Generic skills in the 14-19 curriculum: an international review

Singapore

International case study

Generic skills description	Framework for 21st Century Competencies; Critical Core Skills in post-secondary vocational education
Generic skills in the academic and vocational curriculum	Common in secondary education, diverge in post-secondary education. Fully integrated and embedded into academic and vocational subjects in the Common Core Curriculum. Discrete qualification available on postsecondary vocational routes.
Skills teaching and learning approaches	Project work, cross-curricula activities. Specialist Critical Core Skills teachers.
Generic skills assessment	No assessment of skills at transition to post-secondary education. Assessment of Common Core Skills in the vocational post-secondary pathway.
Teacher autonomy	Autonomy in implementation but within the context of a centralised education system.

This is a case study of generic skills in 14-19 education in **Singapore** developed through a desk review of selected, mostly official documents. It is intended to be read alongside another 9 international case studies and an overarching summary report of the research *Sheffield Institute of Education* undertook in collaboration with *Centre for Education Systems* with funding from *The Charitable Foundation for Educational Development*. The project investigated how 'generic skills' are characterised, understood, and implemented across 10 jurisdictions, with particular reference to the relevance for England.

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Summary

Singapore has a clear commitment to offering generic skills within the secondary curriculum, alongside both academic and vocational qualifications. Generic skills are explicitly taught, but they are not formally assessed for progression to the next stage of education at 16 years. They are formally assessed within a Works Skills Qualification in post-secondary education (vocational learners at Institutes of Technical Education and Polytechnics).

Generic skills in Singapore are defined in a Framework for 21st Century Competencies. The framework has core values at its centre, feeding into capacities such as self-awareness, social awareness and relationship management. These underpin explicit skills to support the development of confident and concerned citizens who actively contribute and are self-directed learners. The three skills domains are:

• Communication, Collaboration and Information Skills

• Critical and Inventive Thinking

• Civic Literacy, Global Awareness and Cross-culture Skills

Generic skills are important at all levels from primary to further and higher education. For example, the Common Core Curriculum offered by Singapore Polytechnic is designed to equip students with critical human skills and emerging digital skills necessary to thrive in an ever-changing world.[1] The development of provision for crucial generic skills has taken place alongside significant investment in vocational education in Singapore. The growth in the use of project work and work experience as learning approaches has helped to create a common approach, whether learners opt for academic or vocational courses.

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1 Singapore Polytechnic, 2023 https://www.sp.edu.sg/sp/education/common-core-curriculum/what-you'll-learn

1.   Contextual factors

This section provides an overview of the country of Singapore, beginning with its social and economic context and its educational context in section 1.1. Section 1.2 explores the key systems and structures of the education system. Section 1.3 covers the education workforce and professional status. Finally, section 1.4 describes how policy relating to skills is formed and enacted in Singapore. These are all discussed particularly in relation to generic skills.

1.1   Economic, social, and educational context

Singapore is a relatively stable country, having been ruled by the same political party since 1959. It has a well-developed economy and has been transitioning into a knowledge-based economy, with a focus on high-tech industries such as biotechnology, electronics, and information technology. Singapore has been actively promoting its development as a "smart nation" and investing heavily in areas such as artificial intelligence, cybersecurity, and e-commerce.

Singapore is dealing with some challenging demographic shifts. The population is ageing: the proportion of citizens aged 65-plus rose from 11.1% to 18.4% between 2012 and 2022 and is projected to be almost 25% by 2030.[2] There is also increasing ethnic and cultural diversity in the population. Singapore also faces ongoing issues related to income inequality and social cohesion. Although it has a strong welfare system and relatively low levels of poverty, there are significant wealth disparities between different segments of the population.

Singapore's multicultural society is reflected in its four official languages – Mandarin, Malay, Tamil and English. Bilingual education has long been established in policy.[3] Generally, students study a 'mother tongue' and English.

As in England, vocational education tends to be seen as less prestigious than conventional academic education. Traditionally, academic routes have been preferred[4] reflecting views on socially desirable occupations[5]. Over recent decades, Singapore's vocational education has become more widely accepted in society, thanks to system reforms which have successfully changed how vocational education is perceived. Now, these graduates are well regarded for their knowledge, skills, and high earning potential, and recognised as important for national development. As a result, parents and wider society now view vocational education as a viable option.[6]

While Singapore scores highly in the OECD's Programme for International Student Assessment (PISA) in academic factors and global competence, they also have unfavourably high scores on measures of students' fear of failure.[7]

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2   National Population and Talent Division, 2023 https://www.population.gov.sg/media-centre/publications/population-in-brief/

3   Lee, & Phua, 2020

4   Law in Fredriksen, B. J., Goh, C. B., Lee, S-K., Tan,J-P. (Eds) for The World Bank, 2008 https://documents.worldbank.org/en/publication/documents-reports/documentdetail/121951468302724234/toward-a-better-future-education-and-training-for-economic-development-in-singapore-since-1965

5   Chong, 2014

6   Tarat & Sindecharak, 2020

7   OECD, 2024 https://gpseducation.oecd.org/CountryProfile?primaryCountry=SGP&treshold=10&topic=PI

1.2 Key educational systems and structures

Singapore's curriculum, assessment and qualifications is organised into a secondary phase (12-16 years) and a post-secondary phase (see **Figure 1**). At secondary schools students attend either academic or vocational schools. There are three main streams in secondary education: Express, Normal (Academic) and Normal (Technical). A student's eligibility for these is determined by their Primary School Leaving Examination (PSLE) results, as well as their strengths and interests.[8] However, there has been a notable shift away from wholesale streaming towards subject-level banding in secondary education in recent years. While students primarily attend classes within their assigned bands, they have the option to enrol in courses from other bands based on their proficiency and interest in specific subjects. The objective is to fully implement subject-based banding, allowing students to seamlessly combine classes from various bands, by 2024.[9]

At post-secondary level (from age 16), there are three types of education provider in Singapore: the Institute of Technical Education (ITE), specialising in vocational learning; polytechnics which offer three-year diplomas mostly for academic learners; and junior colleges or the Millennia Institute, for academic A Level learning. Some vocational learners will study for a Nitec (two years) or Higher Nitec (three years) at the Institute, and then progress to a polytechnic.[10] Figure 1 below shows all route options from secondary, as well as course durations and types of qualifications. Polytechnics offer higher-level VET (diploma level) than Institute of Technical Education (certificate/higher certificate). There are preparatory courses available to students from the normal academic secondary route in order to go to the Institute of Technical Education or polytechnics.

Figure 1. Singapore Education System

(author created figure)
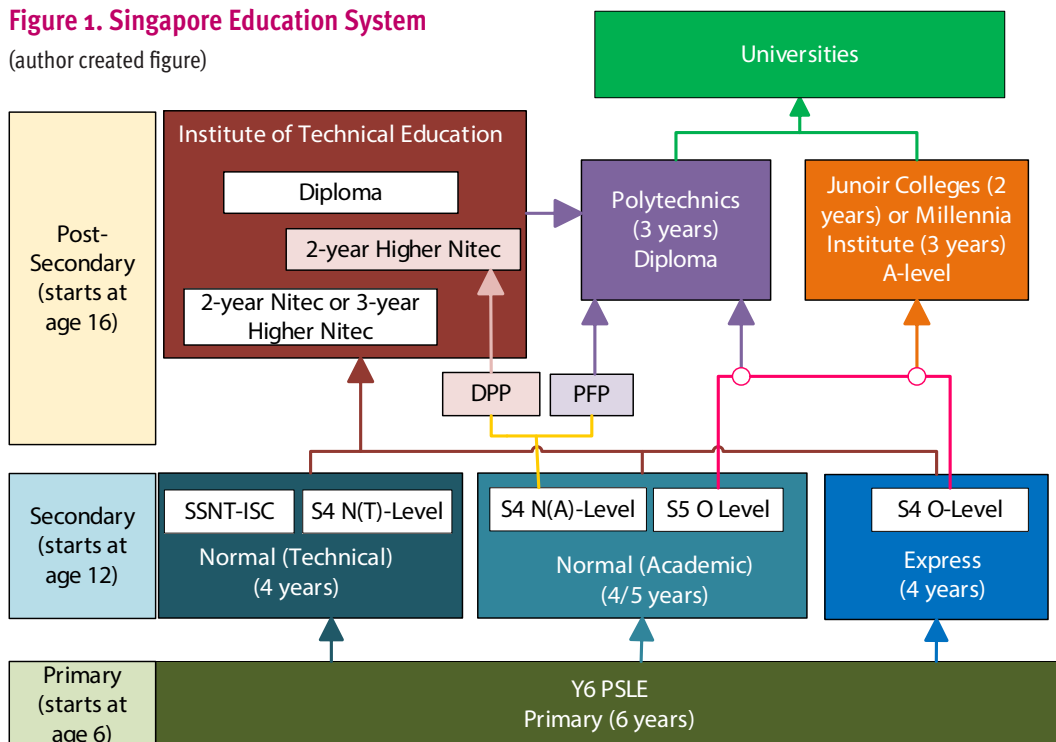
8 Ministry of Education Singapore, 2023a https://www.moe.gov.sg/secondary/courses
9 National Centre on Education and the Economy, 2024 https://ncee.org/country/singapore/
10 Varaprasad, 2022

Education workforce and professional status

In Singapore, individuals who wish to become teachers are required to have completed at least a bachelor's degree or higher in a relevant subject area plus a teaching qualification such as a Postgraduate Diploma in Education. There are some differences between vocational and academic teacher qualifications. Vocational teachers typically have industry experience and hold relevant industry certifications or diplomas in addition to a teaching qualification.

There are teachers in Singapore who specialise in delivering generic skills such as communication, leadership and problem-solving. These teachers are typically referred to as SkillsFuture Advisors and are part of the SkillsFuture Singapore, an agency which:

> *"drives and coordinates the implementation of the national SkillsFuture movement, promotes a culture and holistic system of lifelong learning through the pursuit of skills mastery, and strengthens the ecosystem of quality education and training in Singapore"*[11]

While these advisors may not have the same status as academic or vocational teachers in terms of traditional academic qualifications, they are considered experts in their field and play an important role in helping Singaporeans develop relevant skills for the workforce at all stages of their education and careers.

Professional status and autonomy

In Singapore, there is some level of education standardisation in that teachers are required to adhere to the national curriculum and framework set by the MoE. There is a prescribed syllabus and textbook for each subject and level, and teachers are expected to design and deliver lessons that cover the required content and skills and align with the learning outcomes in the syllabus.

However, within this framework, teachers do have some autonomy and flexibility in aspects of teaching and learning. For example, teachers may have some discretion in deciding on instructional materials, particulars of lesson plans, and ways to formatively assess student learning. They may also be able to adapt the curriculum to meet the needs of their students or to incorporate their own expertise or interests into their teaching.

In recent years, the MoE has been placing greater emphasis on developing 21st century competencies and skills, such as critical thinking, communication, and collaboration. Teachers are given more flexibility in designing and implementing activities that promote these competencies, as long as they align with the broader goals of the curriculum.

1.3   Policy formation and implementation

Singapore's education policy processes are strongly top-down, with the government playing the leading role. The MoE is the government department responsible for making, implementing, and regulating education policies. It sets out the policies and national curriculum for all phases from preschool to higher education and oversees the operations of schools in the country. This includes determining the content, scope, and sequence of subjects, as well as the pedagogical

11 SkillsFuture SG, 2023a https://www.skillsfuture.gov.sg/aboutssg

approaches to be used in the classroom. The MoE also oversees various education programmes and initiatives, such as the Gifted Education Programme, the Integrated Programme, and the Applied Learning Programme.

Within this top-down framework, there are mechanisms for the MoE to take account of the views and concerns of different stakeholders (e.g. advocacy coalitions, pressure groups, unions, and other membership bodies) in policy matters. The government has established platforms for this purpose, including the Feedback Unit and REACH (Reaching Everyone for Active Citizenry @ Home).[12] There is also flexibility for schools and institutions to adapt and tailor policies to meet their specific needs.

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12   REACH Government Feedback Unit, 2024 https://www.reach.gov.sg/

2. Generic skills

21st Century Competencies

The MoE strongly emphasises 21st Century Competencies in education from primary to post-secondary level on both academic and vocational routes, to help students prepare for the challenges of the future. The shift towards prioritising 21st Century Competencies represents a notable departure from Singapore's traditional educational approach, as highlighted in Section 4. Notably, Singapore has transitioned from conventional, rote-learning routines[13] towards student-centred learning[14], such as project-based learning. Despite initial challenges stemming from entrenched learning cultures, efforts have been refocused on developing generic skills closely aligned with project-based learning.

The Framework for 21st Century Competencies and Student Outcomes (figure 4 below) has three tiers: Core Values, Social-Emotional Competencies, and 21st Century Competencies for a globalised world.[15] The different categories are embedded in different curricula. For example, Social-Emotional Competencies are taught within the Character and Citizenship Education curriculum.[16]

Generic skills are a key part of the secondary curriculum in Singapore. There are three types of provision to support development of generic skills: Co-Curricular Activities, Critical Core Skills, and the Common Core Curriculum.

- Co-Curricular Activities (CCAs) include clubs and societies, sports, visual and performing arts, and other activity groups. They are mandatory for all secondary school students, irrespective of route, and strongly recommended at primary and post-secondary education levels. By engaging in CCAs, the stated intention is that students can explore their unique interests and abilities. Students are also supported to develop social skills and social-emotional competencies, teamwork and communication skills, and to build their character and values including a sense of responsibility and commitment.

- Critical Core Skills (CCS) are offered by SkillsFuture Singapore. They are transferable soft skills that can enhance employability and career mobility. CCS provision is specific to vocational routes and strongly encouraged in technical education (from age 16) and Polytechnics (from age 17). Billed as 'skills to build skills', CCS help learners not just to acquire the technical skills and competencies needed for particular jobs, but also enable them to adjust to new job requirements and apply relevant skills across roles.[17] They consist of 16 competencies grouped into three skill clusters that employers consider crucial: Thinking Critically, Interacting with Others, and Staying Relevant.[18] See **Figure 2** on the next page.

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13 Saravanan, 2005

14 Wong et al., 2006

15 Ministry of Education, 2023b https://www.moe.gov.sg/secondary/courses/normal-academic

16   Ministry of Education, 2023c https://www.moe.gov.sg/secondary/courses/normal-technical

17 SkillsFuture SG, 2023b https://www.ssg.gov.sg/wsq.html

18 SkillsFuture SG, 2023c https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills

- The Common Core Curriculum (CCC) is offered by Singapore Polytechnic. It is designed to equip students with the critical human skills and emerging digital skills they need to thrive in an ever-changing world. Students are supported to develop critical thinking skills, empathy towards local and global communities, and to use their skills to create positive change. The CCC's ultimate goal is to help build a sustainable Singapore and a sustainable world by empowering students with the tools to tackle real-world problems. To this end, the CCC consists of 10 modules (shown in **Figure 3** below) that encompass interdisciplinary learning and a focus on the United Nations' Sustainable Development Goals.[19]
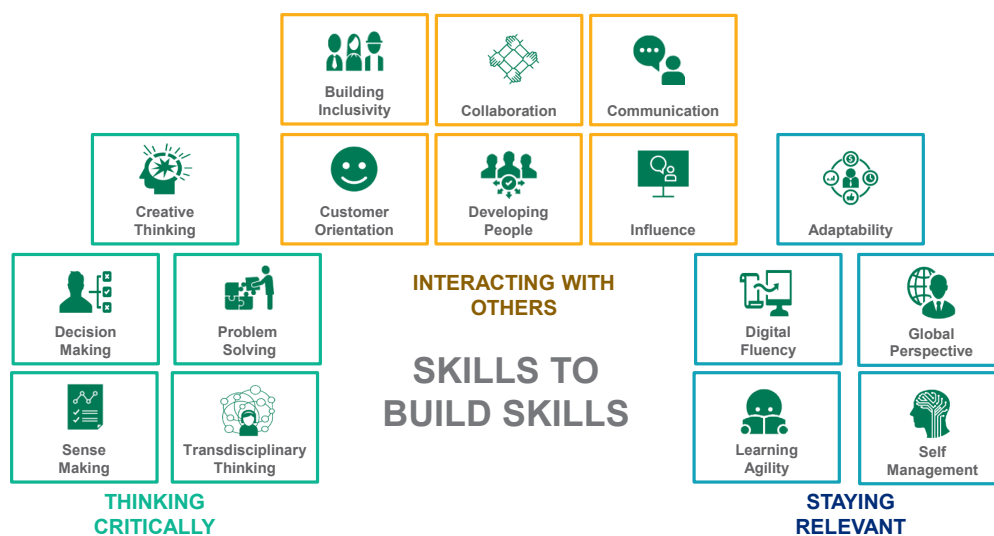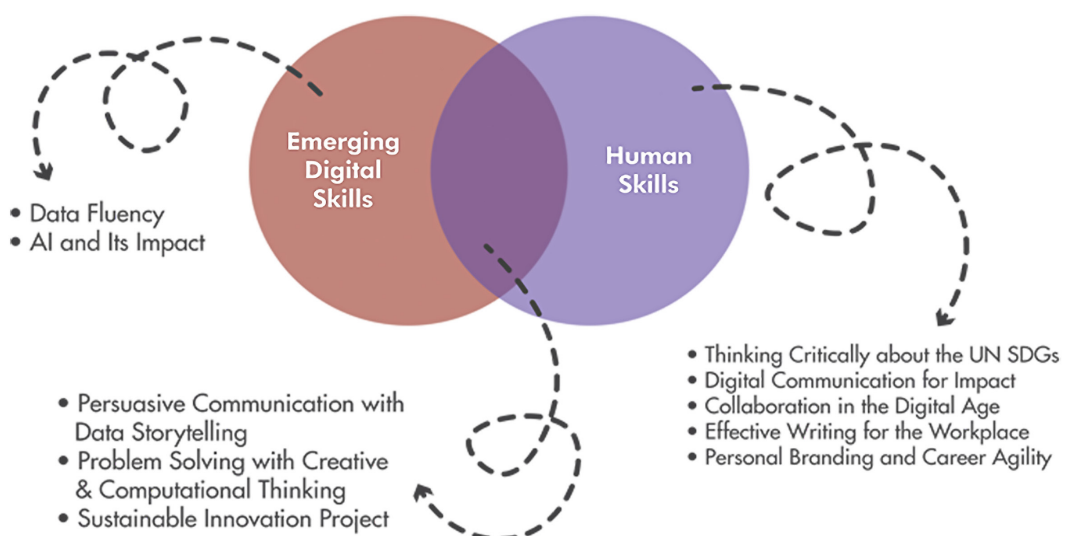
Figure 2. Critical Core Skills competencies.[20]

Figure 3. Common Core Curriculum.[21]

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19 Singapore Polytechnic, 2023
20 Ibid.
21 Ibid - https://www.sp.edu.sg/sp/education/common-core-curriculum/aims

Assessment of generic skills

For most students, generic skills are taught within and alongside prescribed curricula (as outlined above) but they are not assessed separately for a qualification. However, there is a qualification in generic skills available on vocational routes: the Work Skills Qualification (WSQ) outlined in section 1 above. Students on technical education and polytechnic courses are strongly encouraged to take this qualification.

Figure 4. Framework for 21st Century Competencies and Student Outcomes.[22]

22   Ministry of Education, 2023d https://www.moe.gov.sg/education-in-sg/21st-century-competencies
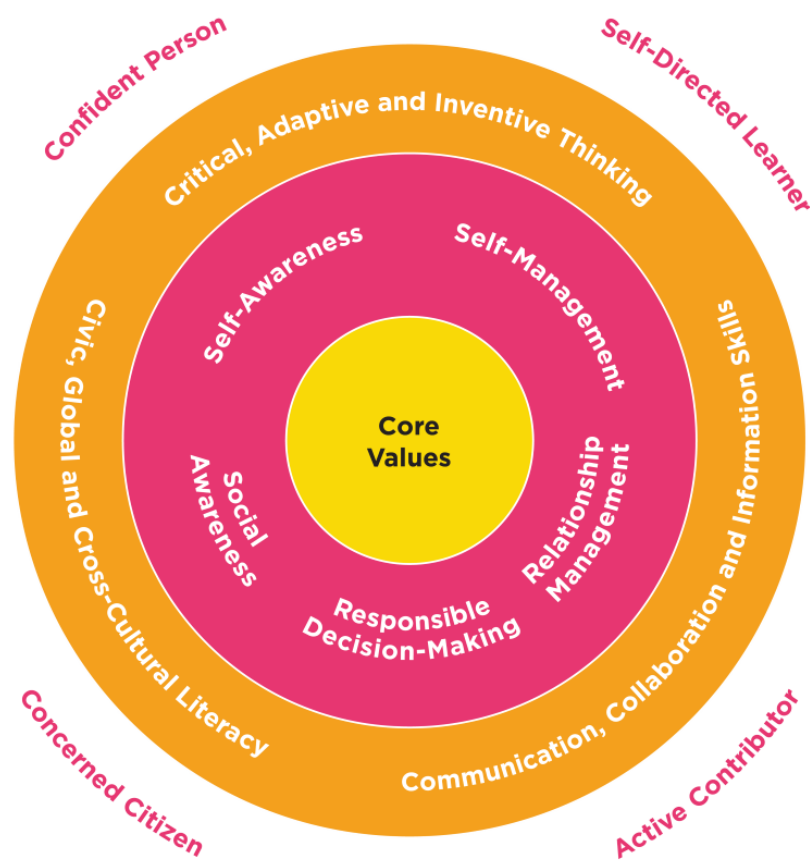
3. Subject and vocational skills

As described above, there are three main education routes in Singapore for young people from age 12 to 16: Normal (Technical), Normal (Academic), and Express. Students in Normal schools are offered the following:

- English Language
- Mother Tongue Languages
- Mathematics
- Science
- Character and Citizenship Education

- Design and Technology
- Food and Consumer Education
- Physical Education
- Art
- Music

Young people on academic routes also study humanities subjects such as Geography and History, while those on technical routes study social science and computer applications instead.

At the Normal (Technical) course level, Specialised Schools for Normal (Technical) (SSNT) are an option for students. In addition to their compulsory core subjects of English Language, Mother Tongue Language and Mathematics, SSNT students pursue an Institute of Technical Education Skills Subject Certificate which allows them to choose two of the following five subjects:[23]

- Mechanical Design and Automation
- Culinary and Restaurant Operations
- Retail and e-Commerce
- Internet of Things Applications
- Mobile Web Applications.

Post-secondary Nitec and Higher Nitec courses cover subject areas such as Applied & Health Sciences, Applied Sciences, Business & Services, Design & Media, Electronics & Info-comm Technology, Engineering, and Hospitality.[24] These options are similar to those in Singapore's five polytechnics. A range of work experience and traineeship (similar to apprenticeship) programmes are offered at the Institute of Technical Education.

Generic skills are integrated into both subject and vocational curricula. In addition, there is a specific Work Skills Qualification (WSQ) available on vocational education routes. This is a national certification awarded by SkillsFuture Singapore[25] that focuses on training, developing, evaluating, and certifying the skills and competencies required for the workforce. The WSQ includes the Critical Core Skills.[26]

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23 Ibid
24 Institute of Technical Education, 2024 https://www.ite.edu.sg/courses/full-time-courses
25 SkillsFuture SG, 2023b
26 Korea-World Bank Partnership Facility, 2015 https://documents1.worldbank.org/curated/en/380681508754067096/pdf/120593-WP-P150980-PUBLIC-Singapore-NQF-summary.pdf

4.   Teaching and learning approaches

Project-based learning is a particular strength of Singapore's education system. All students from age 12 to 16 must participate in project work as part of their qualifications. As a teaching and learning approach, project work allows young people to learn through experience and work in teams, often tackling and solving real-world problems. It has been a feature of the Singapore education system since 2000 when the country made a deliberate shift from more passive, rote-learning routines[27] to student-centred learning.[28] The new approach initially suffered from being at odds with the previous ingrained learning culture in Singapore[29] – this may help to explain the subsequent refocused efforts around generic skills, which align closely with project work. There is evidence that students in Singapore enjoy participating in project work although some do struggle, affecting their general motivation.[30]

The use of technology and simulated activities in lessons is also common, reflecting Singapore's commitment to digital teaching and learning.[31]

In vocational education, practical skills and real-world learning are key to the learning approaches. However, most of the Institute of Technical Education programmes involve full-time training on an Initial Technical Education campus, unlike the European-style sandwich or dual programmes which combine on-the-job training with school-based teaching. Instead, technical education ensures practical experience by incorporating elements of the "factory model" used in Singapore's Economic Development Board institutes. The "factory model" could be characterised by structured training programs, hands-on learning experiences, and a focus on specific technical skills relevant to industry needs. It has also developed its own "authentic learning approach": for instance, hairdressing programmes include functioning salons; retail training involves real coffee shops with customers; auto mechanics work on new vehicles provided by Mercedes and Nissan, along with specialised tools; draftsmen-in-training use cutting-edge CAD/CAM software and other computer-aided design tools. The classrooms are located at the same premises as the shops and workshops, ensuring close integration between theoretical and practical aspects of learning.[32]

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27 Saravanan, 2005
28 Wong et al., 2006
29 Yeong & Ng, 2009
30 Wang et al., 2011
31 Tarat & Sindecharak, 2020
32 Tucker for the Centre on International Education Benchmarking, 2016 http://ncee.org/wp-content/uploads/2018/01/THePhoenix2016.pdf

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