Improving Learning

International Comparison of Tertiary Education Systems

Final Report

Prepared for Australian Government Department of Education

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ACER

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ABI	Apprenticeship Boost Initiative (New Zealand)
AQF	Australian Qualifications Framework (Australia)
ARD	Academic Research Division (Singapore)
AU	Autonomous Universities (Singapore)
BiBB	Federal Institute for Vocational Education and Training (Germany)
CAE	College of Advanced Education
Cedefop	European Centre for the Development of Vocational Training
CSAT	College Scholastic Ability Test (Korea)
CTEC	Commonwealth Tertiary Education Commission
C-VET	Continuing Vocational Education and Training (Germany)
ECDA	Early Childhood Development Agency (Singapore)
ESD	Education Statistics Digest
EU	European Union
FEC	Future Economy Council (Singapore)
GCE	General Certificate of Education (Singapore)
GCE N(A)	Singapore-Cambridge General Certificate of Education Normal (Academic) Level (Singapore)
GCE N(T)	Singapore-Cambridge General Certificate of Education Normal (Technical) Level (Singapore)
GCE O	Singapore-Cambridge General Certificate of Education Ordinary Level (Singapore)
GDP	Gross domestic product
GSCE	General Certificate of Secondary Education (England, Wales, Northern Ireland)
HE	Higher Educations
HESA	Higher Education Statistics Agency (United Kingdom)
IB	International Baccalaureate
ICT	Information and communication technology

IP	integrated Programs (Singapore)
ISCED	International Standard Classification of Education
ITE	Institute of Technical Education (Singapore)
ITM	Industry Transformation Map
KCCE	Korean Council for University College Education
KEDI	Korean Educational Development Institute
KSQA	Korea Skills Quality Authority (Korea)
LSC	Learning and Skills Council (England)
MOE	Singapore Ministry of Education
NA	Normal Academic (Singapore)
NACE	National Centre of Excellence for Workplace Learning
NCEA	National Certificate of Education Achievement (New Zealand)
NCS	National Competency Standards (Korea)
NELP	National Education and Learning Priorities (New Zealand)
NITEC	National Institute of Technical Education Certificate (Singapore)
NOKUT	Norwegian Agency for Quality Assurance in Education
NQF	National Qualifications Framework (England, Wales, Northern Ireland)
NQF	National Qualifications Framework for Lifelong Learning (Norway)
NSELF	State Educational Loan Fund (Norway)
NSI	National Student Index (New Zealand)
NUCAS	Norwegian Universities and Colleges Admission Service
NZIST	New Zealand Institute of Skills and Technology
NZQA	New Zealand Qualifications Authority
NZQF	New Zealand Qualification Framework
OECD	Organisation for Economic Co-operation and Development
Ofqual	Office of Qualifications and Examinations Regulation (England)
OfS	Office for Student (England)
PIAAC	Programme for the International Assessment of Adult Competencies

PPP	Purchasing Power Parties
PSLE	Primary School Leaving Examination (Singapore)
RISE	Regional Innovation System and Education (Korea)
RQF	Regulated Qualifications Framework (England, Wales, Northern Ireland)
RTO	Registered training organisation (Australia)
SCQF	Scottish Credit and Qualifications Framework (Scotland)
SEC	Singapore-Cambridge Secondary Education Certificate (Singapore)
SME	Small and Medium Enterprise
SPEC	State of Postsecondary Education in Canada
SSG	SkillsFuture Singapore
STEM	Science, technology, engineering and mathematics
TAFE	Technical and further education institution (Australia)
TEC	Tertiary Education Commission
TEI	Tertiary Education Institute (New Zealand)
TEO	Tertiary Education Organisation (New Zealand)
TES	New Zealand's Tertiary Education Strategy
TRAQOM	Training Quality and Outcomes Measurement
TTAF	Targeted Training and Apprenticeship Fund (New Zealand)
TVET	Technical and Vocational Education and Training (Singapore)
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States dollar
VET	Vocational education and training
UK	United Kingdom
WGLG	Welsh Government Learning Grant
WSG	The Workforce Singapore

EXECUTIVE SUMMARY

This report is designed to review high performing tertiary systems internationally (Germany, Norway, the United Kingdom, Korea, Singapore and New Zealand) and compare these systems to Australia. This review highlights best practice in international tertiary education systems as well as system weaknesses by considering the following criteria for each country of interest:

- Tertiary education system performance, including participation, attainment, labour market outcomes, and public and private returns for tertiary education
- The national context, including the shape of the broader education system, and relevant demographic and economic characteristics
- The structure of tertiary education systems, including linkages between higher education and vocational education and training
- Tertiary education qualifications, types of institutions and admissions requirements
- Governance, accreditation and quality assurance
- Funding

The report also includes an investigation of tertiary governance structures and considerations as they relate to the interaction between VET and higher education sectors.

Findings from the report are intended to inform the Commonwealth Department of Education's tertiary education policy and improve understanding of critical attributes demonstrated by high performing tertiary systems to support the work of the Australian Universities Accord panel.

The report is separated into 2 stages. Stage 1 (Chapters 2 to 9) reviews and compares Australia's tertiary education system with the systems of the 6 focus countries. Chapters 2 to 7 provide overviews of each international country's education system and investigate factors that influence system performance. Chapter 8 compares Australia with each focus country using quantitative data. Chapter 9 presents a system performance scorecard for Australia that draws on the comparative analyses presented in Chapter 8 and then discusses key points from Chapters 2 to 7 regarding implications for Australia's tertiary education system.

Stage 2 of the report is presented in Chapter 10 including a review of prior national and current international tertiary governance structures.

Stage 1 findings

Findings from Stage 1 illustrate the strengths and weaknesses of the tertiary education system for all 6 focus countries and how Australia sits in comparison. These include the following points:

- Singapore and Korea (only for the 25-34-years age group) had tertiary attainment rates higher than all other countries considered.
- Germany and the United Kingdom, and to a lesser extent Korea and New Zealand, performed better than Australia on some labour market outcomes.
- Germany had the highest public and private financial returns for investment for tertiary education except for private returns for females where Norway had the highest result (Australia reported the second highest public returns for investment for females). Korea had the lowest public returns for investment in tertiary education.
- Equity findings from the review were mixed.

    - Korea and Singapore had the highest levels of tertiary attainment among adults aged 30-44 whose parents had not received a tertiary education, reflecting the upward mobility of their populations. Norway and England also performed better than Australia on this Indicator.
    - The UK, Australia and New Zealand (for private investment only) showed the smallest differences between males and females in net financial returns for investment in tertiary education, suggesting these countries have more equitable labour force participation, employment and earnings. Australia and Norway were also the only countries where the private financial returns for females were higher than for males.
- For lifelong learning, Australia's rates of participation in formal tertiary education across the lifespan are the same or better than most focus countries and similar to Norway.

This analysis can be used to inform Australia's tertiary education system. It is also important to consider the contextual factors that underlie system performance and therefore the degree to which other systems' policies and structures could benefit Australia. However, the report highlights key points for the Australian tertiary education system. For example:

- The percentage of Australian students enrolled in STEM tertiary qualifications was similar to Norway and the UK, however it was also much lower than Singapore, Germany and Korea. Increasing the STEM workforce is often part of international innovation strategies and is part of Australia's agenda for economic prosperity. It is likely that Germany and Korea's higher STEM enrolment rates are influenced by the strong role of manufacturing in their economies. Therefore, it is difficult to benchmark Australia against these countries given the differing contexts. Australia could investigate the approach to STEM education adopted in Singapore to learn how STEM engagement is facilitated in the education system.
- Labour market outcomes in terms of relative earnings are poorer for individuals with tertiary qualifications in Australia than for individuals in Germany and the UK.
- Australia had the highest percentage of individuals reporting they were overqualified for their job among all countries considered.
- Equity continues to be an issue in Australia and elsewhere even withstanding Australia's relatively positive results regarding gender equity. Across Australia and the 6 countries examined, there are variations in regards to the level of funding for tertiary education provided by public versus private sources, tuition fees and financial support for students.

Stage 2 findings

Stage 2 of the report reviews common challenges associated with the intersection of VET and higher education, experiences (both national and international) unifying these 2 sectors and implications for Australia.

While historic (the Commonwealth Tertiary Education Commission) and international examples (SkillsFuture Singapore and New Zealand's Tertiary Education Strategy) can stimulate thinking about policy and program solutions for Australia, cultural context is important. Furthermore, the examples of unified VET and higher education sectors discussed in this report still show weaknesses in their unified structure. Rather, their common feature is a national effort to create an accessible and organised tertiary system. Each is unique to the social, political and economic priorities of the country and time period.

Systems in both Singapore and New Zealand demonstrate the advantage of having direct national control of the education system. In addition to avoiding the complications of federation, it also brings a greater level of consistency to the treatment of each education sector – schools, higher education and VET can all be governed in a similar way.

Each of the examples highlight the value of collaboration across government portfolios with an interest in education to establish a shared vision and priorities, which includes government departments for employment, industry, migration, science and finance. If a body similar to CTEC were to be recreated in Australia today, the architecture for the new commission would need to enable meaningful collaboration between all current stakeholders of tertiary education to support an integrated tertiary education system.

1. INTRODUCTION

1.1. Objectives

Australia's tertiary education system includes a range of higher education providers and registered training organisations (RTOs), and together these parts form a system that educates Australia's future workforce and supports the national growth and innovation agenda.

This report is designed to review high performing tertiary systems internationally (Germany, Norway, United Kingdom, Korea, Singapore and New Zealand) and compare these systems to Australia. This review, which involves highlighting best practice in international tertiary education systems as well as system weaknesses, also includes an investigation of tertiary governance structures and considerations as they relate to the interaction between VET and higher education sectors.

Findings from the report are intended to inform the Commonwealth Department of Education's tertiary education policy and improve understanding of critical attributes demonstrated by high performing tertiary systems to support the work of the Australian Universities Accord panel.

1.2. Approach

This report builds on the structure and approach of a 2018 report produced by the Australian Council for Educational Research for the Department titled, "Tertiary education systems in 5 countries – how does Australia compare?". This report compared the Australian tertiary education system with 5 countries identified by the Department (Germany, Norway, the United Kingdom, Korea, and Singapore). Analysis of the 5 country systems included consideration of:

- Tertiary education system performance, including participation, attainment, labour market outcomes, and public and private returns for tertiary education
- The national context, including the shape of the broader education system, and relevant demographic and economic characteristics
- The structure of the tertiary education system, including linkages between higher education and VET
- Tertiary education qualifications, types of institutions and admissions requirements
- Governance, accreditation and quality assurance
- Funding

In this report, these criteria were again used to undertake an updated review of the 5 country systems examined in the 2018 report with an additional review of the tertiary system in New Zealand. These 6 countries were selected by the Department because of the successes linked to their tertiary education systems. Each of these systems is unique with different agendas driving educational policy and system structures.

To help structure the comparison of the 6 country systems with Australia, the current report drew on the analytic framework developed in the 2018 report (see the 2018 report for a description of this framework). The application of the 2018 framework to the current report was refined to target the needs of the Department of Education and the Australian Universities Accord panel. In particular, the current report focussed on examining quantitative and qualitative data that could highlight system strengths and weaknesses, inform the performance scorecard presented in Chapter 9 as a way to compare Australia's tertiary system to the 6 focus countries, and key policies that help to illustrate the national agenda underlying

each tertiary system. This was conducted via a review of existing literature and data. In Chapter 9, quantitative data comparisons are presented and where possible these include comparison to averages for the Organisation for Economic Co-operation and Development (OECD) as all countries reviewed in the report, except Singapore, are OECD members.

1.3. Definitions and scope

1.3.1. Tertiary education and tertiary education systems

As in the 2018 report, tertiary education is discussed in line with the International Standard Classification of Education (ISCED) 2011, focusing on qualifications at ISCED 2011 Level 5 (short cycle tertiary education) and above. The specific levels of education defined as tertiary education – in Australia and internationally – are specified below.

Tertiary education refers to formal education and training which is delivered by a tertiary education provider and leads to a formal qualification. It encompasses tertiary-level VET courses as well as higher education courses. Tertiary-level VET courses often include a substantial component of training in workplaces, and some higher education courses also include aspects of work-integrated learning. This report focusses on the education and training activities of tertiary education systems.

1.3.2. Tertiary education in Australia

Table 1 outlines the Australian Qualification Framework (AQF) where tertiary-level VET includes level 5 (diplomas) and AQF level 6 (advanced diplomas) that are provided by technical and further education (TAFE) institutes and other RTOs. Higher education in Australia refers to courses at AQF level 6 (advanced diplomas, and associate degrees) and above that are provided by universities and non-university higher education providers.

Table 1 Alignment of the AQF and ISCED 11

<table>
<tr><th>Terms used in this report</th><th>ISCED 2011</th><th colspan="2">Australian sector and AQF level</th></tr>
<tr><td></td><td></td><td>General programs</td><td>Vocational programs</td></tr>
<tr><td>Lower secondary</td><td>Level 2 Lower secondary
Category - General
Category - Vocational</td><td></td><td>Level 1 Certificate I
Level 2 Certificate II</td></tr>
<tr><td>Senior secondary education</td><td>Level 3 Upper secondary
Category - General
Category - Vocational</td><td>Senior Secondary Certificate of Education</td><td>Level 3 Certificate III</td></tr>
<tr><td>Post-secondary non-tertiary education</td><td>Level 4 Post-secondary non-tertiary
Category – General
Category – Vocational</td><td></td><td>Level 4 Certificate IV</td></tr>
<tr><td rowspan="4">Tertiary education</td><td>Level 5 Short cycle tertiary education
Category - General
Category - Vocational</td><td>Level 6 Associate Degree</td><td>Level 5 Diploma
Level 6 Advanced Diploma</td></tr>
<tr><td>Level 6 Bachelor’s or equivalent level</td><td colspan="2">Level 7 Bachelor Degree
Level 8 Bachelor Honours degree
Graduate Certificate
Graduate Diploma</td></tr>
<tr><td>Level 7 Master’s or equivalent level</td><td colspan="2">Level 9 Master’s Degree</td></tr>
<tr><td>Level 8 Doctoral or equivalent level</td><td colspan="2">Level 10 Doctoral Degree</td></tr>
</table>

Notes: Higher education

VET

Secondary school

Source: Australian Qualifications Framework Council (2013) & OECD, European Union, UNESCO Institute for Statistics (2015).

1.3.3. International comparisons and the International Standard Classification of Education (ISCED)

This report uses ISCED 2011 to discuss tertiary education in Australia and each of the 6 focus countries, and where possible draws data from major international data collections that use this classification. This classification system is used to simplify cross-national comparisons as it eliminates comparison difficulties that can arise due to different views on VET delivery (e.g. some countries emphasise provision of VET during secondary education and other countries focus on post-secondary, including tertiary, VET programs) and variation across countries as to how courses are classified (i.e. as higher education or tertiary-level VET).

ISCED 2011 identifies 4 levels of tertiary education:

- ISCED 2011 level 5: Short cycle tertiary education (equivalent to Diplomas, Advanced Diplomas and Associate Degrees in Australia)[1]
- ISCED 2011 level 6: Bachelor's or equivalent level
- ISCED 2011 level 7: Master's or equivalent level
- ISCED 2011 level 8: Doctoral or equivalent level

(OECD, European Union, UNESCO Institute for Statistics, 2015).

The structure of Australia's tertiary education system and how it maps onto ISCED 2011 is summarised in Figure 1.

[1] Short-cycle tertiary education programs (ISCED level 5) have a minimum two-year duration and can provide access into other tertiary education programs (i.e. at ISCED Level 6 or 7) (OECD, European Union, UNESCO Institute for Statistics, 2015).

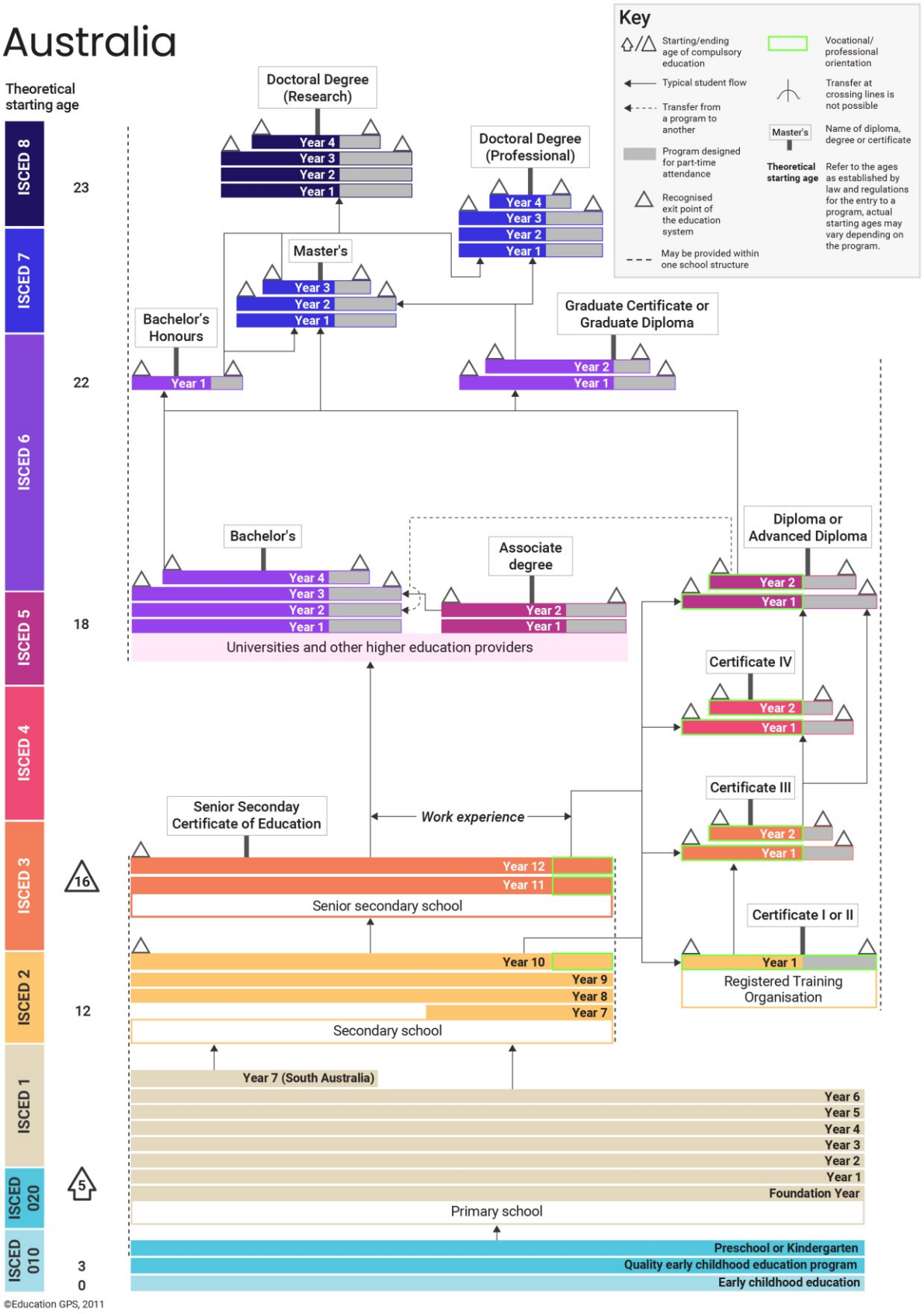

Figure 1 Structure of Australia's education system

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

1.3.4. Distinguishing between tertiary-level VET and higher education

ISCED 2011 can be used to distinguish between tertiary-level VET and higher education. Level 5 in ISCED 2011 identifies short-cycle tertiary education programs with a vocational orientation (those that are practical, occupationally-specific and prepare students to enter the labour market). In this report, these programs are classified as ISCED Level 5, tertiary-level VET programs. Level 5 in ISCED 2011 also identifies short-cycle tertiary education with a general orientation that is academically oriented and below the level of a Bachelor's program or equivalent. In this report, higher education refers to programs at Level 5 in ISCED 2011 with a general orientation, and also encompasses programs at ISCED 2011 Levels 6-8 (see Table 1).

1.3.5. Distinguishing between tertiary VET and non-tertiary VET

VET programs are identified in the ISCED 2011 in:

- upper secondary education (ISCED 2011 Level 3)
- post-secondary non-tertiary education (ISCED 2011 Level 4)[2]
- short cycle tertiary education (ISCED 2011 Level 5).

In Australia, VET programs in secondary schools and post-secondary non-tertiary education include Certificates I, II, III and IV, while tertiary level VET includes diplomas and advanced diplomas undertaken at TAFE institutes and RTOs. Internationally, there is variation across countries on whether VET delivery is emphasised in schools or in non-school settings.

1.3.6. Lifelong learning in tertiary education systems

Lifelong learning refers to access to learning opportunities beyond initial formal education. While the term can encompass various types of programs, in this report lifelong learning is considered predominantly in relation to formal programs offered at the tertiary level.

1.4. Structure of the report

This report is separated into 2 stages. Stage 1 (Chapters 2 to 9) reviews and compares Australia's tertiary education system with the systems of the 6 focus countries. Chapters 2 to 7 provide overviews of each international country's education system and investigate factors that influence system performance. Chapter 8 compares Australia with each focus country using quantitative data[3]. Chapter 9 presents a system performance scorecard for Australia that draws on the comparative analyses presented in Chapter 8 and then discusses key points from Chapters 2 to 7 to construct implications for Australia's tertiary education system.

Stage 2 of the report is presented in Chapter 10 where new analyses investigating tertiary governance structures and considerations as they relate to the interaction between VET and higher education sectors are presented. In particular, this section of the report reviews common challenges associated with the intersection of VET and higher education, experiences (both national and international) unifying these 2 sectors and implications for Australia.

[2] Post-secondary non-tertiary programs (ISCED level 4) are typically vocational programs but also include programs designed to prepare students for tertiary education (OECD, European Union, UNESCO Institute for Statistics, 2015).
[3] Some data presented in Chapter 8 is also discussed in the specific country chapters (Chapters 2 to 7).

References

OECD, European Union, UNESCO Institute for Statistics (2015), ISCED 2011 Operational Manual: Guidelines for Classifying National Education Programmes and Related Qualifications, OECD Publishing. http://dx.doi.org/10.1787/9789264228368-en. Creative Commons Attribution CC BY-NC-ND 3.0 IGO

STAGE 1 INTERNATIONAL COMPARISON OF TERTIARY EDUCATION SYSTEMS

2. GERMANY

Highlights

- Germany continues to have a strong VET sector.
- Earnings premiums for individuals with a tertiary qualification are above the OECD average.
- Recent policies and funding initiatives have focussed on higher education activities and supporting new migrants and refugees arriving in the country.
- Challenges include lower rates of higher education attainment compared to the OECD average, and equity and access issues for individuals with disadvantaged and migrant backgrounds.

2.1. Structure of Germany's education system

Although early years education is optional within the German education system, participation for 3–5-year-olds was high in 2020 at 94%, in comparison to the OECD average of 83%. However, during the compulsory years of primary (6-10 years) and secondary (11-18 years) schooling, 2020 enrolment rates were comparable with OECD averages (99% and 87% for German 6-14- and 15–19-year-olds, and 99% and 86% for similar aged peers across OECD countries; OECD, 2022).

Schooling remains highly stratified from Primary 4 (age 10) onwards as students are streamed into vocational or general studies. However, many German states have moved towards delaying the streaming decision-making age to 12 through combined schools and courses to provide students with additional time to choose their stream. Secondary schooling across German states may therefore implement streaming options that include studying in:

- *Gymnasiums* that offer both lower and upper secondary education and provide entry into a university or a university of applied sciences via the Abitur leaving exam.
- *Realschules, Hauptschules,* and *Gesamtschules* that offer lower secondary education only. Realschules provide both academic and practical skills education for Year 5-10 students, and a pathway into a university of applied science (Realschulabschluss leaving exam). Hauptschules, which are focused on vocational training and entry-level work from years 5-9 and enable entry into a vocational school (Hauptschulabschluss leaving exam), and Gesamtschules, which provide students with 2 or 3 of the above pathways.
- *Berufsschules, Berufsfachschules/Fachoberschules,* and pre-vocational/basic vocational training that provide vocational education. Berufsschules enable students to attend school part-time (1-2 days per week), while completing a 3-4-year apprenticeship. In comparison, students enrolled in Berufsfachschules/Fachoberschules take part in fulltime training in specialized vocational schools for 1-2 years. Finally, prevocational/basic vocational training programmes provide pathways that do not lead to a vocational qualification.

Vocational education and training is provided at upper secondary, post-secondary non-tertiary, and tertiary levels. Qualifications obtained at the upper secondary level enable progress to post-secondary non-tertiary VET programs delivered through dual system (second cycle) or the health and social sectors. Graduates from these programs can subsequently

enroll in tertiary level VET offered through short and long programs in trade and technical schools.

In the German higher education system, universities place a stronger focus on academic and scientific research, while universities of applied science (Fachhochschulen) focus on the practical application of knowledge. Entry into either type of institution is provided for through the completion of a general education qualification at general or vocational schools, or a qualification obtained through a specialized vocational high school. At a post-secondary school level, graduates from tertiary-level trade and technical schools may also access higher education (OECD, 2014). Entry into German higher education institutions cannot be gained through other secondary school or non-tertiary pathways.

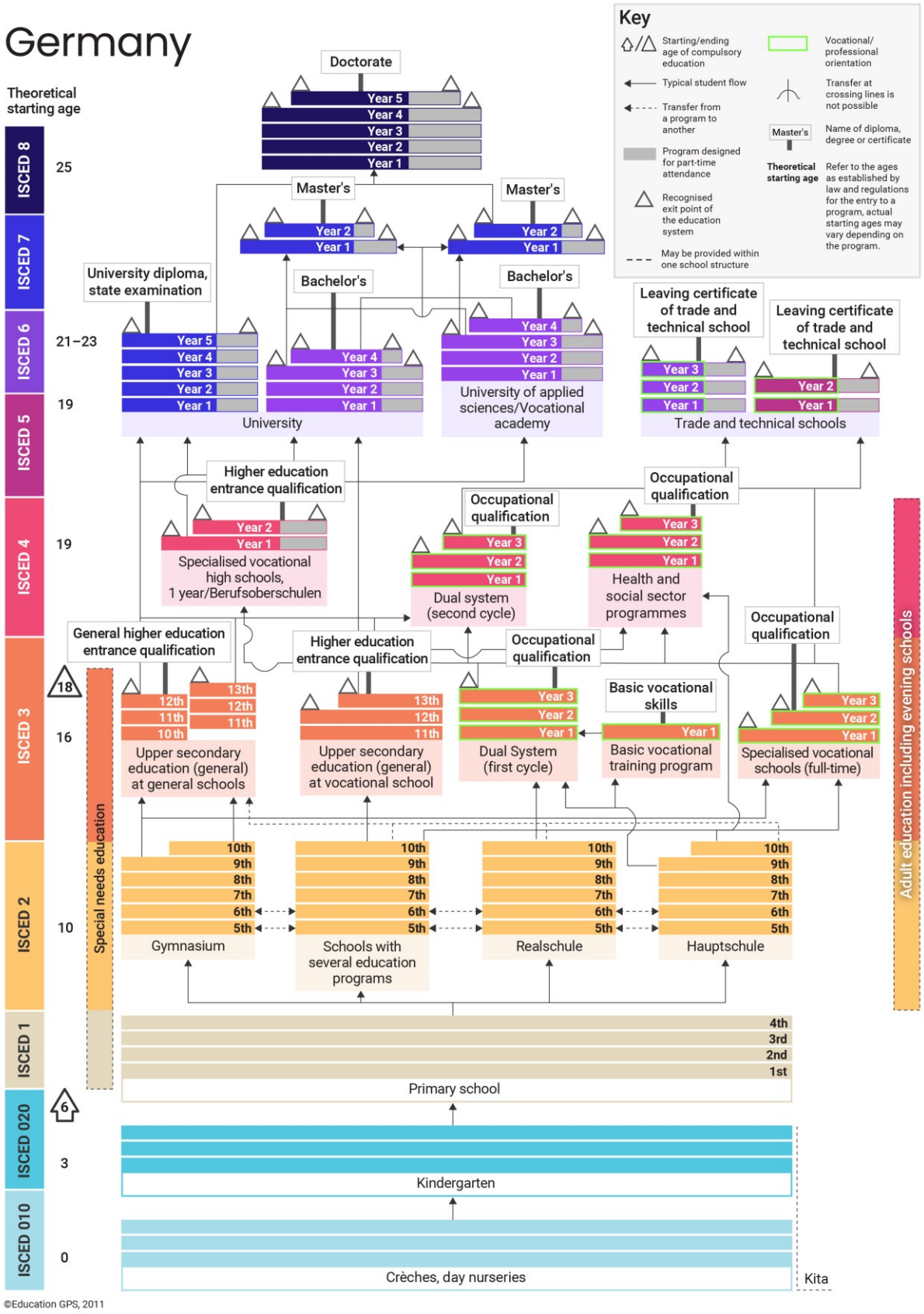

Figure 2 Structure of Germany's education system

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

2.2. Tertiary education – participation, attainment and labour market outcomes

Entry into higher level post-compulsory schooling options in Germany is dependent on students' performance on terminal qualifications at the end of upper secondary education. A key point of interest is that 93% of vocational upper secondary school graduates have access to tertiary level programs, in contrast to the average of 74% across OECD countries (OECD, 2022).

Over previous years, higher education participation has been relatively low compared to other OECD countries examined as part of this report. The percentage of young adults in Germany, aged between 24-35-years with a tertiary qualification, or enrolled in tertiary education programs was 36% in 2021.

In terms of attainment, Bachelor's and Master's level degrees are most common among 25–64-year-olds, at 18% and 11%, respectively. While these percentages mirror OECD averages, the percentage of Doctoral degree holders in Germany (1.7%) is above the OECD average (1.3%).

Like other OECD countries, the attainment of higher education qualifications affords better employment opportunities for German students. Individuals in Germany in the 25-34-year age group with a tertiary degree were 29% more likely to be employed than their peers who had not completed upper secondary schooling (OECD, 2022).

While tertiary attainment for 25–34-year-olds substantially increased from 22% to 36% between 2001 to 2021, these percentages remain below the average observed across OECD countries (i.e. 27% in 2001 and 48% in 2021). The OECD maintains that comparatively lower tertiary attainment rates in Germany compared with OECD averages could be indicative of a stronger VET system that enables more career pathways for German nationals. Across other OECD countries, the average rate of unemployment for workers with an upper secondary or post-secondary non-tertiary attainment is 7%, while in Germany, this rate of unemployment is 3%. German workers with these educational attainments are also more likely to have an earnings advantage in comparison to workers with below upper secondary attainment. Nevertheless, full-time full-year workers with tertiary attainment maintain the highest earning advantage, with those with a Bachelor's level qualification earning 61% more than those with an upper secondary qualification.

2.3. Governance, industry engagement and quality assurance

Various bodies provide education oversight and governance in Germany. At the highest level, the federal government and Länder (16 German federated states in total) jointly govern across the early years, school, VET, higher education, and adult education. Key bodies in federal government include the Ministry of Education and Research that provide national VET and tertiary education policies, and the Federal Ministry of Family Affairs, Senior Citizens, Women and Youth that governs the early years learning sector. At the state level, education ministries within the Länder provide governance over the early years, schools, VET (full and part-time), higher education, and adult education sectors (OECD, 2020). Other key governance, industry engagement, and quality assurance bodies include:

- The Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung), which supports co-operation between VET stakeholders and is engaged in policy, research and practice activities (Federal Institute for Vocational Education and Training, n.d.).
- The Standing Conference of the Ministers of Education and Cultural Affairs of the Länder (Kultusministerkonferenz), which coordinates education policies and

recommendations to support schooling, institutes of higher education, research, and cultural affairs across all 16 states (Kultusminister Konferenz, n.d.).

- The Institute for Quality Development in Education (Institut zur Qualitätsentwicklung im Bildungswesen) in Humboldt University, which provides quality assurance by overseeing test development, defining student competencies over the course of their studies, implementing educational standards, and conducting education research (Institut zur Qualitätsentwicklung im Bildungswesen, n.d.).
- The German Institute for Adult Education (Deutsches Institut für Erwachsenenbildung), which seeks to improve lifelong learning and continuous education by engaging in (federal and Länder funded) research (Deutsches Institut für Erwachsenenbildung, n.d.).

Within the German education system, a significant proportion of decisions – including those relating to governance, industry engagement, and quality assurance – are overseen by the Länder. Over the course of primary to secondary schooling, for example, the Länder oversee planning, management, and supervision of each system, as well as teacher recruitment and salaries. This centralised approach differs from more decentralised education systems like those in Australia and Canada, which have delegated more oversight and responsibilities to local administrative bodies and schools. While the Länder also exert centralised governance over higher education institutions, especially through target agreements that are negotiated annually with higher education institutions, each institution may practice greater autonomy as a result of variations in legislation and standard practices. Institutional governing boards have also been introduced to strengthen higher education management (OECD, 2020).

2.4. Funding

Funding for higher education institutions is largely provided for by the Länder in addition to the federal government and local authorities (or Kommunen). While higher education institutions can exercise significant financial autonomy, funding is determined by performance-based indicators and institutional spending plans must often be approved by the Länder (OECD, 2020).

Several funding initiatives and programs have been implemented since 2000 to support higher education activities. These have included the Excellence Strategy 2016, which aimed to raise the quality of higher education across Germany by funding internationally competitive research across 2 funding lines (75% of funds provided by the federal government and 25% provided by the Länder). The Excellence Cluster funding line has made available €385 million annually since 2018 for internationally competitive research projects within universities or across universities engaged in collaborative research projects. The Innovation Institution of Higher Education 2016 initiative (€550 million over 10-years) was also implemented to raise the Transfer and Innovation profile of institutions with established strategies for business and society engagement. In May 2022, 39 Fachhochschulen, 13 universities and Pädagogische Hochschulen, and 3 colleges of art and music received funding from this initiative. Additionally, €1 billion has also been allocated to higher education institutions for the Programme to Support Up-and-coming Academics. This program is focussed on marketing the appeal of the German higher education system and research activities, and retaining junior academics by encouraging them to pursue tenured professorship (European Commission, 2023).

Additionally, the Higher Education Pact between the federal government and Länder provided additional study positions to meet growing demand and support the expansion of higher education. Over its 2007-2020 term – with final phase funding coming to completion at the end of 2023 - this Pact has enabled more than 1.6 million students to enroll in higher education studies from 2007-2020, with universities receiving more than €20 billion and €19 billion from the federal government and Länder, respectively (European Commission, 2023). However, a 2017 evaluation of the first 2 phases of funding revealed that while student enrolments had increased by 40% over the period 2005-2015, the ratio of staff to students had decreased

alongside teaching quality at universities. The third phase of funding (2016-2020) was focussed on providing an additional 760,000 study places, and increasing staff numbers and professional development (OECD, 2020).

Other examples of federal government and Länder higher education funding initiatives and programs include the:

- **Contract for the Future of Higher Education and Teaching**, which will supersede the Higher Education Pact once funding has stopped
- **Innovation in Higher Education Teaching**, which promotes strengthening university system characteristics, knowledge transfer between key stakeholders, and teaching and learning quality
- **Funding for Investment Projects at Institutions of Higher Education**, which provides funding for research infrastructure of supranational importance, is of significant scientific quality, and where costs exceed €5 million
- **Female Professors Programme**, which supports the goal of increasing the ratios of female professors and scientists in their careers (European Commission, 2023).

2.5. Selected policy areas

In Germany, equity remains an issue for learners from disadvantaged and migrant backgrounds. They are more likely to underperform in reading, present with wider achievement gaps in comparison to native-born people, more than 3 times more likely to leave education, 3 time less likely to be enrolled in higher education or be less likely to attain higher education and vocational education qualifications. Data suggests that plans and initiatives (e.g. the National Integration Plan (2007), National Action Plan (2011), Recognition Act (2012) and Vocational Language Training (2016)) to integrate newly arrived migrants into vocational education and training opportunities have not had an effect with the rate of commencement in training being about half of that seen in native born Germans (OECD, 2020, 2019).

The increasing proportions of new migrants and refugees arriving in Germany has led to the federal government and Länder implementing various policies to fulfil humanitarian commitments and enhance broader social cohesion and economic outcomes. These integration-focused VET initiatives have included qualifications recognition to validate skills and qualifications; preparatory courses that support language acquisition, developing basic competencies, and providing access to apprenticeship courses; and implementing dual VET courses that enable migrants/refugees to develop language skills and competencies, while also earning a salary as an apprentice. The key challenges relating to the integration of migrants/refugees through VET include inconsistencies in VET study program quality, the need to improve VET data collection, monitoring, and evaluation practices, and continuing to improve VET access for migrants (OECD, 2020).

In relation to lifelong learning, German companies that must respond to changing labour demands can now provide workers with access to further training regardless of their qualification, age, and the company's size (Qualifications Opportunities Act, 2018). Additionally, the National Skills Strategy in Adult Education (2019) for Continuing Vocational Education and Training (C-VET) brings together various partners who have agreed to make training and funding opportunities more accessible and transparent; these partners are the federal government, the Lander, industry, and unions (OECD, 2020).

Despite the availability of educational pathways, the rates at which German VET students transition into higher education are low. Jobs in Germany are reportedly at high risk of shifts towards automation or change. This is problematic as participation in adult education remains low (CEDEFOP, 2020a; OECD, 2020). In 2018, the VET sector received federal government and Länder support to modernise working conditions, infrastructure, and the continuing professional development of teachers/trainers in light of digitisation/technology advancements

and provide more flexible pathways between study tracks. Greater equivalency has also been implemented between general and vocational studies by using consistent language for both studies so that equivalent qualifications can be recognised, and part-time training has been expanded. The Länder have also defined an action framework that includes strengthening VET sector innovation through international and employer collaborations, integrating VET into particular target groups (e.g., those with a migration background or refugee status) (CEDEFOP, 2020b), providing language training and individual support, and sharing best-practice on quality management and VET staff professional standards.

2.6. Challenges

Challenges for the German tertiary education system are similar to those reported in 2018 and include the following.

- High levels of stratification in the education system continue with scope still remaining to improve pathways between VET and higher education.
- Rates of higher education attainment in Germany continue to be lower in comparison to other EU and OECD countries. This is despite funding initiatives/programs by the federal government and Länder, and higher earning potential and better employment opportunities for those with a Bachelor's qualification.
- There are equity and access issues for individuals with disadvantaged and migrant backgrounds.
- While employment rates for VET graduates remain high, there are signs that young Germans are becoming less attracted to VET programs.

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3. NORWAY

Highlights

- Norway has a predominantly public funded tertiary education system.
- There is a high tertiary education attainment rate (above the OECD average), however, the earnings premium for tertiary education is low (below the OECD average).
- Recent funding initiatives include those aimed at improving upper secondary education attainment rates, particularly within VET, and supporting refugees by improving documentation and recognition of their qualifications.
- Challenges include poor completion rates and above average course completion times, a growing skills mismatch in the labour market and ensuring efficiency within the publicly funded system.

3.1. Structure of Norway's education system

In Norway, participation in kindergarten is voluntary. Children can start attending kindergarten at anytime between the ages of 1-6 and are entitled to a place at their municipality kindergarten from the age of one. School is compulsory from the ages of 6-16 with students attending primary school for Grades 1 to 7 (ages 6-12), then lower secondary for Grades 8-10 (ages 13-16). All lower secondary graduates are entitled to free upper secondary education (NOKUT, n.d. (a)).

From the ages 16-19, students have the option of attending upper secondary school, where they choose between a general and vocational program. Since the 2020–21 school year, upper secondary VET in Norway covers 10 education programs that lead to more than 180 different trade or journeyman's certificates. A renewed VET curricula for all trades and crafts was also implemented to meet labour market needs (The Norwegian Directorate for Education and Training, 2020). Norway has a strong upper secondary school VET program with around half of students choosing the VET pathway (Cedefop, 2017a). Within the upper secondary school VET program, a standard "2-plus-2 model" includes 2 years in school (which includes some practical training in workshops and enterprises), followed by 2 years of apprenticeship in enterprises (which includes training and work) (The Norwegian Directorate for Education and Training, 2020). Completion of upper secondary VET leads to a trade certificate for industrial and service trades or a journeyman's certificate. Over half of trade and journeyman's certificates are awarded to people aged over 23 (Cedefop, 2017a).

At the post-secondary non-tertiary and tertiary levels, a range of short VET programs (up to 2 years duration) are available to upper secondary school graduates through vocational colleges (Fagskoler). Master craftsperson programs, for holders of trade and journeyman's certificates with several years' work experience, combine general business management, marketing and vocational theory as part of their qualifications (Cedefop, 2017a).

Higher education is provided by universities, specialised universities and university colleges, which are owned or funded by the government. Universities traditionally have a research orientation and offer degrees in medicine, law, and other areas at both undergraduate and postgraduate levels. Undergraduate courses with a professional orientation, such as teacher training, nursing, or engineering, are provided by university colleges, which tend to focus on teaching. However, these distinctions are narrowing with some university colleges now offering postgraduate programs (Koutsogeorgopoulou, 2016).

Numerous pathways are available for graduates from both general and vocational programs in upper secondary school to access higher education. These pathways into higher education include:

- Undertaking the Higher Education Entrance Qualification to gain admission to higher education upon successful completion of an upper secondary school general program. Entrance is based on grades from upper secondary school and coordinated by the Norwegian Universities and Colleges Admission Service (NUCAS).
- Entry to higher education via a one-year bridging course, or direct entry to some specialised Bachelor programs upon completion of a trade or journeyman's certificate in an upper secondary school vocational program.
- Entry to higher education via one of 3 pathways:
    - via the law of 23/5 (for persons over 23 years of age, who have 5 years of work experience and/or schooling, and have passed a course in core subjects);
    - via recognition of relevant formal, informal and non-formal learning (for persons aged 25 and above, who do not meet general entrance requirements); or
    - by completing the first 2 years of a VET program followed by a bridging course in core subjects (Cedefop, 2017; Koutsogeorgopoulou, 2016).

Figure 3 shows the structure of the Norwegian education system.

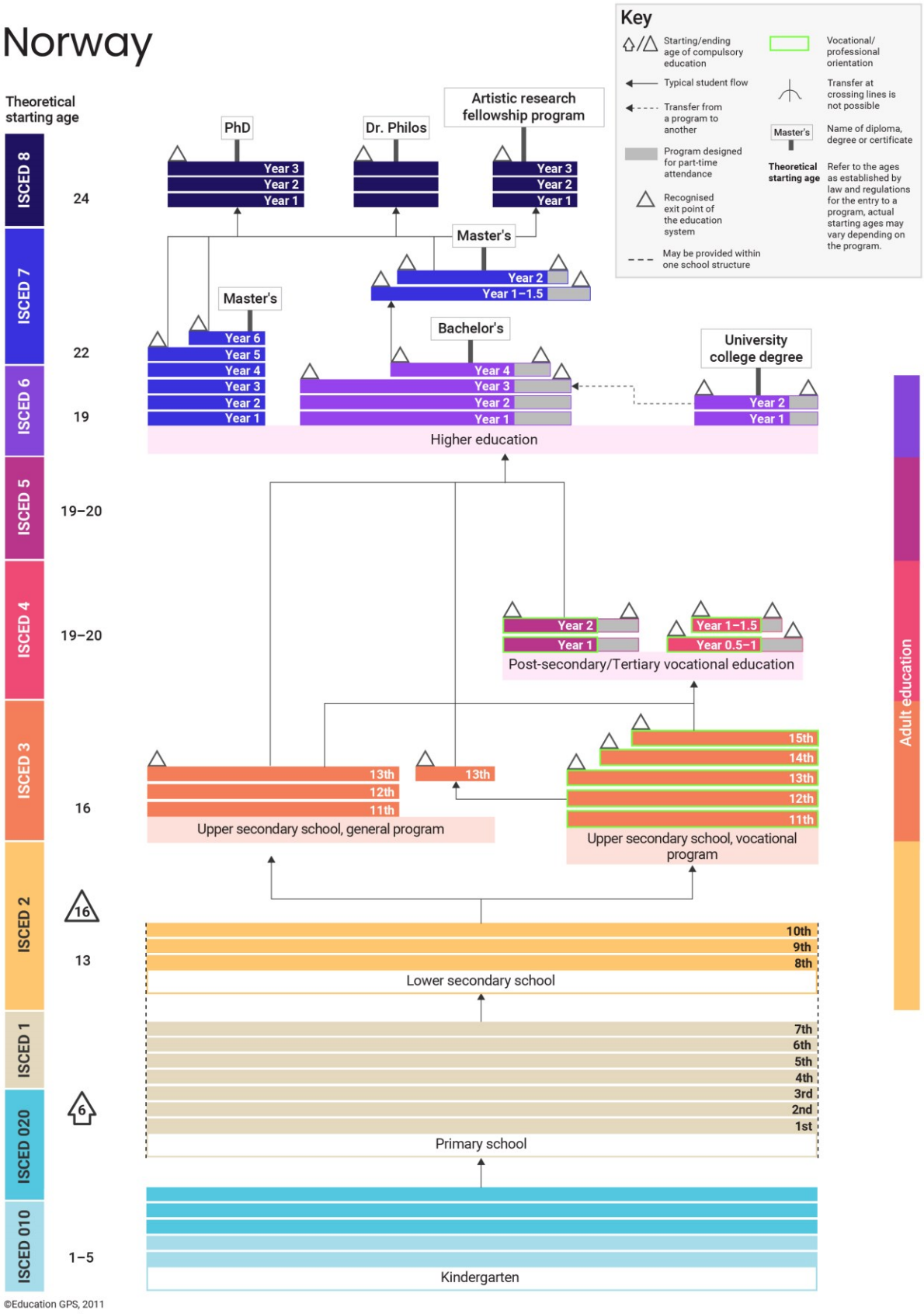

Figure 3 Structure of Norway's education system

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

Norway has a relatively large land area coupled with a relatively small population (5,403,000 as at 2021). There are currently 10 universities, 9 specialised universities, 29 university colleges (NOKUT, n.d. (b)) and over 100 post-secondary or tertiary vocational institutions. These institutions are located throughout the country, reflecting Norway's commitment to supporting regional economies and increasing tertiary participation in non-metropolitan areas. However, many institutions are small in size, which may have implications for economies of scale (Koutsogeorgopoulou, 2016).

3.2. Tertiary education – participation, attainment and labour market outcomes

Norway has a high tertiary education attainment rate. The percentage of the population aged 25-34 with tertiary education was 55% in 2021, which was higher than the OECD average. However, some concerns have been raised about completion rates in Norway (which are below the OECD average) and the proportion of students (approximately 35%) who take longer than the expected time to complete their course (Koutsogeorgopoulou, 2016).

The post-secondary vocational education model in Norway entails 2 years of education in an upper secondary school followed by 2 years of apprenticeship training (2-plus-2 model). Data from 2021-2022 show that 35% of students graduating from post-secondary vocational education were enrolled in two-year VET programs. Of the total of 11,199 graduands, 56% were female and 38% were enrolled in public schools (Statistics Norway, 2023a).

Between 2016-2022, a total of 28,040 students enrolled in VET (as a comparison, a total for students in all education programs during the same time period was 65,635) (Statistics Norway, 2023b). It is important to note that VET programs have a strong presence at the upper secondary school level in Norway and are less prominent at the tertiary level.

Employment rates for persons with a tertiary education are above the OECD average. Among 25–64-year-olds with a tertiary education, the overall employment rate was 89% in 2020, compared with the OECD average of 84%. Employment rates for persons with upper secondary or post-secondary non-tertiary qualifications (80%) and persons with short-cycle tertiary qualifications (83%) were similar. In contrast, higher employment rates were evident for Bachelor's graduates (91%), Master's graduates (92%) and Doctoral graduates (90%).

Unemployment rates for tertiary graduates are mixed. The unemployment rate for 25–64-year-olds with a Bachelor's qualification is low (2.5% in 2021), while the unemployment rates for persons with upper secondary or post-secondary non-tertiary education, and persons below upper secondary education are 2.8% and 6.8%, respectively.

The earnings premium for tertiary education is relatively low due to the wage negotiation system and a low-income differential in Norway (OECD, 2013). Full-time tertiary-educated workers aged 25-64-years earned 19% more than those with upper secondary education in 2019. In contrast, the earning premium for tertiary education across the OECD was 53%. The earnings premium for bachelor's graduates relative to upper secondary graduates was particularly low in Norway (7%).

Most workers in Norway (65%) reported that the level of their qualifications was well-matched to the level required by their jobs. This is just over the OECD average of 61%. Twelve per cent of workers in Norway in 2021 reported being overqualified for their jobs.

3.3. Governance, industry engagement and quality assurance

The Norwegian government sets the goals and framework for all levels of education and training, from early childhood through to higher education. Overall responsibility for VET and higher education lays with the Ministry of Education and Research, except for master craftsperson programs, which come under the Ministry of Trade, Industry and Fisheries (Cedefop, 2017; OECD, 2013).

Higher education institutions, including universities, specialised universities, and university colleges, have a large degree of autonomy in decision-making, including how they allocate resources and design courses. Vocational colleges are also able to design their own courses and curricula. VET in Norway involves close co-operation between education authorities, institutions, and social partners. Social partner representatives from business, industry and the public contribute to the decision-making system for upper secondary VET, which is deemed important in anticipating skills needs and in securing relevant provision of VET. This tripartite co-operation is regarded as essential for both designing VET provision and in assuring relevance and quality in accordance with labour market needs, particularly in the implementation of the new VET curricula from 2020 (The Norwegian Directorate for Education and Training, 2020).

The National Qualification Framework for Lifelong Learning (NQF) was developed in 2011. It applies to all levels of education and training and is focussed on learning outcomes. That is, it sets out levels according to what a person knows, can do, and is capable of doing as a result of a learning process (OECD, 2013).

The Norwegian Agency for Quality Assurance in Education (NOKUT), an independent government agency, is responsible for the accreditation of institutions (and study programs in some types of institutions). It also provides external quality assurance of higher education and tertiary vocational education institutions (Cedefop, 2018, pp. 11-12; Koutsogeorgopoulou, 2016; OECD, 2013).

Since 2016, performance agreements between the Ministry of Education and Research and public higher education institutions have been introduced, as part of a multi-year initiative to enhance quality, diversity, and co-operation (Larsen et al, 2019). From 2019, all public higher education institutions are required to have a performance agreement in place.

3.4. Funding

Norway provides one of the highest levels of funding for education as a proportion of their national wealth amongst OECD countries, spending 6.6% of their GDP on education institutions in 2019. Within higher education, Ministry of Education and Research block grants are provided for both public and private institutions. These grants typically comprise of a 70% fixed component and a 30% performance-based component. While public institutions are more likely to gain access to larger grant amounts, both public and private institutions may allocate funding as needed and may choose to supplement their income through other sources (e.g., research contracts or external grants) (European Commission, 2022b; OECD, 2020).

Funding examples include:

- Norwegian roadmap for Research Infrastructure 2020 (The Research Council of Norway, 2021). Close to 6 billion NOK has been allocated to this roadmap since 2009. It is designed to support long-term funding of research infrastructure to support national innovation (The Research Council of Norway, 2021).
- Universal financial support to higher education students through the State Educational Loan Fund (NSELF) (OECD, 2020). Support is designed to cover living and study costs

and additional support can be applied for to cover study fees. Students must meet an income and asset assessment and pass all examinations in order to receive the maximum grant amount (European Commission, 2022b).

- Adult Education and Training Funding (European Commission, 2022a)

3.5. Selected policy areas

The decentralised higher education system in Norway enables higher education institutions to practice autonomy with respect to teaching and research, while legislations and agreements serve to regulate most administrative practices (see Section 3.3 above). These regulations have gradually become less prescriptive and now provide stakeholders with broad frameworks and checks when dispensing their administrative duties; see for example The Act relating to Universities and University Colleges, and The Public Administration Act. Key challenges in this regard relate to ensuring that policies are implemented consistently and with sufficient capacity at local levels and promoting equality and efficiency across the higher education sector (Norwegian Agency for Quality Assurance in Education, n.d.; OECD, 2020).

Efforts to better prepare Norwegian youth for the workforce have focussed on improving these upper secondary completion rates, particularly in vocational education where the combination of an academic approach to VET and an inability to secure apprenticeship places are considered key factors that explain low completion rates (OECD, 2020). The Strategy for Skills Policy (2017-2021) was developed to ensure that skills could be acquired by individuals and businesses to build the competitiveness of Norway's business sector, enhance efficiencies within the public sector, and further develop an inclusive labour market. Part of this strategy includes increasing access to apprenticeships and career opportunities (Ministry of Education and Research (Norway), 2017).

The OECD (2018) proposed measures to reduce the costs borne by employers as a way of creating incentives to offer apprenticeships, as well as more targeted measures aimed at supporting students at risk of dropping out. Norway has recently developed a new VET curriculum (2020) in consultation with professional councils (OECD, 2020). The new courses offer earlier specialisation in a professional field to better prepare students for the transition to work-based learning. Other policies that aim to improve VET outcomes include:

- The Certificate of Practice Scheme (Cedefop, 2017), which was implemented in 2018 and aimed to reduce dropout rates in VET courses by providing alternative training programs for students who are experiencing difficulties completing an ordinary VET course.
- The Lifelong Learning skills reform (Ministry of Education and Research (Norway), 2020), which aims to ensure that employees possess up-to-date skills, and that provider training targets skills in demand. Career guidance and additional funding is also provided as part of this reform package.

Norway has had ongoing challenges with respect to performance gaps between immigrant and non-immigrant students; an issue that is particularly challenging given Norway's increasing immigrant population (OECD, 2020). The Qualifications Passport for Refugees was implemented in 2016 to support a scheme for evaluating the education and training backgrounds of refugees in Norway. The qualification passport has allowed successful documentation of refugee qualifications, as well as building recognition capacity in higher education institutions and relevant agencies for these qualifications. It has also supported national and local initiatives that are aimed at societal, educational, and labour market inclusion (Norwegian Agency for Quality Assurance in Education, n.d.).

Increasing rates of upper secondary attainment continues to be a challenge within the Norwegian education system, and especially within VET. Levels of upper secondary attainment have trended downwards between 2005-2018 for 25-34-year-olds (lower than the OECD average), while tertiary attainment for this same age group increased over this same

period (above the OECD average) (OECD, 2020). Additionally, increased tertiary education funding through student loans and grants (e.g. through the State Educational Loan Fund) have not led to improvements in the timely completion of tertiary qualifications. Many Norwegian higher education students do not graduate within the theoretical timeframe for their studies; only 49% of Bachelor's students in Norway graduate within the theoretical timeframe (OECD, 2020).

3.6. Challenges

Key challenges for Norway's tertiary education system include:

- Ensuring efficiency within the predominantly public funded system. The small size and spread of many of Norway's institutions has resulted in some institutional mergers. Completions rates continue to be a challenge for the system and may be linked to the growing skill mismatch in the labour market (see below).
- As described in the 2018 report, the context in which students enter the tertiary education system (e.g. no tuition fees and a healthy job market) may contribute to poorer completion rates and longer course completion times.
- A current and growing skill mismatch in the labour market, attributed to granting learner choice in VET programs as opposed to the needs of the Norwegian society, has resulted in many companies being unable to fill positions with suitably qualified applicants (Cedefop, 2023). Learner choice in VET programs is reported to be influenced by geographical distance. The skill mismatch has also been linked to poor completion rates, as students with poor grades are less likely to secure an apprenticeship, and therefore, are less likely to graduate from VET.

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4. THE UNITED KINGDOM

Highlights

- The UK has high levels of tertiary education attainment (above the OECD average) but a low earnings premium for tertiary education (below the OECD average).
- Several recent policy initiatives have focussed on addressing skills-related shortages through additional funding and support to the VET sector.
- Challenges include addressing equity issues related to educational access, particularly for adult workers and those from minority groups, and improving the status of VET.

4.1. Structure of the United Kingdom's education system

Collectively, the education systems in England (Figure 4), Northern Ireland (Figure 5), and Wales (Figure 6), and Scotland (Figure 7), characterize education in the United Kingdom (UK). Across these systems, schooling is compulsory for students up to 16-years-old, and education up to 18-years-old.

Pre-primary education in the UK typically begins at 3-4 years of age, while primary education takes place from 5-years onwards for another 6 or 7 years. The lower secondary levels of school occur after this for 3 years. In England, Northern Ireland, and Wales, 16-year-olds take their General Certificate of Secondary Education (GSCE) or Level 1/2 qualifications, while those in Scotland sit their National 3/4/5 assessments. Students then have the option to choose a general or academic pathway, or vocational education and training pathway, at the senior secondary levels. In England, Northern Ireland, and Wales, a general or academic pathway requires students to undertake their A-Levels examinations, while those in Scotland must sit the Higher Grade or Advanced Higher examinations. Students who choose a vocational education and training pathway in any of the 4 education systems will typically undertake further studies in a vocational education institution or commence an apprenticeship/traineeship.

The Regulated Qualifications Framework (RQF) provides qualifications accreditation in England, Ireland, and Wales. It is regulated by England's Office of Qualifications and Examinations Regulation (Ofqual), Wales' Department for Children, Education, Lifelong Learning and Skills, and Northern Ireland's Council for the Curriculum, Examinations and Assessment (Skills for Schools, n.d.). The RQF oversees national school assessments and vocational qualifications and specifies 8 levels from the GCSEs in secondary education (Level 1) through to Doctoral qualifications in higher education (Level 8). Vocational qualifications are addressed from Levels 1-6, with Level 6 referencing Degree Apprenticeships. In contrast, the Scottish Credit and Qualifications Framework (SCQF) includes 12 levels that describe qualification difficulty and outlines Level Descriptors to indicate learning outcomes across 5 dimensions – knowledge and understanding; practice; generic cognitive skills; communication, numeracy, and IT skills; and autonomy, accountability and working with others (Scottish Credit and Qualifications Framework, 2023). These 12 levels connect with qualifications specified by the Scottish Qualifications Authority, higher education institutes with vocational qualifications, and apprenticeships. VET across the UK can be provided for by secondary schools, sixth form schools and colleges, further education colleges, higher education institutes, private providers, and employers.

Universities in the UK are largely autonomous and, since 1992, have operated under a unified system whereby polytechnics can gain tertiary education provider status by offering specific

courses. Higher education qualifications typically comprise of intermediate and Bachelor's degrees at the undergraduate level, and research and professional postgraduate certificates/diplomas, Master's, and Doctoral degrees at the postgraduate level (Leuze, 2011).

As seen in Figures 4, 5, 6 and 7, movement from VET to higher education courses is possible across the UK. In England, Northern Ireland, and Wales, this can occur once students complete their short course or Level 4+, with entry provided into a Bachelor's level course in a higher education institution. Likewise in Scotland, completion of a VET Higher National Diploma allows entry into higher education courses at the Bachelor's level, but also into postgraduate diploma/certificate and Master's level courses.

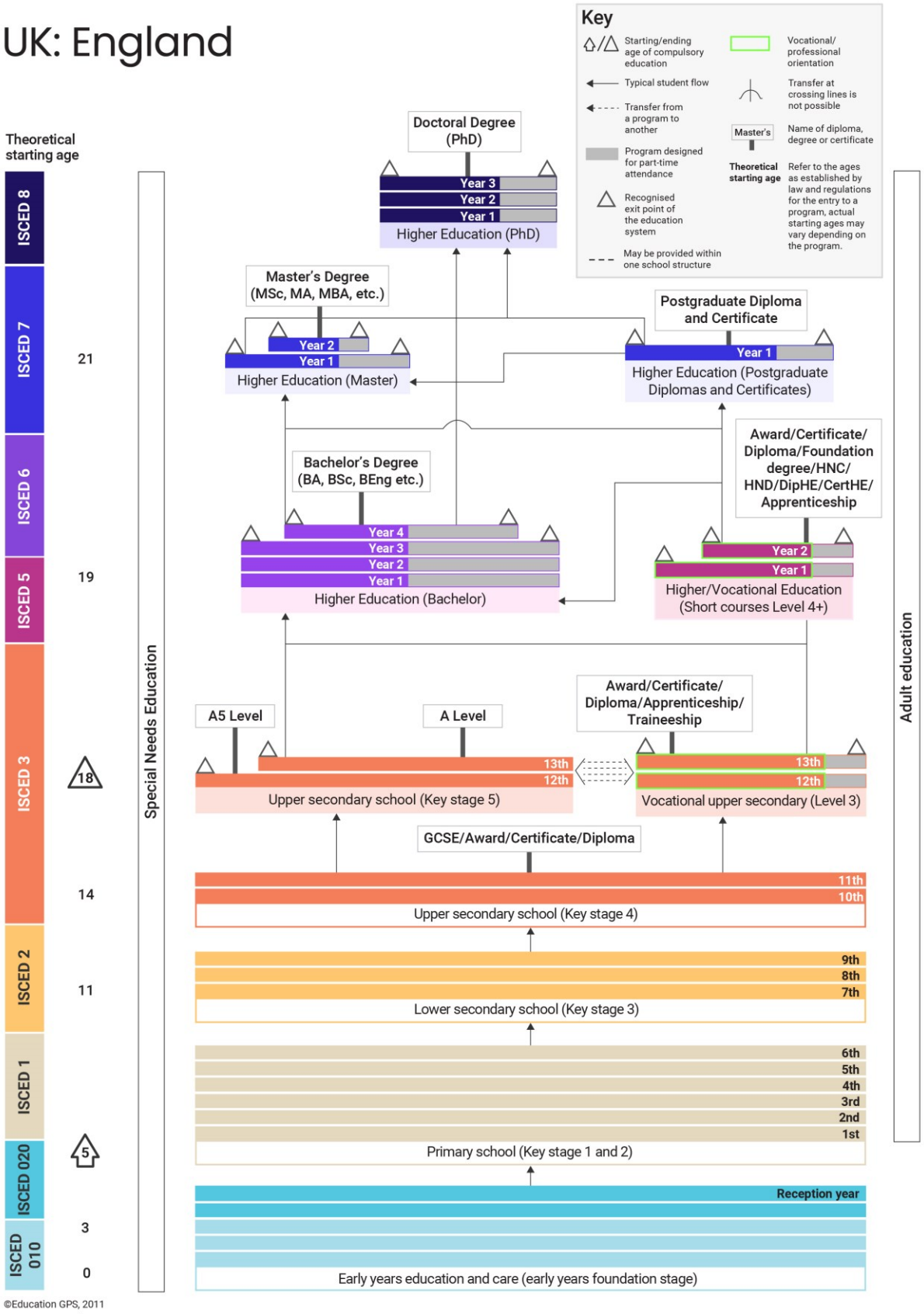

Figure 4 Structure of the education system in England

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

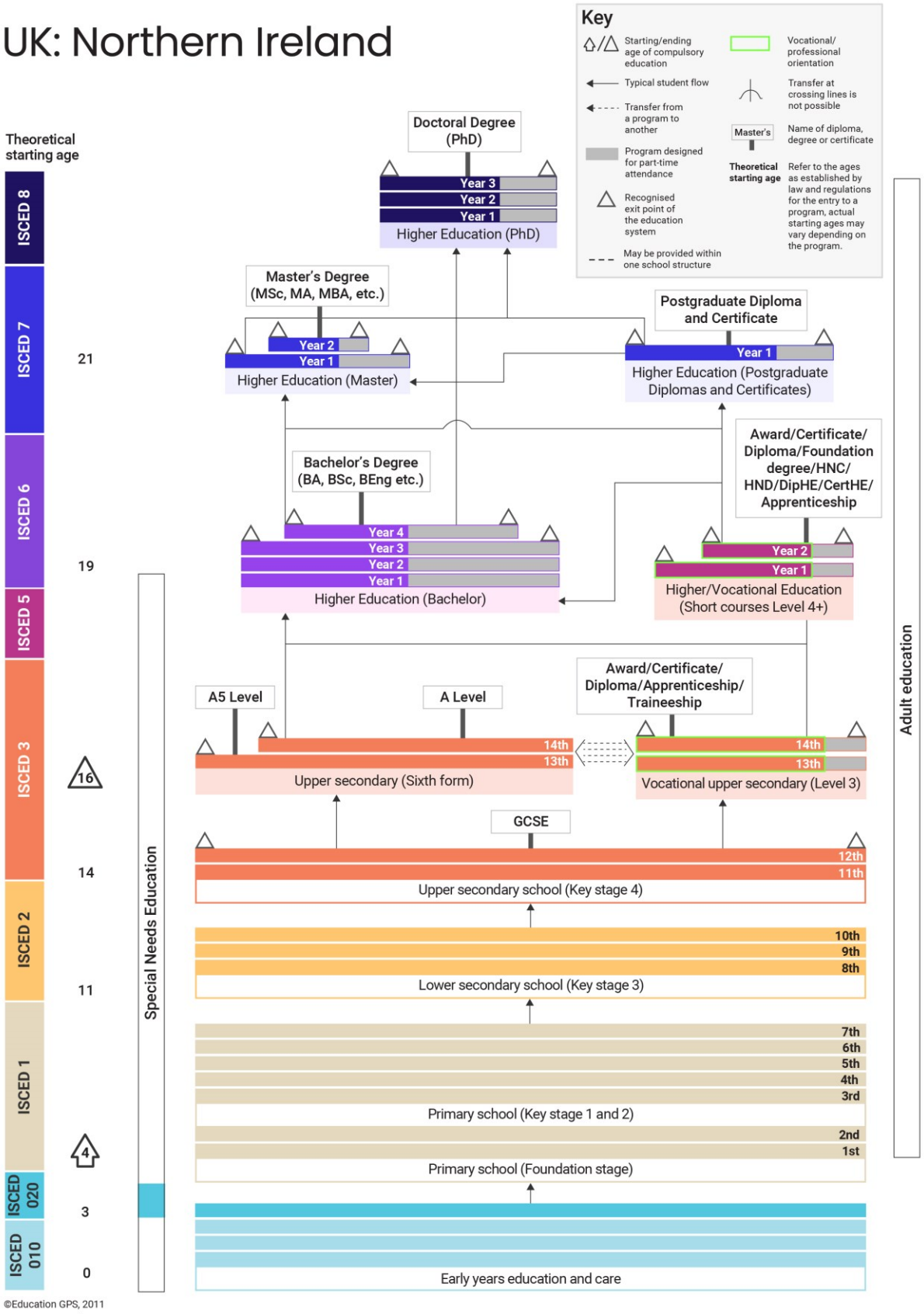

Figure 5 Structure of the education system in Northern Ireland

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

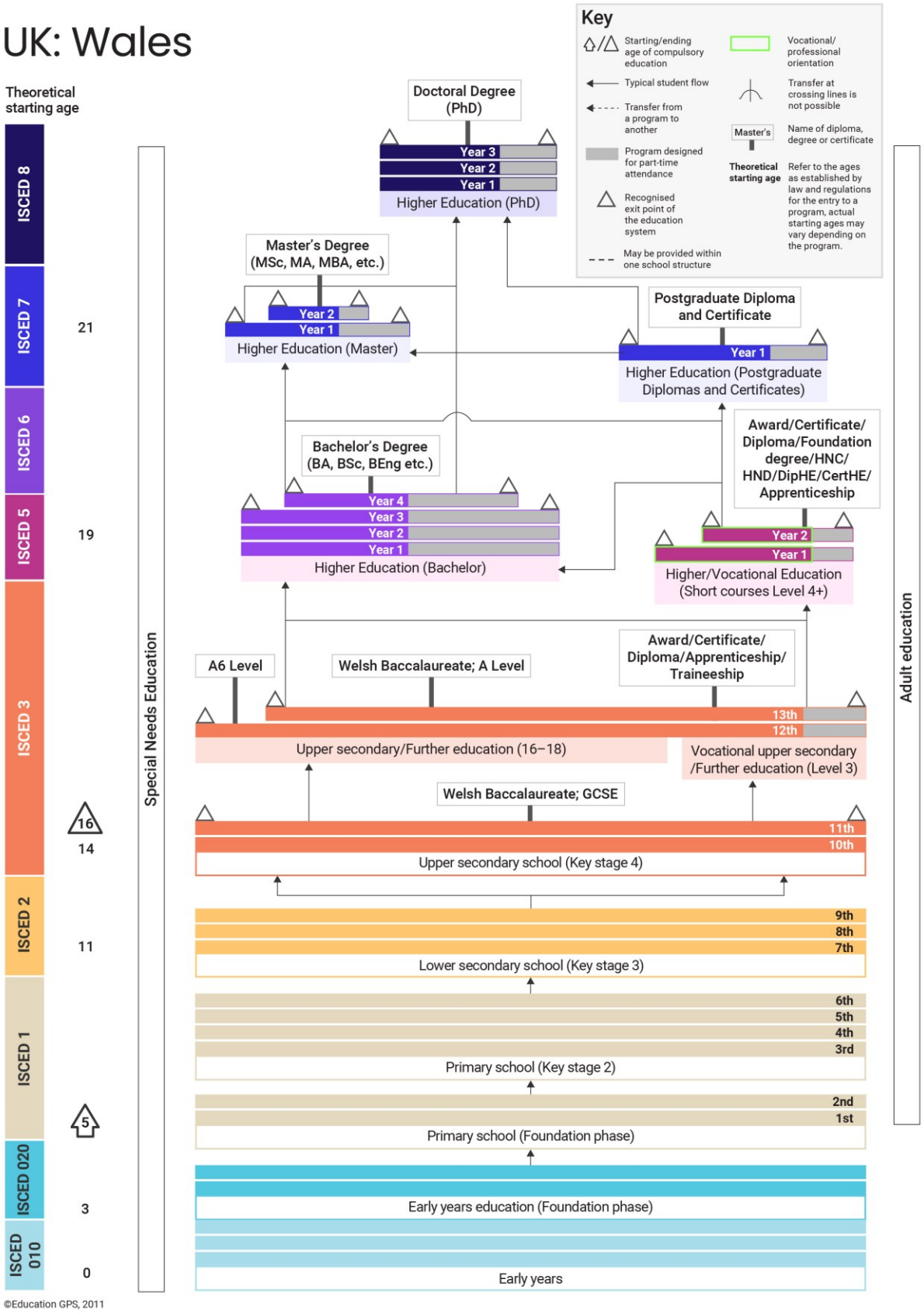

Figure 6 Structure of the education system in Wales

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

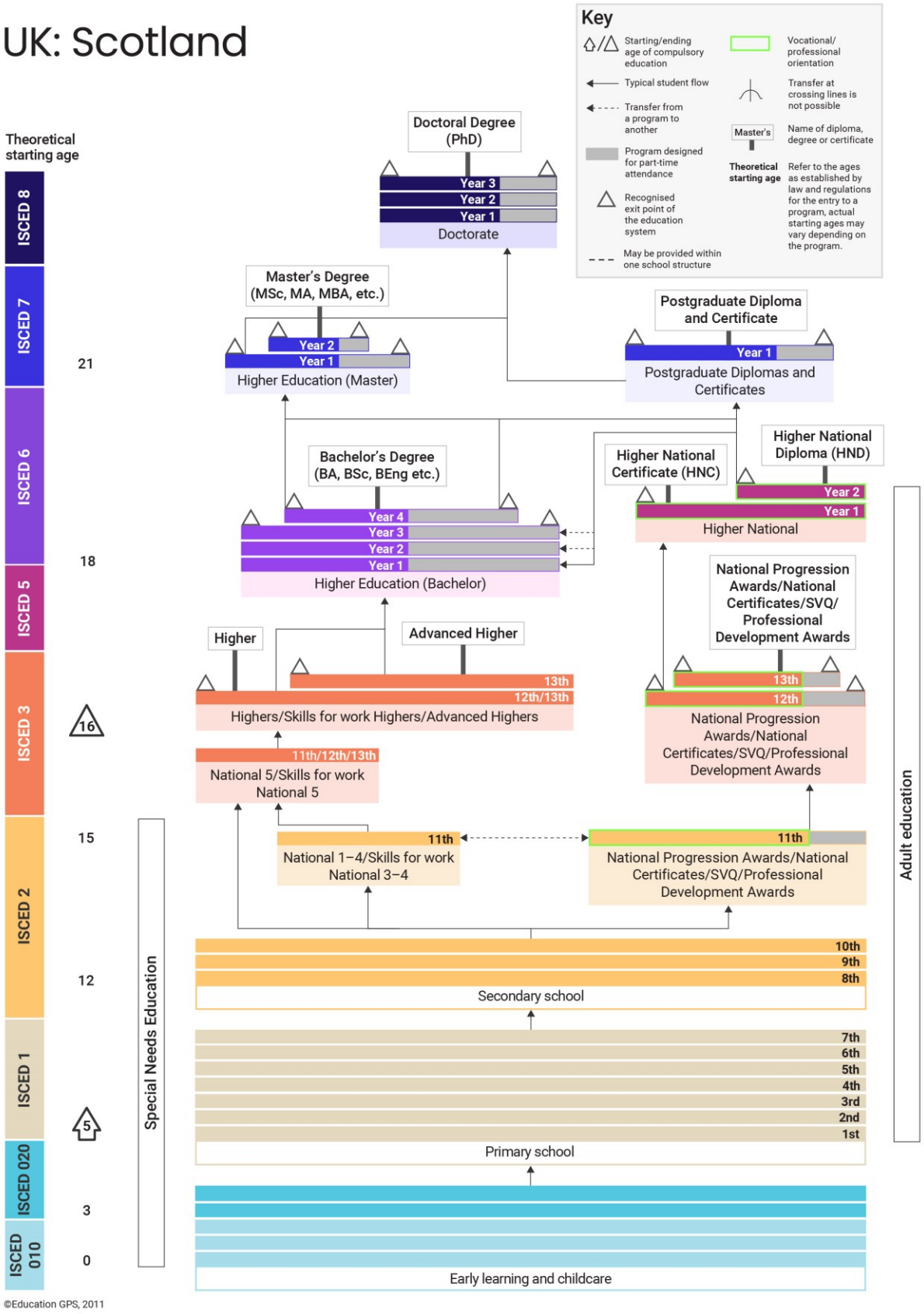

Figure 7 Structure of the education system in Scotland

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

4.2. Tertiary education – participation, attainment and labour market outcomes

Tertiary education participation and attainment in the UK has increased significantly over previous decades.

Specifically, the proportion of tertiary attainment by 25–34-year-olds was 29% in 2000 and increased to 57% in 2021 compared to the average across OECD countries of 27% in 2000 and 48% 2021. Bachelor's degrees are the most common for 25–64-year-olds at 26% (OECD average is 19%), followed by Master's qualifications at 13% (OECD average is 14%), and then short-cycle courses at 9% (OECD average is 7%) (OECD, 2022a).

The labour market outcomes associated with a tertiary education in the UK are also significant. In comparison to workers with below secondary attainment, 2019 data indicated that those with upper secondary and tertiary levels of attainment earned wages that were 25% more and 50% more, respectively. Additionally, workers in 2021 who had attained tertiary qualifications in engineering, manufacturing, and construction were the highest employed group at 87%, while those who had studied health and welfare were the lowest employed group at 82% (OECD, 2022a).

4.3. Governance, industry engagement and quality assurance

The Department for Education in England oversees higher and further education policy, and apprenticeships and wider skills. It is the governing body that is responsible for the teaching, learning, and training of youth and adults in apprenticeships, training programs, and further education, as well as the teaching and learning of those in the higher education sector. Oversight also includes supporting professionals who work with youth and adult learners (Department of Education (England), n.d.). Similar activities are managed by the Department of Further and Higher Education, Research, Innovation and Science in Northern Ireland, while in Wales, these are managed by the Department of Education and Skills (Department of Education and Skills (Wales), n.d.; Department of Further and Higher Education, Research, Innovation and Science, n.d.). In Scotland, these activities are managed by the Department of Higher and Further education (Scottish Government, n.d.).

The UK Quality Code for Higher Education (Quality Code) specifies quality practices across higher education institutions to protect public and student interests across the sector in Northern Ireland, Scotland, and Wales. This includes industry engagements with partner organisations to develop courses and standards that are of a high quality. Principles (e.g. Expectations for standards and Expectations for quality) are outlined to assure quality student experience and engagement, and ensure award integrity and provider quality.

Providers typically use the Quality Code with respect to their mission, quality arrangements, and legislative requirements. National bodies that fund and regulate higher education institutions in Northern Ireland, Scotland, and Wales can use the Quality Code for evaluating and quality assurance processes related to higher education provision (QAA, 2023).

In England, the Quality Code may be used to further enhance baseline requirements that are specified in the Office for Students' (OfS) Regulatory Framework for higher education in England (the Framework). This Framework outlines how the OfS executes its mandates and how registered higher education providers can maintain their registration.

The main bodies that are focused on VET policy development, administration, and funding in the UK include the Department for Education and Institute for Apprenticeships and Technical Education, and The Education and Skills Funding Agency in England; the Department for the Economy in Northern Ireland; the Department of Learning and Department of Lifelong Learning, Skill Development Scotland, and the Scottish Funding Council in Scotland; and, the

Department for Education and Skills, and Higher Education Funding Council for Wales in Wales. In England and Northern Ireland, the Regulated Qualifications Framework (RQF) is used in VET provision, in Scotland the Scottish Credit and Qualifications Framework is used and in Wales the Credit and Qualifications Framework for Wales is operational.

4.4. Funding

Annual expenditure per student by tertiary education institutions in the UK is higher than the OECD average (OECD, 2022a), while public funding for research and development in tertiary education in the UK (20%) is lower than the OECD average (29%). Private funding for tertiary education in the UK is significantly higher at 73% than the OECD average at 31% (OECD, 2022a).

The following are some examples of funding initiatives provided to countries in the UK.

England. According to the Institute of Fiscal Studies, recent changes to spending in England on further education and skills and higher education have included:

- **Further education and skills**

Spending reviews in 2019 and 2021 resulted in increases to education spending for 16–18-year-olds in further education colleges and sixth forms. As part of the 2021 spending review, an extra £900 million in public funding will be allocated to adult education and apprenticeships in 2024-2025 than in 2019-2020 (Drayton et al., 2022).

- **Higher education**

The implementation of a package of student reforms in February 2022 has substantially reduced the long-term cost of higher education by shifting repayment thresholds. These changes mean that students from the 2012-2022 entry cohorts will repay more of their student loan, with those in the middle-income bracket being affected the most by these reforms. Students enrolled from 2023 onwards will be required to repay their student loans using a lower threshold and interest rate, but over a longer period of time. Additionally, high income earners will no longer pay more than they borrowed, and low income earners will be the only cohort to have their loans subsidized by taxpayers (Drayton et al., 2022).

Northern Ireland. Initiatives relate to:

- **Further education and training.**

In 2020, €826.2 million was provided for further education and training programs (including for VET programs) through the Further Education and Training Authority (SOLAS) (CEDEFOP, 2022). Additionally, the skills package – under the 2022 Government budget – included funding to support and implement apprenticeships (€34 million) and for the delivery of further education and training strategic priorities, such as a 10-year Adult Literacy for Life Strategy and removing the €200 levy for 10,000 Post Leaving Cert learners (€9 million) (Government of Ireland, 2021).

- **Higher education**

The 2022 Funding the Future policy response aimed to set a vision for further and higher education in Northern Ireland. This includes (re)prioritizing €307 million to implement a sustainable multi-funded model, instead of an income contingent loan for fees model. The multi-funded model will involve a mix of Exchequer investment and employer contributions. This policy also aims to reduce the cost of education by investing an additional €18.5 million into the Student Assistance Fund to support full- and part-time students who are experiencing financial difficulties while studying, reducing student contribution fees, increasing student grant maintenance payments, and increasing the postgraduate fee grant from €2,000 to €3,500 (Department of Further and Higher Education, Research, Innovation and Science, 2022; HEA, n.d.).

Scotland. Since 2020, the Scottish Government's portfolio responsibilities for Education and Skills have included funding for:

- **Further education and training.**

This includes support for Scotland's college sector, increased financial support in the skills and training budget to increase the number of apprenticeships, an offering of more apprenticeship opportunities through Skills Development Scotland, and an investment of £5 million to buy new digital resources for universities, colleges and community learning providers (Scottish Government, 2020; Scottish Government, 2021a; Scottish Government, 2021b

- **Higher education**

This includes more loans to support disadvantage students access higher education (minimum income guarantee of £7,750 per year), improved efforts to raise the student loan repayment threshold (to £25,000), and an investment of over £60 million to support research innovation and a highly skilled workforce (Scottish Government, 2020; Scottish Government, 2021a).

Wales. The Welsh Government has implemented various initiatives to support the further and higher education sectors:

- **Further education**

This includes increased mental health and wellbeing support for further education colleges (£4 million of funding) and more funding for students with additional learning needs (£2.1 million of funding) (Welsh Government, 2023a; Welsh Government, 2023b).

- **Higher education.**

Support for full-time and part-time higher education students to cover living and studying costs has been addressed through the Welsh Government Learning Grant (WGLG). From 2018, each full-time student can access a minimum of £1,000 (Welsh Government, 2022).

4.5. Selected policy areas

England has a large low-skilled worker population. Initiatives have been implemented to support this population including:

- Managing the Adult Education Budget (Education and Skills Funding Agency) and the Union Learning Fund (Unionlearn), which provide resources for ensuring accessibility to further training and apprenticeship places
- Supporting access to digital skills programs via the Department for Digital, Culture, Media and Sport and the Office of Qualifications and Examinations Regulation

The main barriers to improving adult learning participation have consistently been time (e.g. due to family and work commitments) and cost (e.g. employers needing to find replacement workers, while also paying wages for all parties and associated costs). Structural factors may also impact access to further skills training as low-skilled workers are more likely to be employed in positions that require them to work longer hours, during the weekend, and maintain atypical work schedules than those in EU countries. They are also less able to access quality workplace skills training, with very few employers providing basic numeracy and/or literacy vocational training courses (OECD, 2020).

From 2017 onwards, the VET sector in England has shifted towards an emphasis on apprenticeship standards rather than apprenticeship frameworks. This was due to a lack of flexibility on the part of implemented frameworks to match local and employer requirements and provide general learning content. In contrast, apprentice standards have been developed/designed by employers, are less prescriptive with regards to learning content, and are not necessarily associated with a qualification. Thus, labour market trends appear to have had a strong influence on the design and implementation of VET sector policies. Various

policies and initiatives have been implemented since 2000 that enable English VET system and courses to be shaped by market demand (Hogart, 2022). This has included the establishment of the Learning and Skills Councils (LSCs) in 2000, and the replacement of LSCs through reforms that established the Education and Skills Funding Agency and the Adult Skills Budget in 2010, all of which were responding to employer needs and market signals. As a result, there has been significant growth in the number of VET qualifications offered in England. Since the 1980s, but increasingly in recent years, funding has also been made available to providers to be more responsive to market demands (Hogart, 2022). Nevertheless, the Department for Education, UK (2021) has reported that there has been a:

- Decline in learners aged 19 years and above participating in further education and training from 2012/2013-2019/2020.
- Twenty one percent drop in the number of achievements across apprenticeships and classroom-based learning during 2019/2020 as a result of COVID-19-related disruptions to assessment and the school term.
- Trend for learners to pursue apprenticeships that lead to higher employment and earnings potentials, especially in construction, engineering, and ICT, and away from business, leisure, and retail qualifications.

In **Northern Ireland,** while employers are generally content with graduates' skills, there remain clear challenges as they relate to workplace readiness and acquiring in-demand commercial, entrepreneurial, and language skills. OECD data from the 2012 Programme for the International Assessment of Adult Competencies indicated 25% of adults possessed Level 2 or 3 problem-solving skills (OECD average is 31%), which relates to the ability to use or navigate digital tools, applications, and platforms to solve problems. Only 30% of adults are reported to have basic digital skills and data literacy, and those from poorer socioeconomic and education levels tend to self-report below average digital skills (OECD, 2023).

The domestic challenges affecting the Irish economy and population include:

- Regional inequalities, labour shortages, and diminishing labour productivity in key sectors
- Rising cost of living and house prices
- Managing the impact of the war in Ukraine with respect to large inflows of refugees and surges in energy and food prices
- Managing an increasing demand for upskilling, reskilling and adapting to the impact of the COVID-19 pandemic (i.e., digital skills literacy for work and learning) and climate change (e.g., scientific and technical skills) (OECD, 2023)

Over 20 policies that have been implemented since 2018 to address these skills-related challenges have included the:

- Action Plan for Apprenticeship, 2021 to 2025 (2021), which is designed to develop and increase the uptake of apprenticeships by expanding the types of programs available to provide relevant qualifications and making 10,000 apprenticeships available per year by 2025.
- Pathways to Work Strategy 2021-2025 (2021), which aims to help people return to work, particularly following COVID-19, and expand labour market participation in marginalised/underrepresented groups (e.g., women, carers, single parents, and young unemployed) through government support (e.g. through the National Childcare Scheme) and initiatives that include reskilling/upskilling.
- Technology Skills 2022 – Ireland's Third ICT Skills Action Plan, which aims to meet Ireland's ICT skills demand by increasing the amount of highly skilled ICT graduates every year through expanding the number of relevant programs available and

attracting more women to the field (OECD, 2023)

Scotland. The Scottish apprenticeship system has experienced significant progress from 2013/2014 to 2019/2020 in terms of a 10% increase in apprenticeship commencements, provisions for a greater number of education pathway and training options, and greater reach for a wider range of adult and disadvantaged learner groups. Challenges still remain as they relate to:

- Limited employer participation/engagement in the apprenticeship system and advisory groups.
- Enhancing the apprenticeship system by, for instance, understanding how to leverage innovation, technology, and data to better respond to labour market demands.
- Providing fast-tracked apprenticeship options for the most skilled workers, as well as 'higher' level recognition once an apprenticeship has been attained (OECD, 2022c).

4.6. Challenges

As noted in the 2018 report, the UK continues to report high levels of tertiary education participation and attainment. System challenges include:

- Addressing socioeconomic factors that impact on educational access, which are key to upskilling adult workers.
- Increasing the popularity of VET, including in its provision in secondary education.
- Addressing system weaknesses that were exacerbated during COVID-19 (e.g. educational access for individuals from minority groups).

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5. KOREA

Highlights

- Korea has very high tertiary attainment and participation rates (above the OECD average) combined with a low earnings premium for tertiary qualifications (below the OECD average) and low employment rates for individuals with a tertiary qualification (below the OECD average).
- Academic studies and higher education are highly valued.
- Recent policy initiatives include those promoting lifelong learning to help support the aging population and address skills shortages, and those focussed on preparing the system for a shrinking youth cohort.
- Challenges include raising the status of VET to correct for the imbalance between higher education and VET participation, a mismatch between student supply and labour market skill requirements and adapting the system to meet large age-related population changes.

5.1. Structure of Korea's education system

Most children in Korea are enrolled in early childhood and pre-primary education, with 94% of 3-5-year-olds enrolled in early childhood programs in 2020 (OECD, 2023), compared to the OECD average of 83%. Children attend primary schools (*chodeung hakgyo*) for 6 years (ages 6-11) and then move to lower secondary schools (*Jung hakgyo*) for 3 years. The enrolment rate for elementary and middle schools, which is the compulsory education stage, is 95-98%, and the enrolment rate for high schools is 90% (KEDI, 2021, p.21)

Tracking starts at age 14 when the majority of students (OECD, 2016, p. 8) move to upper secondary school (*Godeung hakgyo*) for 3 years. This includes general high schools, special-purpose high schools and autonomous high schools. The remaining students move to either specialised vocational high schools or Meister High schools for vocational training.

High school education is not compulsory in Korea and enrolment is subject to passing a qualification exam or relevant assessment to gain entry into a regular, autonomous, special or vocational high school. Prior to 2019, students who accepted placements in high schools were fee-paying and this was seen as a barrier to participation in further learning by the Korean government. To address this, free high school education was launched in 2019 (Ministry of Education, Korea, n.d.(a)).

The structure of Korea's education system is summarised in Figure 8.

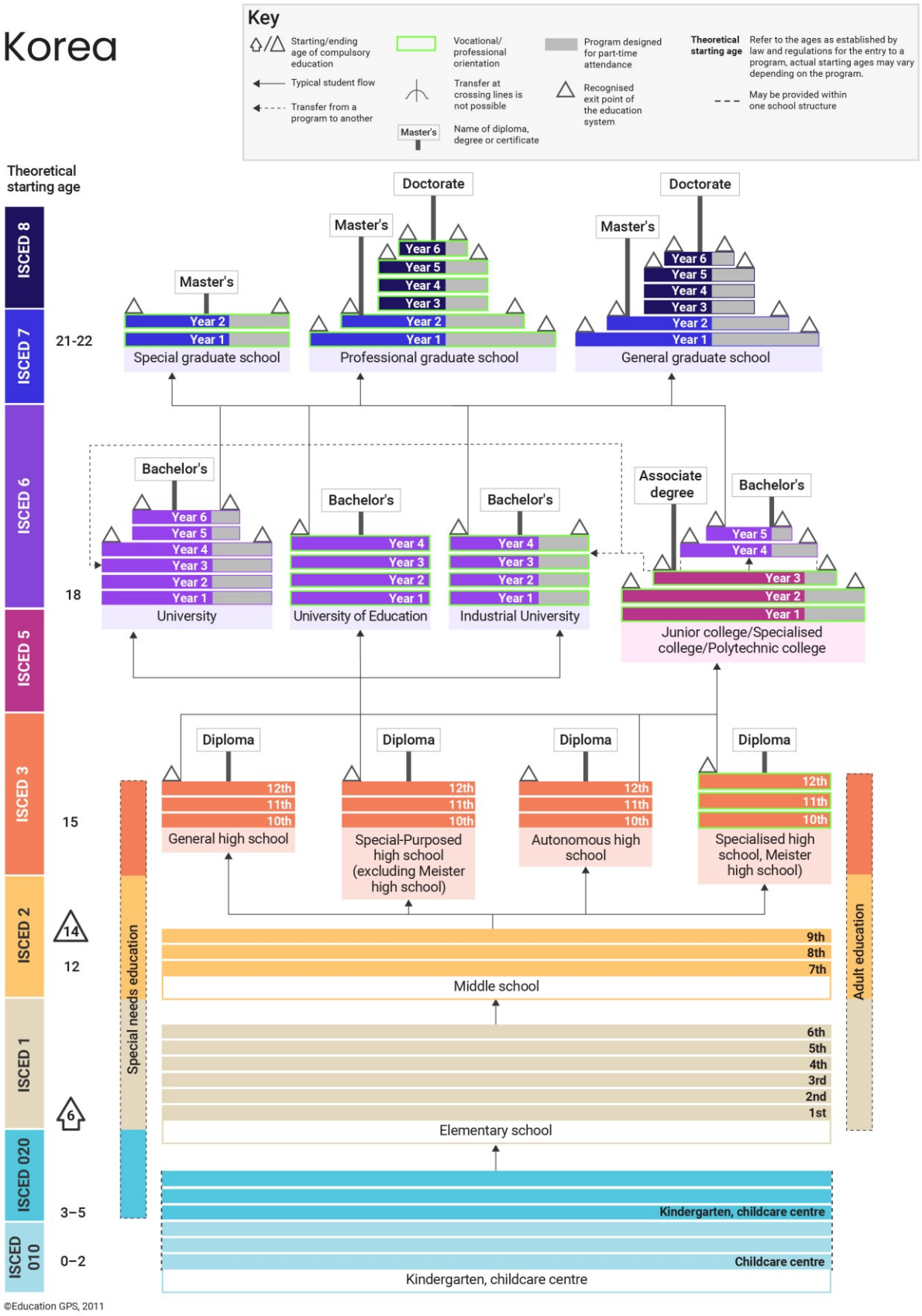

Figure 8 Structure of the education system Korea

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

In 2021, the Korean tertiary system comprised of 426 institutions. This included 227 universities, 154 junior colleges, 9 polytechnic colleges and 45 graduate schools (Ministry of Education, Korea, n.d.(b). Tertiary-level VET is offered in junior colleges and polytechnic colleges, while industrial universities provide professional knowledge and skills for the industrial sectors. Admission to tertiary-level VET is available from general and vocational high schools.

Students who want to enter university need to sit the College Scholastic Ability Test (CSAT). Students need to provide a transcript of their high school records and may also need to sit an additional university entrance examination (Korean Ministry of Education, 2018). University admissions policies have undergone a number of changes in recent years as universities have been allowed to accept students according to their own admissions criteria.

In Korea, academic studies are a priority during secondary education and higher education is emphasised at the tertiary level. To prevent confusion among students and parents, the Korean government has simplified the admissions process by putting more emphasis on CSAT score and school records than on essay writing or other skills, based on the notion that these may be affected by external factors such as private tutoring and where students went to high school (regular high schools, autonomous or special purpose high schools) (Ministry of Education, Korea, (n.d. (c)).

Since 2000, a decreasing proportion of students have been choosing the vocational track, leading to a mismatch between the supply of VET students and labour market demand (OECD, 2016, p. 8). The share of high school students in vocational high schools fell to only 18% by 2021, well below the 44% OECD average (OECD, 2019). As a response to falling VET enrolments, the Korean government has responded by converting some vocational high schools to general high schools and promoting the specialisation of vocational high schools, such as the Meister schools. Meister schools were first introduced in 2010 to increase the attractiveness of VET among young people. They are modelled on the German system of training master craftspeople, with emphasis on learning a specific trade or craft that is in demand in the labour market. They prepare students for work, rather than for further academic progression.

Post-secondary VET graduates can progress to higher education, although the proportion choosing this option has been falling in recent years, with more graduates choosing to directly enter the labour market.

A significant issue for the Korean tertiary education system is preparing for shrinking youth cohorts. The proportion of 15–24-year-olds in Korea is forecast to decline by 5 percentage points between 2015 and 2030. As a result, in 2022 the Korean government administered a university-level structural reform evaluation with the aim of reducing student quotas. In response to shrinking youth cohorts, some universities may be required to change to non-profit foundations or vocational institutions (Korean Ministry of Education, 2018).

5.2. Tertiary education – participation, attainment and labour market outcomes

Korea has very high upper secondary and tertiary participation and attainment rates. Between 2000 and 2021, the share of 25–34-year-olds with tertiary attainment in Korea increased by 32 percentage points (from 37% in 2000 to 69% in 2021), which is a faster rate than most OECD countries. In 2021, 69% of 25–34-year-olds were noted to have tertiary qualifications compared to 47% on average across OECD countries (OECD, 2022). Data from the Korean Educational Development Institute in 2020 show that the rate of advancement to colleges was 70% in 2019 (KEDI, 2021).

Korean youth and their parents value education highly, but their skills do not always match labour market needs. According to 2022 data, 50% per cent of university graduates are reported to be employed in a field unrelated to their field of study (Jones & Beom, 2022, p.19).

Many graduates spend a long time searching for a job or report that their qualification exceeds their job requirements. At the same time, small and medium enterprises (SMEs) struggle to fill positions (OECD, 2019). On average, 18% of all upper secondary students opt for VET programs in Korea, a lower proportion than the OECD average of 42%.

The employment rate for those with a tertiary education in Korea is below the OECD average. Among 25- to 64-year-olds with a tertiary education qualification, the employment rate was 77%, compared with the OECD average of 84%. Overall employment rates in Korea are similar for persons with short cycle tertiary education and Bachelor's qualifications, at 76.1% and 76.3%, respectively. The employment rate of vocational high school graduates fell from 52% in to 29% in 2021 (OECD, 2019) consistent with lower overall VET enrolments.

In Korea, the relative earnings of tertiary educated adults aged 25-64 was on average 33% more than those with upper secondary qualifications in 2019. This was below the OECD average of 53%.

To support connections between education, training and the workplace, a one-stop service model ("WE-Meet") which encompasses career exploration, education and training, and job-seeking activities, is intended to be established to offer support responsive to local industrial demands; and 'vocational education innovation zones' will be created to cultivate local high school graduates into a highly-skilled workforce (i.e. 17 zones by 2026) (Ministry of Education, Korea, (n.d. (d)).

5.3. Governance, industry engagement and quality assurance

Tertiary education – both higher education and tertiary-level VET – is the responsibility of the Ministry of Education, except for 34 polytechnic colleges which are the responsibility of the Ministry of Employment and Labour. Since the 1990s, the Ministry of Education has delegated some responsibility to the Korean Council for University Education for governance of the higher education sector, and to the Korean Council for University College Education for the coordination of vocational colleges. Other bodies shaping education policy include the National Institute for Lifelong Learning, and the Korean Research Institute for Vocational Education and Training (OECD, 2016; UNESCO-UNEVOC, 2018).

The majority of tertiary education institutions in Korea are privately owned and can appoint board members, set up governance structures, and make decisions about their work. However, the Ministry of Education sets the teaching and examination framework, sets quotas on the number of graduates, and regulates admission and enrolment policies (although institutions are gaining increasing autonomy in admissions screening processes) (OECD, 2016).

National Competency Standards (NCS) are the responsibility of the Ministry of Education and the Ministry of Employment and Labour. A National Qualifications Framework is developed based on the NCS (UNESCO-UNEVOC, 2018). Tertiary education institutions are required to regularly self-assess and report via the University Information Disclosure System on their teaching, research, organisation and management, facilities and equipment (OECD, 2017d). Quality assurance in VET is the responsibility of the Korea Skills Quality Authority (KSQA) (UNESCO-UNEVOC, 2018).

More recently, Korea has sought to boost student interest in VET and better align VET programs and labour market needs. As of April 2020, there are 576 vocational high schools in Korea, accounting for 24% of all high schools, with 19% of high school students enrolled. Over the last decade, the Ministry has implemented a series of reforms to increase the share of students in vocational schools to 29% by 2022. One such reform is an emphasis on career exploration at the primary and lower secondary years, to allow students to consider the option of VET at upper secondary (Job First, University Later initiative). This is supported by a centrally managed support system connecting the government, local education offices and

schools to provide potential VET graduates with links to employment prospects in reputable companies. As part of the Job First, University Later initiative, students can pursue higher education pathways after gaining employment to further enhance their skills and competencies. To enable continuing education, the Ministry of Education, in collaboration with 162 universities working together with companies, run an Apprentice School program. The aim of this program is to help students develop job-related practical skills and knowledge through 183 courses (at 2020), allowing them to participate in on-the-job training from the second year of the program. Other related support for VET graduates returning to study include additional academic support and curriculum adaptations (Ministry of Education, Korea, 2020).

Despite high tertiary attainment rates, Korea is currently experiencing a dramatic decline in the school age population, and it is anticipated that the number of enrolments to colleges and universities will fall by 160,000 in the coming years. According to a 2022 study by the Statistical Office, the number of elementary school students in 2026 is estimated to be about 2.2 million, a decrease of about 17.5% from 2.67 million in 2021. On October 31, 2022, the Korean Educational Development Institute (KEDI) calculated the Elementary School Downsizing Index by predicting the number of enrolled students to see how many elementary schools will be at risk of closing or merging in 2025 compared to 2022. It was predicted that, by 2025, 1657 schools, or 26.3% of all elementary schools nationwide, would be in the high-risk group, (i.e., likely to close or merge with another school if no measures are taken to attract students) (Jeon & Son, 2023).

To mitigate the effects of this shrinking youth cohort on the tertiary education system, a series of changes enabled by increases in institutional autonomy and accountability were released by the Korean Ministry of Education as the Support Strategy for Systematic College Management and Innovation on May 20, 2021. This policy included supports for colleges and universities to voluntarily adjust enrolments to ensure sustainability (e.g. establishing a cap on enrolments), while those that are not financially or educationally unstable are set to undergo transformation, or close where improvements are not observed. Additionally, it is proposed that a greater and more collaborative higher education ecosystem in the metropolitan areas is needed, as well as between higher education institutions in the same locality (Ministry of Education, Korea, n.d. (d). A new initiative, the Regional Innovation System and Education (RISE), was announced in early 2023 to further strengthen regional universities and is a key 2023 educational reform strategy designed to address demographic shifts in the population) (Jung, 2023).

5.4. Funding

Reflecting the value placed upon education in Korea, overall expenditure on education across all levels as a proportion of GDP is among the highest in OECD. At the tertiary level in Korea, this proportion is 2.3%, which is also above the OECD average (1.6%)

High level of spending on tertiary education is driven by high levels of household spending. Around 42% of expenditure on tertiary education institutions comes from households, which is 20% more that the OECD average. Net private returns for tertiary education are considerably higher than net public returns in Korea and this has been proposed as a contributing factor to the high levels of household spending on education (OECD, 2015).

A national scholarship program was first launched in 2012 to ease the cost of college and university education. Tuition is relatively more expensive in Korea than in other OECD countries (OECD, 2022). Measures have been introduced to reduce the financial burden on households and address equity. Higher education students have access to income-contingent loans through the Korea Student Aid Foundation, and a national scholarship program which awards scholarships based on household income and academic achievement. The Half-Tuition Policy was also introduced through the National Scholarship System, with the aim of reducing tuition fees payable by households by 50% in total. Full scholarships are available

for students from low-income families, and graded subsidies are available for higher income families. Tuition fees are also regulated, with the government introducing a ceiling on annual rate increases, and establishing the Enrolment Fee Deliberation Committee in 2010 to determine reasonable fees (Korean Ministry of Education, 2018; OECD, 2016). National scholarships are granted based on household income, aimed at ensuring educational equity for willing and able students regardless of their individual circumstances. The budget total for the scholarship program was ₩4,1348 trillion in 2022 (Ministry of Education, Korea, n.d. (c)).

To further enable access, universities are also encouraged to fund their own scholarship programs and avoid fee increases. To further encourage participation, application fees to all universities were abolished in 2022, beginning with national and public universities in 2018. From 2019, another initiative introduced by the government to support students in universities and their families was the lowering of the student loan interest rate. According to the Korean Ministry of Education, student loan rates were reduced by 0.5% from 2.2% in 2019 to 1.7% in 2021 (Ministry of Education, Korea, 2020).

5.5. Selected policy areas

Raising the attractiveness of VET in order to redress the imbalance between participation in academic/higher education and VET tracks and to address the supply and relevance of skills needed in the labour market, remains an issue in Korea (OECD, 2019). A range of strategies are being implemented, including:

- Specialised College of Korea: This is a designation given to tertiary institutions which develop specialties in selected areas to a high standard and produce highly skilled experts, through linkages with industry (OECD, 2016, p. 8).
- Launch of the Korean Open Courseware Platform, which also involves the Korea College Library Association, and includes institution-provided Technical and Vocational Education and Training content and learning resources in different subject areas to mitigate the skills gap in the working population. Content is classified into themes more relevant to technical and vocational education, including employment, entrepreneurship, and lifelong education and curated according to the 84 tracks under 8 specializations, following the classification framework of specializations provided by the Korean Council for University College Education (KCCE) (KRIVET, 2020).

To address the skill mismatch previously discussed, the Korean government has recently invested heavily in the provision of quality career counselling to help young people make informed educational choices and aid the transition from school to work. Counselling includes linking education and training to desired occupations and sectors, information about the job market, as well as individual strengths and weaknesses to bridge deficits in knowledge and information. While the provision of well-qualified and trained career counsellors is integral, partnerships with industry and families, particularly those that are disadvantaged, is also deemed crucial (OECD, 2019).

The Korean government enacted the Lifelong Education Act in 2000, ensuring that it takes responsibility for the lifelong education of its citizens. The National Institute for Lifelong Education oversees implementation of the legislation at both metropolitan and regional levels. In 2019, it was reported that the participation rates of adults in lifelong learning was 43.4%, a significant increase from 29.8% in 2007 (Ministry of Education, Korea, 2020). As part of the Lifelong Education Act, a Lifelong Education Promotion Master Plan is reviewed every 5 years. Now in its fifth iteration, the government is looking to co-operation between colleges/universities and industry to ensure that vocational education and community-based lifelong learning are provided in a cyclical manner to students through contract-to-hire courses. It was also highlighted that selected 2-year colleges will operate as vocational education institutions (by 2023) and that junior college co-ops will be expanded and revised for more effective teaching and learning of skills. This integrated curricula of vocational high schools and junior colleges will provide an appropriately qualified workforce in newly emerging fields

of technology (Ministry of Education, Korea, n.d.(d)).

5.6. Challenges

Korea's high levels of higher education participation and attainment continue to pose a number of challenges for the tertiary education system.

- The continuing emphasis on academic studies and higher education combined with university tuition fees see households shouldering significant costs.
- A shrinking youth cohort and aging population present significant challenges to the tertiary education system.
- An oversupply of university graduates presents a challenge for the labour market and has led to a skills mismatch problem.

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6. SINGAPORE

Highlights

- Singapore has very high upper secondary and tertiary participation and attainment rates, as well as high employment rates.
- Academic studies and higher education are highly valued; however, some secondary and tertiary education reforms have been implemented to recognise and encourage the valuing of a broader range of skills.
- Recent policy initiatives are driven by the national agenda of creating an advanced economy and inclusive society. Further development of the national VET system is seen as a key component to achieving this agenda.
- Challenges include an intergenerational skills mismatch, elevating the status of VET and promoting lifelong learning.

6.1. Structure of Singapore's education system

The structure of the Singapore education system has undergone significant structural reform since 2018 (Kwek, Ho & Wong, 2023). The education of children as well as the governance of primary and secondary schools lies within the remit of the Singapore Ministry of Education (MOE). MOE also has oversight of the early childhood sector, where subsidised kindergarten is available for children aged 4-6 years of age. This falls under the Early Childhood Development Agency (ECDA), which is an autonomous governance and regulatory body jointly established by MOE and the Ministry of Social and Family Development (ECDA, 2023).

The Compulsory Education Act established in 2000 (Ministry of Education Singapore, 2021) mandates that all children undergo compulsory primary education from the age of 6, where they attend school for 6 years. Traditionally high-stakes, primary students were moved on to secondary schools for the next 4-6 years depending on their results on the Primary School Leaving Examination (PSLE) at the completion of primary school, or through the Direct School Admission program (Ministry of Education Singapore, 2023a). In this program, students can apply to secondary schools based on their talents in specific academic subjects, co-curricular activities (such as music, chess, etc.), and sports prior to the release of the PSLE results that subsequently provides evidence for which secondary school course best suits their academic learning and aptitude. These options currently include:

- Secondary schools
    - an Express stream (preparation for the Singapore-Cambridge General)
    - a Normal Academic (NA) option (preparation for GCE Normal academic level – GCE N(A) level – at the end of the 4 years) – approximately 25% of students move into this pathway
        - a fifth year can be undertaken by students from Normal Academic to prepare for the GCE 'O' level examinations.
    - a normal technical / vocational (i.e. VET) option (preparation for GCE Normal technical level – GCE N(T) level – at the end of the 4 years).
    - Integrated Programs (IP), which is a 6-year program catered for academically strong students who bypass the GCE 'O' level examinations and graduate at the end with either the Singapore-Cambridge GCE A-Level qualifications, the International Baccalaureate (IB) Diploma, or the National University of

Singapore High School Diploma.

- Specialised independent schools.
- Special Education schools.
- Privately funded schools (Ministry of Education, Singapore, 2022a, p.vii-x).

Noting that such streaming approaches encouraged exam-centric and competitive schooling environments, MOE proposed a series of reforms in 2019 to ensure the provision of multiple pathways to academic success, recognising the differentiation of abilities and strengths in individuals. For students moving from primary to secondary school, the following 2 initiatives were proposed:

- A new scoring system for PSLE, using broad bands that are criterion-referenced and standards-based (Ministry of Education, Singapore, 2019).
- Implementation of Full Subject Based Banding to be completed by 2024, allowing students to undertake a range of subjects at 3 different levels based on their strengths and interests: G1, G2, G3 (G stands for General), replacing the mapped standards of N(T), N(A) and Express standards, respectively. A new common national examination, the Singapore-Cambridge Secondary Education Certificate (SEC) will be implemented in 2027.

Revisions to post-secondary admissions as a result of the above changes will be progressively introduced and fully implemented by the 2028 Academic Year admissions to recognise changes in students' different combinations of subject as well as subject levels.

Figure 9 summarises the education pathways for students in Singapore.

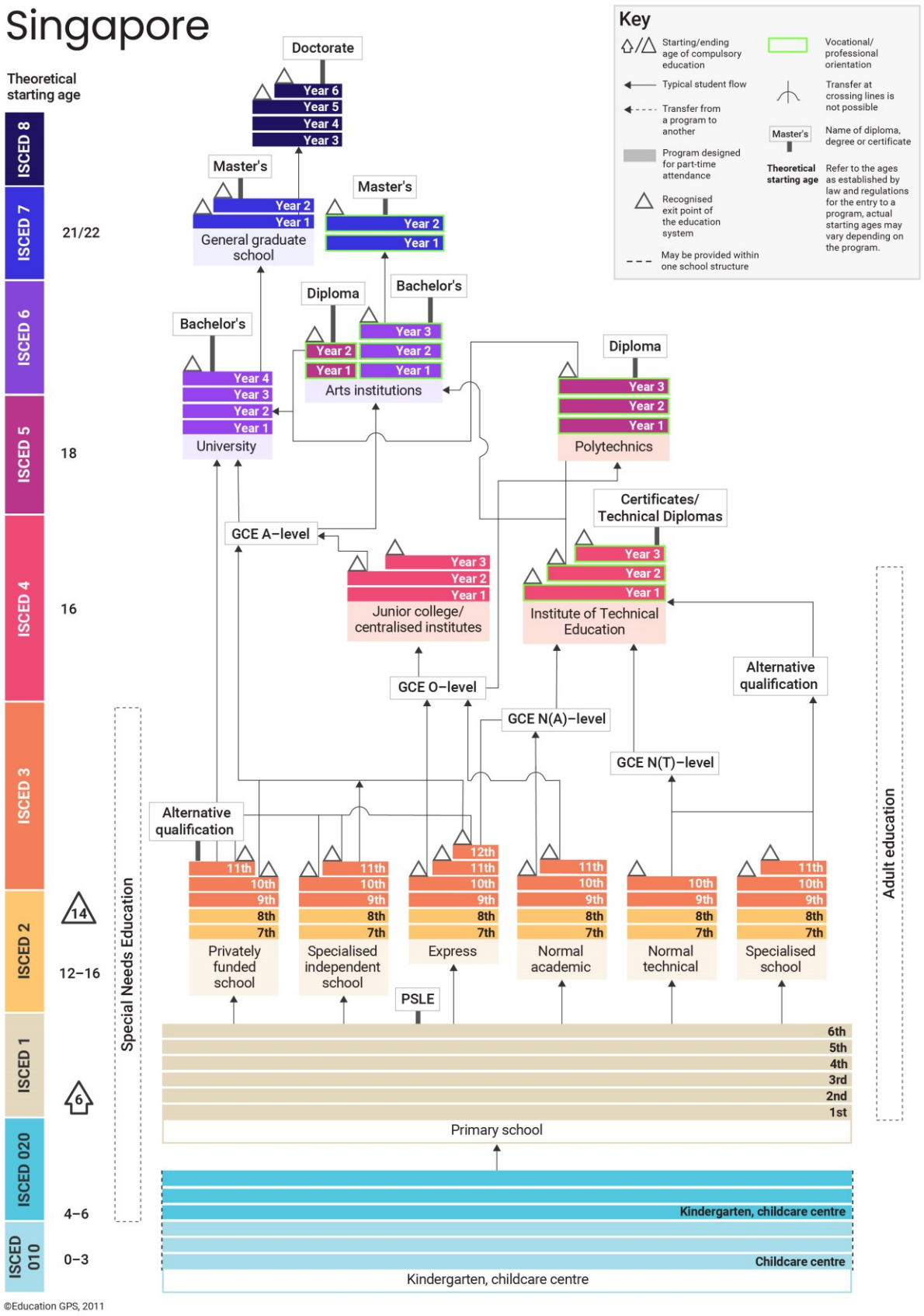

Figure 9 Structure of the education system in Singapore

Source: Adapted from Singapore Ministry of Education (2022) & OECD, European Union, UNESCO Institute for Statistics (2015)

Post-secondary school, students can attend:

- any one of 18 junior colleges and one centralised institute (approximately 30% of all post-secondary students). These schools offer either a 2-year (junior college) or 3-year (centralised institute) pre-university course that leads to the GCE 'A' level examination. Students must have the necessary GCE 'O' level qualifications to enter these schools. Completion of these courses provides the necessary requirements for entrance to university.
- any one of 5 Polytechnics (attended by approximately 40% of all post-secondary students) which have 3-year Diploma Courses providing applied and practice-oriented learning and training, with curricular designed in close consultations with industry to ensure that its Diplomas meet requirements and demands of the industry. Work attachments with industry partners are part of the Polytechnic curriculum and can vary in duration from 6 weeks to 6 months or longer for selected courses. Admission to polytechnics requires the necessary GCE 'O' levels or recognised National Institute of Technical Education Certificate (NITEC) qualifications from the Institute of Technical Education (ITE) described in more detail below. Top performing Secondary 4 (NA) students may apply for entry to the Polytechnics via the Polytechnic Foundation Programme in lieu of Secondary 5 (Ministry of Education, Singapore, 2000). Since 2019, students who have graduated from junior colleges with GCE-A level qualification can be admitted to Polytechnics at the start of Year 1, Semester 2, allowing them to finish their diploma course in 2.5 years as opposed to 3 years. Starting from 2020, 56 courses allow exemptions of up to 2 semesters, allowing A-Level graduates to complete their studies in 2 years. Up to 120 polytechnic courses offer exemptions for A-Level graduates (Ministry of Education, Singapore, 2020). Polytechnics also admit working adults with relevant work experience into full-time or part-time diploma or post-diploma (Advanced Diploma and Specialist Diploma) programs across a range of disciplines. Adults seeking training in a different discipline can also undergo diploma (Conversion) courses that facilitate career switches. Polytechnic graduates who wish to further their studies may be considered for admission to universities based on their diploma qualifications (Ministry of Education, Singapore, 2000).
- any one of the 3 Institutes of Technical Education (ITE) campuses (approximately 20% of all post-secondary students) which provide 1-2-year technical or vocation courses to students who have completed their GCE 'N' or 'O' level certificates. ITEs promote their extensive partnerships with industry as well as collaborations with foreign partners. Students completing these diploma programs may also qualify to progress to university. Aptitude-based admissions were introduced in 2018, allowing students to gain admission to courses based on their aptitude and interest related to their intended field of study. Completion of the course awards students with NITEC or higher NITEC qualifications. The introduction of the ITE SkillsFuture Work-Study Diploma occurred in 2018 and aims to provide a pathway for skills deepening and career progression in partnership with industry to both fresh and in-employment ITE graduates. More recently in 2022, ITE introduced a new enhanced 3-year curricular structure by streamlining overlapping competencies between related NITEC and Higher NITEC courses, leading to the latter qualification (Moktar, 2018).
- either of the 2 Arts institutions (Singapore Sports School/School of the Arts, Singapore), which offer a range of publicly funded degree and diploma programs in visual and performing arts, including The International Baccalaureate Diploma.

(National Centre on International Education Benchmarking, 2018; Singapore Ministry of Education, 2017b).

Currently, Singapore has 6 publicly funded universities that encompass both research and

academic studies across graduate and post-graduate courses. These autonomous universities have strong collaborations with foreign universities and often have clear links with industry. Like many formal training institutes, those in Singapore also offer assessment for recognition of prior learning – either to allow entrance into a course, to be given an exemption from a subject or module or to be given a credit transfer (Temasek Polytechnic, 2018). In March 2021, it was announced that Singapore's first private university of the arts would be established by 2025, as an alliance between LASALLE and the Nanyang Academy of Fine Arts, with the intention that both institutions maintain distinct yet synergistic programs (Ministry of Education, Singapore, 2022c).

The 3 largest publicly-funded Autonomous Universities (AUs) in Singapore have a Discretionary Admissions scheme, allowing up to 15% of every freshman cohort to be admitted based on a holistic evaluation of their achievements in cocurricular activities and other areas even if they may not meet specific academic requirements. To increase participation in higher education, the MOE has expanded the aptitude-based admissions system to cover more majors offered in university. These aptitude-based admissions allow for students in some areas to be admitted based on an evaluation of their past work and competencies in specific skills not necessarily covered in previous levels of education. Since 2017, the AUs have launched Work-Study Degrees to further tighten the nexus between education and training. These programs feature increased employer involvement, where the companies and AUs co-design and co-deliver curricula that closely interconnect theory and practice, as well as co-assess students' performance at the workplace. These programs allow students to alternate work and study on a weekly or term basis (SkillsFuture, 2023a).

6.2. Tertiary education – participation, attainment and labour market outcomes

Singapore has very high upper secondary and tertiary participation and attainment rates. Just under 97% of those who had started primary school in 2011 had progressed to post-secondary – either general or vocational – education in 2021. World Bank data report that the post-secondary attainment rate for those aged 25 years and older was 63% in 2022 (Department of Statistics, Singapore, 2023).

Employment data show that 83% of the general population aged 25 to 64 were in employment in 2022 compared to 82% in the previous year and 79% a decade ago. Women were also shown to have increased participation in the workforce due to a rising educational profile, movement towards gender equity and flexible work arrangements (Ministry of Manpower, Singapore, 2022).

In 2022, 62% of the labour force were tertiary graduates with a degree, diploma or professional qualification. This was higher than the 48% rate reported in 2012. The increase was more pronounced for those with degree qualifications, from 29% in 2012 to 42% in 2022 (Ministry of Manpower, Singapore, 2022).

The median income of full-time employed degree holders rose to $8,190 in 2022 driven by the increased share of graduates in higher-skilled and higher-paying professionals, managers and executive roles (from 78% in 2021 to 80% in 2022.) The median gross monthly income for diploma holders aged 25 to 29 was $3,740 compared to $3,389 in 2017. Those with degrees from local AUs earned a gross median monthly income of $5,740 in 2022, compared to $5,070 in 2017, while those graduating with degrees from private institutions or overseas earned $4,437, compared to $4,095 in 2017 (Ministry of Manpower, 2022).

6.3. Governance, industry engagement and quality assurance

All tertiary education, including universities, polytechnics and ITEs are the responsibility of the Ministry of Education. Each provider is autonomous and usually has a board. However, this board is also supervised by the Ministry of Education. The Ministry of Education divisions in charge of higher education quality assurance measures are as follows:

- The Higher Education Policy Division
    - formulates, implements and reviews policies relating to universities, polytechnics, ITEs, private education and the Arts Institutions
    - performs research, horizon scanning and quantitative studies that inform higher education policy.
- The Higher Education Operations Division has responsibility for:
    - strategic Human Resource matters relating to the post-secondary education institutions, the Higher Education Quality Assurance framework and service quality
    - contingency planning and incident management affecting the post-secondary education institutions and the MOE Statutory Boards.
- The Academic Research Division
    - formulates, implements and reviews academic research on manpower policies and funding under the Research, Innovation and Enterprise Masterplan for the universities, polytechnics and the ITEs
    - reviews the progress and performance of the Research Centres of Excellence and administers research funds, including the MOE Academic Research Fund and the Research Scholarship Block
    - formulates policies pertaining to social science and humanities research and constitutes the secretariats for the Academic Research Council and the Social Science Research Council.
- The SkillsFuture Division
    - undertakes planning and policy work for SkillsFuture initiatives
    - formulates, reviews and implements policies to support continual and lifelong learning
    - works with the universities, polytechnics and the ITEs to develop multiple pathways for skills acquisition and mastery
- The Higher Education Planning Office
    - oversees strategic planning and policy coordination
    - conducts data analysis to inform policy development
    - oversees higher education-related International Relations initiatives (Ministry of Education, Singapore, 2022c)

Overall, there is a high level of industry engagement in shaping education and training in Singapore. In terms of vocational education, the 3 ITEs pride themselves on their strong connections with companies (Tucker, 2012).

6.4. Funding

University, polytechnics and ITE fees are self-determined in close consultation with the ministry. All 6 of the universities, the polytechnics and the 3 ITEs are publicly funded. However, this funding is more like a subsidy than a fully funded placement. This means that the Ministry of Education allocates money on a per student basis, with the shortfall made up by substantial private funding. There is a government bursary and loan schemes which are only available to students in Ministry of Education subsidised courses at the publicly funded Autonomous Universities, polytechnics, and ITEs. These institutions also offer their own financial assistance schemes to help their students (Government of Singapore, 2023).

For polytechnics and universities, there is also a Tuition Grant Scheme, which requires graduates who are permanent residents or international students to work in Singapore-based companies for 3 years upon graduation. ITEs do not have this scheme (Ministry of Education, Singapore. 2023b).

To encourage individual ownership of workplace and lifelong learning, the SkillsFuture initiative, in the form of SkillsFuture Credit, provided Singapore Citizens aged 25 and above with an opening credit of $500 in 2017. A broad-based top-up of $500 was provided in 2020, together with an additional SkillsFuture Credit (Mid-Career Support) of $500 for Singaporeans aged 40-60 to be used on career transition programs by 2025 (SkillsFuture, 2023b).

6.5. Selected policy areas

The Singaporean economy is known to be driven by skilled personnel in its manufacturing, financial and tourism sector. In the wake of Industry 4.0, a highly skilled, future ready workforce is seen as the key contributor for a diverse, inclusive, and globally competitive economy. The Technical and Vocational Education and Training (TVET) system, policies and initiatives in Singapore are in line with the changing needs of industry. The ‘Skills-Future Singapore Agency Act 2016 (No. 24 of 2016)’3 and ‘Workforce Singapore Agency Act (Chapter 305D)’4 are the 2 acts that govern TVET strategy and implementation in Singapore (Republic of Singapore, 2016).

SkillsFuture is one of the key national initiatives of the Government toward advancing TVET. SkillsFuture Singapore (SSG), a statutory board under the MOE, is tasked to implement SkillsFuture initiatives by working with educational institutions and training partners to build high-quality, industry-relevant training. The Workforce Singapore (WSG), a statutory body under the Ministry of Manpower, drives efforts to help Singaporeans assume quality jobs and careers, while addressing industry manpower needs. As part of the program, a suite of supports has been introduced along with dedicated funding. These include:

- **SkillsFuture Series**. A list of short, industry-relevant training courses known as the SkillsFuture Series that focus on priority and emerging skills areas, such as data analytics, finance, and tech-enabled services and have been developed by the institutions of higher learning, including Polytechnics and Universities. The courses are offered across 3 proficiency levels to students: Basic, Intermediate and Advanced.
- **SkillsFuture Career Transition Programme**. Launched in April 2022, this permanent program aims to help mid-career workers remain employable, and pivot towards sectors with good hiring opportunities. Skills and training advisory services will be made available to help trainees select courses that best suit their strengths and interests. All courses will have elements of industry involvement, such as work attachments or industry projects, to enable trainees to acquire industry-relevant skills. Employment facilitation will also be available to support trainees in their job search (SkillsFuture, 2023c).
- **MySkillsFuture Portal.** MySkillsFuture is a one-stop online portal that empowers individuals to chart their own career and lifelong learning pathways. The workforce

portal provides industry information, online assessment tools, a Skills Passport for documenting users' skills, certificates and licences, as well as a Skills Quotient that helps individuals to identify their skills gaps along with personalised course recommendations to help shape informed career and training decisions. MOE students from Primary 5 to Pre-University use the students' portal as part of their curriculum to raise their self-awareness and understanding of the world of work, identify their career aspirations, and guide them in their education and career decision-making processes.

The Singapore government is projected to increase the number of work-study placements for students to 5,000 by 2025, double job placements for mid-career workers to 5,500 by 2025 and increase the capacity of reskilling programs for mid-career workers.

The Future Economy Council (FEC) drives the growth and transformation of Singapore's economy for the future and foresees 5 futures that the TVET sector is well-positioned to support, including:

- Future Jobs and Skills;
- Future Growth Industries and Markets;
- Future of Connectivity;
- Future City and
- Future Corporate Capabilities and Innovation.

The FEC builds on initiatives such as SkillsFuture and Industry Transformation Maps (ITMs), and as of 30 April 2021, the FEC has spearheaded the launch of 23 Industry Transformation Maps (ITMs), with good results achieved. Singapore's overall labour productivity increased by 2.7% per annum from 2016 to 2019, compared to 2.2% per annum in the preceding 3 years. This has translated into the creation of quality jobs and higher wages, with median income for full-time Singaporeans increasing by 3.7% per annum for the same period, compared to 3.2% in the preceding period. ITMs are essential to informing sectoral strategies to meet the accelerated changes arising from the changing operating environment (FEC, 2021).

6.6. Challenges

In Singapore, key challenges for the tertiary education system include:

- Moving away from a high-stakes testing mentality and emphasis on academic achievement as success criteria and moving towards improving students' wellbeing, and broader critical thinking skills in formal education.
- In conjunction with the point above where the focus is moving away from academic emphases in education, elevating and promoting the status of VET.
- Addressing an intergenerational skills mismatch and promoting lifelong learning.
- Making relevant industry transformation to further the national agenda of creating an advanced economy and inclusive society

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7. NEW ZEALAND

Highlights

- Tertiary attainment rates in New Zealand are slightly above the OECD average as are employment rates for individuals with a tertiary qualification.
- Māori and Pacific peoples in New Zealand have lower rates of educational attainment, particularly in higher education.
- Recent policy initiatives include those aimed at improving equity, in particular for First Nations people, and promoting lifelong learning, as well as post-COVID economic recovery strategies that have invested in VET programs.
- Challenges include ensuring educational equity and access for all learners in New Zealand, and evaluating the impact of educational investments, particularly for VET programs.

7.1. Structure of New Zealand's education system

Despite early childhood education not being compulsory in New Zealand, participation remains comparatively high (over 96%) across the country. During these early years, certified early learning services can be teacher-led, whānau-led (caregiver-led), or parent-led, and must meet minimum standards of education and care in order to operate (New Zealand Ministry of Education, 2022b).

Compulsory schooling for children/adolescents occurs between 6-16 years and is free in government schools for those aged 5-19 years. Primary education typically begins at 5- or 6-years at Year 1 and extends to Year 8 (approximately 12-years old). Secondary education occurs from Year 9 (approximately 13-years old) to Year 13 (approximately 17-years old) (New Zealand Ministry of Education, 2022e).

The National Curriculum is implemented across all primary and secondary schools, with English-medium schools using the New Zealand curriculum, and Māori-medium schools using the Te Marautanga o Aotearoa. The latter delivers all or some of the curriculum in the Māori language at least 51% of the time. Schools can also be categorised as:

- *State schools*. These are government owned and funded, secular/non-religious, and are required to deliver the national curriculum. The large majority of students in New Zealand attend state schools.
- *State-integrated schools*. These are government funded schools but also require some student attendance fees from parents/caregivers, and must deliver the national curriculum. These schools set their own aims and objectives to reflect their values (e.g., philosophy or religious values).
- *Private schools*. These school are funded mostly from fees paid by parents/caregivers but also receive partial government funding. These schools develop and deliver their own learning programs that are not required to align with the national curriculum.

Towards the end of secondary schooling, students have the option to complete 3 levels of the National Certificate of Educational Achievement (NCEA). The NCEA is the main national qualification that enables senior secondary students to enter universities and polytechnics in New Zealand and overseas. Level 1 begins at Year 11, Level 2 at Year 12, and Level 3 at Year 13. To complete an NCEA level, students must achieve a specified number of credits based on the standard of their assessed work within a course (i.e., subject). Schools may also

allow students to study a combination of Level 1-3 subjects simultaneously across Years 11-13. To recognise high achievement, NCEA with Merit and NCEA with Excellence endorsements are awarded to students who have achieved a sufficiently high standard in their assessment. Students' ability to access post-secondary course options after Year 13 may be dependent on their level of NCEA attainment and performance (New Zealand Ministry of Education, 2023a; NZQA, n.d.b).

The NCEA can also be completed within vocational education and training schools. These schools offer a range of integrated and post-secondary *Youth programs* that include:

- *Youth guarantee*. These vocational pathway programs provide 16- and 17-year-olds with course options in vocational training, secondary-tertiary programs, trade and service academies, and fee-free places in tertiary institutions. Students can achieve an NCEA level 2 or equivalent through these programs and then progress to other study or career options.
- *The Gateway program*. This integrated program enables Year 11-13 students to engage in structured workplace vocational learning while studying at school. Assessed workplace learning provides students with the opportunity to earn credit towards their NCEA.
- *New Zealand apprenticeships*. Apprentices are provided with high-quality training while working for an employer. They are required to complete practical assessments, attend relevant apprenticeship courses, and complete written assessments (New Zealand Ministry of Education, 2022f).

Institutions providing post-NCEA levels 1-3 vocational training pathways (i.e., those institutions offering Level 4 Certificate Programmes, Diplomas, and Advanced Certificates) may also enable lateral transfer to tertiary-level courses (NZQA, n.d.c). Specifically, students who are currently completing the second year of their Diploma/Advanced Certificate can – pending entry requirements – transfer into Years 1-3 at the Bachelor's level. New Zealand's tertiary institutions comprise of universities, Institutes of Technology and Polytechnics, Wānanga, and government and private training establishments. They typically award diplomas, degrees, and graduate and postgraduate qualifications to qualifying students, and may engage in research activities and vocational study (e.g., teacher education, nursing, or law) (New Zealand Ministry of Education, 2022c, 2022f; OECD, 2023).

Finally, New Zealand's education system also supports learners with structured on- and off-job industry training so that they can work, learn, and earn a wage. This training is managed by Industry Training Organisations that have been established by industry to set national skills standards, provide information and advice to trainees, develop training packages and trainee assessments, and monitor training quality (New Zealand Ministry of Education, 2022f; NZQA, n.d.a).

Figure 10 summarises the education pathways for students in New Zealand.

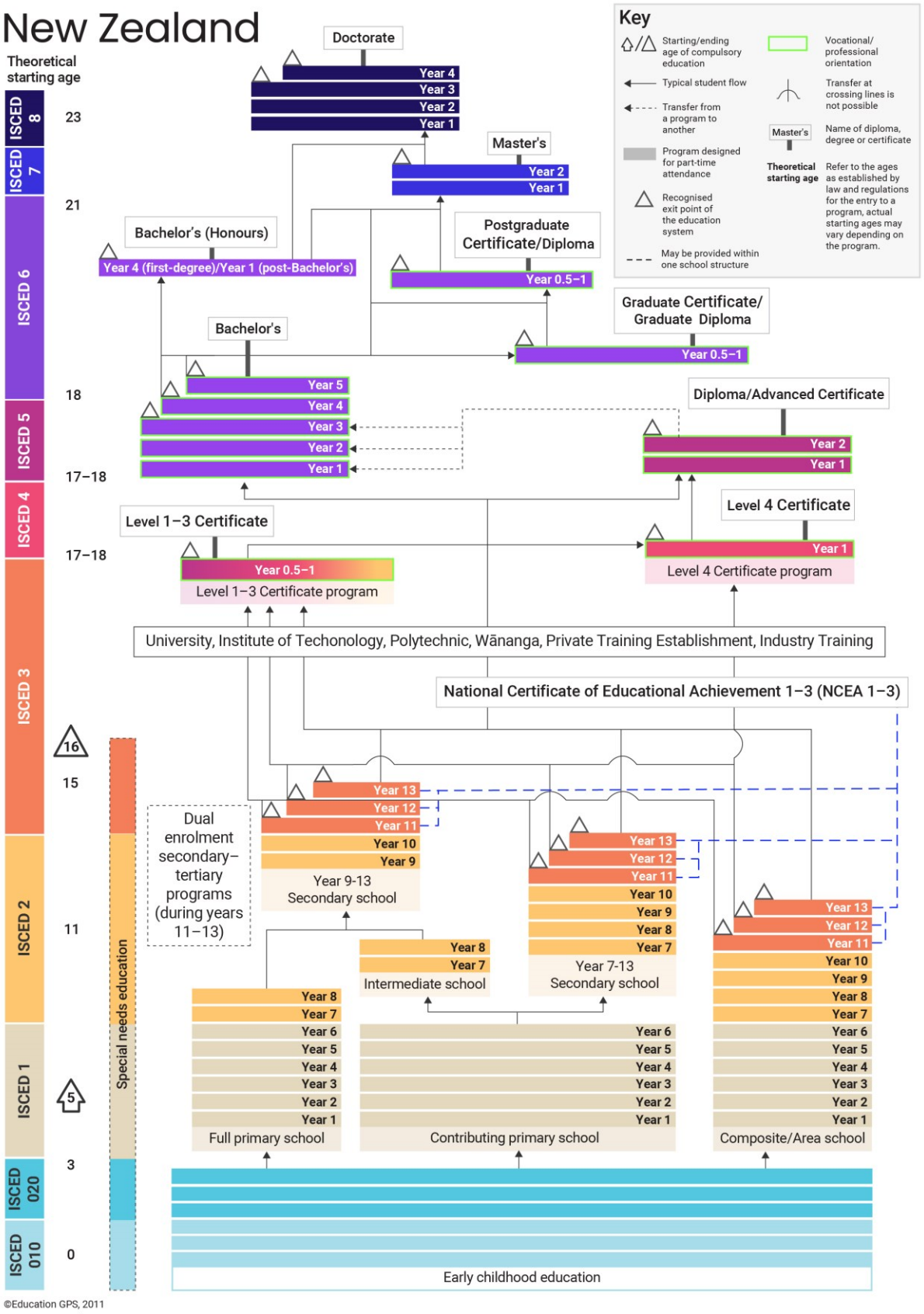

Figure 10 Structure of the education system in New Zealand

Source: Adapted from the OECD's Education GPS (http://gpseducation.oecd.org)

7.2. Tertiary education – participation, attainment and labour market outcomes

Educational attainment in New Zealand has increased over the last 2 decades, with the proportion of 25-34-year-olds with a tertiary education qualification increasing from 29% in 2001 to 45% in 2021. The percentage of adults aged 24-64 with a tertiary education qualification was 41% in 2021, which was slightly higher than the OECD average of 40%. The employment rates of working adults in New Zealand aged 24-64 with tertiary education attainment averaged 88% compared to the OECD average of 85%. The relative earnings of tertiary graduates in the 25-64-years age group in New Zealand was 30% higher than those with an upper secondary qualification compared to 53% higher for the OECD average.

According to OECD data, only 26% of New Zealand students participated in VET programs in 2020, which was lower than the OECD average (32%) (OECD, 2020). Furthermore, 30% of upper secondary students in New Zealand were enrolled in VET courses, which was also less than the OECD average (42%).

While there has been growth in the last 20 years in tertiary attainment in New Zealand, educational attainment gaps for Māori and Pacific peoples persist, particularly at the higher education levels. In 2001, approximately 5% of both Māori and Pacific peoples had attained a Bachelor's degree or higher, while the proportion of all New Zealanders with these qualifications was approximately 14%. In 2021, approximately 18% of Māori people, 16% of Pacific peoples, and 35% of all New Zealanders had a Bachelor qualification (New Zealand Ministry of Education, 2022a).

In New Zealand, entry into Bachelor's level courses (ISCED 6) typically occurs through learners acquiring a specified number of NCEA 1-3 credits, and a sufficient number of NCEA with Merit and Excellence endorsements (OECD, 2023). Alternative pathways into Bachelor's level courses can also occur by completing bridging programs that offer NCEA 1-3 qualifications, or through successively completing a Level 4 Certificate Program and then a Diploma/Advanced Certificate. Both student pathway options enable learners to enter into a Bachelor's course, with Diploma/Advance Certificate graduates having the potential to enter into a Bachelor's course at Years 1-3 (OECD, 2023).

Bachelor's level graduates have the option to pursue a traditional academic pathway from an Honour's qualification towards a Doctoral qualification, or may pursue Graduate Certificate/Graduate Diploma or Postgraduate Certificate/Diploma on their way towards a Master's qualification and then Doctoral degree. It should be noted that Honour's graduates may also progress towards a Doctoral qualification from a Master's qualification (OECD, 2023).

7.3. Governance, industry engagement and quality assurance

According to guidelines in the Education and Training Act 2000, Tertiary Education Organisations (TEOs) provide tertiary level education, training, and/or assessment. Tertiary Education Institutes (TEIs) comprise of universities, institutes of technology, polytechnics, and wānanga and fall under the Crown Entities Act 2004. The Tertiary Education Commission provides funding and monitors the performance of all Tertiary Education Institutes, and is accountable to the Minister for Tertiary Education, Skills and Employment. All universities are governed by a University Council under the Education Act 1989 (Parliamentary Counsel Office, 1989) that comprises of 8-12 members. These members include the Chancellor who is the chair of the University Council, government appointees, lay, academic, and student members, who provide oversight management of institutional affairs and property. The Vice-Chancellor serves as the chief executive and is responsible for managing the academic and administrative arms of the university. The Vice-Chancellor also serves as the employer of all

university staff and is an ex-officio member of the University Council who facilitates the link between university governance and management.

With respect to vocational education and training, the Education (Vocational Education and Training Reform) Amendment Act (2020) "amends the Education Act 1989 and repeals the Industry Training and Apprenticeships Act 1992 to create a unified and cohesive vocational education and training system" (New Zealand Ministry of Education, 2020a). Specifically, this Act provides:

- A new framework for regulating vocational education and training by integrating vocational education and work-based training, as well as integrating (and repealing) provisions set out in the Industry Training and Apprenticeships Act 1992.
- For workforce development councils to be established in one or more industries to provide skills leadership, set standards, develop qualifications, endorse programmes, moderate assessments, and serve in an advisory/representative role. These councils may also provide the Tertiary Education Commission with advice about what combination of vocational education and training is needed across industries.
- For the New Zealand Institute of Skills and Technology (NZIST) to be established to deliver, organise, and support education and training courses/programs across institutions and the workplace. The NZIST also includes polytechnics (i.e., institutes of technology or polytechnics) and adheres to a charter that specifies a need to be responsive to learners, industries, employers, and communities across all regions in New Zealand.
- For transitional arrangements so education and training continuity can be maintained, and staff/students can be transferred to the NZIST and its subsidiaries (New Zealand Ministry of Education, 2020a).

7.4. Funding

The Tertiary Education Commission provides guidance and criteria for assessing the investment plans of Tertiary Education Organisations, as well as for determining and allocating funding for these organisations (New Zealand Ministry of Education, 2020b). Fifty-eight per cent of tertiary education expenditure is from public funding, which is less than the OECD average (66%).

In the 2022 budget for New Tertiary Education Funding, $350 million was provided for operating investments for 4 years and $40 million for capital investment for 2 years. A breakdown of this spending includes:

- $267 million (increase of 2.75%) for tertiary tuition and training subsidies and $73 million for increased enrolments over 4 years; this funding is aimed at supporting providers to maintain education quality and delivery that will be relevant and responsive to learners, communities, and employers.
- $2 million for the Tulī Takes Flight and Pacific Education Foundation Scholarships over 4 years. This funding seeks to address Pacific education system inequalities and scholarship management.
- $40 million capital co-funding has been allocated for Te Pūkenga (New Zealand Institute of Skills and Technology) to upgrade physical infrastructure across all Institutes of Technology and Polytechnics from 2022-2023 to 2023-2024. This will enable teaching facilities to be fit-for-purpose and promote increased learning flexibility.
- $10 million to support new or ongoing programs that deliver te reo Māori proficiency.
- $317 million provided through Vote Social Development for the Apprenticeship Boost,

which comprises of a $230 million extension to the end of 2023 (New Zealand Ministry of Education, 2022d, 2023b).

7.5. Selected policy areas

The Statement of National Education and Learning Priorities (NELP) and the Tertiary Education Strategy (New Zealand Ministry of Education, 2020b) both maintained a vision for education that is focused on 5 objectives and corresponding priorities:

- Objective 1. Learners at the centre
- Objective 2. Barrier-free access
- Objective 3. Quality teaching and leadership
- Objective 4. Future of learning and work
- Objective 5. World class inclusive public education

All objectives and priorities can be linked to policy areas that focus on and aspire to improving equity and lifelong learning opportunities.

Various policy and strategy documents have aimed to improve inclusion and cultural reform across education in New Zealand, including higher education. The Education and Training Act 2020 (Parliamentary Counsel Office, 2023) stipulates that all learners should have access to education that provides them with the skills, knowledge, and capabilities for full participation in the labour market and society. Specifically, this Act seeks to "honour Te Tiriti o Waitangi and supports Māori-Crown relationships". As seen above, the Statement of NELP and the Tertiary Education Strategy also emphasise the need to position Learners at the centre (Objective 1) and ensure Barrier-free access (Objective 2) to education.

Specifically, Objective 1 emphasises the importance of learners and their whānau (meaning extended family or community) being at the centre of education by having the freedom to access equitable education that is safe and inclusive, maintains high learner aspirations, and is supportive of all learners' needs (including learner identities, languages, and cultures). Objective 2 seeks to ensure that high-quality education opportunities and outcomes are accessible to all learners. The aim is to achieve this by reducing barriers to education and implementing approaches that help ensure that all learners gain necessary and sound foundation skills in language, literacy, and numeracy.

Policies that aim to support lifelong learning include ensuring that quality teaching and leadership are learner and whānau focused (Objective 3). Where relevant, this involves meaningfully incorporating te reo Māori and tikanga Māori into daily learning practices and strengthening staff capability to teach, lead, and support learners. This includes supporting leaders and staff to develop their te reo Māori and tikanga Māori skills, enabling learners to learn in te reo Māori, ensuring that gaps in capability and opportunities to strengthen staff capabilities in teaching, leadership, and learning support are identified, and that teachers/educators are confident and able to successfully support a diverse range of learners.

Lifelong learning is also supported through programs and initiatives that aim to secure the future of learning and work (Objective 4) by ensuring that learning is relevant in the present and across life. Directions for achieving this include through industry and employer collaborations that ensure that learners possess the skills, knowledge, and pathways for workplace success. This requires teaching and learning to be closely aligned to workplace needs, learners to be supported and encouraged to pursue education and career pathways that appeal to them, and learners to upskill and retrain throughout their lives to gain relevant skills for employment.

Finally, it is intended that lifelong learning is supported by developing world class inclusive public education in New Zealand that is trusted and sustainable (Objective 5). This involves enhancing research and mātauranga Māori contributions to addressing local and global

challenges. Key factors required to achieve these goals include a diverse and sustainable workforce that provides a broad pool of research knowledge and talent, the advancement of and support for Māori-led and mātauranga informed solutions, and Tertiary Education Organisations contributing innovative approaches for addressing economic, environmental and social challenges (New Zealand Ministry of Education, 2020b).

Objectives 4 and 5 are particularly relevant for tertiary education and vocational education and training providers as they are directly linked to transition points between study and work, and enhancing the workforce and workforce effectiveness within broader society.

New Zealand invested in several VET related initiatives to support its economic recovery post-COVID-19. This included the Apprenticeship Boost Initiative (ABI) (providing financial incentives for employers to take new apprentices and retain them) and Mana in Mahi (designed to support business growth by helping young people complete apprenticeships or industry qualifications), both of which were first implemented in 2018 but further supported in 2020 (Cabinet Social Wellbeing Committee, 2021). Additionally, the Targeted Training and Apprenticeship Fund (TTAF) was implemented to provide learners with the opportunity to undertake VET courses without fees from 1 July 2020 to 31 December 2022. More broadly, the TTAF aimed to respond to targeted employer demands for industry skills and help strengthen New Zealand's recovery efforts over the course of the pandemic (TEC, 2022). Such initiatives have been credited for driving significant growth in the country's tertiary enrolments in 2021 (Ministry of Education, New Zealand, 2022). Additionally, these initiatives are consistent with Objective 4 (Future of learning and work) of the Tertiary Education Strategy, which aims to support collaboration "with industries and employers to ensure learners/ākonga have the skills, knowledge and pathways to succeed in work" (New Zealand Ministry of Education, 2020b, p. 13)

The New Zealand Qualification Framework (NZQF) (New Zealand Qualification Authority, 2011) is explicit in its recognition that learning can take place in a mixture of ways, including through full or part-time modalities, and over the course of life as part of a person's job, while enrolled in an education institution, electronically or online, or through distance learning.

7.6. Challenges

Challenges for the New Zealand tertiary education system include:

- Evaluating the impact of educational funding/investments, particularly for VET programs, and also for learners, communities, and employers.
- Ensuring educational equity and access for all learners in New Zealand, regardless of their backgrounds, gender identity, or learning needs.
- Identifying the resources and investment needed to develop a world class, inclusive public education system that is capable of addressing economic, environmental, and social challenges

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8. CROSS-NATIONAL COMPARISONS

Highlights

- Singapore and Korea (only for the 25-34-years age group) had tertiary attainment rates higher than all other countries considered.
- Germany and the UK, and to a lesser extent Korea and New Zealand, performed better than Australia on some labour market outcomes.
- Germany had the highest public and private financial returns for investment for tertiary education except for private returns for females where Norway had the highest result (Australia reported the second highest public return for investment for females). Korea had the lowest public returns for investment in tertiary education.
- For lifelong learning, Australia's rates of participation in formal tertiary education across the lifespan are the same or better than most focus countries and similar to Norway.

Evaluating tertiary education systems to establish international best-practice can be difficult given countries vary according to factors like socioeconomic characteristics and government priorities. This chapter compares system performance for Australia, Germany, Norway, the UK, Korea, Singapore and New Zealand by considering quantitative data for various factors that contribute to system performance. These include those related to geography, and economic, labour market and cultural factors. Some of these data have also been described in Chapters 2 to 7.

Each piece of comparative data is numbered as an Indicator (see tables below). Lessons for Australia that draw on the key Indicator data in this chapter and the contextual information provided in the individual country chapters are discussed in Chapter 9.

8.1. General country factors

Relevant general demographic data for each of the 6 focus countries and Australia are presented in Table 2. While Australia’s population is much larger in size compared to New Zealand, Singapore and Norway, it is much smaller when compared with Korea, the UK and Germany (Indicator 1). In terms of the distribution of age across the population (Indicator 2), Australia is similar to New Zealand, the UK and Norway where between 17% to 19% of the population are aged between 0-14 years and around half the population are aged between 25-64. Alternatively in Korea and Singapore, only approximately 12% of the population are aged between 0-14 years and over 60% of the population are aged between 25-64. As noted in Chapters 5 and 6, a reduction in the youth cohort and aging populations present a challenge to the tertiary education systems of these 2 countries.

Table 2 Demographics

Indicator	Australia	Germany	Norway	UK	Korea	Singapore	NZ
1. Total population (thousands), 2021	25,921	83,409	5,403	67,281	51,830	5,941	5,130
2. Age structure of the population (%; per 100 total population), 2021							
0-14	18.4	13.9	17.0	17.7	11.9	12.0	18.9
15-24	12.3	10.1	12.1	11.6	10.8	10.8	12.9
25-64	52.8	53.8	52.8	51.9	60.6	63.1	52.3
65 and above	16.6	22.2	18.1	18.9	16.7	14.1	15.9

Note: due to rounding some percentages will not sum to 100

8.2. Economy and labour market factors

The proportion of wealth that a nation spends on the education system reflects national education priorities. Table 3 presents key data for each of the 6 countries and Australia to compare the economic context of tertiary education for each nation. For all countries in Table 3, except for Korea and New Zealand, the GDP per capita for 2022 was above the OECD average with Singapore and Norway showing the greatest amount of economic activity (Indicator 3). Norway was also the country with the highest percentage of GDP spent on education institutions (6.6%; Indicator 4). Australia spent the second highest percentage of GDP on education institutions (6.1%), with Germany's percentage (4.3%) falling below the OECD average.

Conditions in the labour market are also important for understanding the graduate outcomes of those with tertiary qualifications. Table 3 shows that 69% of the Korean working age population were employed (Indicator 5). Australia's employment rate for this age group was similar to Germany and Norway but less than Singapore. Australia's employment rate for the younger cohort of 15–24-year-olds (66%; Indicator 6) was the highest of all focus countries and above the OECD average (43%).

Table 3 Economy and labour market

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	NZ
3. GDP (USD per capita), 2022	54 015	68 701	64 146	95 027	55 378	50 897	98 149	52 242
4. Total expenditure on education institutions as a percentage of GDP (%), 2019	4.9	6.1	4.3	6.6	6.0	5.3	m	5.1
5. Annual employment rate (persons aged 15-64), 2022	69.4	77.2	77.2	77.7	75.6	68.5	82.7[1]	79.7
6. Annual employment rate (persons aged 15-24), 2022	42.8	65.7	50.5	57.9	54.3	28.8	34.5	61.2

[e]m = Data are not available; [1]Singapore's data is for the 25-64-year age group.

8.3. Participation in tertiary education

Table 4 presents data regarding pre-tertiary education that can impact tertiary education pathways. As illustrated in each of the country chapters, each country of focus and Australia have different points at which education tracking first occurs (Indicator 7). Germany is the country where this practice is introduced earliest while in Australia, Norway, New Zealand and the UK this happens later in upper secondary school.

Upper secondary education is often a prerequisite qualification needed to pursue tertiary education pathways. In Table 4 (Indicator 8), the OECD average for first-time upper secondary education graduation rates for students younger that 25 was 80% with Norway, Korea and New Zealand reporting rates higher than this average. Australian data for this category was not part of the 2019 OECD database; however, as a general comparison with a different age group, the Australian Bureau of Statistics reported in 2020 that 79% of Australian's aged 15–64 had attained Year 12 or equivalent or a non-school qualification at the Certificate III level.

Table 4 Tracking and upper secondary graduation

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
7. Age when tracking first occurs		16	10	16	15-16	14	12	15
8. First-time upper secondary education graduation rates for students younger than 25, 2019	80.3	m	73.1	83.6	65.6	95.8	m	85.9

m = Data are not available

Table 5 presents data on tertiary education participation in Australia and the 6 focus countries. Using number of enrolments as an indicator of the size of each country's tertiary education system, Germany, Korea and the UK have the largest systems, Singapore has the smallest system and Australia falls in the middle (Indicator 9). Data in Table 5 show that Korea had a much higher enrolment rate in 2020 for both 18-20 year-olds (Indicator 10) and 24-35 year-olds (Indicator 11) compared to all other countries. Fifty per cent of Australian 20-year-olds were enrolled in a tertiary education program in 2020, which was the second highest enrolment rate for this age group after Korea (70%). For the 24–35-year-olds, the UK had the second highest enrolment rate (58%) after Korea (69%) with Germany reporting the lowest rate (36%).

Table 5 Tertiary education participation

Indicator	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
9. Enrolments in tertiary education, 2020	1,762,972	3,280,033	294,043	2,734,158	2,994,210	207,818	249,917
10. Tertiary education enrolment rate for 17-20 yr olds, (%), 2020							
17 yr olds	1.8	0.7	0.0	2.6	0.6	m	1.9
18 yr olds	34.4	9.0	0.4	38.1	63.9	m	28.8
19 yr olds	47.8	21.9	18.2	48.3	77.7	m	38.7
20 yr olds	49.8	30.0	34.4	48.6	70.3	m	41.0
11. Percentage of young adults (24-35 yrs) with a tertiary qualification or enrolled in tertiary (%)(2021)	54.3	35.9	55.0	57.5	69.3	m	45.3
12. Share of enrolments in tertiary education by education level (%), 2020							
Short-cycle tertiary education (ISCED2011 level 5)	21.5	0.3	3.2	13.3	20.6	m	16.9
Bachelor's or equivalent level (ISCED2011 level 6)	57.9	61.1	65.6	63.4	68.9	m	70.6
Master's or equivalent level (ISCED2011 level 7)	17.6	33.1	28.1	19.3	7.9	m	8.6
Doctoral or equivalent level (ISCED2011 level 8)	3.1	5.6	3.1	4.0	2.6	m	3.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13. Enrolments in science, technology, engineering and mathematics (STEM) tertiary education, 2020	21.6	36.6	20.0	24.3	33.5	37.2	25.6

m = Data are not available – either missing or the indicator could not be computed due to low respondent numbers; some Indicator 12 data for the UK contains data from another category; due to rounding some percentages for Indicator 12 will not sum to 100.

Table 5 shows that the highest share of tertiary enrolments in 2020 was at the Bachelor level, ranging from 58% in Australia to 71% in New Zealand (Indicator 12). One-third of Germany's tertiary education students were enrolled in master's courses. Norway also had a relatively high share of enrolments at this level (28%). Norway and Germany also had significantly smaller percentages of students enrolled in short-cycle tertiary education programs.

VET activity at the secondary level is inversely associated with short cycle tertiary activity (Indicator 12). For example, while Germany has a relatively large percentage of young people who complete upper secondary vocational programs, short-cycle tertiary education represents a small share of tertiary education enrolments in Germany (<1%). In contrast, countries where

relatively low proportions of young people complete upper secondary VET programs, the proportion of tertiary students undertaking short cycle tertiary education is higher (21% in Korea and 22% in Australia).Table 5 also presents data on STEM enrolments (Indicator 13). These are reported given that many economic and national innovation strategies often include a priority to promote participation in STEM to expand the STEM workforce. Data in the table shows that Norway (20%) and Australia (22%) had the lowest percentage of enrolments in STEM tertiary education programs, and Singapore (37%) and Germany (37%) had the highest enrolment rates (Indicator 14).

8.4. Tertiary education attainment

Table 6 (Indicator 14) shows that the percentage of adults (25–64-year-olds) who attained a tertiary qualification was below the OECD average in Germany (31%), but substantially above the OECD average for each of the other focus countries except New Zealand (41%). Singapore had the highest proportion of adults with a tertiary qualification (57%), followed by Korea (52%), the UK (50%) and then Australia (50%).

When the target age group changes to focus on the younger cohort of 25-34-year-olds, the percentage of people with a tertiary qualification was higher across all countries (Indicator 15). However, similar to patterns found with the 25-64-year-old group, Germany had the smallest percentage of young adults with a tertiary qualification (36%), which was again below the OECD average (47%). New Zealand's rate (45%) was also below the OECD average, while Singapore (80%) and Korea (69%) had the highest percentage. Australia's attainment rate (54%) was similar to that of Norway (55%).

Table 6 Tertiary education attainment

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
14. Percentage of adults (25-64 year olds) with a tertiary qualification, 2021	39.9	49.8	31.1	47.2	50.1	51.7	57.0	40.5
15. Percentage of younger adults (25-34 year olds) with a tertiary qualification, 2021	47.1	54.3	35.9	55.0	57.5	69.3	80.0	45.3
16. Share of first-time Bachelor's, or equivalent graduate rates for national students below the age of 30 (%), 2019	31	34	32	37	38	m	m	31

m = Data are not available – either missing or the indicator could not be computed due to low respondent numbers

Table 6 also presents the share of first-time Bachelor's or equivalent graduate rates for national students below the age of 30 for Australia and each of the focus countries (Indicator 16). Graduate rates for national students are presented to remove the influence of international students' graduation rates, which can confound data patterns, particularly for countries with large intakes of international students. The Bachelor's or equivalent graduation rate for Australian national students below the age of 30 (34%) is above the OECD average/New Zealand's rate (31%), similar to Germany (32%) but slightly below the rate for Norway (37%) and the UK (38%).

8.5. Labour market outcomes

Higher levels of education are associated with better employment outcomes and higher average earnings (OECD, 2021). Table 7 presents a range of data on labour market outcomes associated with educational attainment. Across Australia and all focus countries, the employment rate of tertiary graduates ranged from 76% to 93% and was higher than the employment rate for non-tertiary graduates (Indicator 17). Generally across countries, employment rates increased progressively as attainment qualifications increased with slight discrepancies for Germany (short cycle tertiary versus Bachelor qualifications), New Zealand (short cycle tertiary, Bachelor and Master qualifications), Australia (Bachelor versus Master qualifications) and Norway (Bachelor, Master and Doctoral qualifications). The total tertiary employment rate for Korea (73%) and Australia (75%) was slightly lower than the OECD average (76%).

Across all focus countries and in Australia, unemployment rates were lowest for individuals with a tertiary qualification and highest for those with below upper secondary qualifications (Indicator 18). All unemployment rates were lower that the OECD average for all countries.

Table 7 also presents relative earnings for working adults for Australia and the countries of focus according to level of education attainment (Indicator 19). The earnings of tertiary educated adults in full-time employment range from 19% higher than individuals with upper secondary education in Norway to 62% higher than individuals with upper secondary education in Germany. All countries except Germany had earnings for tertiary educated people that were lower than the OECD average (53%). Across all countries in Table 7, tertiary graduates' relative earnings increased with educational level except in Norway where short cycle tertiary graduates' earnings were higher that individuals with Bachelor's qualifications.

Table 7 Labour market outcomes

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
17. Employment rates of 25-64 year olds, by educational attainment (%), 2020								
Below upper secondary	57.6	56.5	62.6	60.7	64.5	61.4	m	70.8
Upper secondary or post-secondary non-tertiary	74.7	74.5	82.2	79.5	80.4	70.4	m	81.8
Short cycle tertiary	81.0	76.9	89.4	83.4	82.1	76.1	m	88.5
Bachelor's or equivalent	83.1	82.5	87.6	90.5	87.0	76.3	m	87.8
Master's or equivalent	87.7	82.1	89.5	92.0	87.5	84.7	m	86.9
Doctoral or equivalent	92.6	92.8	93.1	89.7	92.7	x	m	91.7
Total tertiary	84.4	81.5	88.7	89.2	86.3	77.0	m	87.9
(All levels of	75.7	75.0	81.5	80.6	80.4	72.8	m	82.1

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
education)								
18. Unemployment rates of 25-64 year olds, by educational attainment (%), 2021								
Below upper secondary	10.7	7.3	7.1	6.8	5.8	3.9	m	4.2
Upper secondary or post-secondary non-tertiary	6.4	4.6	3.0	2.8	3.4	3.6	m	2.8
Tertiary	4.3	3.0	2.3	2.5	2.5	3.1	m	2.1
19. Relative earnings of 25-64 year olds working full-time, by educational attainment, 2019 (Upper secondary education = 100)								
Below upper secondary	82	88	80	85	75	79	m	89
Upper secondary	100	100	100	100	100	100	m	100
Post-secondary non-tertiary	m	102	111	100	a	a	m	98
Short cycle tertiary	120	109	138	119	118	108	m	113
Bachelor's or equivalent	143	126	161	107	143	136	m	127
Master's, doctoral or equivalent	187	140	175	134	164	182	m	152
Total tertiary	153	125	162	119	144	133	m	130

a = Data are not applicable because the category does not apply; m = Data are not available – either missing or the indicator could not be computed due to low respondent numbers; x - Data are included in another category or column of the indicator table

Data in Table 8 (Indicator 20) illustrates the extent to which all workers (i.e. not only tertiary-educated workers) reported that their qualification levels were well-matched to the levels required by their jobs. Korea had the highest percentage of workers whose qualifications were well-matched to their jobs (67%) followed by Norway (65%). Australia had the highest percentage of workers that were overqualified for their job requirements (20%) and was similar to Germany (19%). The UK had the highest percentage of workers reporting that they were underqualified (26%).

Table 8 Qualifications and skills mismatch

Indicator	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
20. Percentage of workers reporting they are overqualified or underqualified[1]							
Well-matched	61.3	60.2	64.8	59.5	67.2	m	63.5
Overqualified	20.2	18.8	12.0	14.5	12.1	m	13.3
Underqualified	18.5	21.0	23.2	26.0	20.7	m	28.2

m = Data are not available; Australian data is from 2016, Korean data is from 2017, all other data is from 2019.

8.6. Public and private returns on investment in tertiary education.

Tertiary education can be considered an investment and evaluated by a cost-benefit ratio. The costs are the fees required to attain a tertiary education qualification and opportunities that are lost to earn income while undertaking that qualification, whereas the benefits relate to the increased employment opportunities and income that result from obtaining the qualification (after taking into account tax payments etc) (OECD, 2021).

Table 9 shows the private net (Indicator 21) and public net (Indicator 22) financial returns associated with a male/female attaining tertiary education (as compared with a male/female attaining upper secondary education). Each of these Indicators are calculated as the financial benefit of obtaining an additional level of education for each USD invested (OECD, 2021).

Data in Table 9 indicates that the financial gains of a tertiary education qualification outweigh the associated costs in Australia and all 6 focus countries. The average private returns for males were highest in Germany (USD 350,000) and lowest in the UK (USD 210,800) (Indicator 21). The average private returns for Australian males were lower than the OECD average. The average private returns for females were highest in Norway (USD 264,000) and Australia (USD 236,400) and were also above the OECD average. Norway and Australia were also the only countries where the private net returns for females were higher than for males.

Governments or public investment in tertiary education (e.g. public expenditure on educational institutions, government scholarships) can also be investigated through a similar cost-benefit ratio where public benefit is seen when individuals with higher income pay more tax and require less social support (OECD, 2017).

The average public returns across OECD countries were USD 127,000 for males and USD 60,600 for females. The highest public returns were observed for Germany (USD 274,000 for males and 104,200 for females) (Indicator 22). Norway, where most of the tertiary education expenditure is made via public sources (see Table 9), had lower public returns (USD 63,300 for males; USD 31,100 for females). However, Korea, where individuals with tertiary qualifications had the lowest employment rates across all countries of focus (see Table 7), had the lowest public returns (USD 44,200 for males and USD 6,700 for females). Across all countries, public returns for females were lower than those for males.

Table 9 Public and private returns for males and females

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
21. Private net financial returns for a man/woman attaining tertiary education (as compared with a male/female attaining upper secondary education, in equivalent USD converted using PPPs for GDP, 2018)								
Males	287,200	212,100	350,000	217,800	210,800	251,700	m	233,800
Females	226,800	236,400	208,300	264,000	193,200	173,200	m	214,400
22. Public net financial returns for a man/woman attaining tertiary education (as compared with a male/female attaining upper secondary education, in equivalent USD converted using PPPs for GDP, 2018)								
Males	127,000	118,500	274,000	63,300	100,100	44,200	m	83,700
Females	60,600	99,000	104,200	31,100	82,500	6,700	m	42,900

Note: Purchasing power parities (PPPs) – to facilitate cross-national comparisons, data are based on full-time equivalents and are in equivalent USD, converted using purchasing power parities (PPPs) for GDP. These reflect the amount required to produce the same basket of goods and services in a given country as in the United States in USD (OECD, 2017, p. 170).

8.7. Equity and lifelong learning

Where equity and access are considered in relation to tertiary education, parental education is often used as a proxy for student socioeconomic background in order to measure and evaluate equity outcomes. Table 10 presents 2012 data that investigate socioeconomic factors that relate to tertiary attainment by focusing on intergenerational mobility. These data are from the Survey of Adult Skills (PIAAC) (OECD, 2016) where intergenerational mobility is examined as the proportion of individuals with a different qualification to their parents. Unlike most quantitative data included in this report, PIAAC uses ISCED 1997 to classify education level. Data are available in each of the focus countries on tertiary attainment disaggregated by parental education attainment. In these data, individuals' tertiary attainment is classified into tertiary-type B programs, which refer to programs with a vocational emphasis leading directly to the labour market, and tertiary-type A and advanced research programs which are more theory-based (OECD, 2017). Among persons whose parents do not have a tertiary

qualification, the attainment of tertiary-type A and tertiary-type B qualifications are examples of upward social mobility. Opportunities for upward mobility are dependent upon the education system and past policies, as well as the share of parents who have not attained tertiary education.

Table 10 (Indicator 23) shows that for Singapore, Korea and Northern Ireland, over 80% of 30–44-year-olds have parents who both have less than tertiary education. In the remaining European focus countries and Australia, this share is lower (63%-71%). Of adults aged 30-44 whose parents did not have a tertiary education the proportion who attained a tertiary-type A or advanced research qualification was highest in Singapore (37%) and lowest in Germany (14%). The proportion who attained a tertiary-type B qualification was highest in Korea and Singapore (22%-23%) and lowest in Norway (4%). In each of the focus countries, the proportion who attained a tertiary-type A or advanced research qualification was higher than the proportion who attained a tertiary-type B qualification. This difference was largest in Norway, and smallest in Korea and Germany.

Overall, of adults aged 30-44 whose parents did not have a tertiary education, the proportion who attained a tertiary qualification was highest in Singapore (60%) and lowest in Germany (25%).

Table 10 Equity – socioeconomic factors

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
23. Tertiary attainment among adults aged 30-44 years old whose parents both have less than tertiary education (%), 2012								
Tertiary-type A or advanced research programs	19.9	23.8	14.2	33.0	25.0 (Eng) 20.2 (N Ir)	25.5	37.4	31.8
Tertiary-type B	12.2	9.5	10.5	3.5	12.9 (Eng) 10.5 (N Ir)	22.6	22.3	14.2
Total tertiary attainment	32.1	33.3	24.8	36.5	37.9 (Eng) 30.7 (N Ir)	48.1	59.7	54.0
(% adults in whose parents have less than tertiary education group)	74.5	67.7	65.1	63.2	71.4 (Eng) 83.0 (N Ir)	84.6	81.1	58.2

Note that recent, updated data could not be found for this indicator (data is from 2012 for all countries except Singapore and New Zealand).

Another way to investigate equity is by reexamining the data presented in Table 9 and comparing the outcomes within each country for males and females (Indicators 21 and 22). Large differences between male and female private and public net financial returns reflect gender differences in labour force participation, employment and earnings, whereas theoretically, more equitable contexts should be reflected in smaller gender differences. The largest gender differences in Table 9 were observed in Germany and Korea with Australia, the UK and New Zealand (for private net financial returns only) data reflecting some of the smallest

gender differences.

Table 11 Lifelong learning

Indicator	OECD average	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
24. Enrolment rates in formal tertiary education by age group (%), 2020								
25-29 yrs old	12.2	16.8	18.0	16.7	7.1	7.9	m	9.3
30-39 yrs old	4.5	7.9	4.59	6.7	3.7	1.6	m	5.5
40-64 yrs old	1.1	2.6	0.5	2.3	1.2	0.6	m	2.1

Lifelong learning, learning that occurs across the course of life, is of particular interest to countries that are faced with aging populations. Table 11 presents data that examines lifelong learning in Australia and the focus countries by comparing formal tertiary enrolment rates across countries according to 3 different age groups (Indicator 24). Australia had the third highest enrolment rate for the 25-29-year-old group (17%) and the highest enrolment rates for the 2 older age groups (8% and 3%). Participation was lowest in the UK for the 25-29-year-old and 30-39-year-old groups and lowest in Germany and Korea for the 40-64-year-old group.

8.8. Tertiary education expenditure

Table 12 shows that annual expenditure per student varies considerably across countries (Indicator 25). Australia and all focus countries except Korea reported an annual expenditure in 2019 that was above the OECD average. The UK and Norway reported the highest annual expenditure per student and Australia's annual expenditure was similar to Germany and New Zealand.

Table 12 also presents tertiary education expenditure for all countries by highlighting the percentage of GDP spent on tertiary education institutions (Indicator 26). These data are differentiated into public (i.e. government funding) and private spending (e.g. students, families and other private groups). The total percentage of GDP spent on tertiary education institutions was highest for Australia in 2019 (2%) with the majority of this spending coming from private sources (1.3%). Australia's percentage of GDP spending that originated from public sources (0.7%) was lower than the OECD average (0.9%). Norway and the UK had the second highest total percentage of GDP spent on tertiary education institutions (both 1.9%); however, while the UK was like Australia with most of this spending coming from private sources (1.4%), the large majority of Norway's funding was from public sources (1.8%).

Another way to represent tertiary education expenditure shown in Table 12 is the distribution of spending on tertiary education by public versus private sources, with the private spending further broken down into household expenditure (spending by students and their families) and expenditure by other private entities (including non-profit organisations and private businesses) (Indicator 27). The large majority of tertiary expenditure in Norway (92%) and Germany (81%) came from public sources. Alternatively, the majority of spending on tertiary education in the UK (73%), Australia (66%) and Korea (62%) was from private sources, specifically more from household expenditure.

Table 12 Economic resources and sources of funding

Indicator	OECD	Australia	Germany	Norway	UK	Korea	Singapore	New Zealand
25. Annual expenditure per student by tertiary education institutions for all services, 2019 (USD, PPPs)	17,559	20,625	19,608	25,019	29,688	11,287	m	19,217
26. Public and private expenditure on tertiary education institutions as a percentage of GDP, 2019								
Public	0.9	0.7	1.0	1.8	0.5	0.6	m	1.0
Private	0.5	1.3	0.2	0.1	1.4	0.9	m	0.7
Total	1.4	2.0	1.2	1.9	1.9	1.5	m	1.7
27. Distribution of public, private, household and other private expenditure on tertiary education, 2020 (%)								
Public sources	66.0	33.7	81.2	92.2	23.7	38.3	m	58.0
Private sources	30.8	66.3	16.9	6.2	72.6	61.7	m	42.0
Household expenditure	22.3	50.9	-	3.8	53.9	42.3	m	30.7
Expenditure of other private entities	9.3	15.5	-	2.4	18.6	19.5	m	11.3

- Data not available for Germany

Note: Purchasing power parities (PPPs) – to facilitate cross-national comparisons, data are based on full-time equivalents and are in equivalent USD, converted using purchasing power parities (PPPs) for GDP. These reflect the amount required to produce the same basket of goods and services in a given country as in the United States in USD (OECD, 2017, p. 170).

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9. CONCLUSION: SYSTEM PERFORMANCE AND IMPLICATIONS FOR AUSTRALIA

Highlights

- Australia has a higher tertiary education attainment rate than the OECD average, Germany and New Zealand, and higher participation in lifelong learning at the tertiary level than each of the focus countries.
- Australia's rate of student enrolments in STEM tertiary qualifications was similar to Norway and the UK but also much lower than Singapore, Germany and Korea.
- Equity continues to be an issue in Australia and elsewhere even withstanding Australia's relatively positive results regarding gender equity.
- The comparative analysis reported identifies the strengths and weaknesses of the 6 focus country systems; however, it is important to consider the contextual factors that underlie system performance and therefore the degree to which other systems' policies and structures could benefit Australia.

9.1. System performance

In this report, 6 high performing tertiary systems (Germany, Norway, United Kingdom, Korea, Singapore and New Zealand) are examined and compared to Australia. This comparative analysis makes it possible to identify system strengths and weaknesses.

Chapters 2 to 7 describe each of the 6 focus countries' tertiary systems, illustrating the wide variation across countries and how key contextual factors shape educational policy and efficiencies. Chapter 9 builds on these country descriptions by comparing quantitative data for Australia and the 6 focus countries (where possible) and demonstrates that each of the 6 focus countries shows above average performance in at least some areas considered.

Table 13 presents a performance scorecard for Australia's tertiary education system by comparing Australia to the 6 countries on key Indicator data presented in Chapter 9. These data relate to tertiary education attainment and participation (including lifelong learning), labour market outcomes, private and public financial returns for educational investment and equity. The scorecard illustrates the strengths and weaknesses of each country and how Australia sits in comparison noting that for many Indicators, comparable data for Singapore were not available. Specifically, Table 13 shows:

- Singapore and Korea (only for the 25-34-years age group) had tertiary attainment rates higher than all other countries considered.
- Germany and the UK, and to a lesser extent Korea and New Zealand, performed better than Australia on some labour market outcomes.
- Germany had the highest public and private financial returns for investment for tertiary education except for private returns for females where Norway had the highest result (Australia reported the second highest public return for investment for females). Korea had the lowest public returns for investment in tertiary education.
- In relation to equity, findings were mixed.
    - Korea and Singapore had the highest levels of tertiary attainment among adults aged 30-44 whose parents had not received a tertiary education, reflecting the upward mobility of their populations. Norway and England also performed

better than Australia on this Indicator.

  - The UK, Australia and New Zealand (for private investment only) showed the smallest differences between males and females in net financial returns for investment in tertiary education, suggesting these countries have more equitable labour force participation, employment and earnings. Australia and Norway were also the only countries where the private financial returns for females were higher than for males.

- For lifelong learning, Australia's rates of participation in formal tertiary education across the lifespan are the same or better than most focus countries and similar to Norway.

It is important to consider these findings in conjunction with the contextual information provided in Chapters 2 to 7. For instance, Germany's lower attainment rate is influenced by the non-tertiary VET system. Furthermore, high tertiary attainment rates in Korea for the younger adult age group coincide with a mismatch of skills for labour market needs.

Table 13 2023 Performance scorecard: Performance of the focus countries relative to Australia

	Germany	Norway	UK	Korea	Singapore	New Zealand
Attainment						
Percentage of adults (ages 25-64) with a tertiary qualification	– –	0	0	0	++	–
Percentage of young adults (ages 25-34) with a tertiary qualification	– –	0	0	++	++	–
Enrolments in STEM	++	0	0	++	++	+
Labour market outcomes						
Employment rates of 25-64-year-olds with tertiary education	0	0	0	–	m	0
Earnings of tertiary-educated 25-64-year-olds working full-time, relative to adults with upper secondary education	++	–	++	+	m	+
Skills mismatch between worker's qualification level and qualifications required for job (all workers)						
Well-matched	0	0	0	+	m	0
Overqualified	0	–	–	–	m	–
Underqualified	0	+	+	0	m	++
Public and private net financial returns to tertiary education (compared to returns to upper secondary education)						
Private returns						
Males	++	0	0	+	m	+
Females	–	++	– –	– –	m	– –
Public returns						
Males	++	– –	–	– –	m	– –
Females	0	– –	–	– –	m	– –
Equity						
Tertiary attainment among adults aged 30-44 years old whose parents both have less than tertiary education	–	+	+ Eng – N. Ire	++	++	
Lifelong learning and participation						
Enrolment rates in formal tertiary education by age group (%), 2020						
25-29 yrs old	0	0	–	–	m	–
30-39 yrs old	–	0	–	–	m	–
40-64 yrs old	–	0	–	–	m	0

Notes: ++ Performance well above Australia; + Performance above Australia'; 0 Performance similar to Australia; – Performance below Australia; – – Performance well below Australia; m. Missing

9.2. Implications for Australia

Analyses presented in this report demonstrate that Australia's tertiary education system performs well compared to other systems across some key indicators. In particular, Australia has:

- a higher tertiary education attainment rate than the OECD average, Germany and New Zealand, and;
- higher participation in lifelong learning at the tertiary level than each of the focus countries.

The comparative analysis provided in this report identifies the strengths and weaknesses of the 6 focus country systems. This analysis can be used to inform Australia's tertiary education policy; however it is important to consider the contextual factors that underlie system performance and therefore the degree to which other systems' policies and structures could benefit Australia. Many of the policy changes observed for Singapore, Korea and the UK seem to be driven by economic and labour market agendas. For Korea, large changes in population demographics are particularly relevant for the tertiary education agenda. For all 3 systems, mismatch between student supply and labour market needs are a key driver of policy directions. It is also interesting that a skills mismatch is emerging in Norway and attributed to granting learner choice in VET programs as opposed to promoting labour market needs. Alternatively, policy initiatives in New Zealand are driven by a social agenda of improving equity and in particular improving outcomes for their First Nations people, while in Germany system changes are directed at adjusting an imbalance in the tertiary education system that emphasises VET.

While these considerations are important, this report highlights key points for the Australian tertiary education system. For example:

- While the percentage of Australian students enrolled in STEM tertiary qualifications was similar to Norway and the UK, it was also much lower than Singapore, Germany and Korea. Increasing the STEM workforce is often part of international innovation strategies and is part of Australia's agenda for economic prosperity. It is likely that Germany and Korea's higher STEM enrolment rates are influenced by the strong role of manufacturing in their economies. Therefore, it is difficult to benchmark Australia against these countries given the differing contexts. Australia could investigate the approach to STEM education adopted in Singapore to learn how STEM engagement is facilitated in the education system.
- Labour market outcomes in terms of relative earnings are poorer for individuals with tertiary qualifications in Australia than for individuals in Germany and the UK.
- Australia had the highest percentage of individuals reporting they were overqualified for their job among all countries considered.
- Equity continues to be an issue in Australia and elsewhere even withstanding Australia's relatively positive results regarding gender equity. Across Australia and the 6 countries examined, there are variations in regards to the level of funding for tertiary education provided by public versus private sources, tuition fees and financial support for students.

STAGE 2
TERTIARY GOVERNANCE STRUCTURE

10. INTERNATIONAL EXPERIENCE OF COMMON CHALLENGES

Highlights

- International rates of VET and higher education uptake vary across countries.
- Different countries have different data collection approaches and policies for their tertiary education data.
- While positive views of VET are recorded in many European countries, it is still widely considered to have a lower status than general education. This is also the case in Australia.
- Countries with VET systems that are better respected by their citizens tend to be well-funded, have trained teachers and promote constructive relations with community and industry.
- Australia's previous Commonwealth Tertiary Education Commission enabled a co-operative approach between the States and the various sectors of education within the federated system.
- Singapore's SkillsFuture organisation provides a comprehensive structure for promoting lifelong learning within the education system.
- New Zealand's Tertiary Education Commission was established in 2003 and differs from Australia's Commonwealth Tertiary Education Commission in that it does not have a role in policy-making or providing advice.

10.1. Uptake of VET and higher education

The OECD *At a Glance* report for 2022 (OECD, 2022) collates information on participation and attainment in all sectors of education across OECD countries. The report found an increase in tertiary educational attainment for all OECD countries over the previous decade.

Between 2011 and 2021 the share of 25–34-year-olds with a tertiary qualification increased from an OECD average of 38% to 47%. While the share increased for all countries, there is wide variation between countries, for example (OECD, 2022, p. 46):

- Australia: from 45% to 54%
- Canada: from 56% to 66%
- Chile: from 22% to 41%
- Finland: from 39% to 40%
- Germany: from 28% to 35%
- Ireland: from 47% to 63%
- Korea: from 64% to 69%
- United Kingdom: from 47% to 57%
- United States: from 43% to 51%

In the 25-34 age group, across the OECD the share of individuals with tertiary attainment is 7 percentage points higher than the share of individuals with upper secondary or post-secondary non-tertiary attainment. The OECD report posits that, if current trends continue, a tertiary education will be the most common attainment among working-age adults on average across OECD countries within a few years (OECD, 2022). While this is already the case in Australia (OECD, 2022), upper secondary or post-secondary non-tertiary education remains the most common level of attainment in a number of European countries (e.g. Czech Republic, Finland, Germany, Hungary, Poland and the Slovak Republic) where few young people leave the education system with below upper secondary attainment, but tertiary attainment rates are below the OECD average.

In 14 OECD countries, including Australia, more than half of all 25–35-year-olds have a tertiary degree. For Canada and Korea, this proportion rises to at least two-thirds. Italy and Mexico are the only OECD countries where tertiary attainment among younger adults is below 30%.

Across the OECD, business, administration and law is the most common single field of tertiary study, accounting for almost a quarter of tertiary-educated 25–64-year-olds. A further 25% of 25–64-year-olds with tertiary attainment have studied a STEM field. However, attainment in different fields of study varies widely across countries.

As tertiary attainment has become more common across OECD countries, the share of the population with upper-secondary or post-secondary non-tertiary education as their highest level of attainment has declined (OECD, 2022). It is important to note that as these qualifications tend to be measured in a hierarchical way, the potential for attainment of non-tertiary education that occurs as a pathway to, or in tandem with tertiary qualifications could potentially be masked. The trend data suggests non-tertiary education is shrinking because it does not account for individuals acquiring and using multiple post-school qualifications.

10.2. Data collection and analysis

Countries around the world have established a variety of mechanisms for collecting and collating data on tertiary education. Table 14 below provides examples of some approaches that are in use.

Table 14 International data collection approaches

Country	Data collection approach
Canada	Since 2018, Higher Education Strategy Associates has released the report, The State of Postsecondary Education in Canada. The report compiles and analyses key indicators concerning Canadian higher education, including academic staff trends, enrolment figures, income sources for institutions, international comparisons, and tuition data. SPEC was introduced following recognition that Canada's data collection and analysis was weaker than in other comparable countries. The report is modelled on a set of publications produced by the Grattan Institute entitled, *Mapping Australian Higher Education*. https://higheredstrategy.com/the-state-of-postsecondary-education-in-canada-2/ Statistics Canada compiles a collection of education-related data, some of which is sourced from universities and community colleges through the Postsecondary Student Information System. https://www.statcan.gc.ca/en/subjects-start/education_training_and_learning

Country	Data collection approach
Finland	Statistics Finland compile data on students and qualifications, sourced predominantly from 2 data collections: KOSKI and VIRTA. VIRTA is a national data warehouse for higher education operated by the Ministry of Education and Culture. It contains a register of higher education achievement (student records) and a public information service that compiles metadata on publications from all Finnish research organisations. https://wiki.eduuni.fi/display/CSCOPTIETOR/VIRTA+in+English KOSKI is a national registry and data transfer service for study rights and completed studies maintained by the Finnish National Agency for Education. KOSKI compiles individuals' education records from comprehensive school, secondary school, vocational school and higher education (via the VIRTA database). The data in KOSKI is used by individuals (through a service MyData – and can be used to support recognition of prior learning) and a range of public agencies for strategic planning. https://okm.fi/en/koski-service-in-liberal-adult-education
Germany	Since 2009, the Federal Institute for Vocational Education and Training (BIBB) has issued an annual Data Report to accompany the Report on Vocational Education and Training prepared by the Federal Ministry of Education and Research. https://www.bibb.de/datenreport/en/index.php
New Zealand	The Tertiary Education Commission collects funding and performance data from tertiary education providers. Tertiary education datasets maintained by the Ministry of Education are available through the following website: https://catalogue.data.govt.nz/dataset/tertiary-achievement-and-achievement The National Student Index is the New Zealand education sector's core databased of student identity data. The National Student Number is used across all education sectors, from early childhood education, through schooling and into tertiary education. From March 2022, to improve data quality, NSI records are being data matched against birth register records. https://www.education.govt.nz/further-education/tertiary-administration/national-student-index-nsi/
Singapore	In Singapore, data on education is compiled by the Ministry of Education and made publicly available by the Department of Statistics. https://www.singstat.gov.sg/publications/reference/ebook/population/education-and-literacy The Ministry of Education's Education Statistics Digest provides statistical information on schools, enrolment, teachers, educational outcomes, employment outcomes and finances. The ESD covers primary, secondary, pre-university and university education. https://www.moe.gov.sg/about-us/publications/education-statistics-digest
United	Higher Education Statistics Agency collects, assures and disseminates

Country	Data collection approach
Kingdom	data about higher education in the UK. HESA collaborates with HE providers to gather data which is then provided as an open source of HE information for data users. https://www.hesa.ac.uk/about Since 2012, Ofqual has collected data from vocational education providers on a quarterly basis. https://ofqual.blog.gov.uk/2022/06/07/vocational-and-technical-qualifications-what-ten-years-of-data-can-tell-us/

10.3. Learner perceptions of VET

VET has a positive image in Europe, especially in relation to its capacity to provide job opportunities, prepare people for the world of work and meet employer needs. A European survey (Cedefop, 2017) revealed considerable variation between countries on awareness of VET, ranging from 46% to 91% of respondents reporting that they know what VET is.

The Cedefop survey also found variation between countries regarding the nature of advice young people received about the value of VET – around 50% of general education learners were advised against VET in Hungary, Romania and Italy, while less than 15% were advised against VET in the Netherlands, Denmark and the UK. Across all countries that participated in the research, 75% of respondents agreed that students with low grades were directed towards vocational education in their country, and 63% agreed that it was easier to get a qualification in vocational education than in general education.

Almost a quarter of survey respondents (Cedefop, 2017, p. 11) thought VET had a negative image in their country. In France, Hungary, Belgium and the Netherlands, more than 40% of respondents thought VET had a negative image. However, 86% of all survey respondents agreed that “people in vocational education learn skills that are needed by employers” (Cedefop, 2017, p. 41).

In many countries, survey respondents favoured prioritising national government investment in vocational education over general education. A further survey in 2020 (Cedefop, 2020) found that respondents valued upper secondary VET as a way to find jobs, strengthen the economy, help reduce unemployment and tackle social inclusion. However, the survey also found that VET is perceived as a less attractive learning option compared with general education and is considered a second choice for “second-rate students” (Cedefop, 2020, p. 16). Survey respondents viewed VET as the type of education that can lead to a job quickly, but not necessarily to a well-paid, well-regarded job, suggesting that while individuals believe that VET is good for the country, they may not believe it is good for them personally.

Research into Australian perceptions of VET found multiple misconceptions surrounding the sector and generally negative views in comparison to higher education (Wyman et al, 2017). Commonly held views expressed by respondents to a national survey included that VET graduates earn less than university graduates, university graduates find work more easily and that VET is no longer as relevant as university in a globally competitive world (Wyman et al, 2017).

A survey of young people in Australia (Walker, 2019) found that over a quarter of young Australians were deterred from studying VET due to a perceived stigma associated with it. The survey also found that the concept of TAFE was more widely understood than VET - 53% of survey respondents had a well-rounded understanding of TAFE compared with 31% for VET and 77% for university. The most frequent words used by survey respondents to describe TAFE/VET were practical, affordable, for tradies, specialised and easy.

Additionally, employer satisfaction with VET has declined over the past decade. In a 2021 employer survey (NCVER, 2021), 79% of employers reported that nationally recognised training met their skill needs compared to 89% in 2011. One of the top reasons reported for employer dissatisfaction was that relevant skills were not taught in VET programs.

The House Standing Committee on Employment, Education and Training is currently conducting an Inquiry into the Perceptions and Status of Vocational Education and Training. A submission to the inquiry by the Department of Employment and Workplace Relations makes the following observations about perceptions of VET:

- Individuals have a better understanding of VET products (e.g. Certificate III) than of VET itself.
- Children are influenced about work and education pathways from a young age – children as young as 7 develop biases and stereotypes about education pathways and the world of work.
- Parental attitudes and preferences for different pathways are highly influential on the choices of young people, especially for young people who are uncertain about choosing a pathway.
- VET delivered in secondary schools is perceived as of lower quality than post-school VET despite often being delivered by the same providers.
- Barriers to entry into apprenticeships include perceptions that they lead to a single occupation and are primarily for high school students (DEWR, 2023, pp. 6-7).

10.4. Elevating the status of VET

The low standing of VET is viewed as a problem by countries across the world (Billet et al, 2023). In part this concern is driven by observable gaps in the development of skills that are required in the labour market. There are growing concerns in many countries about low levels of adult competence in technologically driven work, and engagement with continuing education and training (Billet 2020).

The status of VET is influenced by the views held by individuals – employers, learners, parents – on the status and value of the occupations that VET serves (Billet, 2020). However, Billet observes that although the low-standing of VET is felt globally, the problem manifests differently in different countries depending on the cultural context and the structure of an education systems – in particular, whether the VET system has a distinct post-secondary identity (e.g. in Germany) or is less recognisable and partially embedded within secondary schooling (e.g. in the USA).

Countries with more mature VET systems, such as Finland and Switzerland, tend to have systems with relatively positive status and standing. Consistent features of the better respected VET systems are that they are well-funded and have trained teachers and constructive relations with community and industry (Billet, 2013).

In 2015, US researchers identified the Swiss vocational education and training system as the “gold standard” with the strongest VET system in Europe (Hoffman & Schwartz, 2015). In Switzerland, 70% of young people pursue a vocational route in their secondary education by taking up apprenticeships that provide entry into a wide range of occupations including high-tech, human services, health and traditional trades and crafts. The high take-up of VET in Switzerland can be attributed to the way in which the system is supported by a range of stakeholders and policy settings.

- Strong support from employers means that about 30% of Swiss companies participate in the VET system by hosting 16-19-year-old apprentices. Employers view VET as a major contributor to the country’s economic success.

- Apprentices divide their time between learning in the workplace with their host company, participating in nationally recognised training delivered by training providers approved by industry, and attending secondary school. Features of the system that make it attractive to young people are:
    - It places young people in adult settings where they are given responsibility, coaching and support.
    - Learning is hands-on, contextualised and applied.
    - Students are paid while they learn.
- Each canton or state in Switzerland operates a network of community-based career centres to support students with their pathway decisions.

In part, the high take-up of VET is driven by tightly controlled access to higher education because Swiss leaders believe that enrolling more than 25% of students in university might lead to a diminution in quality (Hoffman & Schwartz, 2015). The US research concludes that a major source of the Swiss system's strength "derives from its being the mainstream system, the way most young people make the transition from schooling to working life" (Hoffman & Schwartz, 2015, p. 19). They warn that the benefits of the system need to be continually communicated to parents and young people to ensure they do not succumb to the view that higher education is a better option – as has been the case in Denmark and Germany where participation in VET has fallen below 50%.

Many international efforts to raise the status of VET focus on secondary students and their parents, and therefore on the provision of career guidance and support for career pathways. Programs aiming to increase the uptake of apprenticeships also often take an approach that aims to counter existing negative perceptions of vocational training. This can be seen in the Ontario Youth Apprenticeship Program, a school-to-work transition program offered through secondary schools in Ontario, Canada. The program allows students to explore apprenticeship and consider careers in the skilled trades as attractive, viable options. Under Ontario's Skilled Trades Strategy, the Ministry of Colleges and Universities has 3 objectives for the program:

- Break the stigma around careers in the trades
- Simplify the skilled trades and apprenticeship system
- Encourage employer participation in the system (Ministry of Colleges and Universities, 2023).

Similar to Australian apprenticeship support networks, the Ontario Youth Apprenticeship Program messaging emphasises the benefits of the apprenticeship model for apprentices and their employers.

SkillsFuture Singapore provides an alternative example for raising the status of VET through an emphasis on lifelong learning. Messaging through SkillsFuture is directed at the whole working age population, rather than at school students. If this approach does succeed in decreasing stigma or negative attitudes associated with VET, these may also ultimately change perceptions among school students and their parents.

Both broad and narrowly focused research and inquiries have explored factors that influence the uptake of VET and possible ways to elevate the status of VET. Some of these are included in Table 15 and Table 16 below.

Table 15 Factors from literature that influence VET uptake

Factors that influence VET uptake
Attractiveness as a learning path, including: • provision of guidance and counselling • opportunities/pathways for moving on to higher education • quality assurance for the training provided (Cedefop, 2014)
Preparation for migration to build skills that are in demand in the target host country (Uraguchi, 2022)
Co-operation between employers and educational institutions (Uraguchi, 2022)
Accessibility of digital platforms and online tools (Uraguchi, 2022)
Improvement of retention in VET programs through: • teacher education • curriculum reform • alignment with work requirements (Norwegian example in Billet, 2020)
Pathways from initial vocational education to higher education (Swiss example in Billet, 2020)

Table 16 Ideas for elevating the status of VET

Ideas for elevating the status of VET
Make VET an appealing, credible and alternative option to general education pathways through structural reforms to improve quality: • improve VET curricula • use innovative methods and modern technologies • align VET programs with skills required in the labour market • offer relevant apprenticeship schemes (Cedefop, n.d.)
Promote VET through marketing and promotional campaigns that emphasise attractive features via: • a clear route to the labour market • including practical aspect of learning process • learn and earn options (Cedefop, n.d.)
Provide role models to show young people what they can achieve through VET (Cedefop, n.d.)
Raise entry requirements for VET programs to increase exclusivity (Danish example in Billet, 2020)

Significant energy and investment have been expended in attempts to raise the status of VET in Australia and elsewhere. However, these attempts may have been undermined by simultaneous efforts to raise the aspirations of young people. Through setting targets for participation in post-compulsory education and training, and measuring based on markers such as 'highest post school qualification achieved', policy makers and researchers continue to reinforce hierarchical perceptions of educational attainment.

Australian and international research has found that learners from different socio-economic backgrounds have different views on the attractiveness of VET. Some learner cohorts, e.g. First Nations learners and those from regional, rural and remote areas, have higher than average VET participation rates (Commonwealth of Australia, 2019). However, this is not the case for all minority or disadvantaged cohorts. Accordingly, there is not a single 'learner perception' of VET and for some demographics, participation in VET is aspirational.

11. EXPERIENCE IN UNIFYING TERTIARY EDUCATION

11.1. The Commonwealth Tertiary Education Commission 1977-1988

11.1.1. Establishment

The Tertiary Education Commission (TEC) was an independent statutory authority established by the federal government under the Tertiary Education Commission Act 1977. It was created from a merger of 3 separate commissions: for universities, colleges of advanced education (CAEs) and TAFE. Their identities were preserved in the TEC structure through 3 sectoral councils, with the Chairs of each Council serving as a full-time Commissioner.

In 1981, TEC was renamed the Commonwealth Tertiary Education Commission (CTEC). In both iterations, the functions of the Commission were to:

- advise the Minister on financial assistance for States and institutions, in relation to universities, colleges of advanced education (CAEs) and TAFEs
- distribute financial assistance to States and institutions on behalf of the Commonwealth
- make recommendations to the Minister on which institutions should be recognised as universities and CAEs
- provide advice to the Minister on any other matters relating to tertiary institutions – as directed by the Minister, or as identified by the Commission.

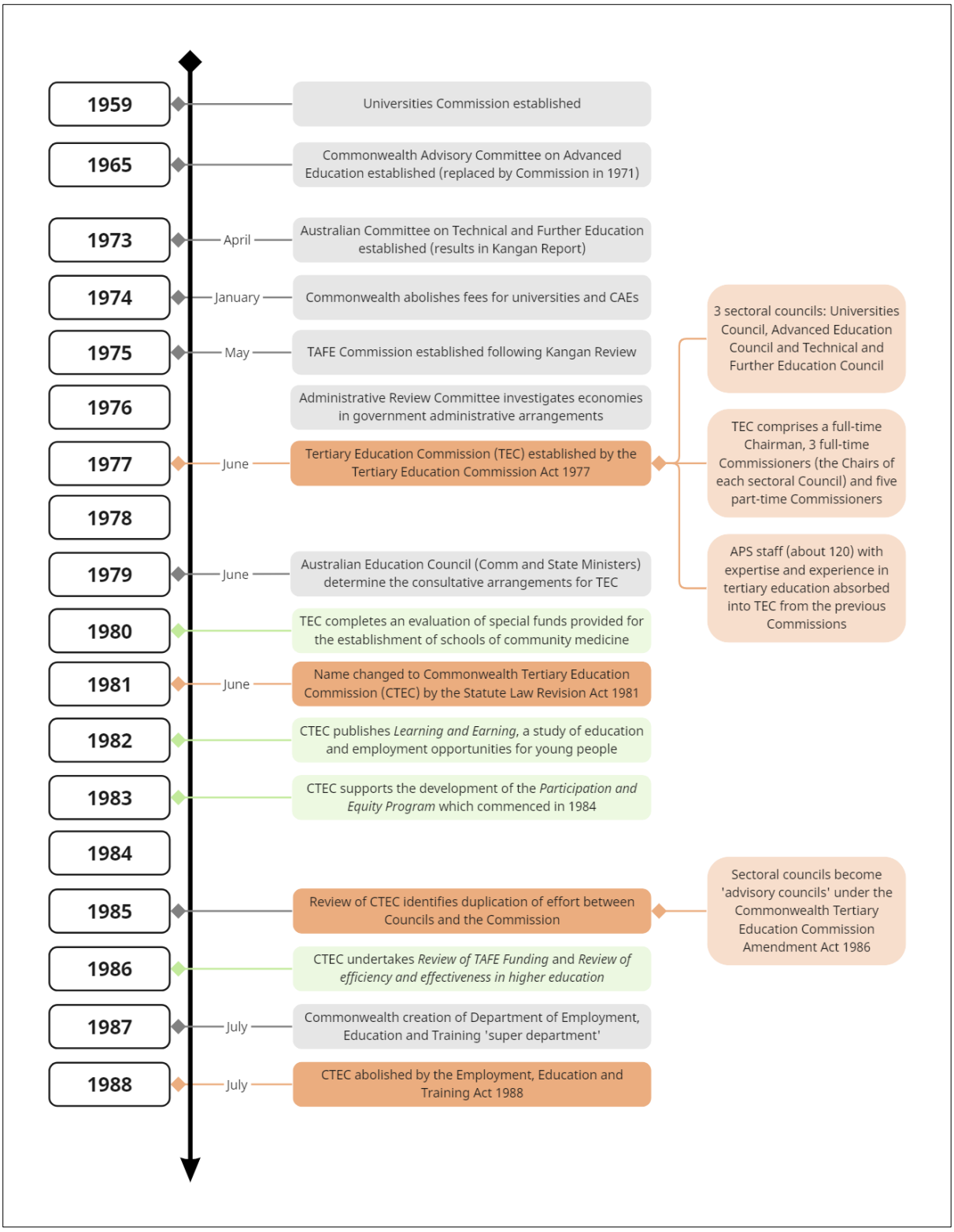

Figure 11 Commonwealth Tertiary Education Commission Timeline

Source: Adapted from Bessant 1982, Goozee 2011, Hudson 1985, Marshall 1990, CTEC Annual Reports 1981-1988.

11.1.2. Political context for establishment

In the early 1970s Australia's Commonwealth Government took a special interest in education and introduced many changes. In 1974, the Commonwealth took over full responsibility for

funding universities and colleges of advanced education[4], and abolished tuition fees.

Government interest in technical and further education saw the establishment in 1974 of an Australian Committee on Technical and Further Education headed by Myer Kangan. Recommendations in the subsequent report of the committee (colloquially, the Kangan Report) were based on an expectation that a TAFE Commission would be established alongside the pre-existing Commissions for Australian Universities and Advanced Education. And, in 1975, the Technical and Further Education Commission was established. After November 1975, despite a change in government, there was continuing interest in technical and further education due to its potential to support industrial development, increase labour force skills, assist economic recovery and "pick up the casualties from the growth in unemployment and the cutbacks in social welfare" (Goozee, 2001, p. 32).

Between 1975 and 1977, an Administrative Review Committee was charged with investigating economies in government programs and services and ways to improve Commonwealth/State administrative arrangements. The Committee identified wasteful duplication and overlap between the 3 commissions (Marshall, 1990). As a result, in 1977, the 3 bodies overseeing tertiary education were brought together in the Tertiary Education Commission.

11.1.3. Function

CTEC had strong support from successive governments, the public and academic community and was given considerable discretion to determine the direction of tertiary education policy, until the mid-1980s (Marshall, 1990). Marshall observed that CTEC emulated the "buffer" principle previously adopted in Britain for its University Grants Committee to protect campuses from political interference and ensure impartiality in Commonwealth-State relations (Marshall, 1990, p. 148).

CTEC's role was to ensure the balanced and co-ordinated development of all the nation's tertiary institutions. The role of the Commission was to deal with intersectoral matters, while each Council was to provide advice on policy matters for its sector. Although formally empowered to act in an advisory capacity, CTEC was responsible for developing and implementing a range of new initiatives. The bulk of policy recommendations in the late 1970s and early 1980s came from CTEC or its sectoral Councils (Marshall, 1990).

For the TAFE Council, particular emphasis was placed on upgrading and expanding the physical capacity of TAFE institutions and on improving the quality of planning and content of TAFE courses (Goozee, 2001). Through CTEC, recurrent funding was provided to States to compensate for the cost of abolishing fees for vocational courses. Special purpose grants were directed at areas of special need. These included curriculum development, assessment of community needs, development of self-paced learning, measures to improve public awareness of TAFE, and increased provision of preparatory and bridging programs (Goozee, 2001).

The operating and consultative arrangements for CTEC were determined by Commonwealth and State Ministers for Education, meeting as the Australian Education Council in June 1979 (CTEC, 1983). These arrangements were operated on a triennial planning cycle, as shown in Figure 12 and detailed below.

[4] At the time, Colleges of Advanced Education were state-owned institutions that provided certificate and diploma qualifications in areas such as teacher training, accountancy, nursing and information technology. The 'advanced education' category also included Institutes of Technology and Agricultural Colleges. During the higher education reforms of the late 1980s, most institutions in this category merged with universities or with each other to form new universities.

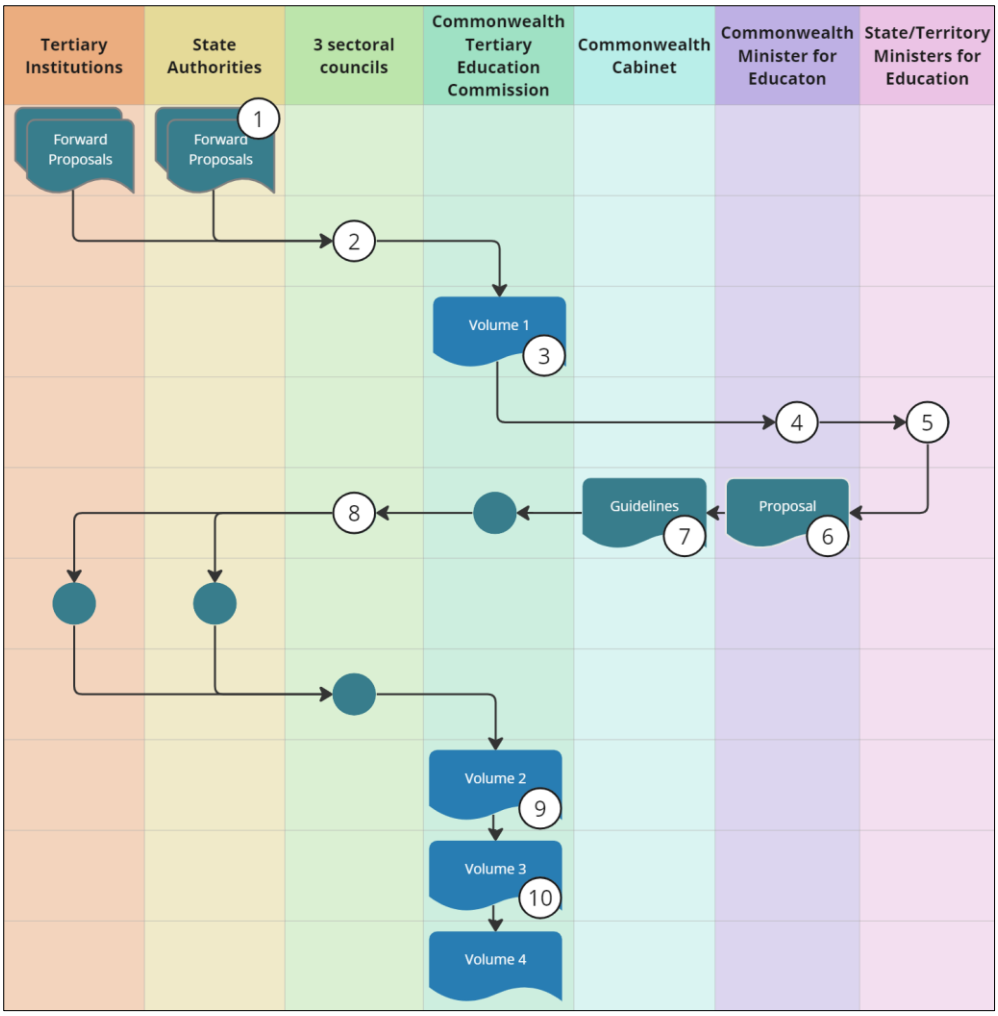

Figure 12 Commonwealth Tertiary Education Commission Triennial Planning Cycle

Source: Adapted from Hudson 1985, CTEC Annual Reports 1981-1988.

1. State authorities and institutes prepare forward proposals for consideration by the relevant sectoral council
2. Sectoral councils report to CTEC
3. CTEC develops a comprehensive policy statement, known as Volume 1
4. CTEC submits Volume 1 to the Commonwealth Minister for Education
5. Commonwealth Minister consults with State Ministers
6. Commonwealth Minister presents a final proposal to Cabinet
7. Cabinet develops Government Guidelines[5] as policy directives for CTEC
8. CTEC consults with sectoral councils and other stakeholders to finalise funding allocations based on the Government Guidelines
9. CTEC develops Volume 2 with recommendations on levels of:
    a. recurrent funding for universities and CAEs for the triennium

[5] The Government Guidelines set out decisions on the total level of funds available for tertiary education, and on policy issues raised by CTEC in Volume 1. The guidelines were usually open-ended directives that gave the commission considerable discretion over the allocation of monies for programmes (Marshall, 1990, p 152).

b. recurrent funding for TAFE for the first year of the triennium

c. capital equipment funds for all 3 sectors for the first year of the triennium.

10. CTEC develops Volumes 3 and 4 with recommendations on funding for the second and third years of the triennium.

Extensive compromise and adjustment were required from the many participants in the consultative process, resulting in an incremental style of decision-making. A 1985 review of the CTEC structure described a need to avoid "lowest common denominator" outcomes that are the minimum to which everyone can agree (Hudson, 1985, p. 13). Criticisms at the time (Bessant, 1982) stated that CTEC was closely tuned to government thinking and dominated by political appointments and, as a result, CTEC monitored and overturned the recommendations of the 3 councils to ensure that final CTEC recommendations were acceptable to government.

However, others viewed the consultative framework as key to CTEC's effective performance. "Proposals were carefully scrutinised and all perspectives critically considered… The Commission's eventual recommendations to Cabinet were based on thorough analysis and contained policy advice of a particularly high order" (Marshall, 1990, p. 151). CTEC's consultative, incremental approach introduced significant change to tertiary education and notably accommodated 25% growth in student numbers between 1975 and 1984, despite a funding decline of 8% (Marshall, 1990). The achievements of CTEC included:

- Establishing Special Research Centres and Key Centres of Teaching and Research in universities and colleges to focus on areas of national significance
- Improving participation and equity levels and increasing the vocational orientation of undergraduate courses
- Upgrading technical college facilities (CTEC 1987a).

The sectoral Councils appear to have worked fairly independently of each other and, to an extent, were in competition for government funds. They were initially responsible for awarding grants to states and institutions, but, after a review in 1985, their status was changed to an *advisory* role. Findings from the review included duplication of effort between the Councils and the Commission, remoteness of the Commission from institutions, and insufficient time spent on encouraging intersectoral developments.

11.1.4. Political context for dissolution

Challenging economic conditions in the 1980s saw a wider range of agencies take an interest in tertiary education. There was a view that tertiary education could support economic recovery and contribute more to national goals in relation to participation and equity, workforce capability, industry productivity and applied research (Marshall, 1990). Multiple agencies developed programs for delivery through tertiary institutions, including the:

- Department of Trade – proposed allowing full-fee paying overseas students
- Department of Industry, Technology and Commerce – introduced a national company training scheme, a tax concession for local research and development, and established the Industrial Research and Development Board
- Department of Employment and Industrial Relations – introduced the Australian Traineeship Scheme
- Department of Science – established a new research council on the recommendation of the Australian Science and Technology Council (Marshall, 1990, p. 159).

The alternative sources of funding that these initiatives provided for tertiary institutions decreased institutional reliance on CTEC and undermined CTEC's monopoly on tertiary education policy. New divisions over the role and purpose of tertiary institutions emerged,

especially in relation to the impact of applied research and the influx of overseas students. With more interested and vocal stakeholders, CTEC's consultative mechanisms were overloaded, contributing to a public perception of the Commission as bureaucratic and slow-moving (Marshall, 1990).

Significant restructuring of the Commonwealth Public Service, following the 1987 federal election, created *super departments* to enable better cross-portfolio coordination. A new Department of Employment, Education and Training combined the Department of Education, the employment divisions of the Department of Employment and Industrial Relations, the Office of Youth Affairs, and CTEC's TAFE Council. As a result, CTEC was left with very limited functions and, in October 1987, the decision was made to disband it (Goozee, 2001).

11.2. SkillsFuture Singapore

11.2.1. Establishment and purpose

SkillsFuture Singapore (SSG) is a statutory board under Singapore's Ministry of Education. It was established in 2016 through a restructure of the Singapore Workforce Development Agency and the Council for Private Education.

SSG's area of responsibility is the Continuing Education and Training sector, which comprises:

- In-house employer training
- Training offered by private providers
- Training provided by Institutes of Higher Learning – local universities, institutes of technical education, and polytechnics.

Many of these providers also deliver post-secondary education to Singaporean school leavers, but that aspect of the education system is the responsibility of Singapore's Ministry of Education, not SSG.

On establishment, SSG had a long-term objective to build an integrated, high-quality and responsive education and training system that would foster employer recognition and ownership of skills and create a strong culture of lifelong learning (SSG, 2017). An acknowledged task for SkillsFuture is to "shift away from an education system that relies on front-loading within the first 2 decades of an individual's life, towards continuing education and learning over a lifetime" (MoE, 2021, p. xvi).

SSG has strong messaging around skills mastery and lifelong learning. On its website, SkillsFuture is introduced as follows:

> *Skills Future is a national movement to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points.*
>
> *(https://www.skillsfuture.gov.sg/aboutskillsfuture)*

In the first SSG Annual Plan (SSG, 2017) 4 areas were identified for reimagining the education and training landscape:

- Educational and training pathways – with initiatives for reskilling throughout life including an earn and learn program and work-study degree programs
- Learning – with an emphasis on bite-sized learning, workplace learning, lifelong learning and skills mastery

- Trust and quality in the education and training landscape – integrating quality assurance, accreditation and regulatory frameworks that were previously the responsibility of 2 separate agencies, and introducing additional protections for students in the private education sector
- Service delivery – with a focus on process improvements and the use of technology, including the MySkillsFuture portal.

11.2.2. MySkillsFuture

The MySkillsFuture portal, launched in 2017, is a central component of SSG. The portal aims to empower Singaporeans to make informed choices and take ownership of their learning and career plans.

Through MySkillsFuture, individuals can:

- access training and career information
- find and enrol in courses
- apply for jobs
- redeem their SkillsFuture credits
- conduct self-assessments
- provide feedback on the quality of training.

11.2.3. SkillsFuture credits

When the MySkillsFuture portal was launched, all Singaporeans aged 25 and above were given a $500 credit to spend on continuing education and training. On December 31, 2020, Singaporeans aged 25 and above received an additional one-off credit of $500 to encourage timely reskilling and upskilling. At the same time, those aged 40-60 received a further $500 credit to improve their access to career transition programs.

The SkillsFuture credits can be used on top of existing government course subsidies to pay for a range of skills-related courses including:

- courses offered by Ministry of Education funded institutions such as the Institute of Technical Education, polytechnics, autonomous universities, LASALLE College of the Arts and Nanyang Academy of Fine Arts
- courses supported by public agencies
- courses offered by the People's Association and the Infocommunications Media Development Authority of Singapore (e.g. digital literacy courses for seniors).

The credits cannot be used to pay for training provided by employers.

According to local media reports (Kai, 2022), 247,000 Singaporeans used their SkillsFuture credit on eligible courses in 2021, an increase from 188,000 people in 2020. Courses in the information technology, healthcare, and professional services sectors saw the highest demand.

11.2.4. Web services

In addition to services provided for individuals through MySkillsFuture, the SkillsFuture website provides access to:

- an enterprise portal linking employers to programs and initiatives from SSG and Workforce Singapore (https://www.gobusiness.gov.sg/enterprisejobskills/)
- a training partners gateway connecting training providers with training resources and to relevant grants across the whole-of-government (https://www.tpgateway.gov.sg/)

- a developer portal allowing system developers to connect with SkillsFuture and Workforce Singapore-related application programming interfaces to integrate data into their own systems (https://developer.ssg-wsg.gov.sg/webapp/home).

11.2.5. Skills Frameworks

SSG uses Skills Frameworks to promote skills mastery and lifelong learning for the Singapore workforce. Skills Frameworks are jointly developed with employers, industry associations, unions, education and training institutions. More than 30 Skills Frameworks have been developed, covering a wide range of industries. They provide:

- industry sector information, including information on trends and workforce profiles
- a skill map, showing critical work functions and key tasks aligned to pathways
- detailed skills and competencies, including occupation-specific technical skills and critical core skills identified at level for each job
- information on available training programs.

Skills Frameworks are designed for use by individuals, employers and training providers and are accessible on the SkillsFuture website (https://www.skillsfuture.gov.sg/skills-framework).

11.2.6. Training Quality and Outcomes Measurement

Learner feedback on the quality and career/job impact of courses funded by SSG and courses eligible for SkillsFuture credit is gathered through 2 surveys. The aim of the Training Quality and Outcomes Measurement (TRAQOM) initiative is to:

- help learners make more informed choices through the publication of TRAQOM ratings
- establish benchmarks that help training providers identify areas for improvement
- inform the policies and regulations of SSG and other government agencies.

11.2.7. Employee training

Since 1979, employers in Singapore have been required to pay a Skills Development Levy. The levy is paid monthly and applies to all employees working in Singapore, including foreign employees and employees working on a casual, part-time or temporary basis. Since 2008, the rate of contribution is 0.25% of the monthly remuneration for each employee, with a minimum contribution of $2 and a maximum of $11.25 per month. The levy also applies to government employers.

Levy payments go into a Skills Development Fund that is managed by SSG to support continuing education and training. In 2022, the SkillsFuture Singapore Act and the Skills Development Levy Act were amended to give SSG more power to investigate and take punitive action in cases of misrepresentation and abuse of SSG funding and schemes.

In funding continuous education and training, SSG provides grants and support for employee training. In 2018, SSG established a National Centre of Excellence for Workplace Learning (NACE) to support small and medium-sized enterprises to build their own work-learn capabilities. In 2019, NACE had successfully helped 79 companies to implement workplace learning systems. (SSG, 2020) This figure rose over the following years to more than 960 enterprises in 2021 (SSG, 2021).

Annual SkillsFuture Employer Awards are used to recognise employers who champion skills development in their employees and actively build a workplace culture that encourages lifelong learning.

11.2.8. Future skills analysis

In 2021, SSG launched an inaugural *Skills Demand for the Future Economy Report* to provide a shared understanding for learners, employers and training providers to respond to skills

gaps and prepare for the future. For the 2022 report (SSG, 2022), SSG built its analytical capability to provide deeper insights on the nature of priority skills. The report identifies skills demand growth and skills transferability and informs a list of priority skills with specific focus on:

- Green economy, digital economy and care economy
- Jobs and skills in Industry 4.0 implementation
- Growth opportunities and skills-based pathways for mid-career workers
- The use and development of critical core skills in Singapore.

Long-term policy approach

As with many public policy initiatives in Singapore, the work of SkillsFuture is conceived as a long-term undertaking. While reporting on solid achievements, SSG's third annual report stated:

> *'we recognise that these are early days and the SkillsFuture movement is a multi-year journey'*
>
> *(SSG, 2019, p.5)*

The Next Bound of SkillsFuture began in 2020. It included:

- the introduction of advisory services that offer one-to-one customised support to individuals on their learning and upskilling needs
- SkillsFuture credit top-ups
- a special focus on mid-career workers to help them stay employable and move to new jobs or new roles.

11.3. New Zealand Tertiary Education Strategy

11.3.1. Establishment and purpose

New Zealand's Tertiary Education Strategy (TES) was established as a statutory document under the Education and Training Act 2020, which also established the Statement of National Education and Learning Priorities (NELP).

The NELP and TES set out government priorities for education to ensure the success and wellbeing of all learners. They were developed through extensive stakeholder consultation for the Education Work Programme, which set 5 objectives in 2018.

- Objective 1: Learners at the centre
- Objective 2: Barrier-free access
- Objective 3: Quality teaching and leadership
- Objective 4: Future of learning and work
- Objective 5: World-class inclusive public education

These set the context for the development and implementation of the NELP and TES.

The NELP is a set of 7 priorities to guide planning and practice in schools. An additional priority is included for the TES. Against the resulting 8 priorities, the TES identifies actions that

government and tertiary organisations can take to respond to the priorities. The priorities are:

1. Ensure places of learning are safe, inclusive and free from racism, discrimination and bullying.
2. Have high aspirations for every learner/ākonga, and support these by partnering with their whānau and communities to design and deliver education that responds to their needs, and sustains their identities, languages and cultures.
3. Reduce barriers to education for all, including for Māori and Pacific learners/ākonga, disabled learners/ākonga and those with learning support needs.
4. Ensure every learner/ākonga gains sound foundation skills, including language, literacy and numeracy.
5. Meaningfully incorporate te reo Māori and tikanga Māori into the everyday life of the place of learning.
6. Develop staff to strengthen teaching, leadership and learner support capability across the education workforce.
7. Collaborate with industries and employers to ensure learners/ākonga have the skills, knowledge and pathways to succeed in work.
8. Enhance the contribution of research and mātauranga Māori in addressing local and global challenges. (TES only)

11.3.2. Tertiary Education Commission

The Tertiary Education Commission was established in New Zealand in 2003 under the Education Act 1989. The commission is a crown agent and is responsible for administering all types of post-secondary education – work-based and institutional VET, higher education, adult literacy and numeracy, community education, and labour market programs (Smyth, 2023) – and giving effect to the government's tertiary education strategy.

The functions of the commission include funding and monitoring the performance of tertiary education organisations. While the commission creates operational policy to carry out its functions, and provides policy advice to tertiary education providers, it does not have a broader policy role. Tertiary education policy advice is provided to the Minister by the Ministry of Education (Smyth, 2023; Ministry of Education, n.d.).

The commission is not responsible for quality assurance of the tertiary sector. For universities, that is the responsibility of the Academic Quality Agency and for all other tertiary education providers it is the responsibly of the New Zealand Qualifications Authority (NZQA). NZQA is also responsible for managing the New Zealand Qualifications and Credentials Framework and running the assessment system for secondary schools (the National Certificates of Educational Achievement). NZQA works with Universities New Zealand to establish minimum entrance standards for admission to universities (NZQA, n.d.).

In 2020, the New Zealand government commenced the Reform of Vocational Education project, which aims to create a system that better responds to the needs of learners and employers. Under the Reform of Vocational Education, NZQA is working on:

- Simplifying the design of vocational qualifications
- Supporting the functions of Te Pūkenga and Workforce Development Councils
- Reviewing and updating the quality assurance framework
- Updating internal NZQA systems.

In addition to meeting the needs of the new vocational education system, the redesign of the quality assurance framework is driven by a need to give better effect to Te Tititi o Waitangi and changes in regulatory practice that include more reliance on data and insights and a

greater role for regulators in capability building.

12. IMPLICATIONS FOR AUSTRALIA

Highlights

- Systems reviewed in Singapore and New Zealand that focus on unifying the VET and higher education sectors demonstrate the benefits of having direct national control of the education system. This includes increasing consistency across all levels of the education sector. However, these systems also have weaknesses and operate within unique cultural contexts.
- The Commonwealth Tertiary Education Commission operated in a tertiary education landscape that was considerably less complex than the current Australian context. If a body similar to CTEC were to be recreated in Australia today, an effective solution would be required to include the current stakeholders of tertiary education.

While historic and international examples can stimulate thinking about policy and program solutions for Australia, cultural context is important. Furthermore, the examples of unified VET and higher education sectors discussed in this report still show weaknesses in their unified structure. Rather, their common feature is a national effort to create an accessible and organised tertiary system. Each is unique to the social, political and economic priorities of the country and time period.

Systems in both Singapore and New Zealand demonstrate the advantage of having direct national control of the education system. In addition to avoiding the complications of federation, it also brings a greater level of consistency to the treatment of each education sector – schools, higher education and VET can all be governed in a similar way.

Each of the examples highlight the value of collaboration across government portfolios with an interest in education to establish a shared vision and priorities, which includes government departments for employment, industry, migration, science and finance.

12.1. Commonwealth Tertiary Education Commission

In the federated Australian system, the establishment of an independent authority enabled a co-operative, rather than confrontationist, approach to the States and the various sectors of education. The triennial planning process, although time-consuming, allowed all stakeholder priorities to be recognised and taken into account in the development of national policies (Goozee, 2001).

While the dissolution of CTEC and establishment of the Department of Employment, Education and Training promised to make the rationalisation of national policy objectives more achievable, it also exacerbated tensions between the Commonwealth and the States. Without the co-operative approach of CTEC, national policy-making was perceived as a “top-down” approach that imposed policies on stakeholders (Lake et al., 2022, p. 10).

Further, following the shutdown of CTEC, there were dramatic changes to the tertiary landscape:

- The concept of ‘advanced education’ as a separate sector was absorbed into a broader concept of universities.
- In both VET and HE there was a shift away from a public service model to a business model, which saw an emphasis on realising efficiencies through a competitive market. This resulted in in a proliferation of private providers in VET, and university reliance on attracting non-government revenue and led to the rise of the international education industry.

- The introduction of nationally recognised training had the effect of removing foundation skills (preparatory and bridging programs) out of mainstream VET, leaving their delivery largely in the control of employment and migrant programs.

These changes make the tertiary education landscape even more complex than it was in the time of CTEC. Currently, there are many more providers and vocal stakeholders with conflicting perspectives on the purpose of tertiary education.

If a body similar to CTEC were to be recreated in Australia today, an effective solution would be required to include the current stakeholders of tertiary education in a meaningful way through representation, consultation and engagement. Relevant stakeholders would include public and private training providers, industry and union representatives, Commonwealth and State Departments responsible for education and training, and other interested parties such as departments or agencies responsible for workplace relations, employment, immigration, industry and research. To support an integrated tertiary education system, consideration should also be given to a commission architecture that would enable greater collaboration between VET and higher education stakeholders than was the case through the separate sector councils of CTEC.

12.2. Singapore

The cohesive Singaporean system is underpinned by a stable, centralised governance structure with strong cross-portfolio collaboration between the Ministry of Education and the Ministry of Manpower. This enables the development and implementation of long-term plans that allow adequate time for attention to detail – even to the niceties of logo design and branding to support and enhance messaging with stakeholders.

The Singaporean model benefits from a culture that is receptive to and accepting of government initiatives and directives. Over many decades, the Singaporean government has cultivated a reputation for acting in the best interests of Singaporean citizens and has built a significant level of trust in government agencies.

Rather than blending or merging VET with higher education, the Singaporean approach focuses on the skill needs of individuals. The continuing education and training sector supports individuals to upskill and reskill as part of lifelong learning, while the post-school education sector focuses on pathways for school leavers. Funding and oversight of the activities of tertiary education providers relates to the courses they offer, rather than to their education sector. SkillsFuture Singapore has a quality assurance role for all delivery of continuing education and training, regardless of which institution delivers the course.

12.3. New Zealand

The New Zealand Tertiary Education Commission differs from the earlier Australian model in that it does not have a role in policy-making or advice. Instead, it performs a largely administrative and performance management function for the tertiary sector. This may avoid the challenges experienced by Australia's CTEC in its latter years when a multiplicity of government players reduced CTEC's ability to develop and implement policy. However, when a whole-of-government approach is required for coherent tertiary education policy, consideration needs to be given to whether this can be best achieved by a single independent agency, or from within a government department.

New Zealand's current Tertiary Education Strategy has a significant emphasis on inclusivity to the extent that it appears more like an equity strategy than a complete approach to managing tertiary education. In implementing the strategy, the TEC is supporting tertiary providers to align their delivery to the strategy's priorities – in effect, an additional quality layer to ensure a focus on the needs of learners.

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APPENDIX 1: DATA SOURCES

Table 2

Indicator 1: Total population (thousands), 2021.

Source: United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

Indicator 2: Age structure of the population (%; per 100 total population), 2021

Source: United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

Table 3

Indicator 3: GDP (USD per capita) 2022. Estimated figures for New Zealand, Australia and OECD average; provisional figure for Germany; Singapore reference year is 2020. Source: OECD (2023), Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en. Retrieved May 20 2023.

Indicator 4: Total expenditure on educational institutions as a percentage of GDP, 2019. Source: OECD (2022) Total expenditure on educational institutions as a percentage of GDP, by source of funds (2019): By level of education, in Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/6a2a0d2f-en. Retrieved May 20 2023

Indicator 5: Annual employment rate (15-64 yr olds), 2022. Source: OECD. (2023). Short-term labour market statistics. Retrieved Retrieved May 20 2023

from https://stats.oecd.org/viewhtml.aspx?datasetcode=STLABOUR&lang=en#

Singapore data: Retrieved on May 20 2023, from https://stats.mom.gov.sg/iMAS_PdfLibrary/mrsd_2022LabourForce_survey_findings.pdf

Indicator 6: Annual employment rate (15-24 yr olds), 2022. Source: OECD (2023), Employment rate by age group (indicator). Retrieved May 20 2023 from https://data.oecd.org/emp/employment-rate-by-age-group.htm#indicator-chart

Singapore data: Retrieved on May 20 2023, from https://stats.mom.gov.sg/iMAS_PdfLibrary/mrsd_2022LabourForce_survey_findings.pdf

Table 4

Indicator 7: Age when tracking first occurs

Refer to country chapters

Indicator 8: First-time upper secondary graduation rates for students younger than 25, 2019

OECD countries excluding Australia: Reference year is 2019; Source: Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris, Retrieved on May 23, 2023 from https://doi.org/10.1787/a37839f9-en. Australian data source: Australian Institute of Health and Welfare (2023). Retrieved May 20, 2023 from https://www.aihw.gov.au/reports/australias-welfare/secondary-education-school-retention-completion

Table 5

Indicator 9: Enrolments in tertiary education

OECD.stat (2020). Retrieved on May 23, 2023 from https://stats.oecd.org/viewhtml.aspx?datasetcode=EDU_ENRL_AGE&lang=en. Note, data from UK includes data from another category.

Singapore (2020 data). Department of Statitistics Singapore. Retrieved on May 23, 2023 from https://tablebuilder.singstat.gov.sg/table/TS/M850251

Indicator 10: Tertiary education enrolment rate for 17-20 yr olds, (%), 2020. Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris, Retrieved on May 23, 2023 from https://doi.org/10.1787/9f4dbb61-en

Indicator 11: OECD (2023), Population with tertiary education (indicator). doi: 10.1787/0b8f90e9-en (Accessed on 31 May 2023) https://data.oecd.org/eduatt/population-with-tertiary-education.htm

Indicator 12: Share of enrolments in tertiary education by education level, 2020

Source: Data extracted from OECD.Stat, retrieved May 31, 2023 from https://stats.oecd.org/viewhtml.aspx?datasetcode=EDU_ENRL_AGE&lang=en# (calculations by author)

Indicator 13: STEM enrolments in tertiary education

Data from the UK includes data from another category (see OECD source website). Source: OECD.stat (2020). Retrieved May 31, 2023 from https://stats.oecd.org/Index.aspx?datasetcode=EDU_ENRL_FIELD (calculations by author)

Table 6

Indicator 14: Percentage of adults (25-64 year olds) with a tertiary qualification

OECD (2023), Adult education level (indicator). doi: 10.1787/36bce3fe-en

(Accessed on 31 May 2023). https://data.oecd.org/eduatt/adult-education-level.htm

Singapore source: Department of Statistics Singapore retrieved May 20, 2023 from https://tablebuilder.singstat.gov.sg/table/TS/M850581

Indicator 15: Percentage of younger adults (25-34 year olds) with a tertiary qualification

OECD (2023), Population with tertiary education (indicator). doi: 10.1787/0b8f90e9-en. Retrieved May 23, 2023 from https://data.oecd.org/eduatt/population-with-tertiary-education.htm

Singapore source: Department of Statistics Singapore retrieved May 20, 2023 from https://tablebuilder.singstat.gov.sg/table/TS/M850581

Indicator 16: Share of first-time Bachelor's, or equivalent graduates rates for national students below the age of 30, 2019.

Source: OECD (2021), Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris. Indicator B5. Retrieved May 23, 2023 from https://www.oecd-ilibrary.org/sites/c1e9f22a-en/index.html?itemId=/content/component/c1e9f22a-en#:~:text=In%20this%20edition%20of%20Education,for%20master's%20and%20doctoral%20levels

Table 7

Indicator 17: Employment rates of 25-64 year-olds, by educational attainment (2020).

Source: Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/e514cdbd-en. Retrieved on May 23, 2023.

Indicator 18: Unemployment rates by education level (indicator).

Source: OECD (2023), doi: 10.1787/6183d527-en, Retrieved May 23, 2023

Indicator 19: Relative earnings of 25-64 year olds working full-time

OECD (2021), Relative earnings of workers, by educational attainment (2019): 25-64 year-olds with income from employment (full-time full-year workers); upper secondary attainment = 100, in *Education at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/58476186-en. Note a = Data are not applicable because the category does not apply; m = Data are not available – either missing or the indicator could not be computed due to low respondent numbers.

Table 8

Indicator 20: Percentage of workers reporting they are overqualified or underqualified. Australian data is from 2016; Korean data is from 2017; all other data is from 2019.

Source: Data extracted from OECD.Stat, retrieved May 31, 2023 from https://stats.oecd.org/Index.aspx?DataSetCode=S4J2022_MISMATCH

Table 9

Indicator 21: Private net financial returns on attaining tertiary education

Source: OECD (2021), Private net financial returns for a man or a woman attaining tertiary education (2018): Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP, in Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/1c1a5f27-en & https://doi.org/10.1787/9782bdbc-en, retrieved 31 May 2023.

Note: Future costs and benefits are discounted at a rate of 2%

Indicator 22: Public net financial returns on attaining tertiary education

Source: OECD (2021), Public costs and benefits for a man attaining tertiary education (2018): As compared with a man attaining upper secondary education, in equivalent USD converted using PPPs for GDP; future costs and benefits are discounted at a rate of 2%, in Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/02af5564-en

& https://doi.org/10.1787/80b9c417-en

Note: Future costs and benefits are discounted at a rate of 2%

Table 10

Indicator 23: Tertiary attainment among adults whose parents both have less than tertiary education

Survey of Adult Skills (PIAAC). Singapore and New Zealand: reference year is 2015. Data on tertiary attainment are based on ISCED-97. Source: OECD.stat, retrieved May 23, 2023 from https://stats.oecd.org/viewhtml.aspx?datasetcode=EAG_MOB&lang=en

Table 11

Indicator 24: Enrolment rates in formal tertiary education by age group (%), 2020.

Source: OECD (2022), Table A7.3. in Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/3197152b-en.

Table 12

Indicator 25: Annual expenditure per student by tertiary education institutions for all services, 2019.

In equivalent USD converted using PPPs for GDP, based on full-time equivalents. New Zealand reference year is 2020. Source: OECD (2023), Education spending (indicator). doi: 10.1787/ca274bac-en, retrieved May 23, 2023.

Indicator 26: Public and private expenditure on tertiary education as a percentage of GDP, 2019.
New Zealand reference year is 2020. Source: OECD (2023). Retrieved on May 23 2023 from https://data.oecd.org/eduresource/public-spending-on-education.htm#indicator-chart

OECD (2017b). *Education at a Glance 2017*, Table B2.3, retrieved 25 July 2018 from http://www.oecd.org/education/eag2017indicators.htm.

Indicator 27: Distribution of public, private, household and other private expenditure on tertiary education. New Zealand reference year is 2020. Source: OECD (2023), Spending on tertiary education (indicator). doi: 10.1787/a3523185-en, retrieved May 23, 2023