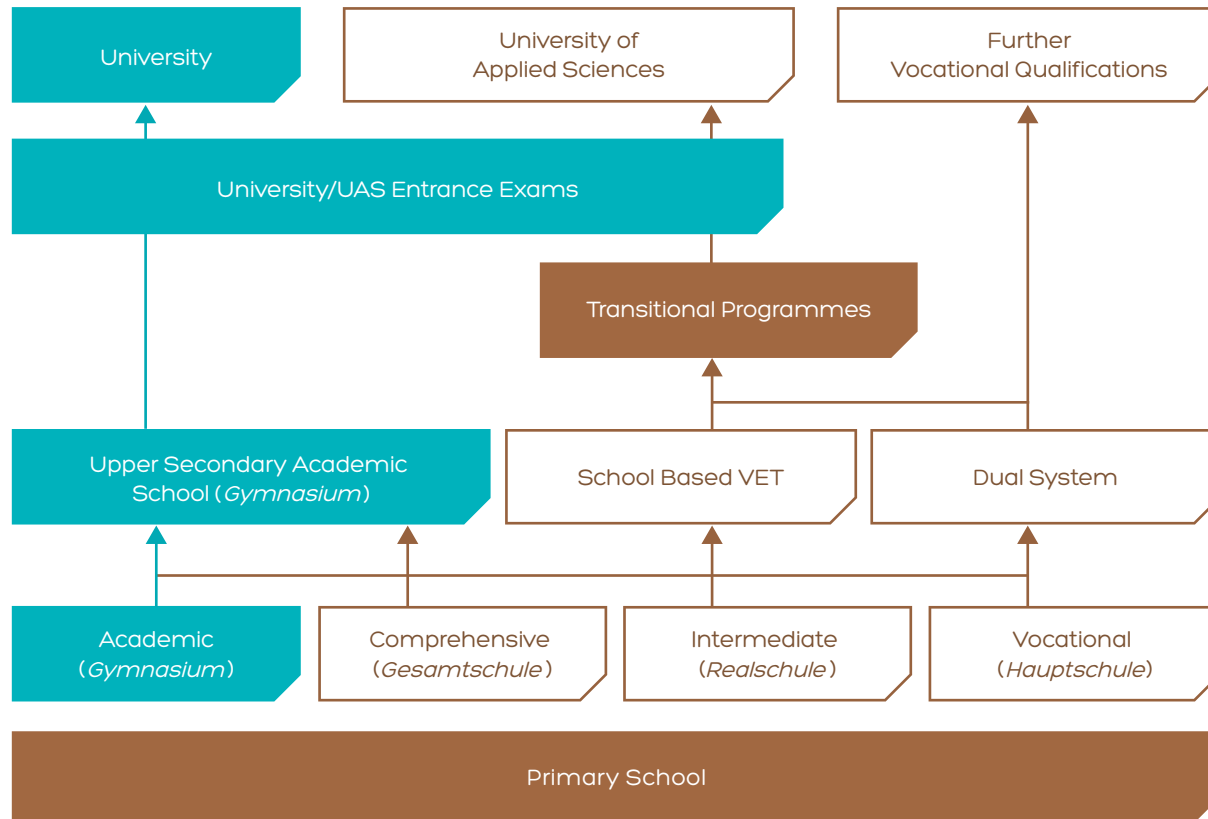## (Annex 5.2) Structure of the UK TVET system
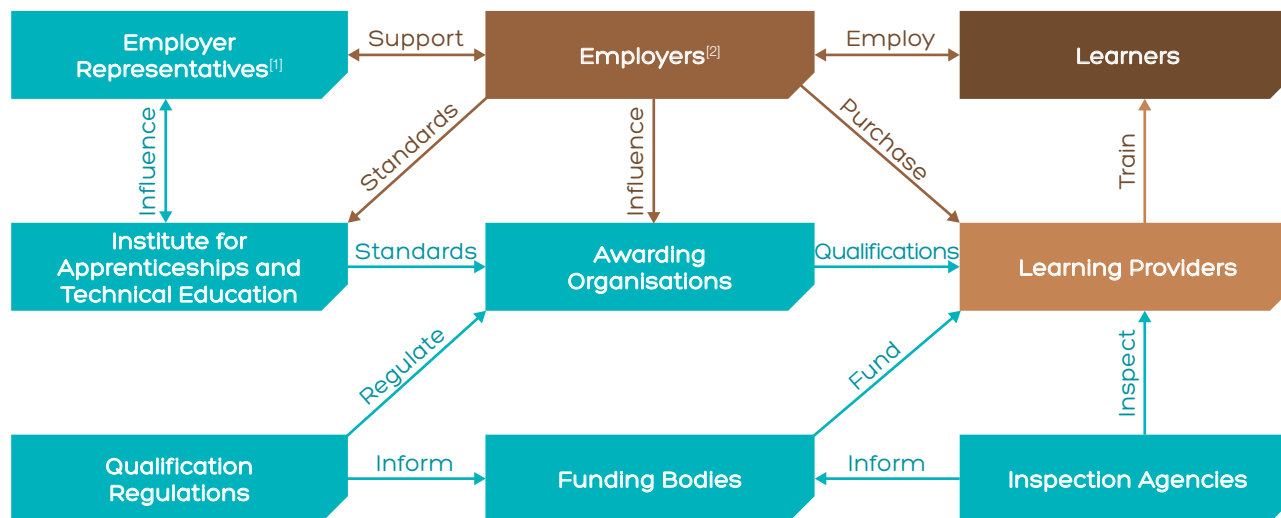
Source: British Council
Note: [1] Employers purchase apprenticeships through the training levy system.
     [2] Employer Representatives include Sector Skills organisations, National Skills Academies and other employer organisations.
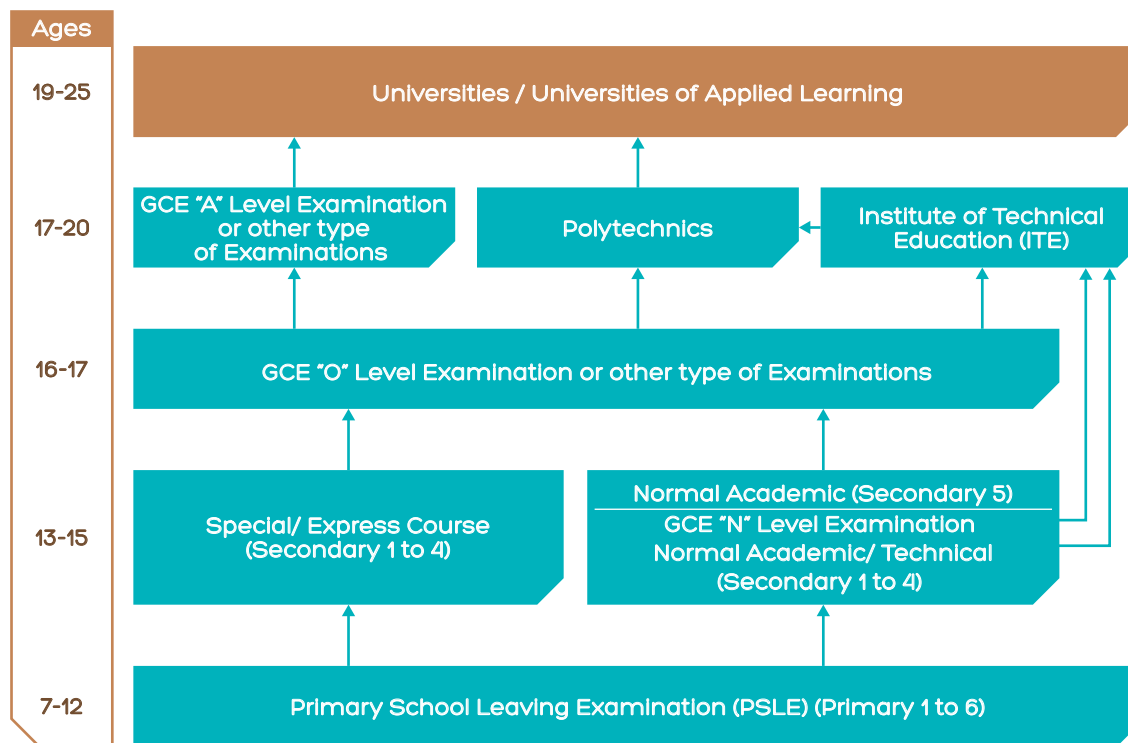
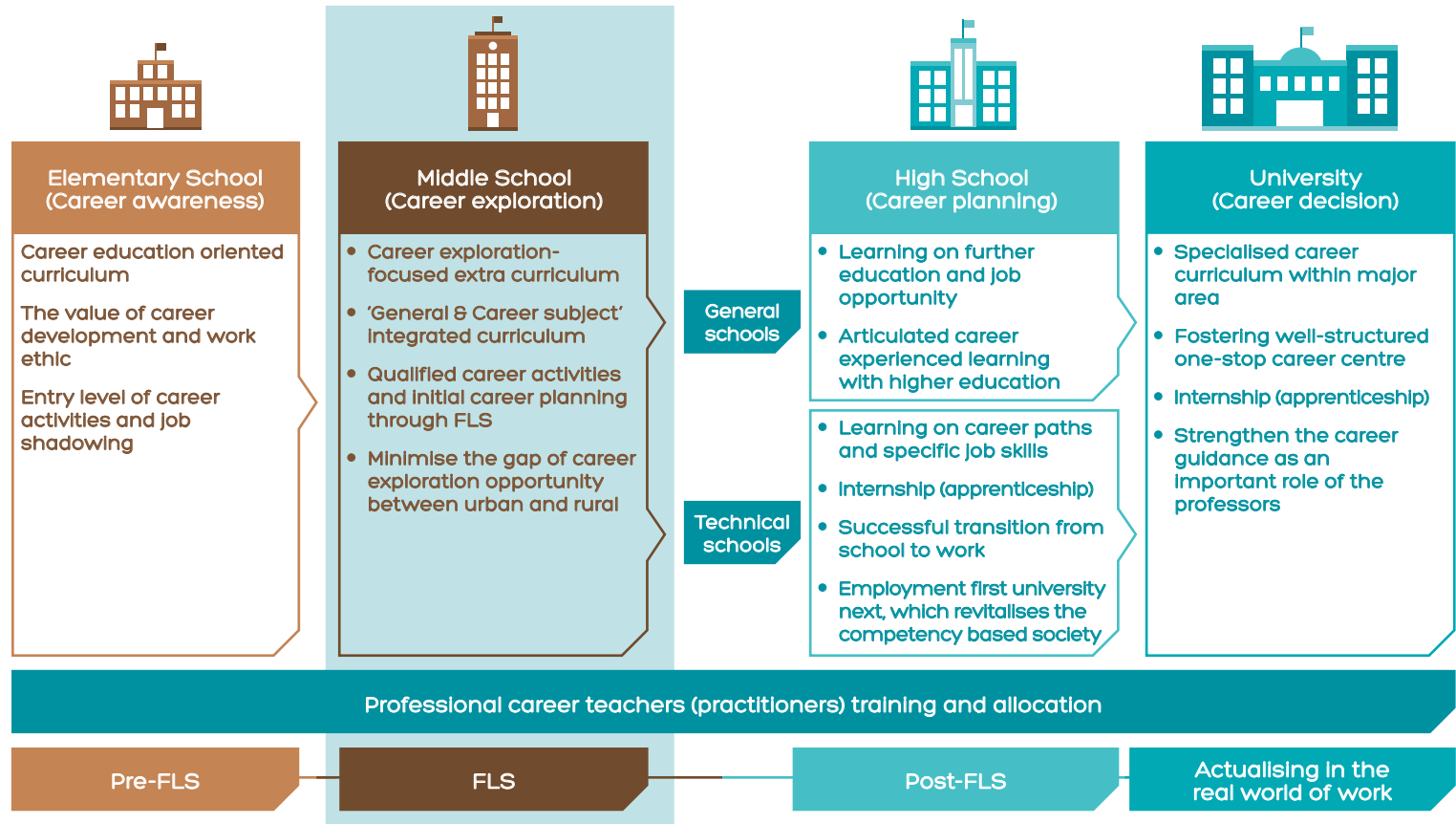## (Annex 5.3) Germany—a system of early streaming and multiple qualifications

Source: Cedefop

(Annex 5.4) **Singapore—the growth of Universities of Applied Learning underpins social needs**

Ages	
19-25	**Universities / Universities of Applied Learning**
17-20	**GCE "A" Level Examination or other type of Examinations** — **Polytechnics** — **Institute of Technical Education (ITE)**
16-17	**GCE "O" Level Examination or other type of Examinations**
13-15	**Special/ Express Course (Secondary 1 to 4)** — **Normal Academic (Secondary 5) GCE "N" Level Examination Normal Academic/ Technical (Secondary 1 to 4)**
7-12	**Primary School Leaving Examination (PSLE) (Primary 1 to 6)**

Source: Ministry of Education, Singapore

(Annex 5.5) **South Korea—Free Learning Semester (FLS) to bring awareness of alternative study paths / careers**

Elementary School (Career awareness)

Career education oriented curriculum

The value of career development and work ethic

Entry level of career activities and job shadowing

Middle School (Career exploration)

- Career exploration-focused extra curriculum
- 'General & Career subject' integrated curriculum
- Qualified career activities and initial career planning through FLS
- Minimise the gap of career exploration opportunity between urban and rural

General schools

Technical schools

High School (Career planning)

- Learning on further education and job opportunity
- Articulated career experienced learning with higher education

- Learning on career paths and specific job skills
- Internship (apprenticeship)
- Successful transition from school to work
- Employment first university next, which revitalises the competency based society

University (Career decision)

- Specialised career curriculum within major area
- Fostering well-structured one-stop career centre
- Internship (apprenticeship)
- Strengthen the career guidance as an important role of the professors

Professional career teachers (practitioners) training and allocation

| Pre-FLS | FLS | Post-FLS | Actualising in the real world of work |

Sources: International Centre for Career Development and Public Policy (ICCDPP) Symposium, International Summit 2017 in South Korea

(Annex 6.1) A graphical illustration of integrated study pathway

Academic degree	**Applied degree** Germany: University of Applied Sciences Singapore: University of Applied Learning Mainland China: by Polytechnic Colleges

Sub-degrees
UK: Higher National Certificate / Diploma, Foundation Degrees
Singapore: Polytechnic Diplomas
Germany: Transitional Programmes[1]
Mainland China: Polytechnic Colleges

University Entrance Exams UK / Singapore: A Level Germany: Abitur Mainland China: "Gaokao" (高考)	**University Entrance Exams** UK: BTEC / T Level Germany: Fachabitur Mainland China: Vocational "Gaokao" / "3+" (高職高考)

Upper Secondary	**Academic studies**	**Applied studies** UK: since age 16 (GCSE) Germany: Dual track programme / School-based VET Singapore: ITE

Singapore Subject-Based Banding (SBB) reform

Lower Secondary		Germany: since age 10 or 12 (grade 4/6) Singapore: since age 12 (before SBB reform) Mainland China: since age 12 (grade 6)

Note: [1] Germany transitional programmes (*Berufsoberschule*) is an upper vocational secondary school which allows vocational students to proceed to university / UAS studies. However, unlike typical associate degrees, *Berufsoberschule* routes students back to one of the university entrance exams.

(Annex 6.2) International comparison table of education pathways

	Hong Kong	UK	Germany	Singapore	Mainland China
Equivalent Qualifications: Direct degree admission from multi-orientation qualifications	X	√	√	X	X → √
Transferability: Transfer from applied to academic route	√	√	√	√	√
Ease of transfer: Transition without extra stages & time	X	√	X	X	X → √
Flexibility at degree level: Universities of Applied Sciences	X	X	√	√	X

Sources: Respective government websites

(Annex 7) Curriculum Development Council structure

Curriculum Development Council

Committees on Key Learning Areas and Liberal Studies

- Committee on Chinese Language Education
- Committee on English Language Education
- Committee on Mathematics Education
- Committee on Arts Education
- Committee on Personal, Social & Humanities Education
- Committee on Physical Education
- Committee on Science Education
- Committee on Technology Education
- Committee on Liberal Studies

Functional Committees

- Committee on Applied Learning
- Committee on Early Childhood Education
- Committee on Gifted Education
- Committee on Learning Resources & Support Services
- Committee on Special Educational Needs

CDC-HKEAA Committees

- 23 CDC-HKEAA Committees

Ad Hoc Committees

- Ad Hoc Committees formed under CDC
- Ad Hoc Committees formed under Functional Committees
- Ad Hoc Committees formed under KLA Committees

Working Groups

Source: Curriculum Development Council

Bibliography

Audit Commission. (2016). Funding of universities by University Grants Committee (Report no. 67. Chapter 2). *Hong Kong: Audit Commission.*

British Council. (2017). The UK Skills System: An Introduction. Retrieved from https://www.britishcouncil.org/sites/default/files/bc_uk_skills_sector-an_introduction-june_2017_0_0.pdf

Cedefop. (2016). Vocational Education and training in Europe: Austria. Retrieved from https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_AT.pdf

Cedefop. (2016). Vocational Education and Training in Europe: Denmark. Retrieved from https://www.refernet.de/dokumente/pdf/2016_CR_DK.pdf

Cedefop. (2016). Vocational Education and Training in Europe: Germany. Retrieved from https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_DE.pdf

Census and Statistics Department. (2017, September 8). *Table E482: Projected Mid-year Population by Age Group and Sex.* Retrieved from https://www.censtatd.gov.hk/hkstat/sub/sp190.jsp?productCode=D5320182

Chai, C. (2018, July 6). THEi 報讀人數「逆市」勁升五成. *Wenweipo.* Retrieved from http://paper.wenweipo.com/2018/07/06/ED1807060001.htm

CLP Group. (2019). CLP Power Academy: The Power to Move Upward. Retrieved from https://www.clp.com.hk/zh/about-clp-site/clp-power-academy-site/Documents/CLPA%20Brochure%20%28Feb%202019%29.pdf?

Concourse for Study Subsidy Scheme for Designated Professions/Sectors. (n.d.). Non-means-tested Subsidy Scheme for Self-financing Undergraduate Studies in Hong Kong. Retrieved from https://www.cspe.edu.hk/en/nmt/index.html

Concourse for Study Subsidy Scheme for Designated Professions/Sectors. (n.d.). Study Subsidy Scheme for Designated Professions/Sectors. Retrieved from https://www.cspe.edu.hk/en/sssdp/sssdp.html

Curriculum Development Council. (n.d.). CDC Structure. Retrieved from https://cd1.edb.hkedcity.net/cd/cdc/en/structure.html

Department of Justice. (n.d.). Hong Kong e-Legislation: Cap. 583 Construction Workers Registration Ordinance. Retrieved from https://www.elegislation.gov.hk/hk/cap583

Development Bureau. (2018, December 27). Adoption of Building Information Modelling for Capital Works Projects in Hong Kong. Retrieved from https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/366/1/C-2018-18-01.pdf

Education Bureau. (n.d.). Business-School Partnership Programme. Retrieved from https://careerguidance.edb.hkedcity.net/edb/opencms/bspp/home/?__locale=en

Education Commission. (2000). Learning for Life Learning through Life: Reform Proposals for the Education System in Hong Kong. Retrieved from https://www.e-c.edu.hk/doc/en/publications_and_related_documents/education_reform/Edu-reform-eng.pdf

EP-Nuffic. (2016). Key figures 2015: Internationalization in higher education. Retrieved from https://www.studyinholland.nl/documentation/key-figures-2015-internationalisation-in-higher-education.pdf

Federation for Self-financing Tertiary Education. (2014). Guidelines for Recruitment and Admission Practices. Retrieved from https://www.fste.edu.hk/files/Guidelines%20on%20Recruitment%20and%20Admission%20Practices%20(English%20version)%20rev_20141117.pdf

Finnish National Agency for Education. (2018). Finnish VET in a nutshell. Retrieved from https://www.oph.fi/download/165770_finnish_vet_in_a_nutshell.pdf

Foster, D. (2019, April 23). T Levels: Reforms to Technical Education. Retrieved from https://researchbriefings.files.parliament.uk/documents/CBP-7951/CBP-7951.pdf

GovHK. (2018, November 23). Human Resources Planning Commission convenes fourth meeting. Retrieved from https://www.info.gov.hk/gia/general/201811/23/P2018112300855.htm

GOV.UK. (2019, March 13). Apprenticeship funding: how it works. Retrieved from https://www.gov.uk/government/publications/apprenticeship-levy-how-it-will-work/apprenticeship-levy-how-it-will-work#pay-apprenticeship-levy

Grijs, R. (2017, October 27). Changes in Chinese higher education to benefit the country's workforce. *China.org.cn.* Retrieved from http://www.china.org.cn/opinion/2017-10/27/content_41802500.htm

Hong Kong Examinations Assessment Authority. (2018). *Table 3: 2018 HKDSE Results statistics.* Retrieved from http://www.hkeaa.edu.hk/DocLibrary/HKDSE/Exam_Report/Examination_Statistics/dseexamstat18_3.pdf

Hong Kong Institute of Construction. (n.d.). Career Progression & Advancement. Retrieved from https://www.hkic.edu.hk/eng/career_path

Hong Kong Science and Technology Parks Corporation. (2017, April 6). HKSTP partner company, RV Automation pioneers the first smart warehouse solution in Greater China. Retrieved from https://www.hkstp.org/en/about-us/press-room/hkstp-partner-company-rv-automation-pioneers-the-first-smart-warehouse-solution-in-greater-china

Manpower Group. (2018). 2018 Talent Shortage Survey. Retrieved from https://www.manpowergroup.co.uk/wp-content/uploads/2018/07/MG_TalentShortage2018.pdf

Ministry of Education Singapore. (2018). Education Statistics Digest 2018. Retrieved from https://www.moe.gov.sg/docs/default-source/document/publications/education-statistics-digest/esd_2018.pdf

Ministry of Education Singapore. (2019). Subject Based Banding. Retrieved from https://www.moe.gov.sg/microsites/cos2019/subject-based-banding.html

MTR Academy. (2019, May 21). MTR Academy co-founded Corporate Tech Academy Network (CTAN). Retrieved from https://www.mtracademy.com/en/newsandevents/news_details_128.html

National University of Singapore Student Service Centre. (n.d.). Aptitude-based admissions. Retrieved from https://www.askstudentservice.nus.edu.sg/app/answers/detail/a_id/176/~/aptitude-based-admissions

New Century Forum. (2018, December 17). 香港各世代大學生收入比較研究報告 (1987年至2017年). Retrieved from http://www.ncforum.org.hk/news/109

Legislative Council. (2019, May 21). Legislative Council Panel on Manpower: Key Findings of Manpower Projection to 2027. Retrieved from https://www.legco.gov.hk/yr18-19/english/panels/mp/papers/mp20190521cb2-1444-8-e.pdf

Legislative Council. (2019, January 5). FCR (2017-18) 49: Injection into Qualifications Framework Fund. Retrieved from https://www.legco.gov.hk/yr17-18/english/fc/fc/papers/f17-49e.pdf

OECD. (2010). PISA 2009 Results: Executive Summary. Retrieved from https://www.oecd.org/pisa/pisaproducts/46619703.pdf

OECD. (2012). PISA 2012 Results in Focus: What 15-year-olds know and what they can do with what they know. Retrieved from https://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf

OECD. (2015). PISA 2015 Results in Focus. Retrieved from https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf

OECD. (2015). PISA 2015 Results (Volume I). Retrieved from https://www.oecd-ilibrary.org/education/pisa-2015-results-volume-i/students-career-expectations_9789264266490-graph32-en

OECD. (2018). Education at a Glance 2018. Retrieved from https://www.oecd.org/education/education-at-a-glance/

OECD. (n.d.). Education GPS. Retrieved from http://gpseducation.oecd.org/CountryProfile

Qualifications Framework. (n.d.). Recognition of Professional Qualifications. Retrieved from https://www.hkqf.gov.hk/en/rpq/index.html

Qcloud. (2019, May 20). 深圳技术大学与腾讯达成战略合作打造"国内一流信息化校园". Retrieved from https://cloud.tencent.com/developer/article/1429483

SERI. (n.d.). State Secretariat for Education, Research and Innovation. Retrieved from https://www.sbfi.admin.ch/sbfi/en/home/seri/seri.html

Singapore Institute of Technology. (2019). Who we are. Retrieved from https://www.singaporetech.edu.sg/about/who-we-are

Statistics Denmark. (2019). *All types of Education.* Retrieved from https://www.dst.dk/en/Statistik/emner/uddannelse-og-viden/fuldtidsuddannelser/alle-uddannelser#

Statistics Finland. (2019). *Total number of students in universities of applied sciences National classification of education 2016), 2002-2018.* Retrieved from http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__kou__akop/statfin_akop_pxt_11ww.px/

Statistics Finland. (2019). Students and qualifications *(National classification of education 2016), 2001-2018.* Retrieved from http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__kou__yop/statfin_yop_pxt_11z2.px/

Statistisches Bundesamt (Destatis). (2018). *Bildung und Kultur: Studierende an Hochschulen.* Retrieved from https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Publikationen/Downloads-Hochschulen/studierende-hochschulen-endg-2110410187004.pdf?__blob=publicationFile&v=4

Statistisches Bundesamt (Destatis). (2019). *Bildung und Kultur: Studierende an Hochschulen.* Retrieved from https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Publikationen/Downloads-Hochschulen/studierende-hochschulen-vorb-2110410198004.pdf?__blob=publicationFile&v=2

STEM Learning. (n.d.). Project ENTHUSE. Retrieved from https://www.stem.org.uk/project-enthuse

Swiss Federal Statistical Office. (2019). *University of applied sciences and teacher education students by year, ISCED field, gender and level of study.* Retrieved from https://www.bfs.admin.ch/bfs/en/home/statistics/education-science/pupils-students/tertiary-higher-institutions.assetdetail.7746233.html

Swiss Federal Statistical Office. (2019). *University students by year, ISCED field, gender and level of study.* Retrieved from https://www.bfs.admin.ch/bfs/en/home/statistics/education-science/pupils-students/tertiary-higher-institutions.assetdetail.7746228.html

Swiss Federal Statistical Office. (2018). *STAT-TAB interactive tables: University of applied sciences and teacher education students by year, ISCED field, gender and level of study.* Retrieved from https://www.pxweb.bfs.admin.ch/pxweb/en/px-x-1502040400_161/px-x-1502040400_161/px-x-1502040400_161.px/?rxid=ee5893c7-b3f5-4648-b120-66c97bc27962

Task Force on Promotion of Vocational and Professional Education and Training. (2019, June 28). Consultation Document. Retrieved from https://www.edb.gov.hk/attachment/en/about-edb/press/consultation/VPET%20TF%20Consultation_e.pdf

Task Force on Review of School Curriculum. (2019, June 28). Consultation Document. Retrieved from https://www.edb.gov.hk/attachment/en/about-edb/press/consultation/TF_CurriculumReview_Consultation_e.pdf

Task Force on Review of Self-financing Post-secondary Education. (2018, December 27). Review report: "Parallel development, Promoting Diversity". Retrieved from https://www.cspe.edu.hk/resources/pdf/en/TF%20review%20report_EN.pdf

The Hong Kong Institute of Engineers. (2019). The Hong Kong Polytechnic University: List of Engineering Degree Programmes Accredited by the HKIE as at 16 April 2019 (Washington Accord). Retrieved from https://hkie.org.hk/en/quali/program_detail/91/

The International Centre for Career Development and Public Policy. (n.d.). About Career Education in Korea. Retrieved from http://iccdpp2017.org/is-2017-in-korea/about-career-education-in-korea/?ckattempt=1

Volkswagen. (n.d.). Dual-study programme. Retrieved from https://www.volkswagen-karriere.de/en/ihr-einstieg/schueler/duales-studium.html

World Economic Forum. (2018). The Future of Jobs Report 2018. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

World Economic Forum. (2016). Chapter 1: The Future of Jobs and Skills. Retrieved from http://reports.weforum.org/future-of-jobs-2016/chapter-1-the-future-of-jobs-and-skills/#view/fn-1

Xinhuanet. (2017, October 27). 广东2018年起拟将一、二本合并设本、专科两批次. Retrieved from http://www.xinhuanet.com/2017-10/27/c_1121868420.htm

YouUAV. (2018, January 19). AEE一电航空与深圳职业技术学院签署战略合作协议. *YouUAV.* Retrieved from http://www.youuav.com/news/detail/201801/19812.html

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Ms Ada Wong Ying-kay, JP
Director, Hong Kong Institute of Contemporary Culture

Mrs Vivian Cheung
President, Hong Kong International Aviation Academy

Ms Sabrina Loi
Deputy Chief Executive Officer, Institute of Technical Education of Singapore

Mr Peter Hefele
Director, Konrad-Adenauer-Stiftung

Mr David Leung
Dean, MTR Academy

Mr Antony Leung Kam-chung, GBS, JP
Group Chairman, Nan Fung Group

Dr Moses Cheng Mo-chi, GBM, GBS, OBE, JP
Consultant, P. C. Woo & Co.

Mr Tan Wee-beng
Deputy Chief Executive, SkillsFuture Singapore

Dr Anissa Chan, BBS, MH, JP
Chairman, Task Force of Review of School Curriculum

Ir Dr Lawrence Chan Wan-ching
Executive Vice President, Technological and Higher Education Institute of Hong Kong

Mr Tai Hay-lap, BBS, JP
Vice Chairman, Board of Directors, Tin Ka Ping Foundation

Mr Yeung Wai-sing, BBS, MH
President, The Association for Hong Kong Catering Services Management Ltd

Prof Stephen Cheung Yan-leung, BBS, JP
President, The Education University of Hong Kong

Prof Anthony Cheung Bing-leung, GBS, JP
Research Chair Professor of Public Administration, The Education University of Hong Kong

Prof Stephen Chiu Wing-kai
Chair Professor of Sociology, The Education University of Hong Kong

Dr Margarita Pavlova
Associate Professor, The Education University of Hong Kong

Prof Simon Ho Shun-man
President, The Hang Seng University of Hong Kong

Prof Wong Yuk Shan, SBS, BBS, JP
President, The Open University of Hong Kong

Dr Roy Chung Chi-ping, GBS, BBS, JP
Chairman, Vocational Training Council

Ir Conrad Wong Tin-cheung, BBS, JP
Deputy Chairman, Vocational Training Council

Mrs Carrie Yau, GBS, JP
Executive Director, Vocational Training Council

Mr Ben Mau Kim-fai
Principal, Youth College

Authors

Mr Stephen Wong
Deputy Executive Director and Head of Public Policy Institute, Our Hong Kong Foundation

Mr Victor Kwok
Head of Education and Youth Research, Our Hong Kong Foundation

Ms Renee Ho
Researcher, Our Hong Kong Foundation

Ms Serena Chow
Assistant Researcher, Our Hong Kong Foundation

Mr Richard Lau
Assistant Researcher, Our Hong Kong Foundation

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OUR HONG KONG FOUNDATION

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