3 Developing relevant skills over the life course in Southeast Asia

The development of skills is central to individuals' personal improvement and well-being, as well as to countries' economic growth and social cohesion. Skills development takes place in schools, homes, communities and workplaces. It entails the interaction of learners with a wide variety of actors, including teachers, principals, peers, parents and employers, among others. This chapter examines the importance of developing relevant skills over the life course in Southeast Asia and how lifelong learning could support a competitive workforce, promote inclusive growth and support Southeast Asian countries' national development objectives. It then explores three opportunities to improve the region's education and training systems: 1) broadening access to skills development; 2) increasing excellence and equity in skills development; and 3) developing skills that matter.

The importance of developing relevant skills over the life course

The development of skills over the life course has many benefits, both at the level of individuals and societies. Learning is a fulfilling endeavour for many individuals, and meaningful education has been associated with better health outcomes, positive effects on well-being, increased social cohesion and increased engagement in civic life (Raghupathi and Raghupathi, 2020[1]; Watson et al., 2018[2]). The development of relevant skills also yields high returns on investment, benefitting firm productivity and increasing rates of employment and employee earnings (OECD, 2016[3]; 2013[4]).

Recognising the many benefits of skills development, countries in Southeast Asia have adopted policies to improve their education and training systems over the years. Investments in education and intensive skills development through the decades have played a central role in the development of countries in the region, rapidly transforming Association of Southeast Asian Nations (ASEAN) member states into some of the most competitive economies in Asia. Policies to expand access to education and increase enrolment rates, especially at the secondary and tertiary levels, have helped transform individual countries from low-cost production economies to innovative knowledge hubs and boosted the region up the global value chain (OECD, 2013[5]; Prakash and Isono, 2012[6]).

Given this strong historical commitment to skills, Southeast Asian countries are well placed to adapt to global megatrends and to disruptions such as the coronavirus (COVID-19) pandemic, which are currently changing the world. With a population of more than 650 million, Southeast Asia currently plays a significant role in intra-Asia and global trade. Emerging economies from the region have transformed into important hubs for services, manufacturing and investments, with their value-added contributions to global value chains having increased significantly over the past few years (Prakash and Isono, 2012[6]; Zhong and Su, 2021[7]). To ensure continued growth in the post-pandemic economy, investments in improving the skills of the Southeast Asian workforce are central to remaining competitive and adapting to the changing demands of the labour market. Global megatrends are interacting with each other, along with the impacts of COVID-19, to make lifelong learning imperative. The traditional approach of “front-end loading” of skills development is becoming increasingly untenable in a world of rapid technological, economic and social change. Lifelong learning is essential to helping citizens become full and active participants in the economy and society (OECD, 2021[8]).

Southeast Asian countries recognise that a highly skilled, resilient and competitive workforce is needed not only to adapt to global megatrends and presently to COVID-19 but also to fuel their national socio-economic development in the long term. Many countries in the region have made education and training the foundation of their national development plans and adopted their policies on lifelong learning. ASEAN also recognises skills development as one of its key areas of co-operation and mobilises its network and resources to actively promote lifelong learning throughout the region (ASEAN, 2020[9]).

While Southeast Asian countries have made great progress, there are still numerous challenges in fully developing relevant skills over the life course. These challenges include difficulties in sustaining enrolment rates at higher levels of education, high drop-out rates among students, a generally low quality of education, poor educational facilities, insufficient digital infrastructure to help learners prepare for tomorrow’s world of work, and lack of work-based skills development offers, among others. Certain disadvantaged groups in the region, such as learners from socio-economically disadvantaged backgrounds, women, migrants and individuals from ethnic and linguistic minorities, are disproportionately affected. Without adequate access to skills development, workers in Southeast Asia’s widespread informal economy, who have low levels of skills to begin with, also risk slipping even lower into poverty.

Given these challenges, this chapter aims to suggest future directions for Southeast Asia’s policies for lifelong skills development based on an analysis of the current performance of the region’s education and training systems. It starts with an overview of the current governance arrangements to deliver skills development throughout the life course, as well as an assessment of Southeast Asian countries’

performance on key indicators on education and training. Building on this assessment, the chapter then presents three opportunities for the region to improve the development of relevant skills over the life course: 1) broadening access to skills development; 2) increasing excellence and equity in skills development; and 3) developing skills that matter. Each opportunity addresses current challenges faced by the region and proposes concrete and evidence-based policy recommendations.

Summary of recommendations

The policy recommendations presented throughout this chapter are summarised as follows.

Summary of policy recommendations for Southeast Asia to develop relevant skills over the life course

Opportunity 1: Broadening access to skills development

Improving access to early childhood education and care and compulsory education for disadvantaged groups

1.1. Establish strong monitoring systems to detect children who have failed to enter the education system, as well as those who are at risk of dropping out

1.2. Support provision of learning materials parents can use at home

1.3. Strengthen digital infrastructure, digital education platforms, and digital literacy to broaden access to skills development opportunities, especially among disadvantaged groups and during times of disruption

Promoting access to skills development after compulsory education

1.4. Adopt a comprehensive policy strategy to address both supply- and demand-side barriers to technical and vocational education and training participation

1.5. Facilitate access to tertiary education by reducing the most significant financial barriers, both in terms of tuition fees and the cost of learning materials

1.6. Create a comprehensive national adult learning strategy that targets disadvantaged groups and facilitates their participation

Opportunity 2: Increasing excellence and equity in skills development

Improving the quality of human resources in schools

1.7. Invest in professional development opportunities for teachers to equip them with better pedagogical skills

1.8. Consult regularly with school leaders about their various needs in terms of resources and upskilling

Strengthening funding and student assessment in schools to improve equity

1.9. Improve the financial management skills of school leaders and personnel.

1.10. Establish avenues for relevant stakeholders to collaborate on improving student assessment systems

Opportunity 3: Developing skills that matter

Improving the alignment between skills development offers and labour market demand

1.11. Increase the involvement of relevant government agencies and industry partners in reviewing the curricula of skills development offers in technical and vocational education and training and tertiary education

1.12. Increase the provision of on-the-job training opportunities, especially among workers in smaller firms and in the informal economy

Steering skills development choices towards labour market needs

1.13. Provide regular training to guidance counsellors and make updated labour market data more accessible to inform their work

1.14. Expand financial incentives for individuals and institutions to encourage the uptake of skills development in strategic industries, especially among disadvantaged groups

Overview and performance

Overview of Southeast Asia's governance arrangements for developing relevant skills over the life course

The development of relevant skills over the life course requires the provision of high-quality education and training offers at different stages of life. Skills systems are composed of different types of skills development offers, each having different objectives and focusing on the acquisition of different skills as an individual progresses through life. While these components of skills development systems may be guided by a formal educational curriculum, they may also cover informal and non-formal learning. Specific definitions of these components vary from one country to another, although common elements are described in Box 3.1.

Box 3.1. Definitions of skills development offers over the life course

- **Early childhood education and care (ECEC)**: General care services that aim to provide a holistic approach to supporting children's early cognitive, language, physical and social development. ECEC is offered from birth until entry into primary school (i.e. usually at the age of six years old in Southeast Asia, except in Myanmar [five years old] and Indonesia [seven years old]). It includes the provision of pre-primary education, which is the initial stage of organised instruction that is designed to introduce very young children to their first school experiences.
- **Compulsory education**: A period of schooling wherein children are legally obliged to attend, usually defined in terms of several grades or an age range, or both. In all countries in Southeast Asia, compulsory education usually encompasses the entirety of the primary level and some parts of the secondary level. Many governments guarantee free schooling at certain levels of compulsory education, but exceptions remain (e.g. lower secondary education in Viet Nam, which is compulsory but not free). In some countries, despite making education compulsory, barriers to achieving universal enrolment persist, such as low quality of education, access to schools in rural areas and low socio-economic background of students.

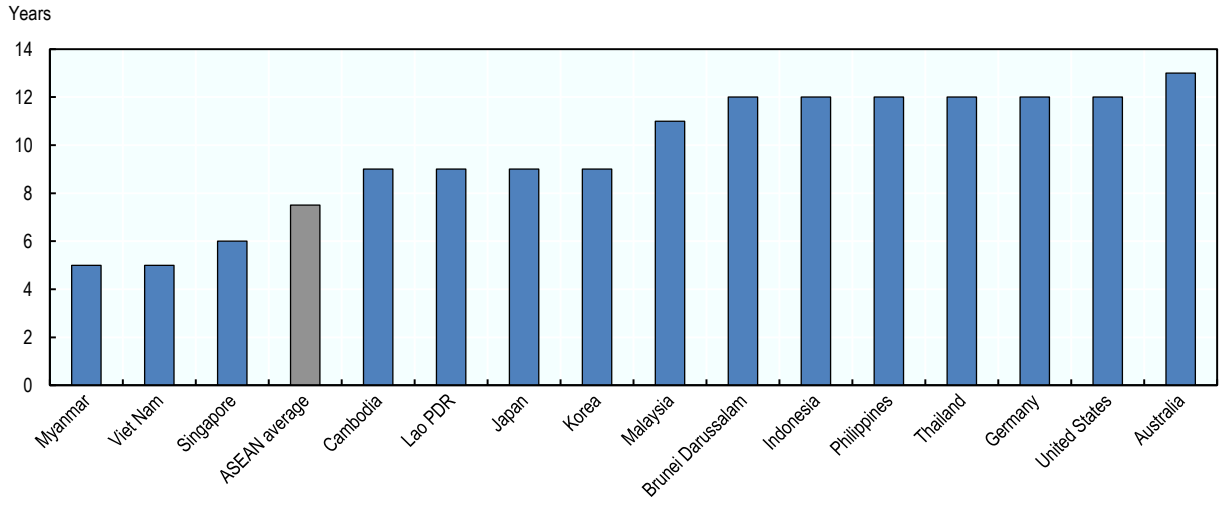
- **Technical and vocational education and training (TVET)**: Education, training and skills development that relates to a wide range of occupational fields and provides work-based learning. TVET often begins at the upper secondary level in Southeast Asia and may lead to continuing education at the tertiary and graduate levels.
- **Tertiary education**: Builds on the completion of secondary education and provides more complex learning activities in specialised fields of study, whether academic, vocational or professional in nature. Tertiary education leads to qualifications such as certificates, diplomas and academic degrees.
- **Adult learning**: Learning that is pursued after completion of initial education. Adult learning includes formal education (e.g. occurs in a structured environment and leads to a certification recognised by the national educational classification); non-formal education (e.g. occurs in a structured environment and does not lead to a certification recognised by the national educational classification); and informal learning (e.g. unstructured learning activities that do not lead to certification). In Southeast Asia, adult learning may also be referred to as "continuing education" or "complementary education".

Source: OECD (2003[10]), *Pre-primary education (ISCED 0),* https://stats.oecd.org/glossary/detail.asp?ID=5409 - :~:text=Pre-primary education (ISCED 0) is defined as the,and a school-based atmosphere; OECD, (2015[11]), *ICSED 2011 Operational Manual: Guidelines for Classifying National Education Programmes and Related Qualifications*, https://doi.org/10.1787/9789264228368-en; UNESCO (2006[12]), *Compulsory Education*, https://learningportal.iiep.unesco.org/en/glossary/compulsory-education; UNESCO (2018[13]), *Adult education*, https://uis.unesco.org/en/glossary-term/adult-education; UNESCO (2014[14]), *Education systems in ASEAN+6 Countries: A Comparative Analysis of Selected Educational Issues*, www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/UNESCO_Education_Systems_in_Asia_Comparative_Analysis_2014.pdf; UNESCO (2020[15]), *Technical and vocational education and training (TVET)*, https://unevoc.unesco.org/home/TVETipedia+Glossary/filt=all/id=474; World Bank (2022[16]), *Primary school starting age (years)*, https://data.worldbank.org/indicator/SE.PRM.AGES?locations=BN-KH-ID-LA-MY-MM-SG-TH-VN.

As of 2020, all Southeast Asian countries guarantee free and compulsory education in their legal frameworks. However, the number of school years covered by law varies across countries, as shown in Figure 3.1. The coverage of such legal frameworks can be limited to as few as five years of schooling in Myanmar and Viet Nam, guaranteeing education only at the primary level. On the other hand, education is compulsory for up to 12 years in Brunei Darussalam, Indonesia, the Philippines and Thailand. Legal frameworks guarantee free and compulsory education until the end of lower secondary in Brunei Darussalam and Indonesia. In the Philippines and Thailand, education is compulsory and free until the upper secondary level, where students can also choose TVET as an optional (i.e. not compulsory) pathway instead of the academic pathway.

Southeast Asian countries monitor skills development over the life course through specific governance bodies. In most countries, policy oversight for the different components of the skills development system falls under different government bodies (Table 3.1). In many cases, the Ministry of Education governs ECEC, compulsory education and tertiary education. However, some countries have separate specialised agencies that govern ECEC and tertiary education (e.g. Singapore's Early Childhood Development Agency, the Philippines' Commission on Higher Education). Governance of TVET is often delegated to a separate specialised agency (e.g. Office of the Vocational Education Commission in Thailand). In Southeast Asia, the governance of adult learning relative to other levels of education is more fragmented and less established, and the mandate of overseeing adult learning programmes, while often led by the Ministry of Education, is usually shared with other ministries and agencies.

Figure 3.1. Number of years of free and compulsory education guaranteed in legal frameworks in Southeast Asia and selected OECD countries, 2022



Source: Adapted from Brunei Darussalam (2018[17]), *Primary Education*, www.moe.gov.bn/SitePages/Primary%20Education.aspx; UNESCO (2022[18]), *SDG4 Indicator Dashboard*, http://sdg4-data.uis.unesco.org/; Singapore Ministry of Education (2021[19]), *Overview of compulsory education*, www.moe.gov.sg/primary/compulsory-education/overview.

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Table 3.1. Overview of Southeast Asian government agencies responsible for education and training

Country	ECEC	Compulsory education	TVET	Tertiary education	Adult learning (main ministry)
Brunei Darussalam	Ministry of Education (MoE)	MoE	MoE	MoE	MoE
Cambodia	Early Childhood Education Department under the Ministry of Education, Youth and Sports (MOEYS)	MOEYS	Ministry of Labour and Vocational Training (MoLVT)	Directorate General for Higher Education under the MOEYS	MOEYS
Indonesia	Directorate General of Early Childhood Education and Community Education under the Ministry of Education and Culture (MoECRT)	MoECRT	Directorate of Technical and Vocational Education under the MoECRT	Directorate General of Higher Education under the MoECRT	MoECRT and the Ministry of Manpower and Transmigration
Lao PDR	Ministry of Education and Sports (MoES)	MoES	MoES and the National Training Council (NTC)	MoES	Department of Non-Formal Education, MoES
Malaysia	Ministry of Education (MOE)	MOE	MOE	Ministry of Higher Education (MOHE)	TalentCorp, Ministry of Human Resources (MOHR)
Myanmar	Ministry of Social Welfare, Relief and Resettlement	Ministry of Education	Ministry of Education	Department of Higher Education under the Ministry of Education	Non-Formal Education Committee

Country	ECEC	Compulsory education	TVET	Tertiary education	Adult learning (main ministry)
Philippines	Early Childhood Care and Development (ECCD) Council	Department of Education (DepEd)	Technical Education and Skills Development Authority (TESDA)	Commission on Higher Education (CHED)	CHED and the Department of Education (DepEd)
Singapore	Early Childhood Development Agency (ECDA)	Ministry of Education (MOE)	Higher Education Group (HEG) under the Ministry of Education (MOE)	Higher Education Group (HEG) under the Ministry of Education (MOE)	Ministry of Education and SkillsFuture Singapore
Thailand	Ministry of Education (MOE)	MOE	Office of the Vocational Education Commission under the MOE	Ministry of Higher Education, Science, Research and Innovation	Department of Non-Formal Education, MOE
Viet Nam	Ministry of Education and Training (MOET)	MOET	Ministry of Labour, Invalids and Social Affairs (MOLISA)	MOET	MOET

Note: Entries for the column on adult learning are not exhaustive, as the management of adult learning activities often falls under multiple government ministries depending on the industry (see Chapter 5). Entries are based on the ministry in charge of the main policies covering adult learning or are the focal point for inter-ministerial co-ordination.

Regional governance bodies are also present to foster cross-country co-operation in skills development policies. ASEAN member states co-ordinate their actions through ASEAN Ministerial Bodies, namely the ASEAN Education Ministers Meeting (ASED) and the ASEAN Senior Officials Meeting on Education (SOM-ED). Additional mechanisms for broader educational co-operation with neighbouring non-ASEAN countries include the ASEAN Plus Three Education Ministers Meeting (APT EMM) and the East Asia Education Ministers Meeting (EAS EMM). ASEAN Working Groups exist to address thematic areas of education, including the strengthening of education for out-of-school children (OOSC) and youth, the promotion of higher education mobility and quality assurance (ASEAN, 2020[9]). In addition to ASEAN bodies, the Southeast Asian Ministers of Education Organization (SEAMEO) is a regional organisation that convenes the ten ASEAN member states along with Timor-Leste to promote co-operation in education, science and culture. SEAMEO has 26 specialised institutions that undertake research programmes on various aspects of education and skills development throughout the life course, including community education, teacher quality, special education and sustainable development (SEAMEO, 2022[20]).

Initiatives at the regional level recognise the importance of ensuring access to high-quality lifelong learning for all, especially those from disadvantaged groups. Key declarations, such as the Bangkok Declaration on Advancing Partnership in Education for the 2030 Agenda for Sustainable Development in ASEAN and the Kuala Lumpur Declaration on Higher Education, signal Southeast Asian governments' political commitment to skills development over the life course. Many of these declarations also make specific references to learners from disadvantaged groups, such as OOSC and youth, learners with special needs, workers in the informal economy and those coming from disadvantaged socio-economic backgrounds and remote areas (ASEAN, 2016[21]; 2016[22]; 2019[23]). Additionally, the Vientiane Declaration on Transition from Informal Employment to Formal Employment towards Decent Work Promotion in ASEAN recognises the prevalence of the informal sector in the region. It emphasises the importance of access to skills development in facilitating workers' access to decent employment (ASEAN, 2016[22]).

Co-ordination mechanisms at the regional level have been instrumental to individual countries' response to COVID-19 and their efforts to recover from the impacts of the pandemic. Such regional governance mechanisms were key to helping ASEAN member states to expand access to online learning, build the capacity of teachers to provide distance education, facilitate the exchange of best policy practices and lessons learned and explore future collaborations with partners to support the recovery of education systems across Southeast Asia (ASEAN, 2020[24]). In 2021, ASEAN also released the *ASEAN Policy Brief on Safe School Reopening, Learning Recovery and Continuity* to provide member states with key

strategies to ensure that all learners continue to have access to education, as well as to reduce the learning inequalities exacerbated by the COVID-19 pandemic (ASEAN Secretariat, 2021[25]).

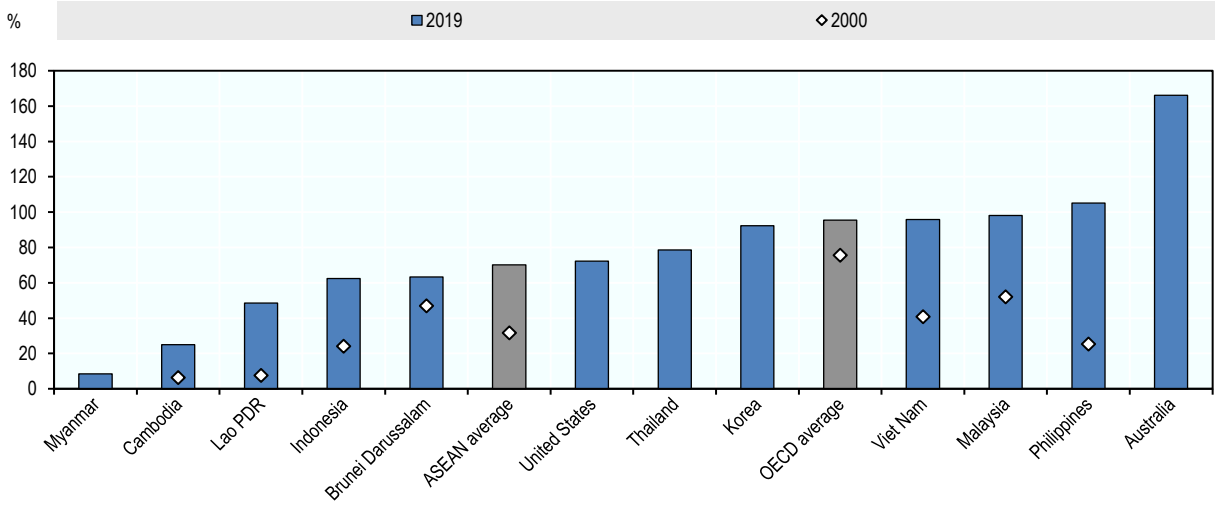
Southeast Asia's performance in developing relevant skills over the life course

Through the decades, Southeast Asia has seen steady improvements in various indicators relating to the development of skills over the life course. With all countries having seen increases in gross enrolment rates at different levels of education during the last two decades, access to skills development has improved significantly in the region. Moreover, improving the quality of education has also received considerable policy attention; however, only Singapore has ranked among the strong performers in international surveys of student performance, such as the OECD's Programme for International Student Assessment (PISA). Furthermore, considerable work remains to be done to achieve universal enrolment at all levels of education, reach the most disadvantaged and excluded learners, and strengthen the role of skills development in reducing informal employment and eliminating inequities across groups.

Access to learning opportunities has grown steadily over the decades, but there is still a need to extend access to all segments of the population

Southeast Asia's average pre-primary gross enrolment rate has increased significantly over the last two decades. Pre-primary education is the initial stage of organised instruction and forms part of ECEC, thereby often serving as an indicator for participation in broader ECEC services. ECEC and pre-primary education have received greater policy attention from Southeast Asian countries over the past years, aiming to provide integrated learning experiences and childcare services before official entry into primary school and ensure the holistic development of children (ASEAN, 2015[26]). Owing to increased policy attention and various educational reforms, gross enrolment rates at the pre-primary level have risen by 40 percentage points across Southeast Asian countries, increasing from 31.7% in 2000 to 70.1% in 2019 (Figure 3.2). Due to this substantial increase from 2000 to 2019, the gap in the average enrolment rates between ASEAN countries and OECD countries has narrowed from 44 to 25.5 percentage points. Despite these improvements, however, the variation in gross enrolment rates across the region remains substantial, ranging widely from 8.5% in Myanmar to 105.1% in the Philippines[1] in 2019.

Figure 3.2. Gross enrolment rates in pre-primary education in Southeast Asia and selected OECD countries, 2000 and 2019



Note: The figure reports gross enrolment rates in pre-primary education in 2019, except for Lao PDR and Myanmar in 2018. Gross enrolment rates account for students of all ages, including those whose age exceeds the official age group for the specified level of education. Therefore, if there is early enrolment, late enrolment or grade repetition, gross enrolment can exceed 100%.
Source: UNESCO Institute for Statistics (2021[27]), *Education*, http://data.uis.unesco.org/.

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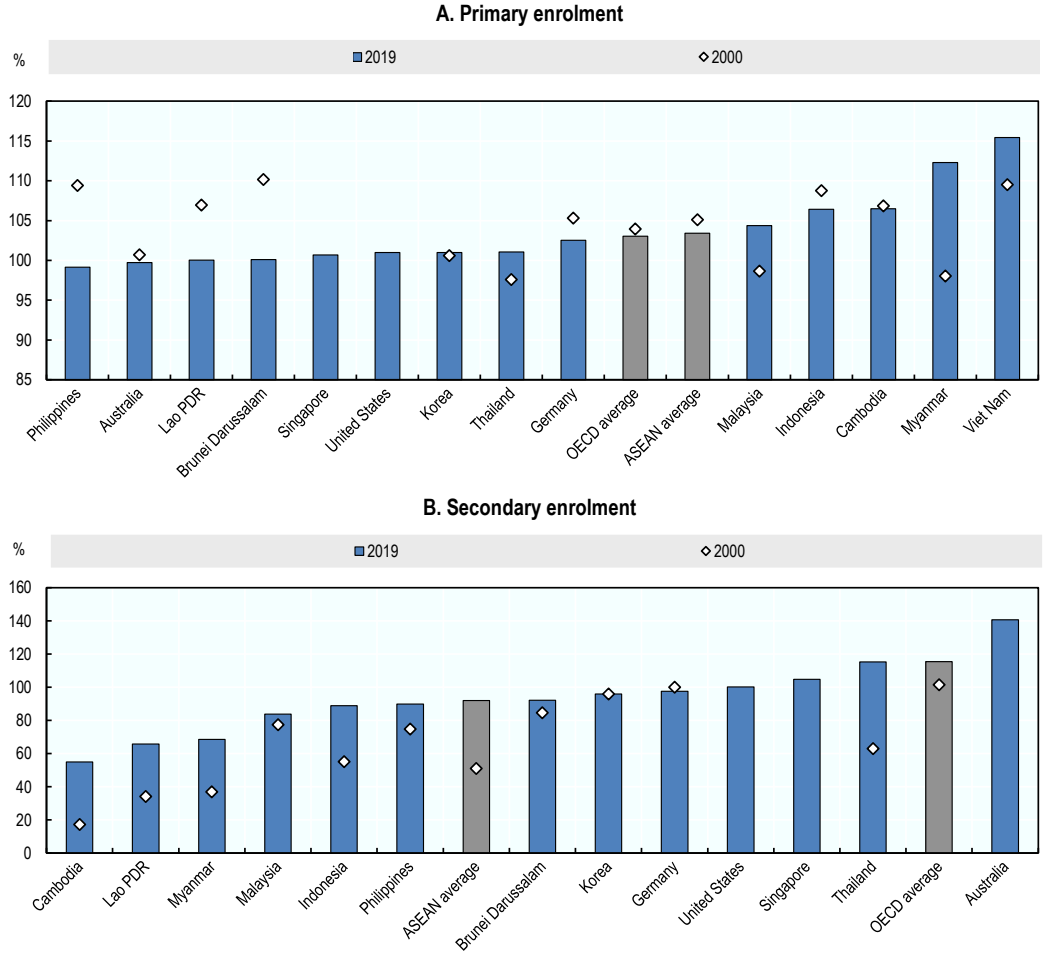
Gross enrolment rates have been universal or near-universal at the primary level over the last two decades in Southeast Asia, although participation begins to decline at the secondary level. Panel A of Figure 3.3 shows that in 2019, the performance of ASEAN countries (103.4%) was very close to that of OECD countries (103.1%). Gross enrolment rates were higher in 2000 than in 2019 in the Philippines and Cambodia, as these countries succeeded in reducing repetition rates at the primary level over the time period (Trading Economics, 2022[28]).[2] Panel B of Figure 3.3 shows that gross enrolment rates tend to be lower at the secondary level than at the primary level. However, the regional average has improved over the last two decades, nearly doubling from 44.3% in 2000 to 84.3% in 2019. Nonetheless, despite these improvements over time, average gross enrolment rates in the region are still lower than those in OECD countries (115.4%). Moreover, the intra-ASEAN gap remains substantial, with 2019 gross enrolment rates at the secondary level ranging from 65.8% in the Lao People's Democratic Republic (hereafter "Lao PDR") to 115.2% in Thailand.

Figure 3.3. Gross enrolment rates in primary and secondary education in Southeast Asia and selected OECD countries, 2000 and 2019



Note: At the primary level, data is not available for 2000 for Singapore and the United States. For Myanmar and Indonesia data for 2019 is not available and data for 2018 is used. At the secondary level, data are not available for 2000 for Australia, Singapore, and the United States, and for the Philippines and Thailand data from 2001 is used. For Cambodia, Indonesia and Myanmar data for 2019 is not available and data for 2018 is used. Data for both years for Viet Nam are not available at the secondary level. ASEAN and OECD averages are the mean values of gross enrolment rates for the member countries available in a given year. ASEAN-OECD mean difference is significant in 2000 ($p<0.001$) and 2019 ($p<0.01$).

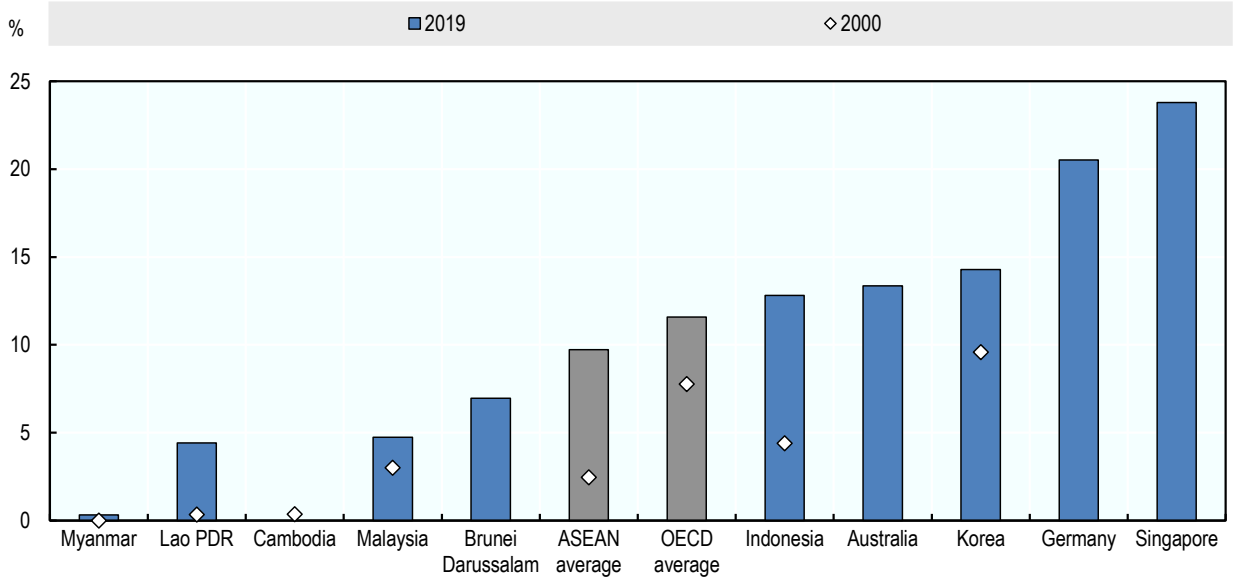
Source: World Bank (2021[29]), *World Bank Development Indicators*, https://databank.worldbank.org/source/world-development-indicators.

StatLink https://stat.link/5rjnx4

Similarly, enrolment in TVET programmes in Southeast Asia has also been on the rise in the last two decades, rising about 6.4 percentage points from 2000 to 2019 for countries with available data. The increase in the enrolment rate in TVET in Southeast Asia has exceeded that of the OECD (3.8 percentage points) over the same period (Figure 3.4). TVET, which often starts at the secondary level, has been collectively identified by Southeast Asian countries' ministries of education as one of the seven priority areas for educational development and a crucial way for countries to meet their current and future skill needs (ASEAN, 2020[30]; SEAMEO, 2016[31]). Strong political commitment over the years has helped increase the TVET participation rate in Southeast Asia, with Indonesia experiencing the greatest increase by 8.4 percentage points.

Figure 3.4. Enrolment rates in technical and vocational programmes in Southeast Asia and selected OECD countries, 2000 and 2019

Percentage (in relation to the youth population aged 15-24)

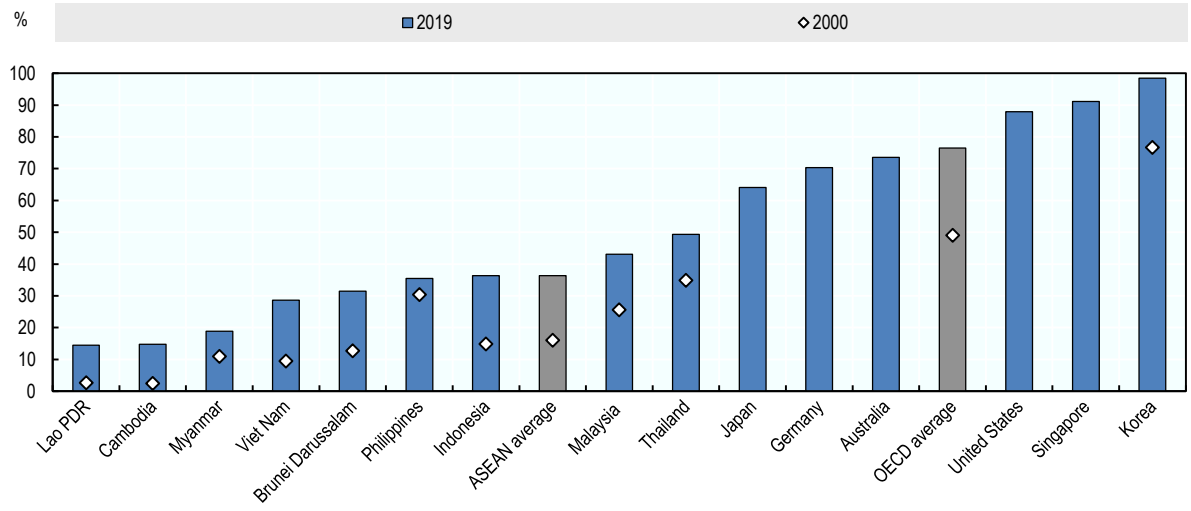


Note: ASEAN average includes countries with available data: Cambodia, Indonesia, Lao PDR, Malaysia and Myanmar for 2000, and Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Myanmar and Singapore for 2019. Data from 2000 are not available for Australia, Brunei Darussalam, Germany, and Singapore, while data from 2019 is not available for Cambodia.
Source: World Bank (2020[32]), *Education Statistics - All Indicators*, https://databank.worldbank.org/indicator/SE.TER.ENRL?id=c755d342&report_name=EdStats_Indicators_Report&popularitype=series#.

StatLink https://stat.link/45l1pt

Gross enrolment rates at the tertiary level have also increased substantially for all Southeast Asian countries, with the ASEAN average having more than doubled from 16% in 2000 to 36.3% in 2019. Individual countries have also seen impressive improvements, with countries such as Indonesia observing an even bigger jump than the regional average, with an increase of 21.4 percentage points from 2000 to 2019 (Figure 3.5). However, in 2019, Southeast Asia still lagged behind OECD countries, with the 2019 average gross enrolment rate of ASEAN countries (36.3%) being less than half that of the OECD (76.5%). Moreover, Southeast Asian countries that had low levels of enrolment at the tertiary level in 2019, such as Lao PDR (14.4%), Cambodia (14.7%) and Myanmar (18.6%), also did so at the primary and secondary levels, suggesting that learners in these countries do not participate adequately at all levels of education.

Figure 3.5. Gross enrolment rates in tertiary education, Southeast Asia and selected OECD countries, 2000 and 2019



Note: The indicator refers to the percentage of the population enrolled in tertiary educational institutions aged a maximum of five years after the official age group for upper secondary education. The OECD average is based on 28 to 33 countries from 2000 to 2014 (varying across the years) and 35+ countries in 2015 and onwards. The ASEAN average is based on 6 to 7 countries available each year.
Source: UNESCO Institute for Statistics (2021[27]), *Education*, http://data.uis.unesco.org/.

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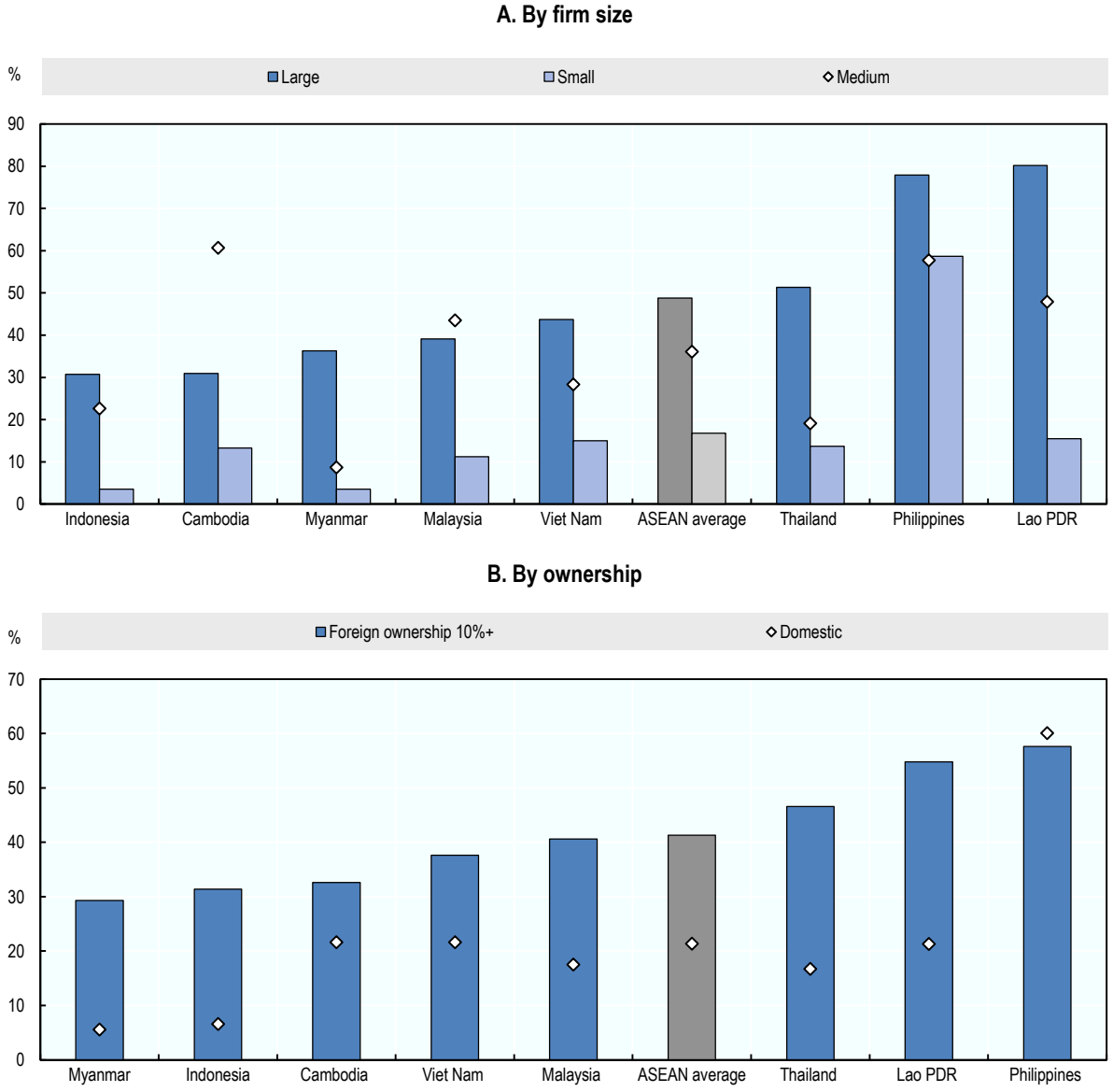
The availability of formal training offers for adult workers varies widely across Southeast Asian countries. On average, throughout the region, employees working for large firms (48.8%) have the most access to training, while medium-sized (36.1%) and small-sized (16.8%) firms generally have less access (Figure 3.6). Cross-country differences are nonetheless significant regardless of firm size. For instance, 58.7% of small-sized firms in the Philippines offer training to their employees, while only 3.5% can do so in Cambodia and Indonesia. By ownership type, workers in firms with foreign ownership (41.31%) have, on average, more access to skills development offers than those in domestically owned firms (21.4%). Well over half of the domestic firms in the Philippines (60.1%) offer training to their employees, while only a few in Myanmar (5.6%) and Indonesia (6.6%) can do so.

In Southeast Asia, access to skills development has been limited due to the COVID-19 pandemic (see Chapter 2), especially among learners from disadvantaged groups. Without contingency plans in place, countries in the region faced challenges in trying to provide continued learning opportunities for all students using different modalities. While the Internet has alleviated some of the bottlenecks in educational service delivery, those living in rural and isolated areas or those living with a disability, those who do not have Internet connectivity and online learning devices, and those who have limited levels of digital literacy struggled to access skills development during the pandemic. Instructional materials were also inadequate for learners with disabilities and those who speak minority languages. With these challenges, there is a significant risk that learners with disadvantaged backgrounds may either not return to school at all or return with significant delays (UNICEF and UNESCO, 2021[33]).

Figure 3.6. Access to formal training provided by employers by firm size and ownership in Southeast Asia, latest available year

Percentage of employers



Note: Only training with a structured and defined curriculum (e.g., classroom work, seminars, lectures, workshops, and audio-visual presentations and demonstrations) is included. The average is not weighted. Large, medium, and small firms refer to companies with 100 or more workers, 20 to 99 workers, and 5 to 19 workers, respectively.
Source: World Bank (2020[34]), *Enterprise Surveys*, www.enterprisesurveys.org/en/enterprisesurveys.

StatLink https://stat.link/9ut40g

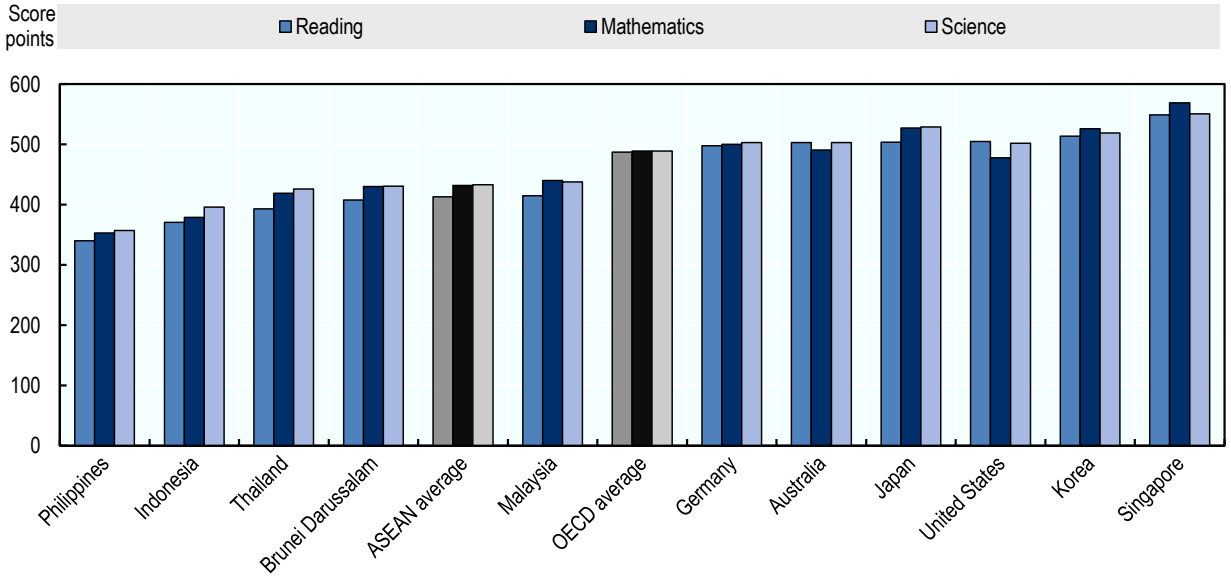
Steady improvements in educational quality have been achieved, but many students across different Southeast Asian countries still perform poorly

Apart from ensuring access to skills development over the life course, Southeast Asian countries have also prioritised improving the quality of education at all levels and enhancing learners' performance. Policy measures to address issues in educational quality across the region have included a wide variety of

interventions, including the expansion of teacher training, the upgrading of educational facilities, the establishment of national quality assurance agencies to evaluate the performance of educational institutions, the regular conduct of curriculum reviews, and the improvement of links between education and industry. Increased policy focus has been given to improving the quality of education in remote and disadvantaged regions, as well as to strengthening independent learning programmes, competency-based training and community-based vocational training that target informal workers (ASEAN, 2022[35]; Lee, 2016[36]).

Despite significant efforts to improve educational quality, all Southeast Asian countries, except for Singapore, perform poorly in international assessments of student performance. In the latest round of PISA in 2018, 15-year-olds in Southeast Asia showed a relatively low overall performance in reading, mathematics and science, with five out of six participating countries performing well below the OECD average in all three subject areas (Figure 3.7). These results point to an important area for policy intervention, as performance in key skills such as reading at age 15 is a potential predictor of literacy in adulthood (OECD, 2019[37]). While Southeast Asian learners – except those from Singapore – performed relatively poorly in the 2018 PISA round, the gender gap in more than half of the participating countries (i.e. Brunei Darussalam, Indonesia, Malaysia and the Philippines) was still lower than that of the OECD (OECD, 2019[38]). While scores between boys and girls in these Southeast Asian countries do not differ much, socio-economic status appears to be a significant predictor of student performance. For instance, students in Singapore were, on average, top performers in reading, but four times as many advantaged students achieved that level of performance in comparison to disadvantaged students, suggesting that even in countries with high-quality educational systems, social inequities are significant (OECD, 2019[38]).

Figure 3.7. Average performance in reading, mathematics and science for 15-year-old students in Southeast Asia and selected OECD countries, 2018



Source: OECD (2019[39]), *PISA 2018 Database*, www.oecd.org/pisa/data/2018database/.

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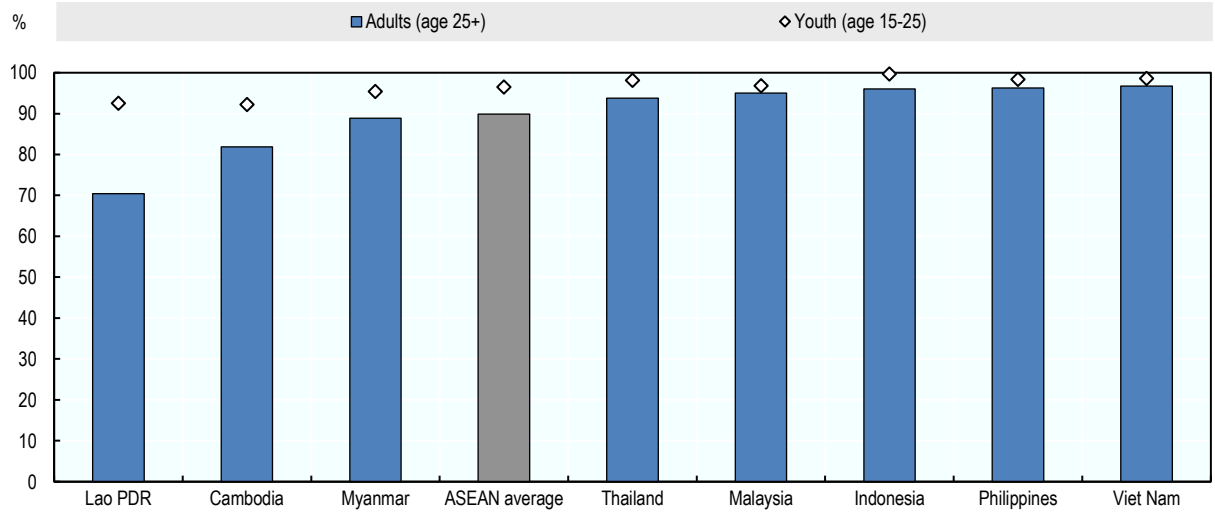
While Southeast Asia has seen great progress in the development of foundation skills, such as literacy, over the last three decades, basic literacy – whether for youth or adults – still has not been achieved in many countries in the region. The average regional literacy rate among youth aged 15 to 24 years old

(96.4%) is generally higher than among adults aged over 25 (89.9%) (Figure 3.8), suggesting that proficiency in literacy has improved over a generation. Nonetheless, there is significant room to increase literacy skills, especially among adults, in countries that remain below the regional average, such as Lao PDR (70.4%), Cambodia (81.9%) and Myanmar (88.9%).

Figure 3.8. Literacy rates among youth and adults in Southeast Asia, latest available year

Percentage of people who can both read and write, understanding a short, simple statement about everyday life



Note: Due to a lack of available data, the following years were used: 2015 for Lao PDR and Malaysia; 2018 for Brunei Darussalam, Cambodia and Myanmar; and 2019 for Indonesia, the Philippines, Singapore, Thailand and Viet Nam. Measuring literacy involves different methodologies across countries, including self-reports, using educational attainment data as a proxy, or administering a direct reading test of literacy skills.
Source: World Bank (2022[40]), *Literacy rate, adult total (% of people aged 15 and above)*, https://data.worldbank.org/indicator/SE.ADT.LITR.ZS.

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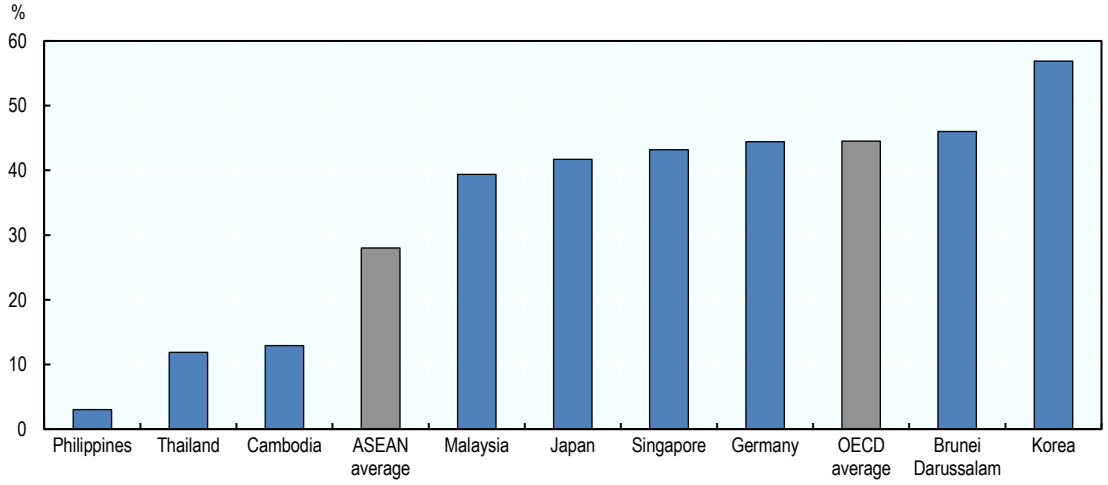
In addition to literacy, digital skills are another domain in which Southeast Asian countries have room to further improve, especially as economic activities become more dependent on technology. Data from 2019 showed that the everyday usage of digital skills in ASEAN countries is relatively low. On average, youth and adults aged 15 to 75 in six ASEAN countries (28%) are less likely than their counterparts in OECD countries (44.5%) to have certain digital skills (e.g. copying or moving a file or folder, sending e-mails with attached files, using basic arithmetic formulas in a spreadsheet) (Figure 3.9). Cross-country differences remain large, ranging from 3% in the Philippines to 46% in Brunei Darussalam, which is the only Southeast Asian country that performs above the OECD average. Moreover, in a 2019 survey of Indonesia, Malaysia, the Philippines, Singapore and Viet Nam, youth aged 15-35 identified their weakest skills in science, technology, engineering and mathematics (STEM) areas, including programming and data analytics (World Economic Forum, 2019[41]).

The development of soft skills is also central to the ability of Southeast Asia to adapt to rapidly changing economies. Soft skills capture a broad array of generic skills that are useful in the workplace regardless of industry or specialisation, such as communication, teamwork, problem solving and self-management, among others, and, as uniquely human skills, are harder to replace or automate in the future as economies evolve (ADB, 2015[42]; OECD, 2021[43]). In a survey of 56 000 young ASEAN citizens, the youth recognised the increasing importance of developing soft skills, and a greater share reported in self-assessments that they are more proficient in soft skills (e.g. resilience and adaptability, technology use, emotional

intelligence and communication) than hard skills (e.g. data analytics, software programming) (World Economic Forum, 2019[41]).

Figure 3.9. Youth and adults aged 15 or over with digital skills in Southeast Asia and selected OECD countries, 2019

Percentage of youths and adults



Note: Values are averaged across the nine types of digital skills: 1) copying or moving a file or folder; 2) using copy and paste tools to duplicate or move information within a document; 3) sending e-mails with attached files (e.g. document, picture, video); 4) using basic arithmetic formulas in a spreadsheet; 5) connecting and installing new devices (e.g. a modem, camera, printer); 6) finding, downloading, installing and configuring software; 7) creating electronic presentations with presentation software (including images, sound, video or charts); 8) transferring files between a computer and other devices; and 9) writing a computer programme using a specialised programming language. Data for the Philippines is missing for indicators 1 and 5, and data for Japan is missing for indicator 1. Due to lack of available data, the latest available year was used for the following countries: Germany (2014 for indicator 5); Indonesia (2017 for all indicators); Cambodia (2018 for indicator 8); and Japan (2018 for indicator 9).
Source: Adapted from UNESCO Institute for Statistics (2021[27]), *Education*, http://data.uis.unesco.org/.

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Opportunities to improve the development of relevant skills over the life course

Developing relevant skills over the life course is central to the ability of Southeast Asian countries to build a competitive and resilient workforce. Based on an assessment of the performance of countries in the region, the following opportunities have been identified for improving the development of relevant skills over the life course:

1. broadening access to skills development
2. increasing excellence and equity in skills development
3. developing skills that matter.

Opportunity 1: Broadening access to skills development

Over the past 20 years, Southeast Asian countries have been successful in widening access across levels of education, but many barriers remain (UNICEF-SEAMEO, 2020[44]; OECD, 2021[45]). Countries have adopted various policies to strengthen educational opportunities over the life course, recognising education

as a key priority area, and affirming governments' obligation to make it accessible to all learners regardless of gender, socio-economic background, location, ethnicity and other characteristics (UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific, 2017[46]). However, despite these efforts, universal enrolment still has not been achieved in ECEC and at all levels of compulsory education (particularly at the secondary education level), and access to learning opportunities across the life course remains highly unequal across groups, depending on various factors, such as household income, geographic remoteness, gender, ethnic and/or linguistic minority status. Access to skills development after compulsory education, such as TVET, tertiary education and adult learning, also remains limited in many countries (OECD, 2019[47]; UN ESCAP, 2017[48]). The COVID-19 crisis has also greatly restricted access to skills development, whether in school, work or community settings (UNICEF and UNESCO, 2021[33]).

Given these challenges, two policy directions have been identified for broadening access to skills development over the life course in Southeast Asia. The first policy direction pertains to the importance of improving access to ECEC and compulsory education for disadvantaged groups. The second policy direction is concerned with promoting access to skills development after compulsory education, including in TVET, tertiary education, and adult learning. Particular attention is given to learners from disadvantaged groups, as their lack of access to education and training could exacerbate their socio-economic conditions and perpetuate informal employment throughout the region.

Improving access to early childhood education and care and compulsory education for disadvantaged groups

ECEC and compulsory education are important components of lifelong learning and are indispensable building blocks of the skills development system. As many of the skills needed in the workplace and society, such as communication, independent thinking and self-regulation, among others, rapidly develop in the early years of life, ECEC and compulsory education lay the groundwork for the acquisition of skills over the life course (OECD, 2019[49]; 2021[50]; UNICEF, 2022[51]). Moreover, attendance in high-quality ECEC and compulsory education is a crucial predictor of children's cognitive, physical, social and emotional development, as well as academic outcomes, over the long term (UNICEF-SEAMEO, 2020[44]; OECD, 2021[45]; Bakken, Brown and Downing, 2017[52]; Kusumah, 2021[53]; Trawick-Smith, 2014[54]). Building a strong foundation for skills in Southeast Asia requires action in three important areas, which are explored below: 1) increasing access to ECEC and compulsory education for disadvantaged groups; 2) creating positive learning environments at home, especially among low-income households; and 3) improving digital infrastructure throughout ASEAN countries to support the early acquisition of digital skills, especially in rural and low-income areas.

Improving access to ECEC and compulsory education for disadvantaged groups

Participation in ECEC is nearly universal in only a few Southeast Asian countries. While gross enrolment rates have increased over the last two decades in all countries, the average remains only at 70% at the ASEAN level (Figure 3.2). Half of ASEAN countries fall below this average, with Myanmar lagging significantly at 8.5%. Data from the Southeast Asia Primary Learning Metrics (SEA-PLM) have also shown that across six participating countries (Cambodia, Lao PDR, Malaysia, Myanmar, the Philippines, Viet Nam), on average, over one in four children did not participate in ECEC opportunities at all in 2019, according to parents' self-reports (UNICEF-SEAMEO, 2020[44]). Nonetheless, countries with significantly high participation in ECEC be found in the region, such as Viet Nam (99.9%), Thailand (99.7%) and Singapore (97.1%). ECEC access also remains low for children who live in poverty, live in geographically remote communities, come from socio-demographic minorities, are exposed to internal conflicts and are susceptible to natural hazards (SEAMEO INNOTECH, 2021[55]).

In response to these challenges, countries in Southeast Asia have put in place various policy measures – both individually and at the regional level – to increase enrolment rates in ECEC. All countries in the region have recognised the benefits of ECEC in their national policies and frameworks (SEAMEO INNOTECH, 2021[55]). For instance, Viet Nam, the region's best performer in ECEC participation, has

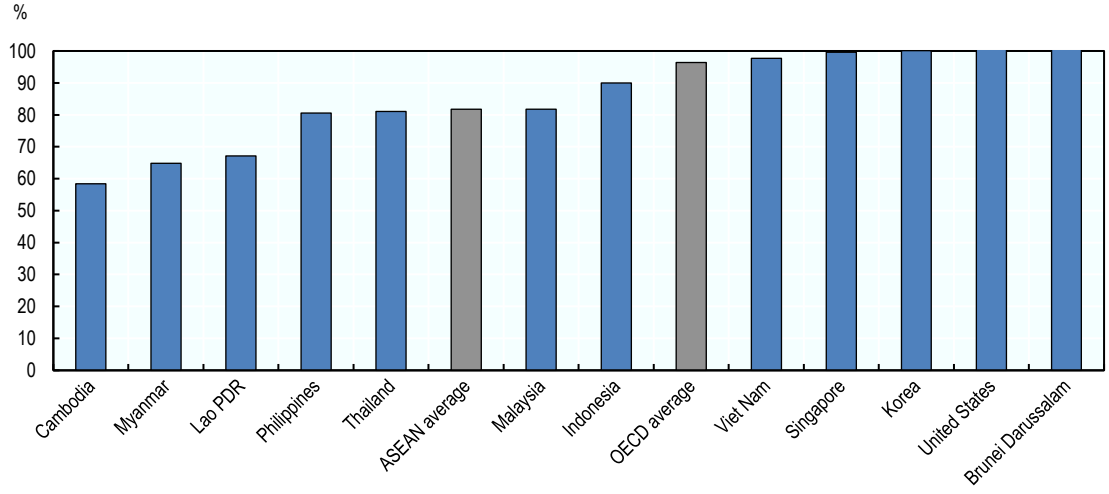
drastically increased government expenditure on pre-primary education over the last decade, and in 2013 adopted the Universal Early Childhood Education for 5-year-old Children programme to expand the coverage of ECEC and improve school readiness, especially among disadvantaged children (Abbott et al., 2019[56]; Vu, 2021[57]; World Bank, 2017[58]). At the regional level, the ASEAN Early Childhood Care, Development and Education Quality Standards were adopted in 2015 to guide member states in ensuring that ECEC services are safe, reliable and of good quality, and to set minimum standards for service provision throughout the region (ASEAN, 2015[26]).

Inequalities also exist in the completion of compulsory education in Southeast Asia. While all countries in the region have achieved significant progress in expanding gross enrolment rates at the primary and secondary levels (Figure 3.3), completion rates are still low for many countries, particularly at the secondary level (Figure 3.10). The completion rate is an important indicator of whether students who gained access to school remain in school until completion. On average, only 81.7% of learners in Southeast Asia finish secondary education compared to 96.4% of learners in OECD countries. Completion rates are especially low for Cambodia (58.4%), Myanmar (64.7%) and Lao PDR (67.1%), posing risks to the full acquisition of foundation skills needed by learners to thrive in workplaces and society.

The large number of OOSC among those of compulsory education age has been a long-standing challenge in Southeast Asia. While the exact definitions of OOSC vary across countries, they generally refer to children at the primary to lower secondary school ages who are not enrolled in formal education, either because they have dropped out or they have never been to school. Although the region has managed to decrease OOSC rates by 11.5 percentage points over the past two decades, the latest figures (i.e. 2019) for Southeast Asia remain substantially high at 11.7% – nearly four times larger than the OECD average of 3%. Cross-country differences are also substantial. For instance, more than one in five children was out of school in Lao PDR (23.2%), whereas OOSC are virtually non-existent in Singapore (0.2%) (UNESCO Institute for Statistics, 2021[59]).

Figure 3.10. Lower secondary completion rates in Southeast Asia and selected OECD countries, 2018

Percentage of persons in the relevant age group who have completed lower secondary education to the total age cohort



Note: The OECD average for lower secondary completion is calculated based on 30 countries. The OECD-ASEAN mean difference is significant ($p < 0.001$).

Source: World Bank (2021[60]), *Lower secondary completion rate, total (% of relevant age group)*, https://data.worldbank.org/indicator/SE.SEC.CMPT.LO.ZS.

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Various factors account for the likelihood of Southeast Asian learners dropping out of school. Across countries, low household income and residency in rural areas are the two major factors associated with a child's out-of-school status, reflecting the opportunity cost of education for families living in poverty and the inadequacy of education services in rural areas. Household income and rural residency often interact, posing the highest risk to children from low-income families living in rural areas. For instance, among the children living in rural areas in Indonesia, those from the poorest quintile are four times more likely to be out of school than their counterparts from the richest quintile. At the same time, there are other country-specific risk factors associated with high OOSC rates, including bullying and gender-based violence at school, the prevalence of child labour and early marriage in a given country, disability, and (un)documented status (UNICEF and UNESCO, 2021[33]; UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific, 2017[46]). In OECD countries where similar challenges exist, such as in Belgium (Flanders), innovative policy measures have been adopted to identify students at risk of dropping out (Box 3.2).

As OOSC are less likely to adequately acquire skills needed in workplaces and societies, the costs of dropping out of school are significant, highlighting the need for urgent policy action. The estimated economic cost of OOSC already reached over 1% of gross domestic product (GDP) on average in seven ASEAN countries, namely Cambodia, Indonesia, Lao PDR, the Philippines, Thailand, and Viet Nam, as well as Timor-Leste, in 2017 (UNESCO Bangkok, 2017[61]). These costs will only grow with the consequences of prolonged school closures in the region due to the COVID-19 pandemic, as children are less likely to return, the longer they stay out of school. It is estimated that the pandemic has increased Southeast Asian children's probability of dropping out of school by 0.9%, and the risks are larger for girls, those from poor households or ethnolinguistic minorities (UNICEF and UNESCO, 2021[33]). An estimated 2.7 million learners across Southeast Asia will not return to school once they are fully reopened, increasing the risk that a significant proportion of the region's future workforce will fail to adequately acquire foundation skills (Hulshof and Tapiola, 2021[62]).

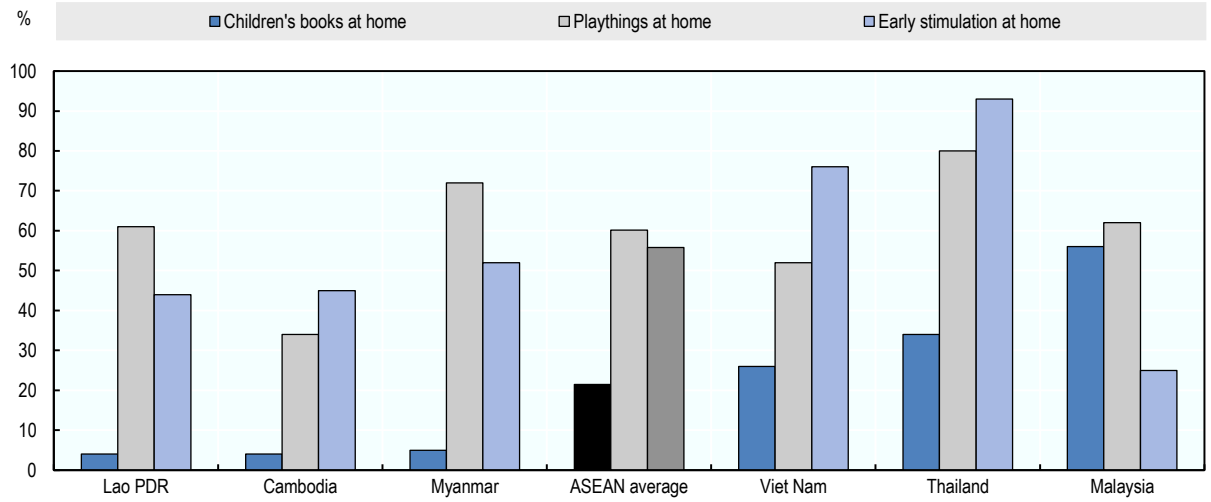
Creating positive learning environments at home, especially among low-income households

While formal education in schools is the primary way learners acquire skills, skills can also be developed in informal ways, such as in the home. There is compelling evidence that a positive and stimulating learning environment at home results in better academic and social development outcomes among children, with lasting effects throughout the life course. Home learning environments consist of different components, such as the quality of parent-child interactions, the availability of learning materials, and children's participation in learning activities (Lehrl, Evangelou and Sammons, 2020[63]). Parents may participate in developing their children's skills by helping them with homework, reading to them, playing with them, communicating with them about various political or social topics, and helping their children regulate their own expectations for their schooling (OECD, 2021[50]).

Positive learning environments at home are central to early skills development, but not all Southeast Asian children have access to these resources. Across six countries in the region, only 21.5% of children have books at home, only 60.1% have playthings, and only 55.8% experience early educational stimulation with their parents to promote learning and school readiness (Figure 3.11). The lack of resources in several countries is severe, such as in Lao PDR, Cambodia and Myanmar, where less than 5% of children have access to books at home, and nearly only half of parents read books or tell stories to their children. This poses severe limitations to the ability of Southeast Asian children to develop foundation skills, such as literacy, affecting their capacity to acquire higher-level skills at later stages of life.

Figure 3.11. Access to early learning environments at home in Southeast Asia, 2019

Percentage of children aged 0 to 59 months with access to learning materials and educational interactions at home



Note: The indicator "Children's books at home" refers to the percentage of children with three or more books at home, while "Playthings at home" refers to the percentage of children with two or more of the following playthings at home: household objects or objects found outside (sticks, rocks, animals, shells, leaves, etc.) and homemade toys or toys that came from a store. The indicator "Early stimulation at home" refers to the percentage of children with whom an adult has engaged in four or more of the following activities to promote learning and school readiness: reading books, telling stories, singing songs, taking the child outside of the home, playing, and spending time with the child naming, counting, or drawing things.

Source: UNICEF and Countdown to 2030 (2019[64]), *Country profiles for early childhood development*, https://nurturing-care.org/wp-content/uploads/2021/12/English.pdf.

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Access to positive learning environments at home is also largely influenced by various factors, such as household income. For instance, the chances of living in a supportive home environment with adequate learning materials and parental guidance are lower for children with lower household incomes. Across the six Southeast Asian countries with available data, children under age five from households in the poorest quintile are, on average, 28.2 percentage points less likely to live in a positive and stimulating home than children from a household in the wealthiest quintile. The income-related gap is the largest for Viet Nam (43.7 percentage points) and the smallest for Thailand (11.8 percentage points). High levels of poverty and material deprivation, especially in low-income countries in the region, may severely inhibit the ability of families to purchase learning materials, such as books and playthings, which would help prepare their children for school. For many adults working in the informal economy, long and unregulated working hours also affect the ability of parents to manage their domestic responsibilities, including childcare. Moreover, parents who work as migrants, especially in sender countries such as Indonesia, Myanmar and the Philippines, often have difficulties with long-distance parenting and supporting the development of their children's skills from afar (UNICEF, ILO and WIEGO, 2021[65]).

The importance of supportive home learning environments has been highlighted even more with the onset of the COVID-19 pandemic, which has led to school closures that have increased time spent learning at home. During the wake of the pandemic from March 2020 to February 2021, schools in Southeast Asia were closed for 119 out of 184 (79%) teaching days on average, affecting approximately 138 million children enrolled in pre-primary to secondary education. During the same period, school closures were more common in ASEAN countries than in OECD countries, although the difference was not statistically significant for both full and partial closures. In most ASEAN countries, schools were more likely to be fully closed than partially closed. Singapore and Viet Nam experienced the least school closures (under 20%

of school days), while Myanmar and the Philippines experienced the most (over 85% of school days), suggesting a massive disruption in the provision of education and the development of skills for children in these countries. The severe learning losses associated with the pandemic have promoted governments – both within Southeast Asia, such as in the Philippines, and in OECD countries, such as in Portugal – to launch initiatives targeted towards improving learning environments at home (Box 3.2).

Improving digital learning opportunities throughout Southeast Asia, especially in rural and low-income areas

Supporting digital learning opportunities (particularly during the COVID-19 pandemic and beyond) requires strong digital infrastructure, digital education platforms and digital literacy. In Southeast Asia, online learning has opened new opportunities for delivering education during the pandemic, as it was widely utilised as a replacement for in-person schooling and a way to ensure the continuity of learning. In response to emergency school closures, most Southeast Asian countries quickly developed strategies for online learning, primarily using online and television platforms, as well as take-home packages (e.g. paper-based learning modules and worksheets delivered to children without television or the Internet) (ADB, 2021[66]).

Digital infrastructure in Southeast Asia must be strengthened to not only ensure the continuity of learning during COVID-19, but also in response to ongoing megatrends. During the pandemic, the lack of Internet access and digital devices disrupted approximately 80 million (or 20%) of children's online learning in the East Asia and Pacific regions (UNICEF and UNESCO, 2021[33]). In 2021, only a little over 50% of 10-14 year-old learners across Southeast Asia had access to digital devices in their schools. The lack of digital infrastructure poses risks to the ability of learners to access digital learning opportunities during disruptions, such as the COVID-19 pandemic, but also to participate in the development of key skills, such as digital skills in preparation for work in increasingly digital economies (UNICEF and ASEAN, 2021[67]).

Besides digital infrastructure, digital education platforms are needed to ensure the continuity of learning. Digital education platforms include online platforms, teaching software and online classroom management systems that teachers can use to teach. In 2021, less than 20% of 10-14-year-old learners across Southeast Asia had access to digital education platforms. Moreover, only about 30% of schools across the region had remote teaching software and online management systems (UNICEF and ASEAN, 2021[67]). The lack of digital education platforms presents risks to the ability of learners to continue learning during disruptions, such as the COVID-19 pandemic, but also to develop key skills, such as digital literacy, in preparation for work in increasingly digital economies. According to OECD stakeholder consultations, several countries in the region have developed digital education platforms to implement blended learning strategies, especially with the onset of the COVID-19 pandemic. For instance, the Singapore Student Learning Space allows for flexible and self-paced teaching and learning, with schools having the flexibility to decide on how to use the platform, based on their students' needs (Singapore Ministry of Education, 2022[68]).

Southeast Asian countries have implemented measures to minimise the risks of exclusion from digital education platforms, especially for disadvantaged groups. Across ASEAN countries and OECD countries, the most common policy measures adopted were providing subsidised devices for access (e.g. personal computers [PCs], tablets) and establishing asynchronous and self-paced learning platforms (Table 3.2). There were also significant measures to support learners in remote areas, with disabilities and from low-income households by providing them with improved access to infrastructure, specialised pedagogical support, and financial aid, respectively. However, fewer countries across the ASEAN and the OECD had measures in place to support other types of disadvantaged groups, such as those speaking minority languages.

Table 3.2. Measures targeting populations at risk of exclusion from digital education platforms in Southeast Asia and selected OECD countries, 2021

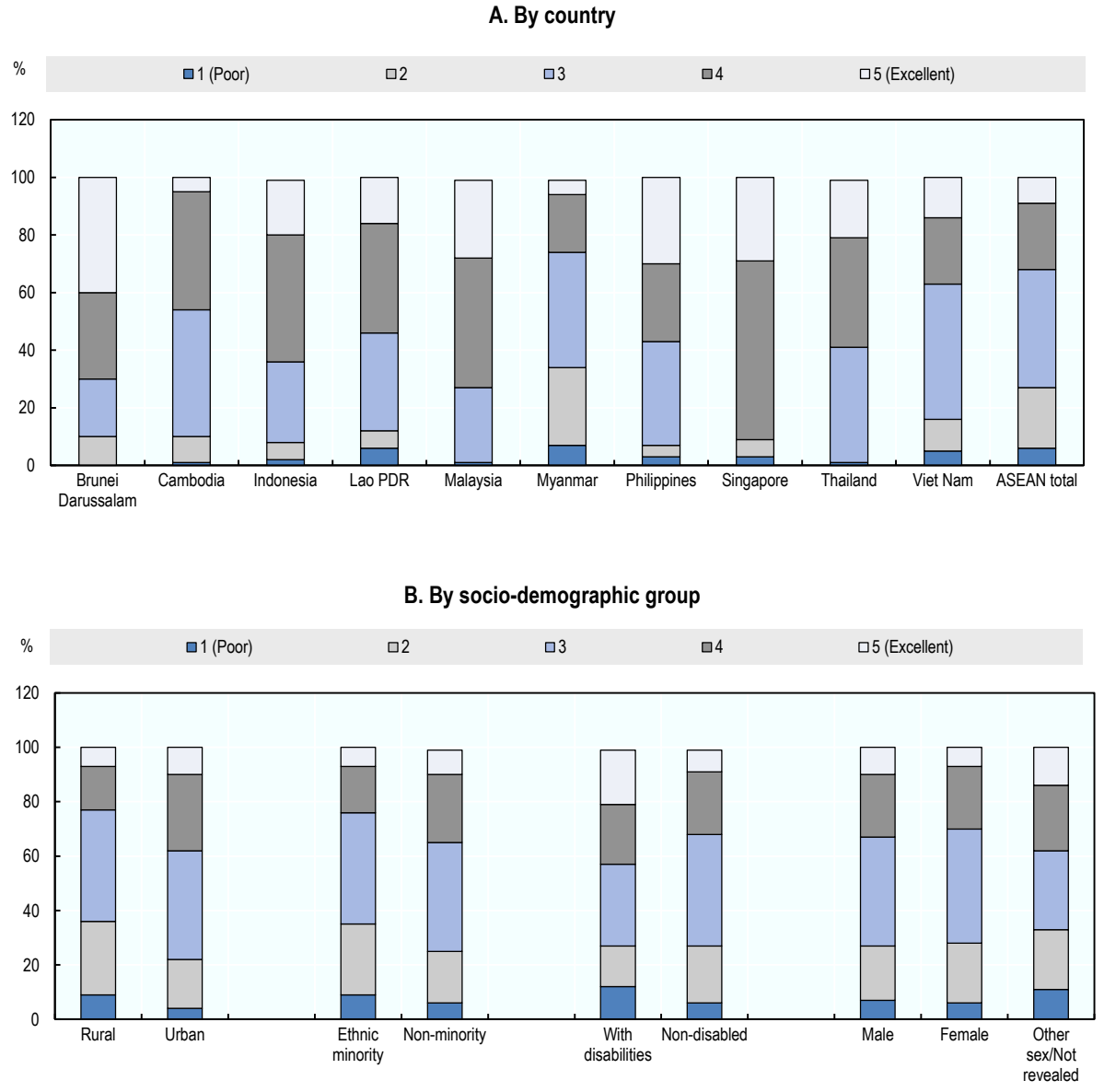
	ASEAN					OECD			
Policy measures	Cambodia	Malaysia	Myanmar	Singapore	Viet Nam	Germany	Japan	Korea	OECD total
Subsidised devices for access (PCs and/or tablets)	☒	☐	☐	☒	☒	☒	☒	☒	23
Flexible and self-paced platforms (asynchronous learning platforms)	☒	☒	☒	☒	☐	☒	☒	☒	22
Improved access to infrastructure for learners in remote areas	☒	☒	☒	☐	☒	☒	☒	☒	18
Support to learners with disabilities (e.g. sign language in online learning programmes)	☒	☒	☐	☒	☒	☐	☒	☒	16
Agreements with Global System for Mobile Communications (GSM) operators/Internet firms to remove Internet access barriers	☒	☒	☒	☐	☒	☐	☒	☒	15
Improved access to infrastructure for learners in urban high-density areas	☒	☒	☒	☐	☒	☐	☒	☐	15
Additional support to lower-income households, including economic support (i.e. take-home rations, cash-based transfers)	☒	☒	☒	☒	☐	☒	☒	☒	14
Special efforts to make online learning more accessible to migrant and displaced individuals, including those in camps	☒	☒	☐	☐	☐	☐	☒	☒	12
Design of learning materials for speakers of minority languages	☒	☐	☐	☐	☐	☐	☐	☒	7

Note: The column "OECD total" refers to the total number of OECD countries with the policy measure in place.
Source: OECD (2021[69]), *OECD Skills Strategy Southeast Asia Policy Questionnaire*; OECD (2021[70]), *The State of School Education: One Year into the COVID Pandemic*, https://doi.org/10.1787/201dde84-en.

While widening access to digital infrastructure and digital education platforms is important, strengthening digital literacy among Southeast Asian learners is equally crucial. Strengthening the digital literacy of youth has been one of the key challenges in the region, where only 32% of individuals across all ten ASEAN member states perceived themselves to have either good or excellent digital skills (Figure 3.12). Low digital literacy is especially prevalent in Myanmar, where 74% of young people perceive themselves to have only poor to moderate digital skills, as well as in Viet Nam (63%). Differences across socio-demographic groups are also stark. For instance, learners in rural areas are 15 percentage points more likely to rate themselves as having only poor to moderate digital skills than their urban counterparts, while members of ethnic minorities are 11 percentage points more likely to do so than their non-disabled counterparts. Particular attention must be paid to these groups on top of general efforts to increase access to skills development, targeting digital literacy, in preparation for an increasingly digitised world (UNICEF and ASEAN, 2021[67]). Such policy efforts are already underway in some OECD countries, such as Australia, as seen in Box 3.2, further below.

Figure 3.12. Self-reported levels of digital literacy in ASEAN countries, 2021

Percentage of respondents by self-reported level of digital literacy



Note: Respondents were given a survey and asked to provide a self-assessment of their ability to navigate the digital world using a scale from 1 (poor) to 5 (excellent).

Source: UNICEF (2021[67]), *Digital Literacy in Education Systems across ASEAN: Key Insights and Opinions of Young People*, www.unicef.org/eap/media/7766/file/Digital%20Literacy%20in%20Education%20Systems%20Across%20ASEAN%20Cover.pdf.

StatLink https://stat.link/0tf1lv

Box 3.2. Country examples relative to improving access to ECEC and compulsory education

Australia's Rural Access Gap programme

The Rural Access Gap programme provides rural and remote schools with reliable Internet connectivity and digital devices (e.g. digital blackboards, laptops) to help students in rural areas close the equity gap with their metro counterparts. Designated Digital Classroom Officers are also nominated in order to support teachers and students in embedding technology into their everyday learning and are provided by the government with digital upskilling opportunities throughout the year.

Belgium's system to monitor out-of-school children

In Belgium (Flanders), an inter-ministry strategy has been designed to decrease the number of school dropouts, involving the Ministry of Education, the Minister of Welfare, Public Health and Family, and the Minister of Work Economy, Innovation and Sport. The strategy highlights the use of a comprehensive monitoring system to identify at-risk students based on data on sex, age, nationality and socio-economic background. Additionally, the strategy puts in place school-based measures to support student well-being as soon as a student shows signs of abandoning education, create links with parents, offer additional guidance services and support the development of flexible learning pathways to facilitate school completion.

Philippines' DepEd Commons Online Learning and Webinar

In March 2020, the Philippines' Department of Education (DepEd) established DepEd Commons, an online platform where public school teachers and parents can access educational materials for students from pre-primary to Grade 10. The resources are free to download and use under fair use conditions. Accessing the portal is also free through DepEd's partnership with telecommunications companies in the Philippines, with the support of the Department of Information and Communications Technology and the National Telecommunications Commission. In addition, DepEd also launched an online webinar in November 2021 amid the pandemic to provide parents with strategies and best practices on how to guide their children through online schooling. The webinar was viewed on the department's Facebook page by over 304 000 people.

Portugal's vouchers for home learning materials

In Portugal, the government aims to make home learning materials more accessible by providing vouchers for parents or registered guardians to obtain free textbooks for primary and secondary school students. Through an online portal, parents or guardians must make the request for the vouchers. Vouchers for books are available for every level of education. Parents may obtain free books for the following year upon returning textbooks from the previous year in proper condition.

Source: European Commission (2021[71]), *Preventing Early Leaving from Education and Training (ELET): Belgium-Flemish Community*, https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/belgium-flemish-community/63-preventing-early-leaving-from-education-and-training-elet; New South Wales Government (2022[72]), *Rural Access Gap Program*, https://education.nsw.gov.au/about-us/strategies-and-reports/schools-digital-strategy/rural-access-gap; Philippines Department of Education (2021[73]), *DepEd empowers parents for a better home learning experience with children*; www.deped.gov.ph/2021/11/17/deped-empowers-parents-for-a-better-home-learning-experience-with-children/; Philippines Department of Education (2022[74]), *DepEd's References and Resources*, www.deped.gov.ph/cce-deped-references-and-resources/; Government of Portugal (2022[75]), *Receber vouchers para manuais escolares gratuitos*, https://eportugal.gov.pt/pt/servicos/receber-vouchers-para-manuais-escolares-gratuitos.

Recommendations for improving access to early childhood education and care and compulsory education for disadvantaged groups

- **Establish strong monitoring systems to detect children who have failed to enter the education system, as well as those who are at risk of dropping out.** Regularly collect school-level data on various individual characteristics that are associated with lack of access and dropouts, such as sex, age, socio-economic background (e.g. parental occupation) and location, among others, to identify children who are at risk of not entering education and leaving education early. Co-ordinate with relevant ministries and government agencies, as well as other stakeholders, to gather as much administrative data on these risk factors as possible, especially in countries where data capacity may be limited, to identify areas where potential intervention might be needed. Ensure that in-school well-being services are available to support children who are struggling to access education, and put in place additional guidance services (e.g. remedial classes, personalised tutoring) for those who are falling behind in learning. Moreover, create opportunities to meet with parents to discuss home situations and how they may impact children's schooling, and offer alternative and flexible learning pathways for children in difficult socio-economic situations to facilitate entry into school as well as completion.
- **Support provision of learning materials parents can use at home.** Offer students from disadvantaged families financial assistance, such as vouchers or income support, specifically earmarked for purchasing books, toys and other playthings. Ensure that such learning materials are available at every level of education and that parents may easily access such financial assistance measures (e.g. through an online portal). Offer targeted policy options to low-income households by raising awareness about such initiatives and how they may be easily accessed. Moreover, promote private-sector and civil-society-led initiatives that sell learning materials, such as books, at more affordable prices and bring them closer to children and their families through community and school-based measures, such as family reading events or book fairs.
- **Strengthen digital infrastructure, digital education platforms, and digital literacy to broaden access to skills development opportunities, especially among disadvantaged groups and during times of disruption.** Invest in infrastructure for Internet connectivity and the distribution of digital learning devices (e.g. digital blackboards, laptops, tablets), especially among disadvantaged learners, such as those from low-income households or rural areas. Additionally, invest in digital education platforms to facilitate the implementation of blended learning strategies that could help ensure the continuity of learning in the face of global disruptions, such as the COVID-19 pandemic. Ensure that investments in digital infrastructure are coupled with initiatives to increase digital literacy among students and teachers, such as providing digital upskilling opportunities and making online resources readily available and accessible.

Promoting access to skills development after compulsory education

Continued participation in education after compulsory schooling is central to lifelong learning and developing higher skills. Continuing to participate in post-compulsory education and at later stages of the life course helps individuals gain higher levels of skills and knowledge, which are associated with higher rates of employment, higher earnings and productivity, and effective transitions into formal employment among informal workers, among other benefits (ASEAN, 2022[35]; ILO, 2019[76]; OECD, 2019[77]). In Southeast Asian skills development systems, common forms of post-compulsory education include TVET, tertiary education and adult learning (see Opportunity 3). The supply of these types of post-compulsory educational offers has greatly expanded across Southeast Asia in the past two decades, but many barriers to access remain. These barriers encompass demand-side barriers, such as lack of awareness, cost and time constraints, but also supply-side barriers, mostly stemming from lack of political commitment and financial resources. In line with these barriers, three themes are explored in this policy area: 1) addressing barriers to TVET participation, such as low awareness and high costs; 2) removing

financial and location-based barriers to tertiary education; and 3) adopting a comprehensive adult learning strategy, encompassing informal workers.

Addressing barriers to TVET participation, such as low awareness and high costs

TVET is an important component of Southeast Asian skills development systems and is one of the earliest forms of post-compulsory education. In most Southeast Asian countries, TVET starts at the secondary level (as an optional pathway to the academic track) and can include post-secondary and tertiary levels. TVET refers to a wide range of skills development and training programmes in various occupational fields, often conducted through school-based and work-based learning (OECD, 2018[78]). Work-based learning through TVET is a principal way by which learners can develop industry-relevant skills, as they are exposed to real-life scenarios and guided by expert practitioners while pursuing, for example, an apprenticeship in a firm (Musset, 2019[79]). Across Southeast Asia, TVET has been an effective tool for increasing employability and earnings, as it offers learners opportunities to acquire work-relevant skills. It has also been effective at providing pathways to meaningful and productive employment among graduates from disadvantaged groups, such as women and children, and reducing informality and social exclusion (OECD, 2018[80]).

Access to TVET in Southeast Asia has risen in the last two decades, owing to the expansion of the supply of programmes through recent structural reforms. On average, gross enrolment rates in ASEAN countries have grown by 294% (i.e. nearly quadrupled) from 2000 to 2019, surpassing the rate of growth OECD countries (49%) achieved over the same period by a wide margin (Figure 3.4). TVET systems in the region have benefitted from increased involvement from the private sector, particularly through the provision of work-based learning opportunities, the supply of training levies to finance the expansion of programmes, the design of skills certification frameworks, and the improvement of job-matching strategies between schools and firms to facilitate the employment of TVET graduates (OECD, 2016[81]).

Despite recent progress in expanding access to TVET in Southeast Asia, overall regional participation is still low and highly unequal. The average TVET enrolment rate in ASEAN countries in 2019 (9.7%) remained below that of OECD countries (11.6%), with enrolment rates of all Southeast Asian countries with available data, except for Indonesia and Singapore, remaining below both regional averages (Figure 3.4). Like compulsory education, access to TVET in Southeast Asia is heavily determined by various socio-economic conditions. For instance, in countries with available data, students in rural areas have less access to TVET opportunities than those in urban areas. The urban-rural gap is often exacerbated by the geographic concentration of TVET providers in urbanised and high-income areas, as well as the poor state of roads and transportation infrastructure that would facilitate mobility across regions (ILO, 2016[82]; OECD, 2018[83]). In addition, gender differences in TVET enrolment are also noticeable. Across all countries in the region, an average of approximately six in ten students enrolled in TVET at the secondary level are males. While most countries report lower TVET participation rates among females than males, an important exception is the Philippines, where 54% of TVET graduates in 2018 were female, and 46% were male. However, throughout the region, even in the Philippines, female and male TVET students are highly segregated according to course or programme, with more female students being concentrated in low-productivity and low-pay occupations (e.g. garment, secretarial work, beauty and cosmetics) (ADB, 2021[84]).

Many TVET learners in Southeast Asia still face both demand- and supply-side barriers to participation. On the supply side, firms across Southeast Asian countries are reluctant to participate in TVET due to a lack of effective dialogue (between government, education institutions and firms), concerns about the (low) reputation of TVET and lack of information about how to participate (ASEAN, 2021[85]). Even when firms do participate in TVET, especially small- and medium-sized enterprises, their ability to provide quality work-based learning opportunities may be restricted by limited financial and human resource capacities. Similarly, on the demand side, the direct (e.g. training course fee) and indirect costs (e.g. transportation, opportunity costs) significantly limit the ability of youth to access TVET programmes, especially those who

are female, are a member of a racial/ethnic minority, come from a low-income household, or live in rural areas. Moreover, many among the public still generally consider TVET as inferior to formal academic education or as a "dead end" in learning pathways (UIL, 2017[86]; ASEAN, 2021[85]; OECD, 2021[45]).

Policy efforts are being pursued in Southeast Asia to respond to challenges in TVET and accelerate uptake, especially among disadvantaged groups. Several countries in the region, such as Malaysia, have launched various initiatives to provide financial support to disadvantaged groups and facilitate their participation in vocational training (Box 3.3). In Indonesia, independent learning programmes, competency-based training, community-based vocational training and apprenticeships have been targeted to informal workers, helping them access skills development offers that can boost their employability in the formal sector (ASEAN, 2022[35]). There are also efforts in the region, such as those in Viet Nam, to rebrand the image of TVET and strengthen partnerships with industry and academic communities to boost both the provision of, and participation in, TVET opportunities (Box 3.3). Moreover, more pathways to tertiary education and higher forms of TVET have been made available to learners in Southeast Asia in recent years. Several countries, including Cambodia and Thailand, have begun to open programmes at more advanced levels of TVET education, providing learners with options to pursue technical and vocational training at the bachelor's, master's, and doctorate levels. Some countries, such as Brunei Darussalam, Cambodia, the Philippines, Singapore and Viet Nam, have also begun to provide options for learners to directly enter tertiary education levels in general or academic tracks after the attainment of TVET certificates and diplomas at the secondary or post-secondary level (UNESCO, 2017[87]; UNESCO, 2021[88]). However, more systematic information is needed on the uptake of higher levels of TVET across the region and how individual countries' reforms are working in practice.

Removing financial and location-based barriers to tertiary education

Participation in tertiary education is another important part of skills development and lifelong learning that needs to be promoted after compulsory schooling. Tertiary educational attainment has been associated with higher levels of productivity and innovation through the acquisition not only of specialised knowledge but also higher-level analytical, managerial and interpersonal skills, driving the economic growth of many countries in Southeast Asia (Muhamad, Sulaiman and Saputra, 2018[89]; Tullao and Cabuay, 2013[90]). Moreover, in many cases, tertiary education institutions in the region are not only places where higher levels of skills and advanced levels of knowledge are acquired but also where social responsibility and community engagement are fostered among learners (Symaco and Tee, 2019[91]).

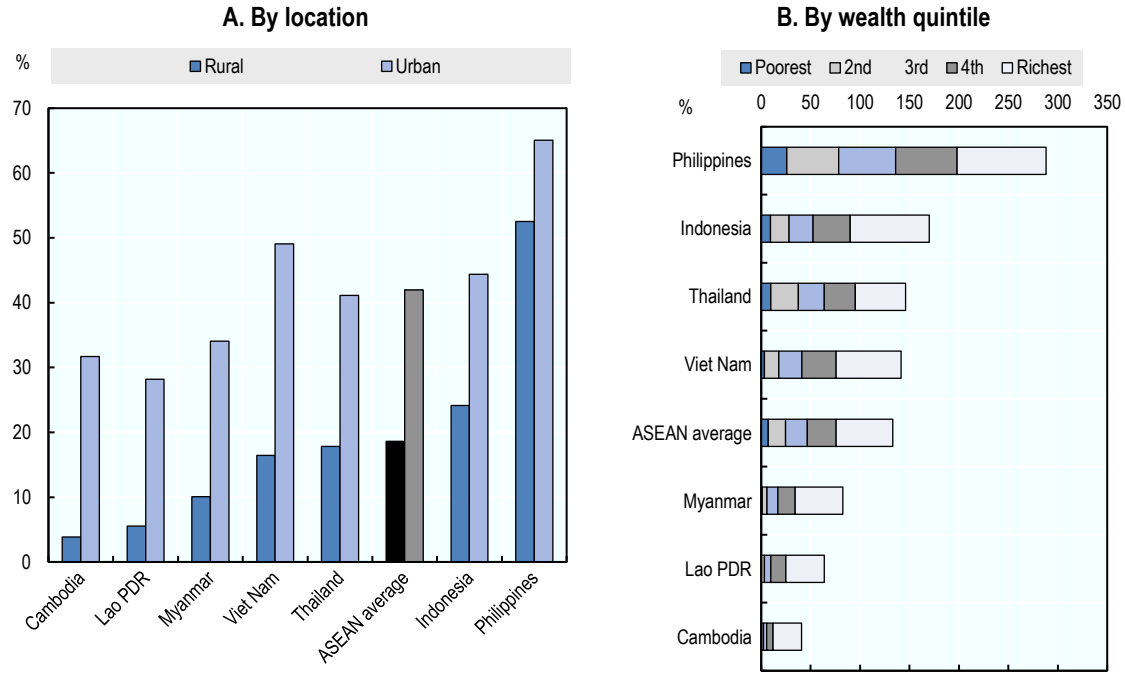
Despite the importance of tertiary education, many Southeast Asian countries still struggle with extremely low participation rates. While the ASEAN's average gross enrolment rate at the tertiary level has more than doubled from 16% in 2000 to 36% in 2019, it is still significantly lower than that of the OECD (76.5%) (Figure 3.5). Enrolment rates are especially low for low-income countries in the region, such as Lao PDR (14.5%), Cambodia (14.7%) and Viet Nam (18.8%). Moreover, not only is access to tertiary education in Southeast Asia low, but it is also highly unequal. Levels of inequality at the tertiary level are strongly associated with inequalities at the secondary level. However, the magnitude of inequality in educational attainment is larger at higher levels of education (UN ESCAP, 2017[48]).

Access to tertiary education is highly influenced by individual characteristics, namely location (i.e. urban versus rural) and household wealth. By location, tertiary education is less accessible in rural areas, where the attendance rate is only 18.6%, than in urban areas, where it is 41.9%, representing an average gap of 23.3 percentage points across ASEAN countries (Figure 3.13). Moreover, in all Southeast Asian countries, individuals from households in the richest quintile are more likely to attend tertiary education, averaging about 57.3% in the region. In contrast, only 7.3% of learners from households in the poorest quintile are likely to attend tertiary education. In addition to location and wealth, ethnicity, language and disability status contribute to unequal access to higher learning in Southeast Asia (The HEAD Foundation, 2022[92]).

The COVID-19 pandemic has exacerbated low and unequal access to tertiary education, but several Southeast Asian countries have taken steps to respond to this challenge. While sudden school closures led to the rapid deployment of online tools to ensure the continuation of learning, many measures were not sustainable, with many universities having to suspend or postpone remote classes due to the lack of access among socio-economically disadvantaged students (The HEAD Foundation, 2020[93]). Private universities, which account for an average of 70% of tertiary education institutions in the region[3] (Welch, 2021[94]), experienced a marked decline in enrolment due to the disruption in financing and in-person teaching during the pandemic (Bustos-Orosa, 2022[95]). Government spending on education was reduced due to economic shocks and constraints in public financing during the pandemic. At the same time, income and urban-rural divides widened, and students with limited access to distance learning opportunities dropped out of schools (Chau, 2022[96]). In response to these challenges, Southeast Asian countries have put in place several policy measures to facilitate learners' access to distance education, as reported in the OECD Skills Strategy Southeast Asia Policy Questionnaire. For instance, in Malaysia, 1 Gigabyte of Internet was offered free of charge by the Malaysian Communications and Multimedia Commission to learners in upper secondary vocational educational and tertiary education. In Singapore, tertiary education institutions provided subsidies and loans for students to purchase digital devices for learning, such as the National University of Singapore's Notebook Ownership Scheme, which assists full-time students in purchasing computers that are well-equipped with a wide variety of information-technology-based learning tools and resources (National University of Singapore, 2022[97]). Beyond COVID-19, there remains a need to make tertiary education more financially accessible in Southeast Asia, as in some OECD countries with generally affordable tertiary education systems, such as France (Box 3.3).

Figure 3.13. Gross attendance rates at the tertiary level in Southeast Asia, by location, sex, and wealth quintile, latest available year

Percentage of students attending tertiary education in relation to five-year age group starting from the official secondary school graduation age



Note: Due to a lack of data, the latest available year was used for the following countries: Cambodia and Viet Nam (2014), Myanmar (2016), Lao PDR and Indonesia (2017), the Philippines (2018), and Thailand (2019). The ASEAN average is the unweighted mean for these seven countries. Data for reference countries in the OECD are not available.
Source: UNESCO Institute for Statistics (2021[27]), *Education*, http://data.uis.unesco.org/.

StatLink https://stat.link/mfyvsr

Adopting a comprehensive policy strategy for adult learning

The development of skills over the life course goes beyond formal education in tertiary education and involves access to reskilling and upskilling opportunities in adulthood. Adult learning refers to learning that occurs in formal settings (e.g. general education, vocational education leading to a nationally recognised diploma), in non-formal settings (e.g. employer-provided training, workshops), and informal settings (e.g. learning from peers at work) (OECD, 2021[98]). Participation in adult learning has many benefits and has been associated with increased employability and productivity, prolonged working lives, as well as improved psychological and social well-being and quality of life (Formosa, Fragoso and Schmidt-Hertha, 2019[99]). Given that most adults have already left initial education, adult learning systems play a crucial role in providing opportunities in adulthood to develop new skills and respond to changing labour market needs, helping prevent skills imbalances (OECD, 2019[100]). In Southeast Asia, different terms may refer to adult learning, such as continuing education and complementary education, among others (Gartenschlaeger, 2019[101]).

Systematic data on access to adult learning programmes in Southeast Asia are scarce, but available evidence suggests that participation rates are low in most countries in the region. While employer-sponsored training is available in many countries across ASEAN (Figure 3.6), provision across firms varies greatly depending on firm characteristics, such as size and whether firms are in the informal or formal economy (see Opportunity 3). Furthermore, uptake is relatively low, with an average of only 11.3% of adults participating in formal and non-formal education and training throughout the region compared to 20.13% across OECD countries. Moreover, gaps in access to skills development, including those between adult men and women, are still prevalent. Across Southeast Asia, enrolment rates among men surpass women by 1.2 percentage points. The greatest gender differences can be found in Singapore, where enrolment rates between men are higher than those of women by 7.5 percentage points (UNESCO Institute for Statistics, 2022[18]).

As with other components of skills development systems in Southeast Asia, access to adult learning is also highly unequal across socio-demographic groups. For instance, participation in adult learning is limited to only a minority of the working population in most ASEAN member states (OECD, 2021[45]). Many of those who need training the most, such as low-skilled adults, the unemployed and long-term unemployed, and workers in rapidly changing industries, have particularly been found to have limited access to adult learning opportunities (OECD, 2021[45]). Participation in learning is also lower among older adults, and there are few formal adult learning systems in place for them (Gartenschlaeger, 2019[101]; OECD, 2021[45]), although some Southeast Asian countries, such as Singapore, have begun to take policy action in response to a rapidly ageing demographic (Box 3.3). Moreover, access to adult learning among workers in the informal economy is a pressing policy issue, as the lack of employer-sponsored training not only lowers their productivity but also inhibits their ability to acquire skills that would help them transition into the formal labour market (ASEAN, 2022[35]; ILO, 2019[76]; OECD, 2021[98]). However, several policy initiatives are in place in OECD countries, such as Mexico, to make training offers more accessible among workers in the informal economy (Box 3.3).

Multiple factors may explain low participation in adult learning in Southeast Asia. Available evidence suggests that many adults do not participate in adult learning programmes because they have low motivation levels and may not see the need to upgrade their skills or develop new ones. Many adults also lack information about adult learning offers and face financial barriers. However, a variety of financial incentives are available in the region to facilitate individuals' enrolment in adult learning (see Table 3.6 under Opportunity 3) (OECD, 2021[45]; Bok, 2021[102]). Moreover, improving adult learning systems in Southeast Asia has been challenging due to insufficient co-ordinated policy attention, funding and monitoring. For example, education ministries typically give much higher priority to initial education, leaving little room to mobilise human and financial resources to support adult learning. While other ministries, in particular the Ministry of Labour, also offer short-term vocational adult learning programmes, co-ordination

mechanisms are often weak and under-established. The lack of co-ordination across all relevant ministries, levels of government and with stakeholders leads to fragmented and inefficient implementation of adult learning policies, with gaps and unnecessary overlaps. Lastly, the general lack of systematic data on information on adult learning makes it difficult to assess participation rates and monitor the outcomes of participation (Gartenschlaeger, 2019[101]), which is important information to improve the quality of adult learning programmes.

Box 3.3. Country examples relevant to promoting access to skills development after compulsory education

France's multi-pronged approach to financing tertiary education

Tuition fees in public higher education institutions are generally low in France, as the French government is the primary funder of tertiary education. In 2019, public sources accounted for 75.3% of spending on tertiary education. In addition to public funding that covers tuition costs, government financial aid is also available to support students during their studies, including tertiary education grants based on social criteria, merit scholarships, housing assistance and emergency grants. These types of financial aid come from mostly public sources, such as the Ministry for Higher Education, Research and Innovation, the Ministry for Europe and Foreign Affairs and local governments. However, some private funders, such as international institutions, non-governmental organisations (NGOs) and foundations, are also available.

Malaysia's provision of financial support to learners to facilitate enrolment in TVET

Additional support is provided to upper secondary vocational students who come from lower-income households. A monthly allowance of MYR 100 (Malaysian ringgit) (USD 22) is provided to students in certificate programmes, and MYR 300 (USD 65) is provided to students with disabilities. Loans are also available for diploma and advanced diploma levels.

Mexico (Tlaxcala)'s Supérate, productive training component

Supérate is a conditional cash transfer programme, which has a training component (*componente de entrenamiento productive*) that aims to upskill members of selected households, including those working in the informal economy, and increase their incomes over the medium term. To facilitate participation in the programme, the government covers the tuition fees and learning materials, and beneficiaries may also receive transportation aid when needed. The trainings cover a wide variety of topics, including financial education, training for formal employment in strategic sectors, micro-business entrepreneurship and agricultural activities.

Singapore's Action Plan for Successful Ageing

To prepare for rapid population ageing, Singapore established the Ministerial Committee on Ageing to adopt a whole-of-nation approach to ageing and co-ordinate all related government policies and initiatives. In 2015, the committee launched the Action Plan for Successful Ageing, which serves as the country's blueprint for enabling senior citizens to contribute to the economy and society even in their later years. The National Silver Academy was established in partnership with a network of civil society organisations to provide a wide range of learning and skills development offers for senior citizens, including inter-generational learning programmes where they could learn skills in information technology (IT), social media, photography, arts and crafts, and music from younger students.

Viet Nam's awareness-raising campaign to rebrand TVET

In Viet Nam, where there is little interest in TVET among employers and the public, the Ho Chi Minh City branch of the Vietnamese Chamber of Commerce and Industry conducts an awareness-raising campaign and offers TVET-oriented career guidance to a variety of groups from government, industry and students. To ensure maximum reach, the campaign utilises different channels, including social media accounts, to respond to questions from students. The campaign also organises open days at schools, where they invite business representatives to connect with prospective students and discuss TVET learning pathways.

Source: Seel and Phuong (2020[103]), *Implementing the Future ASEAN Agenda for TVET: A Compendium of Case Studies*, https://asean.org/wp-content/uploads/2021/08/GIZ-2020_Future-ASEAN-Agenda-Compendium.pdf; OECD (2021[69]), *OECD Skills Strategy Southeast Asia Policy Questionnaire*; OECD (2019[104]), *Spending on tertiary education*, https://data.oecd.org/eduresource/spending-on-tertiary-education.htm; OECD (2021[105]), *OECD Skills Strategy Tlaxcala (Mexico): Assessment and Recommendations*, www.oecd.org/fr/publications/oecd-skills-strategy-tlaxcala-mexico-13925818-en.htm/; Ministère de l'Enseignmement supérieur, de la Recherche et de l'Innovation (2017[106]), *Higher education and research in France, facts and figures – Summary,* https://publication.enseignementsup-recherche.gouv.fr/eesr/10EN/EESR10EN_RESUME-.php; Ministère de l'Europe et des Affaires étrangères (2022[107]), *Finance your studies/scholarships*, www.diplomatie.gouv.fr/en/coming-to-france/studying-in-france/finance-your-studies-scholarships/; N26 (2021[108]), *How to get grants and housing assistance as a student in France*, https://n26.com/en-fr/blog/how-to-get-higher-education-grants-in-france; Singapore Ministerial Committee on Ageing (2019[109]), *What is the Action Plan About?*, www.moh.gov.sg/ifeelyoungsg/about/what-is-the-action-plan-about; UNESCO (2017[110]), *Six Ways to Ensure Higher Education Leaves No One Behind*, https://unesdoc.unesco.org/ark:/48223/pf0000247862/PDF/247862eng.pdf.multi.

Recommendations for promoting access to skills development after compulsory education

- **Adopt a comprehensive policy strategy to address both supply- and demand-side barriers to technical and vocational education and training participation.** On the supply side, encourage the provision of work-based learning opportunities by employers through providing a wide range of financial incentives that subsidise the cost of provision, as well as opportunities for strengthening TVET institutions-industry partnerships (see Opportunity 3). Moreover, pay close policy attention to smaller firms who have less capacity by providing them with resources on pedagogical skills to facilitate their provision of work-based learning opportunities, such as internships and apprenticeships. On the demand side, provide financial support options to learners from low-income households in the form of monthly stipends or affordable loans to reduce financial barriers to participation. Additionally, conduct public awareness campaigns about the new progression opportunities in TVET, including accessing tertiary education, and the types of professional development offers available to graduates.
- **Facilitate access to tertiary education by reducing the most significant financial barriers, both in terms of tuition fees and the cost of learning materials.** Adopt a multi-pronged approach to alleviating the costs of tertiary education for disadvantaged groups and make use of a combination of affordable tuition policies and financial aid programmes, such as needs-based grants and income-contingent loans that consider factors such as household income and location. Ensure that such financial instruments are easily accessible and financially viable for students coming from low-income households. Moreover, help students cover the cost of learning materials by providing subsidies or loans when purchasing textbooks, digital learning devices, Internet connection subscriptions and other materials they may need to finish their schooling.
- **Create a comprehensive national adult learning strategy that targets disadvantaged groups and facilitates their participation.** Establish a comprehensive national adult learning strategy with all relevant actors (e.g. ministries, levels of government and stakeholders) to identify priorities, goals and actions. Actions should specifically target disadvantaged groups that often have lower adult learning participation rates, such as the unemployed, low-skilled workers, older adults and workers in the informal economy. The strategy should raise awareness among the public about the

benefits of adult learning, promote affordable and easy-to-access skills development offers, and disseminate information about adult learning opportunities (e.g. an online portal that consolidates various training offers). The adult learning strategy should also have measures that provide financial and logistical support for potential learners, so that they can attend programmes. Data on adult learning provision and participation, as well as on the outcomes of adult learning programmes, should be collected and consolidated in an integrated data base to inform adult learning policy and programme design and implementation.

Opportunity 2: Increasing equity and excellence in skills development

Through recent decades, Southeast Asian countries have prioritised not only improving access but also improving the quality of education. Challenges remain, however. At the regional and national levels, various policy measures have been put in place to address issues in educational quality, including the expansion of teacher and school leader training opportunities, the upgrading of classrooms and educational infrastructure, the establishment of educational quality assurance bodies, efforts to improve student assessment, the regular conduct of curriculum reviews to assess the relevance of educational content, the strengthening of links between education and labour market actors, and the adoption of performance-based funding strategies in schools (Lee, 2016[36]; SEAMEO INNOTECH, 2020[111]). Despite these efforts, Southeast Asian learners still performed lower in reading, mathematics and science than learners in OECD countries in the latest PISA round in 2018 (Figure 3.7). Universal literacy still has not been achieved in the region, with some low-income countries having a sizeable proportion of their populations still unable to read and write simple statements (Figure 3.8). Digital literacy is also generally weak in Southeast Asia, with only 28% of youth and adults having the skills to carry out activities related to information and communication technology (ICT) (Figure 3.9), risking the ability of the region to develop a workforce that can adapt to increasing digitalisation. Moreover, performance on key skills indicators is also highly unequal across socio-economic groups in Southeast Asia, reflecting inequities in countries' education systems (OECD, 2019[38]).

Increasing excellence and equity in skills development is highly contingent on improving the governance of schools throughout Southeast Asia. This opportunity presents two policy directions for strengthening the quality of education in the region. The first policy direction focuses on improving the quality of human resources in schools, such as teachers and school leaders. The second policy direction discusses the importance of strengthening funding and student assessment in schools to improve equity.

Improving the quality of human resources in schools

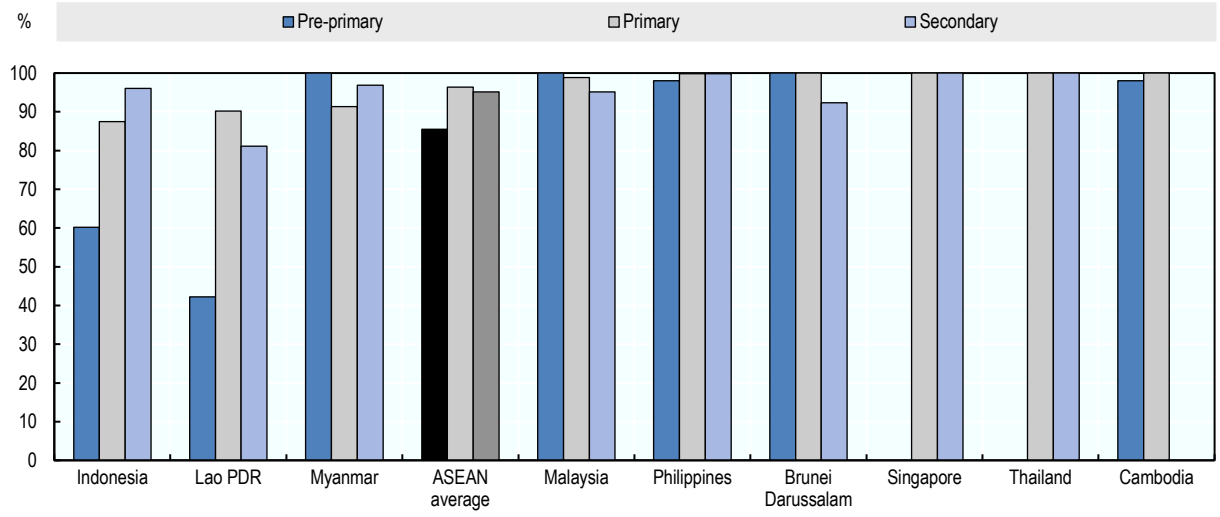
High-quality teachers and strong school leaders are indispensable to skills development systems. For many students, teachers are the main source of new knowledge and skills and are some of the most important figures shaping their cognitive and social development outside the family. On the other hand, school leaders such as principals are at the forefront of improving educational quality and creating effective learning environments where teachers and students can interact and transfer valuable knowledge and skills. Beyond teachers and principals, there are also many other types of staff (e.g. guidance counsellors, in-school psychologists, administrative personnel and social workers) who play an active role in improving the management of schools and creating supportive learning environments. For these reasons, human resources in schools have begun to gain important policy attention in many skills development systems across Southeast Asia and OECD countries (OECD, 2019[112]). This policy direction explores two areas for improving the quality of human resources in schools: 1) helping teachers develop pedagogical skills needed to better manage classroom challenges; and 2) regularly consulting with school leaders about the needs of their schools and learners.

Helping teachers develop pedagogical skills needed to better manage classroom challenges

Southeast Asia generally has a good stock of well-qualified teachers at most levels of education, although there is room for improvement in some countries. In most countries in the region, nearly 100% – if not all – teachers at the pre-primary, primary and secondary levels have at least the minimum academic qualifications (see further below) required to teach their subjects (Figure 3.14). On average, throughout Southeast Asia, 96.4% of teachers at the primary level and 95.2% of teachers at the secondary level are qualified. Figures are generally lower at the pre-primary level, with only 85.5% of teachers being qualified throughout the region, although some countries have significantly lower levels, namely Lao PDR (42.3%) and Indonesia (60.2%). Regardless of the share of qualified teachers, the minimum level of teacher qualification differs across Southeast Asian countries. For instance, in Indonesia, Malaysia, the Philippines, and Thailand, ECEC teachers are required to have achieved some tertiary education, including two years of post-secondary education, specialising in early childhood instruction. On the other hand, in Viet Nam, ECEC teachers are required to have only secondary education (SEAMEO-UNESCO, 2016[113]).

Figure 3.14. Qualified teachers at different levels of education in Southeast Asia, latest available year

Percentage of teachers who have at least the minimum academic qualifications required to teach their subjects



Note: A high value indicates that students are being taught by teachers who are academically well-qualified in the subjects they teach. Data at the pre-primary level are not available for Singapore and Thailand, and at the secondary level for Cambodia.
Source: World Bank (2020[32]), *Education Statistics*, https://databank.worldbank.org/source/Education-Statistics.

StatLink https://stat.link/x0lwsn

In addition to ensuring that Southeast Asian teachers have the right qualifications, it is equally important that they have strong and up-to-date pedagogical skills, which greatly affect the quality of teaching. All countries in the region have adopted policies to support the development and implementation of teaching competency standards, which define the pedagogical skills needed by competent teachers. Across all countries, teachers are considered competent when they are able to select short-term measurable objectives and long-term goals based on national curricula, employ instructional strategies that are appropriate to a lesson's objectives and students' needs, and use appropriate resources and tools when teaching in order to suit students' abilities and learning styles (SEAMEO INNOTECH, 2010[114]). Specialised institutes or training centres for teachers have been established in Southeast Asian countries

such as Singapore and Malaysia (Box 3.4). Despite these efforts, not all Southeast Asian teachers are confident in their ability to use various teaching approaches aligned with their students' needs. For instance, less than 80% of Grade 5-level teachers in Cambodia, Lao PDR and Malaysia are confident in their ability to use multi-age teaching techniques and differentiated instruction, which can risk increasing inequities in educational outcomes among students (UNICEF and SEAMEO INNOTECH, 2022[115]). Moreover, one in every ten teachers across Southeast Asia is not skilled in teaching digital literacy, and training in using ICT in the classroom varies widely between countries. Some 96% of students in Viet Nam, 91% in Malaysia and 83% in the Philippines were in a classroom with a teacher who had received ICT training. However, only 78% of children in Cambodia, 74% in Lao PDR, and 51% in Myanmar do so, creating significant barriers to the ability of teachers in these countries to equip students with much-needed digital skills (UNICEF and SEAMEO INNOTECH, 2022[115]; UNICEF and ASEAN, 2021[67]).

Regardless of qualifications and skill level, many teachers in Southeast Asia face multiple challenges in delivering high-quality education, including material limitations in classrooms. For instance, while print-related materials are some of the most common teaching tools across the region, only 34% of children in Cambodia, 56% in Lao PDR and 58% in Myanmar had a teacher who had access to a classroom library (UNICEF and SEAMEO INNOTECH, 2022[115]). The lack of textbooks and school supplies is especially pronounced in rural areas, widening location-based equity gaps in education (Oblina, Linh and Phuong, 2021[116]). Moreover, teachers' access to ICT in classrooms is also severely limited, with only 22% of Southeast Asian children having a teacher who has access to a working computer and only 15% having access to an overhead projector. In many instances, classrooms also lacked the power outlets needed to use digital learning tools. This has severe implications for the ability of teachers to develop important skills among their students, such as digital literacy, as well as to carry out remote teaching practices in the context of the COVID-19 pandemic (UNICEF and SEAMEO INNOTECH, 2022[115]).

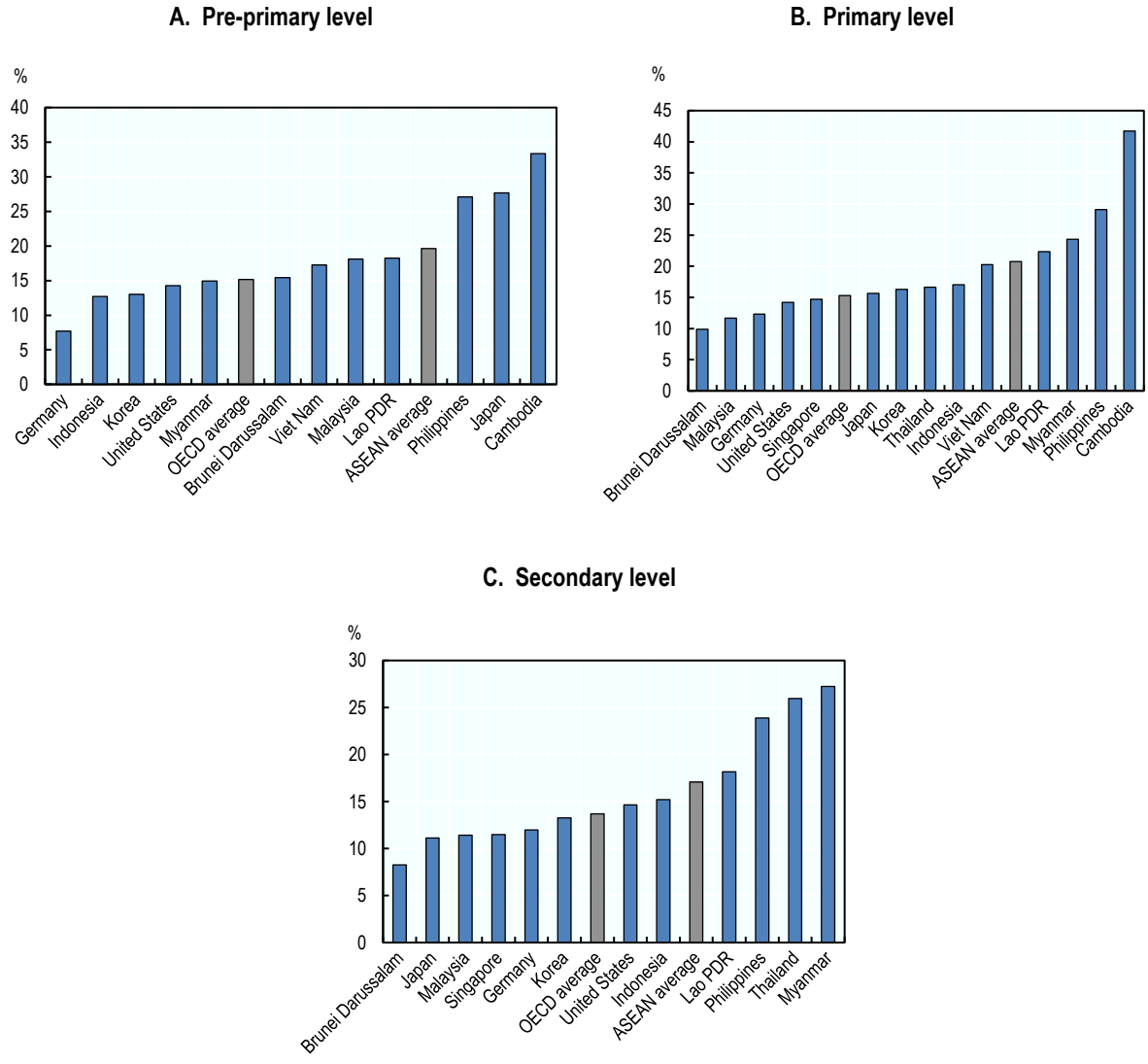
In addition, large class sizes in Southeast Asia may serve as a barrier to providing well-tailored instruction to students and reducing inequities in schools. There is evidence that smaller class sizes are beneficial, especially for disadvantaged students, as they allow teachers to pay more attention to the individual needs of learners and reduce the amount of class time needed to manage disruptions (OECD, 2022[117]). However, in Southeast Asia, there are more students for every teacher at all levels of compulsory education than in classrooms in OECD countries (Figure 3.15). At the pre-primary level, every teacher in Southeast Asia manages an average of 20 students compared to 15 in OECD countries, and the pupil-teacher ratio is particularly high in Cambodia (33) and the Philippines (27). At the primary level, an average teacher in ASEAN countries manages 21 students, 6 students more than an average teacher in OECD countries (15), and the average Cambodian teacher manages double (42) the average number of ASEAN students. There is also evidence from the region showing that more than 60% of Grade 5 students had teachers who experienced difficulties getting learners to settle down – an effect of larger class sizes – which serves as a barrier to effective teaching. Furthermore, a significant proportion of primary students in the region have also failed to master skills expected in earlier grades, therefore requiring additional support from teachers. Learners may also speak diverse languages, which makes it more difficult for teachers to meet individual learning needs (UNICEF and SEAMEO INNOTECH, 2022[115]). While class sizes at the secondary level are slightly smaller than at the primary level, the pupil-teacher ratio is still larger in ASEAN countries (17.1) than in OECD countries (13.7).

To provide better instruction despite resource constraints in the classroom, teachers in Southeast Asia could benefit from opportunities to improve their pedagogical skills. While it is important to address material limitations in the classroom and maintain a good stock of well-qualified teachers, it could also be strategic to provide teachers with opportunities to improve their pedagogical skills and learn a wide variety of teaching techniques (e.g. use of ICT, peer learning, differentiated instruction) that could help them overcome challenges in the classroom (UNICEF and SEAMEO INNOTECH, 2022[115]). This is especially important in cases where governments might have resource constraints that inhibit them from hiring more teachers. It is important to invest in teacher training and make training offers more financially accessible,

especially among disadvantaged schools, as is being implemented in OECD countries such as the United Kingdom (Box 3.4).

Figure 3.15. Pupil-teacher ratio by level of education in Southeast Asia and selected OECD countries, latest available year

Number of students per teacher



Note: Due to a lack of data, the latest available year was used for the following countries: Germany, Japan, Korea, the Philippines, Singapore and Viet Nam (2017); and Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, OECD average, Thailand and Viet Nam (2018).
Source: World Bank (2020[32]), *Education Statistics*, https://databank.worldbank.org/source/Education-Statistics.

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Teachers in Southeast Asia also need increased levels of support during times of massive disruptions, such as during the COVID-19 pandemic. In 2020 and 2021, a wide variety of support measures were adopted across ASEAN and OECD countries to support teachers in the transition to remote teaching (Table 3.3). The most common intervention adopted by countries across the two regions was the provision

of guidelines on how to teach from a distance, such as teaching content adapted to remote teaching (e.g. open educational resources, lesson plans) as well as instructions on how to use a wide variety of teaching modalities (e.g. television, radio, online learning platforms), although more support could have been given on how to prepare a virtual classroom. Teachers were also provided with opportunities to upskill, especially in using ICT in education.

Table 3.3. Support for teachers in Southeast Asia and selected OECD countries to transition to remote teaching in 2020 onwards

Support measures for teachers to transition to remote teaching	ASEAN					OECD			
	Cambodia	Malaysia	Myanmar	Singapore	Viet Nam	Germany	Japan	Korea	OECD total
Teaching content adapted to remote teaching (e.g. open educational resources, lesson plans)	☒	☒	☐	☒	☒	☐	☒	☒	29
Instructions on distance teaching (e.g. TV, radio, learning platforms)	☒	☒	☒	☒	☒	☐	☒	☒	28
Special ICT training	☒	☒	☐	☒	☐	☐	☒	☒	26
Professional development activities (e.g. workshops and webinars) on pedagogy and ICT use	☒	☒	☒	☒	☒	☐	☒	☒	25
ICT tools and connectivity (e.g. PCs, mobile devices, mobile broadband vouchers)	☒	☐	☒	☒	☐	☒	☒	☒	24
Professional, psychosocial and emotional support (e.g. chat groups, online teacher forums)	☒	☒	☐	☒	☒	☐	☒	☒	24
Guidelines for preparing a virtual classroom	☒	☒	☐	☒	☒	☐	☒	☐	13

Note: For OECD countries, data are derived from Iteration 3 (February to April 2021) of the *Survey of National Education Responses to COVID-19 School Closures*, which surveyed countries on the support measures they implemented in 2020. The column "OECD total" refers to the total number of OECD countries with the policy measure in place.
Source: OECD (2021[69]), *OECD Skills Strategy Southeast Asia Policy Questionnaire*; OECD, UNESCO UIS and World Bank (2021[118]), *Survey of National Education Responses to COVID-19 School Closures*, https://covid19.uis.unesco.org/data/.

Regularly consulting with school leaders about the needs of their schools and learners

Addressing teachers' many challenges in the classroom requires strong leadership from principals and school administrative personnel. School leadership has gained more policy attention across the world, as it plays a key role in influencing the motivations and competencies of teachers, as well as the general learning environment in schools. To help schools adapt to changing megatrends, cater to increasing student diversity and decrease inequities in education, school leaders have been tasked with more and more responsibilities relating to financial and human resource management (Pont, Nusche and Moorman, 2008[119]). At the regional level in Southeast Asia, strong leadership in schools has been increasingly recognised as an important area of skills development policy, as it is central to the ability of schools to navigate changes brought about by global megatrends and disruptions such as the COVID-19 pandemic.

Efforts by individual Southeast Asian countries to decentralise the delivery of education have highlighted the need for stronger management skills among school leaders. Many countries in the region have introduced decentralisation efforts to cope with rising educational demand, reduce inequities, such as between urban and rural settings, and respond more adequately to the needs of local schools (Shoraku,

2008[120]). The decentralisation of educational management has involved the total or partial transfer of decision making and school administration responsibilities from the national government to regional, provincial and/or local authorities, including schools. This has highlighted the increased role that school leaders play in ensuring the delivery of quality education. While the transfer of such responsibilities may result in differences in the quality of educational services, countries in the region have mitigated these risks by developing national quality standards for education and enforcing quality assurance efforts in schools. In many cases in Southeast Asia, school leaders were unprepared for rapid decentralisation efforts. However, countries such as Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Thailand and Viet Nam have managed to put in place various capacity-development initiatives to equip school leaders and staff with skills relating to instructional leadership, planning, decision making and financial management (SEAMEO INNOTECH, 2012[121]).

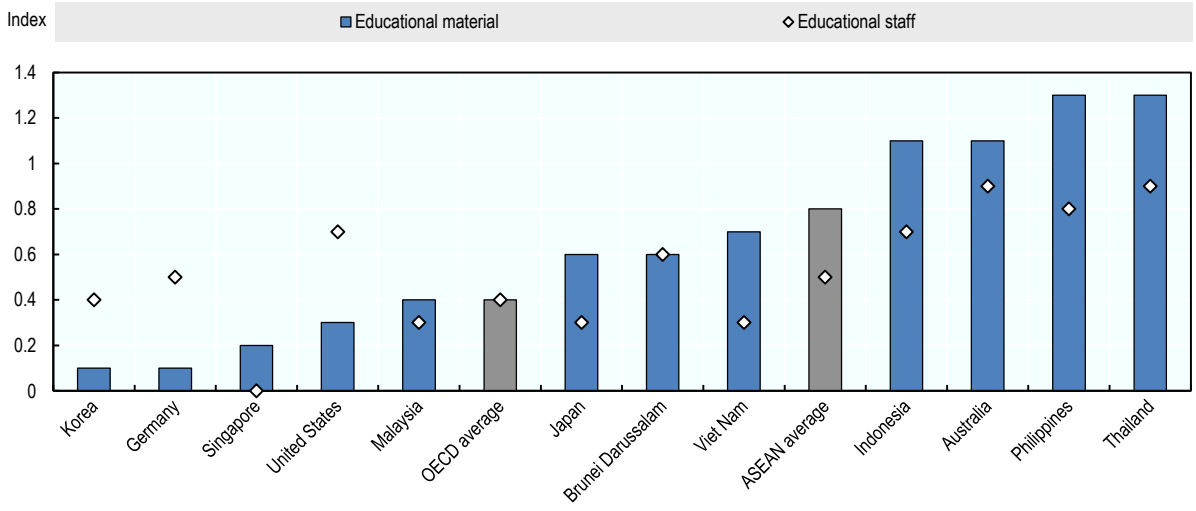
In addition to individual countries' efforts, there is also increasing recognition at the regional level of the need to upskill school leaders to help them respond to various global challenges. For instance, in 2003, SEAMEO INNOTECH, in partnership with ministries of education across the region, developed the Competency Framework for Southeast Asian School Heads, which outlines the skills and attributes needed by school leaders to effectively carry out their roles. The core skills identified in the framework include strategic thinking and innovation, managerial leadership, instructional leadership, personal excellence and stakeholder engagement. The competencies in the framework guide SEAMEO INNOTECH'S programme offerings to train school leaders in the region and may also serve as a useful reference for ministries of education as they conduct capacity-development initiatives for school staff (SEAMEO INNOTECH, 2015[122]).

While steps have been taken to equip school leaders with strong management skills, many barriers remain to ensuring the delivery of high-quality education in schools. One of these barriers is the severe lack of resources in many regional schools, which limits school leaders' ability to effectively carry out their responsibilities. School leaders across many countries in Southeast Asia face a shortage of educational materials and educational staff, with these limitations being even bigger in disadvantaged schools. While Malaysia and Singapore perform better than or are relatively close to the OECD average, differences in schools' socio-economic profiles are especially pronounced in countries such as Indonesia, the Philippines and Thailand (Figure 3.16). In addition to these long-standing problems, the onset of the COVID-19 pandemic has also brought about a new set of challenges for school leaders throughout the region. Many of them were forced to adapt and develop new leadership styles to provide guidance to their schools, as well as ease the constant anxieties of teachers, students and parents surrounding the uncertainty of educational provision. Many school leaders struggled to fully adapt to online learning due to the lack of technical tools and inadequate ICT skills among teachers, forcing them to work closely with members' local communities, such as philanthropists, social organisations and corporate groups, to find innovative ways to deliver lessons despite school closures. School leaders have also had to spearhead curricula-related reforms that aim to make educational content more adapted to online learning (Adams et al., 2021[123]; Parr and Sum, 2021[124]).

Consulting with school leaders and relevant stakeholders is an effective way to gather insights about schools' specific needs and collectively plan reforms. Continuous dialogue between policy makers and school leaders is important to making skills development policies, especially those at the national level, more reflective of the situations at the local school level. During times of change and disruption, consulting school leaders and their personnel also fosters a sense of ownership over policy reforms, which could, in turn, encourage greater co-operation across levels of the skills development system (Pont, Nusche and Moorman, 2008[119]). While policies are in place in some OECD countries, such as in Australia and New Zealand, to formalise consultation mechanisms between the government and school leaders (Box 3.4), there is less information on the existence of such initiatives in Southeast Asian countries.

Figure 3.16. Difference in shortages of educational materials and staff by school socio-economic profile, Southeast Asia and selected OECD countries, 2018

Mean index difference between advantaged and disadvantaged schools



Note: A higher value indicates a larger shortage of resources in disadvantaged schools, relative to advantaged schools.
Source: OECD (2020[125]), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, https://doi.org/10.1787/ca768d40-en.

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Box 3.4. Country examples relative to improving the quality of human resources in schools

Australia's consultation with school-based staff

The government of Victoria has put in place mechanisms to consult with school leaders and their unions each time a significant policy change in their work is proposed, providing them with an opportunity to raise any concerns. Additionally, principals are required to formally consult with school staff to involve them in consultation processes with the government and adequately reflect their interests.

Malaysia's Centre for Instructor and Advanced Skill Training

Malaysia has put in place support measures to improve teachers' pedagogical skills in line with global megatrends. For example, through the Centre for Instructor and Advanced Skill Training of the Ministry of Human Resources, teachers have access to courses and seminars on theory and methods of designing online education, as well as other continuous professional development offers relating to Fourth Industrial Revolution-related technology.

New Zealand's statutory consultation process with schools

The Minister of Education has formalised the consultation processes between the government and school leaders through the statutory consultation process under the Education and Training Act of 2020. Under the policy, the government is required to discuss policy proposals that may affect local school communities. The consultation allows the school community, including its leaders, to provide feedback on the proposed policies that affect the school community, solicit additional information they may need from the ministry, and engage in a dialogue about the school community's needs and concerns.

Singapore's Academy of Singapore Teachers

Singapore's Academy of Singapore Teachers was set up by the country's Ministry of Education to advance the professional development of teaching staff in general education schools throughout Singapore. The academy has established dedicated teacher academies and language institutes, where teachers can build communities of practice and come together to learn from one another about the subjects they teach, as well as pedagogical knowledge. Additionally, teachers can access professional counselling support via the Academy of Singapore Teachers' iCare initiative.

United Kingdom's financial incentives for small schools

With an aim to provide over 500 000 teacher training opportunities, the government has made high-quality, government-accredited training programmes free across the country. In addition to removing financial barriers that teachers may face, an incentive has also been put in place to encourage uptake among smaller schools. A grant payment of GBP 200 is offered to every teacher (in schools with 1-600 pupils) who participates in the training programme.

Source: Academy of Singapore Teachers (2019[126]), *Homepage*, https://academyofsingaporeteachers.moe.edu.sg; OECD (2021[69]), *OECD Skills Strategy Southeast Asia Policy Questionnaire*; New Zealand Ministry of Education (2022[127]), *Having a say – statutory consultations about schools*, www.education.govt.nz/school/new-zealands-network-of-schools/have/; UK Department of Education (2022[128]), *Teacher training to ensure excellent teachers in every classroom*, www.gov.uk/government/news/teacher-training-to-ensure-excellent-teachers-in-every-classroom; Victoria Department of Education and Training (2022[129]), *Consultation with School-Based Staff*, www2.education.vic.gov.au/pal/consultation-school-based-staff/policy-and-guidelines.

Recommendations for improving the quality of human resources in schools

- **Invest in professional development opportunities for teachers to equip them with better pedagogical skills**. Provide schools with resources to train teachers in differentiated instructional techniques that would help them better respond to the diverse needs of learners and manage large classroom sizes (e.g. peer-learning techniques, differentiated instruction). Ensure that digital literacy training opportunities are also available to equip teachers with the skills they need to use ICT in the classroom. It is possible to offer such upskilling opportunities outside of schools through external training institutes that provide free or subsidised course offerings that teachers could easily access and provide incentives to encourage increased uptake. Moreover, make sure that counselling support services are available to ensure the well-being of teachers and school staff, especially during times of disruptions and abrupt changes, to help them cope with increased challenges in the classroom.
- **Consult regularly with school leaders about their various needs in terms of resources and upskilling.** In line with increased responsibilities for school administration and budget management, provide opportunities for school leaders to upskill in terms of financial management, strategic thinking, instructional leadership and stakeholder engagement, and other skills that would allow them to carry out their roles effectively. Provide concrete avenues (e.g. statutory consultation processes) for government officials to regularly consult with school leaders and identify the kinds of support that could be provided through national and local policies, such as increased funding for classroom facilities and educational materials. Ensure that such consultations with school leaders reflect the broader interests of the school community by setting up formal consultation mechanisms between them and the school staff, allowing school leaders to transmit detailed information on the various administrative needs of schools.

Strengthening funding and student assessment in schools to improve equity

Ensuring the sustainable and well-targeted funding and monitoring of schools is central to achieving equitable educational outcomes. Around the world, there is evidence that increasing per-pupil expenditure up to a certain level is linked with improving student learning outcomes. As shown in Figure 3.17, there is a positive relationship between investment in education and average PISA reading performance. Except for Singapore, all participating Southeast Asian countries spend below this threshold and could benefit from increased investments in education. For instance, out of all PISA participating countries, the Philippines, Indonesia and Thailand have some of the lowest expenditures per student. They have also obtained some of the lowest reading scores. However, this relationship could be observed only to a threshold of USD 50 000 in cumulative expenditure per student, after which the level of spending no longer strongly influences average PISA reading performance. For instance, while Brunei Darussalam spends nearly double the amount Malaysia spends, students in Malaysia have a slightly better performance.

The level of spending and the allocation of funding are both equally important in achieving equity in skills development. Funding is necessary to support schooling resources that cost money, such as instructional materials and competitive teacher compensation that allows schools to recruit and retain high-quality teaching staff, among others (Baker, 2017[130]). This is especially important in disadvantaged areas or schools, which often lack adequate infrastructure and educational materials, raising considerable equity concerns (Lafortune, Rothstein and Schanzenbach, 2018[131]; Jackson, Johnson and Persico, 2014[132]; OECD, 2017[133]). Policy decisions on school budgets are best guided by information gathered through strong monitoring systems in schools that show differences in student outcomes and signal equity concerns (OECD, 2017[133]). Given these, this policy direction explores two areas for strengthening the administration of schools towards equitable educational goals in Southeast Asia: 1) improving financial management skills among school leaders and personnel; and 2) addressing technical and human resource constraints in educational monitoring systems.

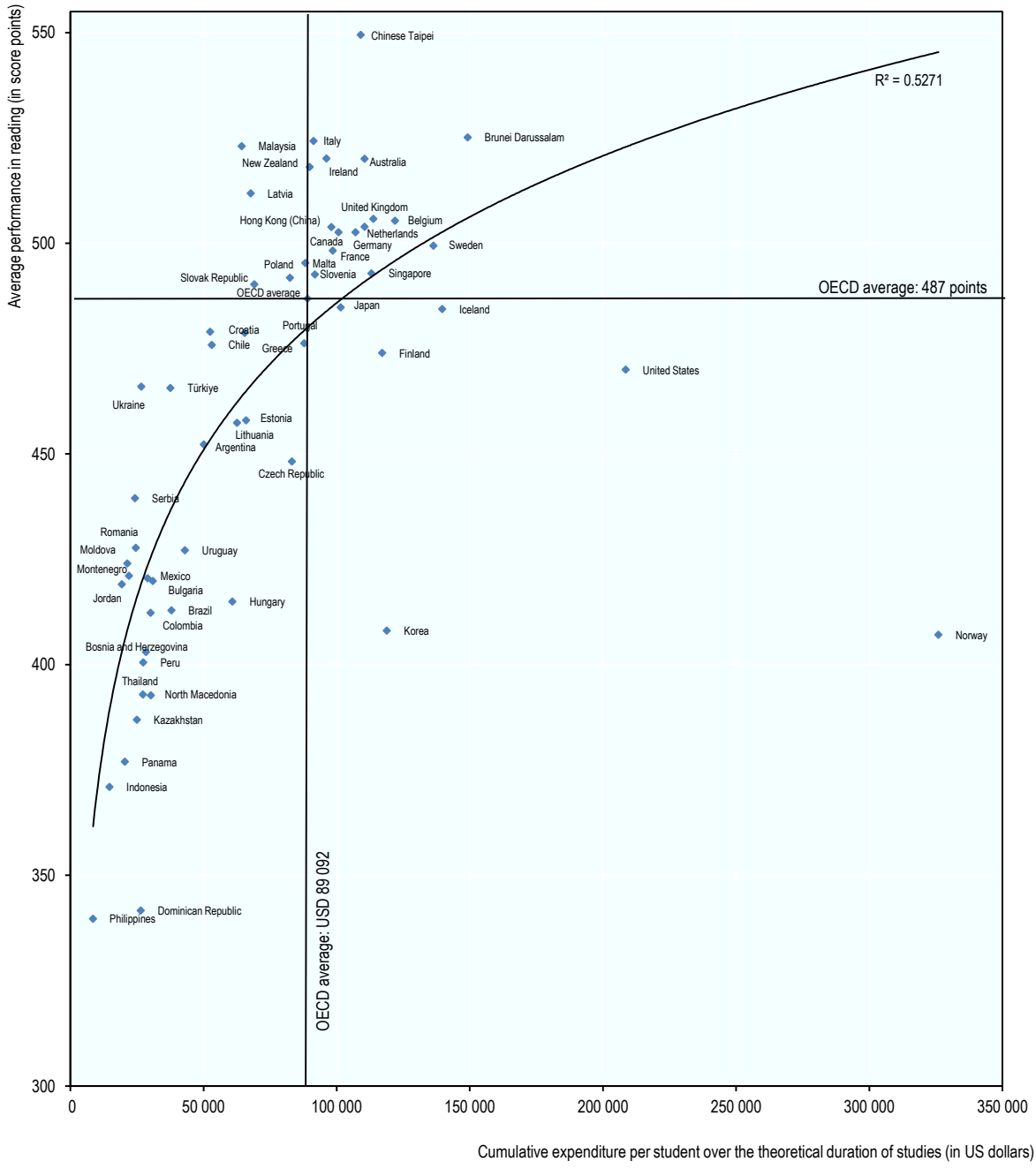
Improving financial management skills among school leaders and personnel

Funding per level of education varies greatly across Southeast Asian countries but is generally lower than that of comparison countries from the OECD. On average, countries in the region spend the most on secondary education (16.7%) and the least on pre-primary education (6.5%) as a percentage of GDP per capita (Figure 3.18). At all levels of education, Southeast Asian countries, on average, have lower levels of funding than the OECD. While some countries, such as Viet Nam (22.7%), have higher levels of government funding for pre-primary education than comparison countries in the OECD, the generally low level of financial commitment to ECEC can have severe implications for inequities in student outcomes. Education is a self-reinforcing process, with the development of foundation skills and knowledge early in life strongly contributing to the successful acquisition of higher-level skills at later stages of education (OECD, 2017[133]). Countries that consistently have extremely low levels of government funding at the pre-primary, primary and secondary levels include Brunei Darussalam, Cambodia, Indonesia and Myanmar.

While overall levels of educational financing matter, mechanisms to allocate funding are equally important, especially for Southeast Asian countries with limited resources. A minimum level of spending is necessary to ensure the provision of high-quality infrastructure, learning materials and teachers. However, the overall level of funding is not the strongest factor that accounts for the success of high-performing schools (OECD, 2017[133]). Evidence shows that beyond a certain level of investment, what matters is how effectively funding is allocated and reaches schools that need it the most, such as those with large student populations from disadvantaged backgrounds. Such strategic targeting of resources can help make the most significant difference in terms of reducing gaps in educational outcomes (OECD, 2021[134]).

Figure 3.17. Relationship between educational funding and PISA reading performance, 2018

Cumulative expenditure per student in US dollars, versus average performance in reading in score points



Source: OECD (2018[135]), *PISA 2018 results*, www.oecd.org/pisa/publications/pisa-2018-results.htm; OECD (2021[8]), *Towards a Skills Strategy for Southeast Asia*, https://doi.org/10.1787/6db0907f-en.

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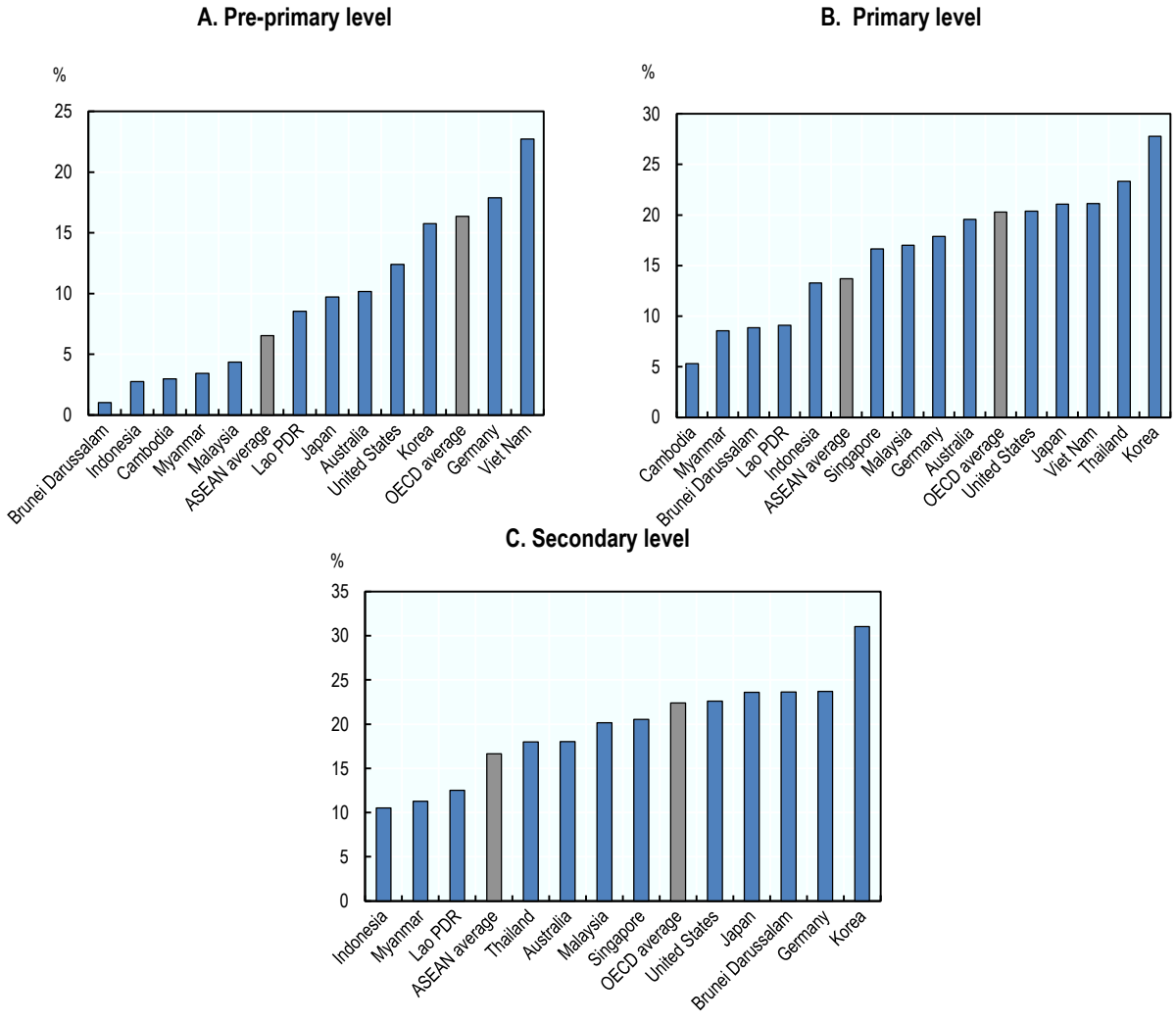
Figure 3.18. Initial government funding per level of education in Southeast Asia and selected OECD countries, latest available year

Percentage of GDP per capita



Note: "Initial" indicates the original source of the funding, in this case, the national government. Using initial funding as an indicator allows analysts to see who paid for the resources and is better aligned with the National Education Accounts methodology. Due to a lack of data, the latest available year was used for the following countries: Thailand and Viet Nam (2013); Cambodia, Indonesia at the pre-primary level and Lao PDR (2014); Indonesia at the primary and secondary levels (2015); Brunei Darussalam and OECD average (2016); Myanmar at the pre-primary level (2017); Australia, Germany, Japan, Korea, Myanmar at the primary and secondary levels, and United States (2018); Singapore (2019); and Malaysia (2020).

Source: UNESCO (2022[18]), *SDG4 Indicator Dashboard*, http://sdg4-data.uis.unesco.org/; UNESCO (2020[136]), *Education expenditure per student by level of education and source of funding*, http://uis.unesco.org/en/glossary-term/education-expenditure-student-level-education-and-source-funding.

StatLink https://stat.link/fwb3az

In Southeast Asia, there are various mechanisms to transfer funds from the national level directly to schools in a more equitable manner. In most countries, the national government plays the largest role in educational financing. However, several funding mechanisms have been created to facilitate the transfer of resources from the national level to subnational levels of government and schools. For instance, school grants, which national governments provide directly to schools to manage their own operations, were nearly non-existent

in Southeast Asia in the early 2000s. However, in more recent years, they have begun to represent a significant proportion of national education budgets in some countries – as high as 23% in Indonesia and 17% in Thailand in 2013 (UNESCO, 2013[137]; Lugaz and De Grauwe, 2016[138]). Additionally, school-based management grants have been expanded in some countries, such as the Philippines, where additional funds are given to eligible disadvantaged public primary and secondary schools to augment the resources provided through the national education budget. Individual schools may use these resources to respond to specific education needs, such as increasing school attendance, improving student participation and boosting completion rates (Philippines Department of Education, 2015[139]; 2015[140]). Throughout the region, financial management is now one of the most decentralised administrative functions in the education system, with subnational levels of government and school units in many countries being allowed not only to propose their own budget but also to generate their own funds to augment deficits from the national government (SEAMEO INNOTECH, 2012[121]).

Despite increases in overall levels of funding and autonomy over expenditures, schools across Southeast Asian countries face various challenges in managing educational funding. While decentralisation has helped improve the allocation of funding and bring resources closer to schools, results have been mixed, with many countries in the region facing difficulties in implementation. For instance, schools in Cambodia, Indonesia, Lao PDR, and Viet Nam have reported challenges in having limited capacity among smaller units of the educational system, including schools, to manage fiscal matters. There have been difficulties with defining roles and responsibilities, as well as with following accounting procedures when managing educational budgets. This suggests the need for school leaders and staff in Southeast Asia to strengthen their financial management skills in budgeting, procurement, internal controls and reporting, among many others. Differences in administrative capacity across schools risk further increasing funding inequalities and exacerbating issues in educational equity (UNESCO, 2014[14]). In OECD countries with similar human resource capacity challenges, such as in the United States (Texas), government-run initiatives have been implemented to upskill school personnel in financial management and programme administration, among other functions (Box 3.5).

Addressing technical and human resource constraints in educational monitoring systems

Student assessments are important in identifying learners' needs and designing skills policies. While it is important to mobilise financial resources, it is equally crucial to match educational funding to the needs of learners, as identified through student assessment results. Student assessment data, ideally collected and managed in integrated skills information systems (see Chapter 5), can inform decisions about targeting learning support more effectively, steering limited resources towards the needs of disadvantaged groups and prioritising school management decisions towards equity concerns (OECD, 2017[133]). Countries in Southeast Asia conduct student assessments at multiple levels: 1) at the school level to inform students' progress in the classroom on a regular basis; 2) at the national level to inform long-term skills policy; and 3) at the international level, to obtain cross-country comparative data on student outcomes.

At the school level, formative assessments in Southeast Asia are conducted primarily to monitor students' learning performance and improve teaching quality. School teachers carry out formative assessments regularly to identify their students' learning weaknesses and respond accordingly. Across Southeast Asian countries, a wide variety of skills and knowledge areas are measured by school-based assessments (Table 3.4). The specific topics of assessment differ from country to country, but many of them cover common topics, such as languages (both local and foreign, such as English), mathematics, sciences, social studies, physical education, religion and life skills.

Table 3.4. Skills and knowledge areas measured by school-based assessment exercises at the primary and secondary levels

Country name	Skills and knowledge areas	Country name	Skills and knowledge areas
Brunei Darussalam	Islamic religious knowledge Languages (English and Malay) Mathematics and science Nationhood education	**Myanmar**	Languages (English and Burmese) Mathematics Sciences Social studies
Cambodia	Languages (Khmer) Life skills Mathematics Physical and health education Sciences Social studies	**Philippines**	Geography, history, and civics Languages (English and Filipino) Mathematics Sciences
Indonesia	Aesthetics and arts Citizenship or civics Religion and noble character Personality Physical education, sports and health Science and technology	**Singapore**	Languages (English and mother tongue) Mathematics Sciences
Lao PDR	Arts, drawing and handicraft Languages (Lao and foreign) Lao literature Mathematics Physical education Sciences (Natural sciences, biology, physics and chemistry) Social sciences (history, geography and civics) Technical studies	**Thailand**	Art Health and physical education Languages (Thai and foreign) Mathematics Occupations and technology Religion and culture Sciences Social studies
Malaysia	Geography History Islamic and religious studies Languages (English, Malay, Chinese, Tamil) Life skills Mathematics Moral education Sciences	**Viet Nam**	Drawing and painting History and geography Informatics and technology Languages (English and Vietnamese) Mathematics Morality Music Nature and society Writing

Source: SEAMEO-INNOTECH (2015[141]), *Assessment Systems in Southeast Asia: Models, Successes and Challenges*, www.seameo-innotech.org/wp-content/uploads/2020/04/SIREP_Assessment-151021.pdf; UNESCO (2011[142]), *World Data on Education: Lao People's Democratic Republic*, www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Lao_PDR.pdf.

At the national level, Southeast Asian countries conduct student assessments to inform skills development policies over the long term. The results of these assessments are used to inform system-level decisions on a wide variety of policy areas, such as strengthening the quality assurance of the overall educational system, designing curriculum reforms as needed and determining the extent to which educational policy objectives have been achieved (SEAMEO INNOTECH, 2015[141]). While the educational priorities of individual countries are diverse, their assessment systems usually cover common elements relevant to the school or classroom level, such as measuring the achievement of each learner, measuring the quality and effectiveness of teaching, assessing the readiness of students for later stages of education and appropriately placing students into additional support programmes. Additionally, Southeast Asian countries also conduct high-stake summative assessments, which aim to facilitate the exit from one level of education and entry to a higher level, such as from primary to secondary and/or secondary to tertiary education. In most cases, they are paper and pencil tests that are administered to schools by specialised

government agencies and testing or examination boards (SEAMEO INNOTECH, 2015[141]; UNESCO, 2020[143]).

At the international level, Southeast Asian countries participate in cross-country surveys to obtain comparable data on their performance on key skills indicators. The most common international assessments that countries in the region participate in include PISA[4] and surveys such as the Catalogue of Learning Assessment 2.0, the Literacy and Educational Attainment Survey, the Survey of Formal Education, Trends in International Mathematics and Science Study (TIMMS) and the Progress in International Reading Literacy Study (PIRLS). Furthermore, the Southeast Asia Primary Learning Metrics (SEA-PLM) is a regional learning assessment programme designed to generate comparative data on learning outcomes at the primary level, helping improve system- and school-level policies. Six countries participated in the first round of data collection in 2019, namely Cambodia, Lao PDR, Malaysia, Myanmar, the Philippines, and Viet Nam (Box 3.5) (SEA-PLM, 2022[144]). Several countries in the region also participate in large-scale assessment programmes at the international level, and there is a trend towards increased participation among more and more countries in the region. Table 5.9 in Chapter 5 summarises Southeast Asian countries' participation in various international surveys, which measure various aspects of skills development over the life course.

While assessments have been instrumental in helping Southeast Asian countries monitor students' progress, several challenges remain. Many countries in the region have reported challenges at all stages of the data collection process. For instance, ensuring the credibility and integrity of data collection has been a key concern in some areas, prompting schools to train teachers on how to more effectively detect cheating and conduct inventories of testing materials, as well as install security equipment to monitor the administration of tests (SEAMEO INNOTECH, 2015[141]). Moreover, many countries have also cited challenges in analysing results of assessment exercises – especially those conducted at larger scales – due to a lack of human resources, technical capacity and data-related infrastructure. In some cases, a lack of financial resources has also impeded the administration of tests and the analysis of large amounts of data. These resource constraints affect not only the quality of the analysis of results but also the ability of school leaders and policy makers to collaborate and use these data to inform skills development policies. (UNESCO, 2020[143]). It is important to address these resource constraints and provide platforms for school leaders and local stakeholders to transform student assessment results into concrete educational reforms. Best practices in overcoming these challenges and effectively using student assessments for policy, such as in Belgium (Flanders), could be widely shared across Southeast Asian countries (Box 3.5).

Box 3.5. Country examples relative to strengthening funding and student assessment in schools

Belgium (Flanders)'s National Assessment Programme

The National Assessment Programme is conducted annually to gather information on student achievement. After the administration of the tests and the processing of results, consultation meetings are organised by the Ministry of Education and Training to bring together key stakeholders, such as school support bodies, the Flemish Inspectorate of Education, initial teacher education institutions, and researchers, among others. Stakeholders are expected to engage in concrete steps, such as updating attainment targets, adjusting school curricula, refining teaching materials, improving teacher education, and introducing new interventions to support students in need.

Myanmar's participation in the Southeast Asia Primary Learning Metrics (SEA-PLM)

In 2019, Myanmar was the first country in Southeast Asia to administer the SEA-PLM after five years of preparation work. During this phase, the national project team participated in multiple capacity-building workshops organised by international development partners to improve the country's ability to manage large-scale learning assessments. Field trial assessments were also conducted in schools

before the first official standardised test was administered. The SEA-PLM test aims to measure learning outcomes in reading, mathematics, writing, and global citizenship and administers background surveys to principals, teachers and parents to gain a fuller picture of the various factors that contribute to students' performance. The results of the SEA-PLM aim to inform areas for policy intervention in Myanmar.

Texas Education Agency's guidance handbooks for funding grantees

The Texas Education Agency offers financial grants to districts and charter schools across the state through a consolidated online portal. In addition to grants, the agency also makes financial training support available to grant recipients to ensure the proper use of funds. Through handbooks uploaded on the agency's website, grant providers disseminate detailed guidance on various aspects of financial management, such as budgeting, budget scheduling, procurement, programme administration, internal controls and reporting, among others, which school personnel are free to consult. Additionally, 20 regional education service centres also provide training support to grantees.

Source: OECD (2013[145]), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, https://doi.org/10.1787/9789264190658-en; SEA-PLM (2019[146]), *SEA-PLM 2019 begins in Myanmar*, www.seaplm.org/index.php?option=com_k2&view=item&id=1:sea-plm-2019-begins-in-myanmar&lang=en; Texas Education Agency (2002[147]), *Training and other resources*, https://tea.texas.gov/finance-and-grants/grants/training-and-other-resources.

Recommendations for strengthening funding and student assessment in schools to improve equity

- **Improve the financial management skills of school leaders and personnel.** Accompany the administration of school grants and other educational funding with training opportunities that equip school leaders and personnel with improved skills in various aspects of financial management in schools, such as budget preparation, budget execution, accounting and monitoring, and reporting. Make resources (e.g. handbooks on financial management) on these topics easily accessible to school personnel, such as through distributing physical materials to schools or through a consolidated and user-friendly online portal. Ensure that these resources are updated often and that they are specifically adapted to the various funding strategies used by national governments to allocate funding to sub-governments or schools.
- **Establish avenues to facilitate collaboration among stakeholders on improving student assessment systems.** To effectively improve the administration of student assessments and use their results, provide fora for stakeholders from the school system, such as teachers and school leaders, to openly discuss difficulties they face with the administration of tests and the processing of data, including lack of security, insufficient technical capacity to interpret results, or inadequate infrastructure, and jointly agree on concrete steps on how to address these challenges. Provide opportunities for policy makers to meet with researchers and analysts and interpret results from student assessment exercises, as well as for local school representatives to provide in-depth insights into classroom-level challenges that may help explain these results. Furthermore, regularly examine the ability of student assessment exercises to provide credible insight into the needs of students and schools, as well as their relevance to national educational objectives. At the regional level, the sharing of best practices in designing, implementing and using student assessments could also be expanded.

Opportunity 3: Developing skills that matter

Ensuring the relevance of skills development offers is central to strengthening the ability of Southeast Asian countries to adapt successfully to megatrends and COVID-19. The world of work is constantly changing as megatrends transform the global economy and ASEAN member states' roles in it,

with about 6.6 million workers throughout the region finding themselves in jobs that are made redundant due to technological advancements over the next decade (CISCO and Oxford Economics, 2018[148]; ASEAN, 2021[85]). Additionally, COVID-19 has also accelerated the demand for certain skills in labour markets and in society, such as digital skills, but also a wide range of cognitive and socio-emotional skills that would allow individuals to analyse and critically think about information in an increasingly digital world of work (Cunningham et al., 2022[149]). These rapid changes require Southeast Asian countries to address their workforce's need for updated and relevant educational offers and increased access to upskilling and reskilling in the workplace (World Economic Forum, 2019[41]).

Given the importance of developing skills that matter in Southeast Asia, this opportunity presents two policy directions. The first policy direction pays particular attention to improving the alignment between skills development offers and labour market demand, specifically through ensuring the relevance of educational curricula and expanding access to work-based learning. The second policy direction discusses opportunities for Southeast Asian countries to steer the skills choices of individuals towards those that are in demand in the labour market, such as through improvements in career guidance services and the adoption of a wide range of policy instruments to incentivise people to pursue educational opportunities in areas of skills shortage.

Improving the alignment between skills development offers and labour market demand

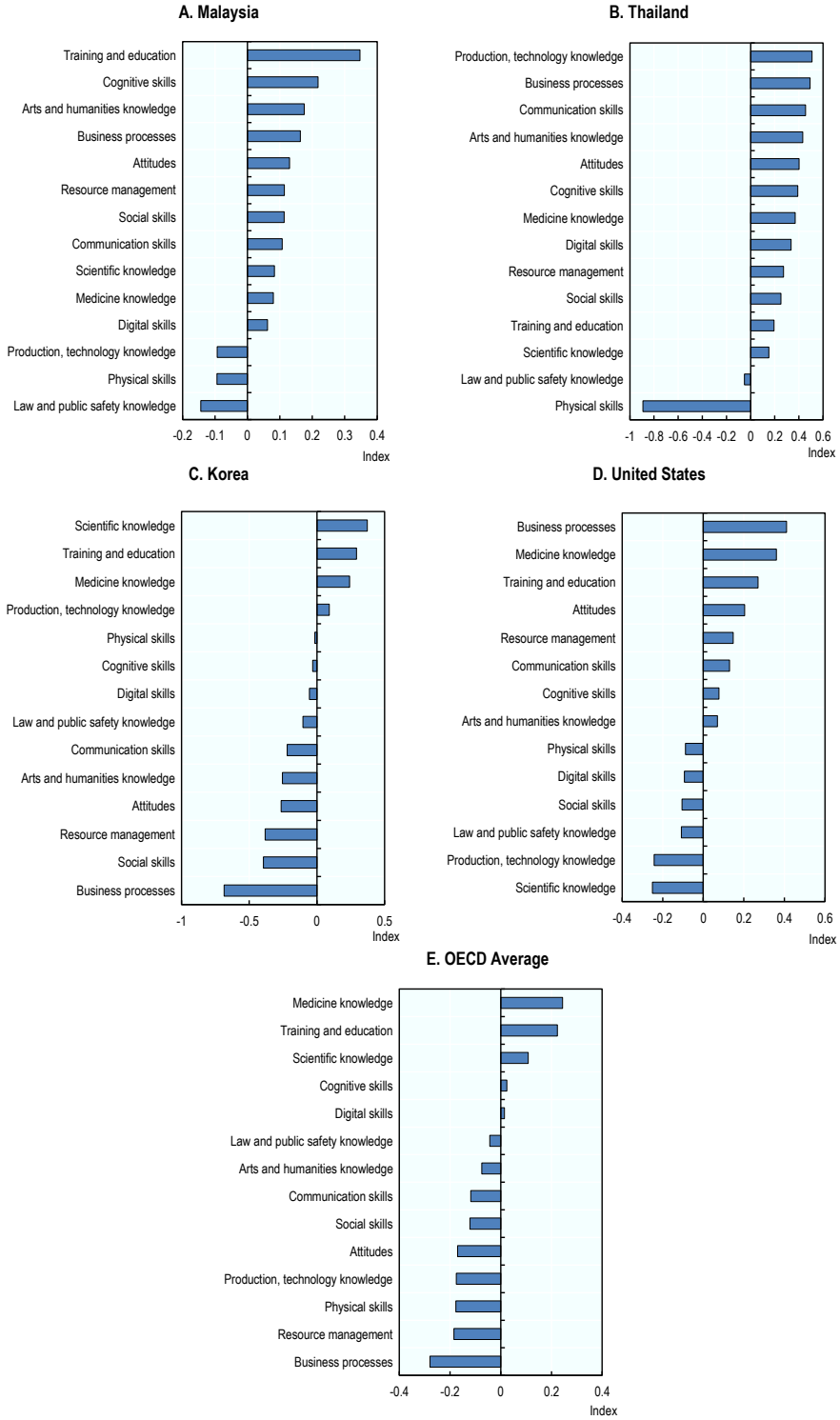
Developing relevant skills over the life course requires an alignment between educational opportunities and the needs of the labour market. This alignment entails that education systems are able to produce the right number of people with the right set of skills at the right time (Van Noy and Cleary, 2017[150]). In doing so, skills mismatches could be reduced, helping address the consequences of over- or under-skilling, such as wage penalties, lower job satisfaction and lower productivity. Ensuring the alignment between educational curricula and labour market demand is thus of utmost importance in skills development beyond compulsory education, such as TVET, tertiary education and adult learning, which play a central role in developing practical, higher-level skills and specialised knowledge that are needed in the workplace (Musset, 2019[79]). To adequately prepare all Southeast Asian learners for the world of work, this policy direction explores two areas: 1) making TVET and tertiary education curricula more relevant to labour market needs; and 2) expanding the provision of on-the-job training among workers in smaller firms and in the informal economy.

Making TVET and tertiary education curricula more relevant to labour market needs

As Southeast Asia's labour market evolves, many workers will need to upgrade their current skill sets, as every sector will undergo changes in line with the development of new technologies. Data from the *OECD Skills for Jobs* database indicate that participating Southeast Asian countries have different skilling shortages that need to be addressed. For example, training and education skills, cognitive skills, and arts and humanities knowledge are areas of greatest skills shortage in Malaysia. In Thailand, production and technology knowledge, business processes and communication skills are most needed (Figure 3.19). Additionally, other sources have estimated that 6.6 million jobs across the ASEAN region will be rendered redundant over the next decade, many involving elementary workers, skilled agricultural workers, service and sales workers, craft and related trades workers, and plant workers and machine operators. Technological displacement of jobs is expected to occur the most in agriculture and manufacturing, which are sizeable employers in countries in the region, highlighting the need to help displaced workers find new employment opportunities. These new jobs will require new kinds of skills and knowledge from their workers, highlighting the need for increased access to education and training (CISCO and Oxford Economics, 2018[148]).

Figure 3.19. Skills needs in Southeast Asia and selected OECD countries, 2019

Index of skills surpluses and shortages, arranged from the highest to lowest level of skills shortage in each country



Note: Positive values indicate skill shortages, while negative values indicate skill surpluses. The larger the absolute value, the larger the imbalance. The value of 1 represents the largest shortage, and -1 the largest surplus across OECD countries, skill categories and years.
Source: OECD (2022[151]), *Skills for Jobs Database: Skill needs by country*, https://stats.oecd.org/Index.aspx?DataSetCode=S4J2022.

StatLink https://stat.link/kc2pun

TVET is one of the principal ways individuals in Southeast Asia develop industry-relevant and transversal skills, boosting employability amidst rapid labour market changes. A key feature of TVET is work-based learning, an educational approach that provides students with real-life working experience and employment-related competencies (UNESCO, 2021[152]). Through the many types of work-based learning, such as internships and apprenticeships, students can use valuable, industry-specific equipment that might not otherwise be available in schools and gain first-hand instruction from industry experts and skilled mentors (Kis, 2016[153]). Furthermore, exposure to various workplace scenarios also equips learners with an opportunity to develop a wide variety of transversal skills (e.g. negotiation, persuasion, service orientation, social perceptiveness), which are expected to rise the most in terms of demand in Southeast Asia (UNESCO, 2015[154]).

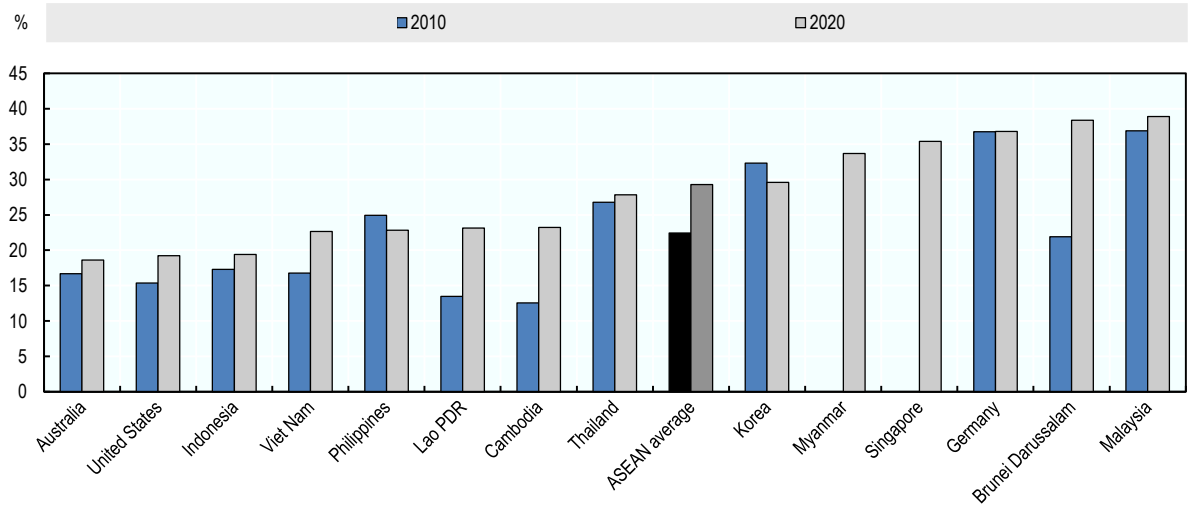
Developing both industry-relevant and transversal skills requires strengthening work-based learning in TVET in Southeast Asia through many ways. For instance, this could be done by providing employers with incentives when they offer skills development opportunities, which help shoulder the cost of hiring interns and apprentices, especially in smaller firms with less financial capacity (e.g. France in Box 3.6). Involving industry in designing the content of TVET programmes is also an equally effective way to ensure the relevance of work-based learning opportunities, as employers and business experts have valuable first-hand insights into the current needs of the labour market (e.g. Brazil in Box 3.6). Moreover, close co-ordination with industry leaders on the certification of skills upon students' graduation ensures that the content of work-based learning programmes is in line with the standards and expectations of employers and is responsive to industry's needs (e.g. Colorado, the United States, in Box 3.6).

In addition to TVET, tertiary education also has a crucial role to play in ensuring the development of relevant, higher-level skills needed for countries' socio-economic development. Through tertiary education, learners can develop skills relevant to research and development (R&D), innovation and entrepreneurship, which strongly contribute to countries' competitiveness and economic development. These constitute strong rationales for countries to boost the uptake of tertiary programmes related to STEM subjects, especially in a world of rapid technological change (Wilson, 2013[155]). The percentage of tertiary graduates from STEM programmes has risen in nearly all Southeast Asian countries from 2010 to 2020 by an average of 6.8 percentage points (Figure 3.20). Malaysia (38.9%) and Brunei Darussalam (38.4%) lead the region in terms of producing STEM graduates, performing better than comparison countries from the OECD, such as Germany (36.8%) and Korea (29.6%). When accompanied by strong skills use policies that foster innovation and entrepreneurship, this presents valuable opportunities for these Southeast countries to leverage their stock of STEM graduates to foster new technologies and socio-economic development (see Chapter 4).

Regular review of tertiary education programmes in partnership with relevant government agencies and industry representatives is needed to ensure the relevance of the skills of the Southeast Asian workforce. A systematic attempt to regularly review the content and methods of tertiary education can help ensure that students are equipped with the right skills and are prepared to thrive in the future world of work. Redesigning educational curricula is a complex process – often involving the conduct of labour market forecasts (see Chapter 5), identification of educational goals at the country level and extensive co-ordination among multiple stakeholders, both inside and outside of government – but it is nonetheless an important policy task (OECD, 2020[156]; Wilson, 2013[155]). It is important to ensure that there are sufficient human resources to support such collaboration. Some countries in Southeast Asia (e.g. Malaysia, the Philippines) and beyond the region (e.g. Brazil, the United States) have instituted such multi-stakeholder policy practices, involving industry representatives in the design of educational curricula and the certification of skills (Box 3.6). Moreover, it is equally important to ensure that there are incentives in place to encourage institutions to focus on providing skills development offers at the tertiary level, especially in areas of skills shortage (see below) (OECD, 2020[157]).

Figure 3.20. Tertiary graduates in science, technology, engineering, and mathematics programmes in Southeast Asia and selected OECD countries, 2010 and 2020

Percentage of graduates



Note: If figures for 2010 or 2020 were not available, those from the closest year were used.
Source: UNESCO Institute for Statistics (2019[158]), *Other policy-relevant indicators*, http://data.uis.unesco.org/.

StatLink https://stat.link/4dh6lb

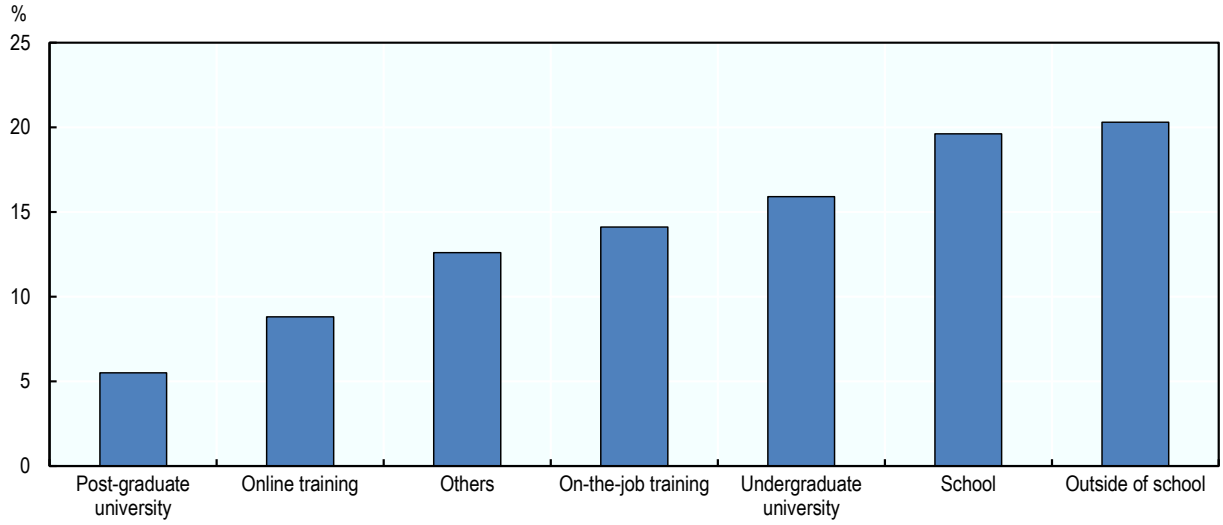
Expanding the provision of on-the-job training among workers in smaller firms and in the informal economy

In addition to ensuring the relevance of educational offers, on-the-job training is an equally important way for Southeast Asia's workforce to develop industry-relevant skills over the life course. On-the-job training contributes to upgrading individuals' skill sets, which is key to addressing the labour market's current and future needs (Hobbs, 2021[159]; Musset, 2019[79]). At present, there is widespread recognition among individuals in Southeast Asia of the value of on-the-job training. Most workers in the region are more likely to report that they were able to acquire the most essential workplace skills outside of school than in it, and on-the-job training is one of the most common methods by which these skills are developed (Figure 3.21). Across Southeast Asia, 14.1% of workers reported acquiring essential workplace skills through on-the-job training.

Countries in Southeast Asia have long recognised the value of on-the-job training through the adoption of various policies. For instance, in the Philippines, the Continuing Professional Development Act of 2016 was passed to improve the competencies of employees and equip them with new skills in line with the developments or advancements in their field (Senate of the Philippines, 2016[160]). Moreover, in Thailand, the Skill Development Promotion Act outlines the responsibilities of employers to provide training for their employees and specifies the specific conditions under which such training opportunities must be offered (e.g. timing of training as a function of the employee's working schedule) (Thailand Department of Skill Development, 2002[161]).

Figure 3.21. Acquisition of essential workplace skills among young workers aged 15-35 years old in Southeast Asia, 2018

Percentage of respondents (employees in companies, excluding entrepreneurs) in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, by source



Note: "Undergraduate university" often refers to a bachelor's degree (ISCED Level 6), while "post-graduate university" refers to higher levels of degree after the completion of a bachelor's degree (e.g. master's degrees at ISCED Level 7 and doctoral degrees at ISCED Level 8).
Source: World Economic Forum (2019[41]), *ASEAN Youth: Technology, Skills and the Future of Work*, www3.weforum.org/docs/WEF_ASEAN_Youth_Survey_2019_Report.pdf.

StatLink https://stat.link/liq103

However, the provision of on-the-job training in Southeast Asia remains highly unequal depending on various factors, such as firm size. On average, 48.8% of workers in large firms have access to non-formal training in the workplace, in comparison to only 36.1% of medium-sized firms and small-sized firms (Figure 3.6). Individuals working in family businesses also have limited opportunities to develop new skills through work-based learning (World Bank, 2020[34]). Small firms face a wide range of barriers to providing high-quality training to their workers, including financial constraints, lack of human resources, inadequate infrastructure and resources for training, poor insight into training needs, and the absence of opportunities for career progression that would encourage the uptake of reskilling and upskilling programmes among workers (Martinez-Fernandez and Choi, 2012[162]; Omar, Arokiasamy and Ismail, 2009[163]).

There are many ways by which Southeast Asian governments can encourage the expansion of skills development offers, especially for workers in small- and medium-sized enterprises (SMEs). A wide variety of opportunities are already available in the region. One of them is the ASEAN SME Academy, an innovative private-sector-led initiative that provides training materials to SMEs on a wide variety of skills topics, such as marketing and business management, finance, legal management, logistics and IT (ASEAN, 2022[164]). In other countries, such as France, various policy support options are also being offered, such as training networks, tax-based measures and training vouchers (Box 3.6).

Additionally, workers in Southeast Asia's widespread informal economy do not have access to high-quality on-the-job training opportunities in the workplace. This puts informal workers in an even more precarious situation, as many of them already have lower levels of skills and education, to begin with. With their lack of access to employer-sponsored on-the-job training, there is a risk of failing to develop newer and higher levels of skills that could boost their employability and help them adapt to changes in the labour market. Providing informal workers with access to skills development can provide them with new skills and

qualifications that can not only boost their productivity but also help them transition towards formal employment (ILO, 2019[76]). Nonetheless, despite the precarious nature of their work, many workers in the informal economy are able to develop skills on the job, for instance, through informal apprenticeships, experiential learning or self-teaching (GIZ, 2020[165]; Palmer, 2020[166]).

Box 3.6. Country examples relevant to improving the alignment between skills development offers and labour market demand

Brazil's engagement with the private sector for curriculum design through its National Industrial Apprenticeship Service (SENAI)

Employers from Brazil's private sector play a lead role in conducting skills forecasts and planning training activities, ensuring a closer alignment between the development of skills and the needs of employers. The SENAI (Serviço Nacional de Aprendizagem, or the National Industrial Apprenticeship Service), a network of not-for-profit professional schools at the secondary level established and maintained by the Brazilian Confederation of Industry, collaborates with a wide range of stakeholders, including businesses and industry experts to forecast labour market needs over a five-year period. The forecast involves looking at trends in technology, emerging occupations, new ways of organising work and educational gaps, which feed into the planning of training activities and curriculum design. SENAI's forecast exercises have been applied to various industries in Brazil, including construction, food, footwear, heavy equipment, industrial automation, petrochemicals, shipbuilding, ship repairing, telecommunications and textiles.

Colorado Department of Education's industry-led certification of skills

In Colorado (United States), partners from industry play a key role in the certification of skills as an option to demonstrate academic knowledge and skill mastery upon graduation. Through the Industry Certification Governing Body, industry can provide specifications of the skills and knowledge that need to be assessed when individuals seek to attain the certification. The body periodically reviews the competencies to maintain relevance to the industry's needs.

France tax incentives for SMEs to offer skills development

Since 1971, all French enterprises with employees have been required to allot to vocational training a percentage of the previous year's total gross wages paid. In addition, the government has developed several tax incentives to promote education and training in SMEs. For instance, enterprises with fewer than 11 employees may be totally or partially exempt from (or may be reimbursed for) paying social contributions for their apprentices, which the state covers.

Malaysia's university-industry advisory panels

Following the Ministry of Higher Education's recommendation to universities to engage directly with industry representatives under the Malaysia Education Plan 2013-2025, universities across Malaysia have appointed university-industry advisory panels (UIAPs) to provide input into their curriculum. UIAPs are composed of experts from top businesses and are matched with relevant university programmes, where they meet with academic staff and provide guidance on how to reflect the industry's latest trends and skilling needs in educational content. In some cases, UIAPs also provide students with internship opportunities.

The Philippines' Technical Education and Skills Development Authority (TESDA)'s Implementing Guidelines on the Establishment of Institutional Arrangements with Industry Boards or Industry Associations

TESDA formalised the bigger role that employers and workers play in designing and implementing TVET programmes in the Philippines through its Implementing Guidelines on the Establishment of Institutional Arrangements with Industry Boards or Industry Associations. In each priority industry, industry boards and industry associations are selected and consulted in developing competency standards, curricula, sectoral skills plans, assessment of industry workers, and accreditation of assessors or trainers, as well as in the administration of apprenticeship programmes and dual training systems. In addition, TESDA provides funding to organise consultative meetings, conferences, and fora to bring together officials from the government agency, industry boards and industry associations, as well as other relevant government offices.

Source: Department of Education (2015[167]), *Industry Certificate Guidebook*, www.cde.state.co.us/postsecondary/ic-standards-alignment; CEDEFOP (2009[168]), *Using Tax Incentives to Promote Education and Training*, www.cedefop.europa.eu/files/5180_en.pdf; European Commission (2017[169]), *A Ticket to Better Training for Polish SMEs*, https://ec.europa.eu/regional_policy/en/projects/poland/a-ticket-to-better-training-for-polish-smes; Humber College (2020[170]), *Become a Program Advisory Committee Member*, https://communityservices.humber.ca/industry/partnerships/program-advisory-committees-pacs.html; Palmer, (2020[166]), *Lifelong Learning in the Informal Economy: A Literature Review,* www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_741169.pdf; OECD (2016[171]), *Enhancing Employability,* www.oecd.org/g20/topics/employment-and-social-policy/Enhancing-Employability-G20-Report-2016.pdf; OECD (2019[77]), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, https://doi.org/10.1787/9789264313835-en; Seneca College (2022[172]), *Program Advisory Committees*, www.senecacollege.ca/about/advisory.html; Taylor's University (2022[173]), *Industry advisory panel (IAP)*, https://university.taylors.edu.my/en/study/undergraduate/business/industry-advisory-panel-iap.html; TESDA (2018[174]), *Implementing Guidelines on the Establishment of Institutional Arrangements with Industry Boards or Industry Associations*, https://intranet.tesda.gov.ph/circulariframe/DownloadFile/1000035537; Vargas Zúñiga (2015[175]), *Skills Anticipation: The Transfer of the SENAI Prospective Model*, www.oitcinterfor.org/sites/default/files/file_publicacion/oit_Prospectiva_ing_sec.pdf.

Recommendations for improving the alignment between skills development offers and labour market demand

- **Increase the involvement of relevant government agencies and industry partners in reviewing the curricula of skills development offers in technical and vocational education and training and tertiary education.** Conduct regular and systematic reviews of emerging skilling needs and establish mechanisms to involve industry representatives (e.g. programme advisory committees) in the design (e.g. of curricula), delivery (e.g. of work-based learning) and certification of educational opportunities. With these industry experts, identify current and future trends in technologies, emerging occupations over a specified period, the specific skills and knowledge needed to effectively carry out these occupations and shortages in the current supply of skills being developed in the educational system (e.g. indicators on graduation rates in relevant programmes identified in the review) (see also Chapter 5). Provide incentives, such as tax exemptions, to TVET providers and employers that offer work-based learning opportunities that are in line with the needs of the labour market, as well as to tertiary education institutions that offer programmes or courses in areas of skills shortage.

- **Increase the provision of on-the-job training opportunities, especially among workers in smaller firms and in the informal economy.** Continue support for the establishment of private-sector-led initiatives that expand the provision of training opportunities for SMEs, such as the provision of free, easily accessible and industry-relevant course offerings (e.g. ASEAN SME Academy). Explore the use of different policy options to ease the financial burden of employee training on SMEs, such as the adoption of tax-based exemptions that allow the state to offset the costs of training (whether fully or partially), as well as the provision of training vouchers that employees could use to pursue skills development offers in training institutions pre-selected and quality assured by the government. Moreover, expand the mandate of vocational training institutions to include the provision of education to workers in the informal economy, such as offering affordable or free course offerings with low admission requirements (e.g. making completion of primary school optional). More importantly, provide ways for workers in the informal economy to certify skills that were developed informally to recognise the value of their competencies and boost their transition into formal labour markets.

Steering skills development choices towards labour market needs

Providing effective guidance services and financial incentives can help individuals choose relevant skills development offers in a rapidly changing labour market. Career guidance refers to a wide range of services that provide people with personalised and timely information on what skills and occupations are in high demand in the labour market, help them assess their current skill set, and advise them on where to obtain skills development offers they need to pursue their interests (CEDEFOP, ETF and European Commission, 2019[176]). Career guidance services must be available throughout the life course and serve a wide variety of educational trajectories – from choosing between academic and vocational pathways at the secondary level, to deciding between different forms of formal, non-formal and informal learning to help them move to a new job, keep a current one or obtain a promotion (OECD, 2019[77]).

In addition to providing career guidance services, it is equally important for countries to make sure that people face no financial barriers to pursuing the education and training opportunities they need. From an economic development perspective, it is also strategically beneficial for countries to promote skills development offers in skills shortage areas by providing a wide range of financial incentives to individuals, schools and employers to increase uptake in those areas (OECD, 2017[177]). Given these insights, this policy direction explores two areas: 1) ensuring the relevance of guidance services and encouraging widespread use; and 2) providing financial incentives to both institutions and individuals to steer skills development choices towards areas of skills shortage.

Ensuring the relevance of career guidance services and encouraging widespread use

Most Southeast Asian countries have put in place various policy measures to improve their career guidance systems, while some others have yet to establish their own. Several countries, such as Brunei Darussalam and Malaysia, have specialised government agencies or ministry departments in charge of managing the career guidance services provided to students in schools or the public. In contrast, others, such as the Philippines, have programmes managed by multiple government ministries (Table 3.5). Career guidance systems in Southeast Asia offer guidance on a wide range of topics and services not only to students but also to out-of-school youth and adults who are unemployed or may want to change jobs. These services include the assessment of individuals' skillsets and skill gaps, the provision of updated labour market information (e.g. employment trends), advice on available skills development offers and training providers, advice on funding options and other forms of assistance, the provision of a personal counsellor to follow progress, and, in some cases, emotional and psychological support. While career guidance services are well established in some Southeast Asian countries, such as Singapore, they are relatively new and are still in development in some others, such as in Cambodia (ICCDPP, 2017[178]).

Table 3.5. Overview of available career guidance services in Southeast Asia

Name of country	Career guidance initiative	Description
Brunei Darussalam	Ministry of Education, Department of Schools	• Has the Counselling and Career Guidance Section, which oversees guidance services in schools
	Student Affairs Division and its Career Guidance Unit, Institute of Brunei Technical Education	• Promotes education and training to potential students and the public through various platforms • Organises job fairs and market days to introduce job opportunities and match graduates with potential employers
Malaysia	Employment Insurance System, including the Graduate Empowerment Programme	• Assesses individuals' profiles and closely monitors their progress • Provides career advice and emotional support to individuals • Assigns an Employment Service Officer who actively provides career advice and support • Provides vocational training in partnership with appointed training providers
	Human Resource Development Corp Placement Centre	• Makes available assessment tools to help individuals learn more about their skills, strengths, goals and interests to help them find the right career • Provides advice to recent graduates on how to apply for jobs and best present their skills
Philippines	Career Guidance Advocacy Programme	• Provides updated labour market information • Invites Career Ambassadors to provide insights on career options for TVET and tertiary education graduates • Facilitates networking opportunities between young learners and industry partners to inform them about various career options
	TESDA Online Programmes (TOP)	• Provides free, accessible, and highly interactive training tools that help learners build skills and confidence to make informed career choices and boost their employability • Has a focus on job readiness, lifelong learning, and 21st Century skills
	Job Linkaging and Networking Services (JoLiNs)	• Established by TESDA in private and public technical vocational institutions (TVIs) • Provides job seekers with relevant labour market information, strategies, approaches and techniques in looking for job opportunities
	Public Employment Service Office of the Department of Labour and Employment	• Delivers core services, such as the provision of labour market information, referral and placement, employment coaching and career counselling
	National Secondary School Career Guidance and Counselling Programme	• Offers career guidance and counselling services to all public and private secondary schools nationwide to provide advice in pursuing tertiary education • Provides secondary education students with labour market information to make informed career decisions • Ensures that graduates of tertiary education meet government and industry requirements
Singapore	Skills and Training Advisory, MySkillsFuture portal	• Guides students or adults at different phases of their careers to identify their skills and training needs, and make informed education and career decisions • Encourages individuals to learn more about their interests, abilities, and passions • Allows individuals to explore different learning or education pathways and career opportunities across various industries to embrace learning throughout life
	Career Advisory Programme of Workforce Singapore	• Functions as an introductory programme for professionals (e.g. human resources practitioners, social service officers, industry mentors) and trains them to provide career basic education and career advisory services as a secondary role in their work (i.e. in addition to their principal roles and tasks)

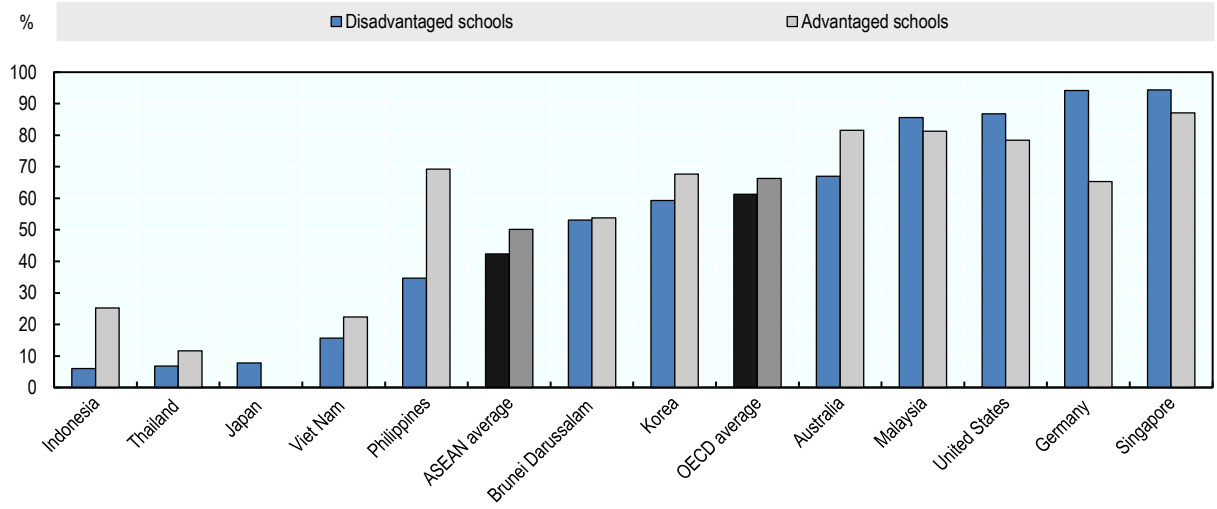
Name of country	Career guidance initiative	Description
Thailand	Public Employment Centres and Smart Job Centre on line and via app	• Provides access to career information and vacancies

Note: Only countries with available information on career guidance initiatives are shown in this table.
Source: Brunei Darussalam Ministry of Education (2018[179]), *Department of Schools,* www.moe.gov.bn/SitePages/Department%20of%20Schools.aspx; Congress of the Philippines (2018[180]), *Republic Act No. 112016: An act establishing a career guidance and counselling program for all secondary schools and appropriating funds therefore*, https://issuances-library.senate.gov.ph/sites/default/files/2022-10/ra%252011206.pdf; Malaysia Ministry of Human Resources (2020[181]), *Employment Insurance System (EIS) – Home*, https://eiscentre.perkeso.gov.my/; Malaysia HRD Corp (2021[182]), *HRD Corp Placement Centre*, https://hpc.hrdcorp.gov.my/; Philippines Department of Labour and Employment (2020[183]), *About Public Employment Services (PES)*, www.dole.gov.ph/public-employment-services-pes-contents/; Philippines Department of Labour and Employment (2021[184]), *Career Guidance Advocacy Program (CGAP)*, https://ro12.dole.gov.ph/career-guidance-advocacy-program-cgap-2/; Singapore Skills Future (2022[185])), *Education and Career Guidance*, www.skillsfuture.gov.sg/ecg; Thailand Ministry of Labour (2022[186]), *e-Labour*, https://lb.mol.go.th/en/; Workforce Singapore (2020[187]), *Career Advisory Programme (CAP)*, www.wsg.gov.sg/programmes-and-initiatives/career-advisory-programme.html.

One of the most common ways for Southeast Asian countries to offer career guidance is through schools, although access remains unequal. Across the region, more students in advantaged schools (50.1%) have access to a dedicated counsellor in comparison to those in disadvantaged schools (42.3%) by about 8 percentage points (Figure 3.22). The difference between advantaged and disadvantaged schools is especially stark in some countries, such as the Philippines (34 percentage points) and Indonesia (19 percentage points). In some countries, access to a guidance counsellor is low regardless of whether a school is advantaged or disadvantaged. For example, in Thailand, only 11.6% of students are in advantaged schools with a dedicated guidance counsellor. This figure drops even lower to 6.8% in disadvantaged schools in the country. Addressing these challenges is key to improving the relevance of career guidance services in the region. For instance, in some OECD countries, such as Sweden, teachers and guidance counsellors in schools are provided up-to-date training on labour market information and the career guidance profession (Box 3.7).

Figure 3.22. Students in schools with one or more dedicated counsellor(s), Southeast Asia and selected OECD countries, 2018

Percentage of students



Source: OECD (2019[188]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/v0ow3a

While Southeast Asia has initiatives to provide students and job seekers with career guidance services, there remain many opportunities to ensure that current initiatives reflect the rapidly evolving needs of the labour market. The use of skills assessment and anticipation exercises are key to identifying current and future skills needs, the results of which could be used to better inform career guidance services (OECD, 2016[189]). However, many Southeast Asian countries have technical and infrastructure limitations in the collection, management, and use of skills data, impeding their ability to adequately perform skills assessment and anticipation exercises (see Chapter 5, Opportunity 3). For instance, in Indonesia, outdated data and methodologies for collection affect students' skills development choices by guiding them into traditional occupations that have low demand in the job market (APCDA, 2021[190]). Moreover, curriculum guidance in Southeast Asia is often not based on available data and does not always correspond to labour market requirements. Many students are often guided into careers based on their gender and personal interests instead of their actual skills or the skills needs of the labour market, worsening skill gaps. In some cases, the advice of parents and local community members also has a significant influence on Southeast Asian learners' skills development choices, but may not always be based on either their personal interests or the needs of the labour market (Intad, 2021[191]; Muhamad, Salleh and Nordin, 2016[192]). Countries in the region could consult policy practices from OECD countries, such as Belgium, Japan and the United Kingdom, where a wide range of initiatives are being implemented to help learners assess their skill sets and guide their skills development choices (Box 3.7).

Countries could also promote the career guidance profession in Southeast Asia to improve the quality of guidance services. There is a lack of supply of guidance counsellors who have obtained adequate undergraduate qualifications for the career counselling profession, suggesting that many counsellors do not always have the skills and knowledge needed to perform their tasks properly (Saputra and Sudira, 2019[193]). Guidance counsellors in the region generally have poorly defined roles, occupy low-ranking positions in educational institutions, have limited access to training and professional development, and do not tend to form communities of practice where they can learn from peers (Harrison, 2022[194]). OECD consultations with stakeholders in Viet Nam have affirmed that there is a general lack of training for guidance counsellors and that teachers are assigned counsellor tasks despite having limited information on how to find jobs in the private and public sectors, the actual needs of the labour market, which economic sectors are growing, and the future skilling requirements of emerging occupations (Intad, 2021[191]; Muhamad, Salleh and Nordin, 2016[192]).

Providing financial incentives for both institutions and individuals in areas of skills shortages

In addition to providing relevant career guidance, countries may make use of a wide variety of incentives targeted towards both institutions and individuals to steer skills development choices towards key skill shortage areas. With rapid technological changing the world of work more quickly than ever, there is increasing room for governments to better align the supply of skills with the needs of the labour market. Many OECD countries have adopted a range of policies to provide financial incentives, such as subsidies, subsidised loans and tax incentives, to encourage the uptake of skills development offers in industries with a national skills shortage. Several Southeast Asian countries are also beginning to increase the use of such policies (OECD, 2017[177]).

Currently, several financial incentives in Southeast Asia target educational institutions, encouraging them to increase the provision of programmes or courses in line with labour market demand. For instance, the Government of Thailand provides earmarked funding for public universities to establish degree and non-degree programmes that develop STEM skills, as well as professional and digital skills, which are central to the implementation of the country's technological and industrial policies (Rouvrais et al., 2020[195]). In addition, performance-based funding is another policy measure commonly used in OECD countries to encourage institutions to deliver training in high-demand sectors. Many Southeast Asian countries are beginning to adopt similar policy practices. Performance-based funding

ensures that the financial resources received by public tertiary education institutions are influenced by certain performance indicators, such as the employment outcomes of graduates (OECD, 2017[177]). There is evidence that this method has been used in several Southeast Asian countries, such as Indonesia, Malaysia and Thailand (Ngoy et al., 2019[196]; Rahman Ahmad, Siok Yee and Farley, 2020[197]), although information on the suitability of such funding mechanisms in the region and the corresponding implementation challenges is extremely limited.

Targeted financial incentives for individuals are also a common policy measure that Southeast Asian countries use to increase access to training in certain skill areas. These financial incentives commonly include subsidies (including scholarships, grants, allowances, vouchers and training credits, among others), tax incentives, loans, time accounts and training or study leaves. Examples of these financial incentives are in place in some countries, such as Malaysia and Singapore, although information on the use of time accounts in the region remains limited (Table 3.6). In many cases, these financial incentives are used to steer the uptake of educational offers towards strategic areas. For instance, in Lao PDR, where a general student loan scheme does not exist, TVET students are exempted from paying tuition fees in shortage sectors, such as automotive and electronic programmes. Similarly, there is evidence of other financial incentives in Malaysia and the Philippines, where scholarships are provided to sectors that either have a shortage of graduates or are considered a priority for the countries' economic development (Box 3.7) (AFD, 2019[198]).

Table 3.6. Financial incentives for participation in adult learning: Examples from ASEAN and OECD countries

	Subsidies	Tax incentives	Loans	Time accounts	Training/study leaves
Description	Direct and highly flexible ways in which governments shoulder a part of the costs of training to keep fees low	Incentives that deduct the costs of training from individuals' taxable income, or provide lower rates of tax	Incentives in which governments allow individuals to borrow money to be used for training, or provide guarantees to individuals to facilitate borrowing from private financial institutions	Mechanism that allows individuals to save up time (rather than money) for training purposes	Incentives that give employees the right to temporarily leave their jobs for training purposes (and guarantees their right to return afterwards)
Southeast Asia country examples	Singapore (SkillsFuture Mid-career Enhanced Subsidy)	Malaysia (Tax reliefs for the purchase of ICT devices through the Inland Revenue Board of Malaysia)	Singapore (SkillsFuture Credit), Malaysia (Loan for the purchase of ICT devices)	n/a	Malaysia (Scholarship for government officers funded by Department of Civil Service)
OECD country examples	Austria (Fachkräftestipendium, or Skilled Workers' Grant) Finland (Ammattitutkintostipendi)	Czech Republic (Tax allowance for students continuously preparing for future employment)	Australia (Higher Education Loan Programme), United States (Public Service Loan Forgiveness Program)	France (Compte Personnel de Formation)	Germany (WeGebAU)

Source: CEDEFOP (2022[199]), *Tax allowance for students continuously preparing for future employment,* www.cedefop.europa.eu/en/tools/financing-adult-learning-db/search/tax-allowance-students-continuously-preparing-future; OECD stakeholder consultations; OECD (2017[177]), *Getting Skills Right: Financial Incentives for Steering Education and Training*, https://doi.org/10.1787/9789264272415-en.

Financial incentives may also be used to encourage disadvantaged groups to pursue skills development offers in strategic economic sectors. Certain groups in Southeast Asia, such as women, face more barriers to obtaining education and training and, at the same time, have significant needs to adapt to changing skills demands, highlighting the need for more incentives targeted to them (OECD, 2017[177]). For instance, in many countries in the region, enrolment in different educational programmes remains highly segregated

according to gender, with fewer female students enrolling in the field of ICT despite expected increases in demand for employment opportunities in the future (OECD, 2020[200]). Across ASEAN countries, less than half of graduates in ICT programmes are female (39.3%), and many countries have significantly high gender gaps in key economic sectors, such as Cambodia, where only 8.4% of ICT graduates are female. While many of the barriers to the uptake of such programmes among women are largely cultural in nature (e.g. belief that ICT and STEM are more well suited for men), there are also significant financial barriers that could be addressed through targeted policy measures and financial incentives (Boccuzzi and Uniacke, 2021[201]).

There is room for Southeast Asian countries to increase the systematic use of financial incentives targeted to disadvantaged groups. While there are initiatives in place to increase the stock of women in key strategic sectors, such as ICT and STEM, many of them are civil-society-led and still in need of a strong enabling policy environment to ensure sustainability. One key area of intervention that Southeast Asian governments could pursue is the provision of subsidies, such as scholarships, earmarked specifically for disadvantaged groups. For instance, in the Philippines, the #WOMENCANDOIT Scholarship Programme is implemented by the International Labour Organization (ILO) and TESDA, in partnership with employers from the private sector, to boost the participation of women in skills development offers (e.g. in animation, creative web design, game development, software development, web development) and facilitate employment in STEM-related jobs afterwards. This highlights the importance of a whole-of-society approach to financial incentives in skills development, wherein various stakeholders are involved not only in providing funding but also in scholarship implementation and employment support (Boccuzzi and Uniacke, 2021[201]; Dalberg, 2017[202]; ILO, 2020[203]).

Box 3.7. Country examples relevant to steering skills development towards labour market needs

Belgium's (Flanders) Mijn loopbaan

The Flemish public employment service (VDAB) offers an online platform, Mijn loopbaan, which offers career guidance services to Belgian citizens. The service allows them to view their work experience and pension credits, create a personalised CV outlining their skills and qualifications, search through available job offerings and training opportunities, and upload their CV onto a platform employers use to find jobseekers. To support early career development and promote the uptake of the service among young learners, the VDAB offers training sessions for teachers on how to use the Mijn loopbaan platform.

Japan's assessment of skillsets through Job Tag

In Japan, the occupational information site Job Tag is equipped with various functions to support individuals' career development, including assessing their current skill set based on their job history. The platform shows the skills gap between their current skillset and the job they want and provides information on the training pathways that would allow them to address these gaps.

Philippines' Fast-Tracked S&T Scholarship Act of 2013

In 2013, the Philippines passed a policy that aims to provide scholarships to students of tertiary programmes in STEM fields in exchange for a return service programme, where they are required to teach full-time high school subjects in mathematics, biology, chemistry, physics, IT and agricultural, aquaculture or fisheries technology. The programme applies to both university and TVET tracks. Apart from receiving financial aid during their last two years of a four-year programme (three years for a five-year programme), recipients are also guaranteed a teaching position in a public or private high school for a minimum of two years, as well as a competitive compensation package.

Sweden's collaboration with the private sector for the public employment service

The Swedish public employment service (Arbetsförmedlingen) works closely with firm representatives to offer training on updated labour market information to teachers and guidance counsellors in schools, so they can rely on the most up-to-date information when providing guidance to students. In-service training for these school personnel is available through respective employers, such as universities, as well as through specialised agencies and NGOs. The trainings cover current labour market topics and the career guidance profession.

United Kingdom's Labour Market Information (LMI) for All

LMI for All was created as an open data project that aims to make labour market information from various reliable sources more accessible to all, helping individuals make better decisions about their learning and work. Career development practitioners collaborate with software developers to design online platforms that suit their clients' (e.g. students or jobseekers) needs.

Source: Euro Guidance (2020[204]), *Guidance System in Sweden*, www.euroguidance.eu/guidance-system-in-sweden; OECD (2021[205]), *Career guidance for adults in a changing world of work,* https://doi.org/10.1787/9a94bfad-en; Japan Ministry of Health, Labour and Welfare (2020[206]), *Jobtag: About This Site*, https://shigoto.mhlw.go.jp/User/about; Official Gazette of the Philippines (2013[207]), *Republic Act No. 10612: Fast-Tracked S&T Scholarship Act of 2013*, www.officialgazette.gov.ph/2013/08/23/republic-act-no-10612/; UK Department of Education (2021[208]), *Research and analysis: LMI for All 2017 to 2018*, www.gov.uk/government/publications/developing-and-enhancing-a-labour-market-information-database-lmi-for-all/lmi-for-all-2017-to-2018; UNESCO et al., (2021[209]), *Investing in Career Guidance: Revised Edition 2021*, https://unesdoc.unesco.org/ark:/48223/pf0000378215.

Recommendations to steer skills development choices towards labour market needs

- **Provide regular training to guidance counsellors and make updated labour market data more accessible to inform their work.** Offer training programmes to career guidance professionals who work in schools and companies, where they could be provided with information on the latest employment trends and labour market developments. Such information could also be made available by establishing online portals that consolidate labour market information and make it easier for guidance counsellors to access and use updated data in their work. In schools where the supply of guidance counsellors is low, teachers could be given additional training on how to provide career counselling and information on how to access and use public employment services, which they could impart to their students.
- **Expand financial incentives for individuals and institutions to encourage the uptake of skills development in strategic industries, especially among disadvantaged groups.** Provide financial incentives, such as performance-based funding, targeted towards institutions universities, TVET institutions and other training providers that would incentivise them to develop programmes or course offerings that address skills shortage areas. Performance-based funding may be based on the ability of institutions to achieve key labour market objectives (e.g. number of graduates in key economic sectors). Furthermore, provide a wide range of financial incentives, such as subsidies (e.g. scholarships), tax incentives, loans, time accounts and training/study leave, targeted towards individuals in educational programmes related to economic sectors that are identified as a priority in the country's national development plan or strategy, or in sectors where there is a shortage of workers. Allot slots in the provision of such financial incentives for individuals from disadvantaged groups, such as women, to facilitate their participation, helping make skills development systems more equitable.

References

Abbott, P. et al. (2019), *Vietnam Case Study: Drivers of Policy Change towards Providing Integrated Early Childhood Development*, Training and Research Support Centre, https://www.tarsc.org/publications/documents/FCH-Vietnam%20case%20study2019.pdf (accessed on 23 November 2022). [56]

Academy of Singapore Teachers (2019), *Homepage*, https://academyofsingaporeteachers.moe.edu.sg/ (accessed on 23 November 2022). [126]

Adams, D. et al. (2021), "Leading schools through the COVID-19 crisis in a South-East Asian country", *Management in Education*, Vol. 0/0, https://doi.org/10.1177/08920206211037738. [123]

ADB (2021), "Learning and Earning Losses from Covid-19 School Closures in Developing Asia: Special Topic of the Asian Development Outlook 2021", https://www.adb.org/sites/default/files/publication/692111/ado2021-special-topic.pdf (accessed on 23 January 2022). [66]

ADB (2021), *Technical and Vocational Education and Training in the Philippines in the Age of Industry 4.0*, https://www.adb.org/sites/default/files/publication/679041/tvet-philippines-age-industry.pdf (accessed on 2 May 2022). [84]

ADB (2015), *Challenges and Opportunities for Skills Development in Asia: Changing Supply, Demand and Mismatches*, Asian Development Bank, Mandaluyong City, https://www.adb.org/sites/default/files/publication/176736/challenges-and-opportunities-skills-asia.pdf. [42]

AFD (2019), *Financing TVET: A Comparative Analysis in Six Asian Countries*, https://www.afd.fr/en/ressources/financing-tvet-comparative-analysis-six-asian-countries (accessed on 21 January 2022). [198]

APCDA (2021), *Indonesia country information*, https://apcda.wildapricot.org/Indonesia#Indo. [190]

ASEAN (2022), *Promoting Decent Work and Protecting Informal Workers*, ASEAN, https://asean.org/wp-content/uploads/2022/05/The-ASEAN-Magazine-Issue-21-2022-Informal-Economy.pdf. [35]

ASEAN (2022), *What is the ASEAN SME Academy?*, ASEAN SME Academy, https://asean-sme-academy.org/the-asean-sme-academy (accessed on 24 November 2022). [164]

ASEAN (2021), *Human Resources Development Readiness in ASEAN: Regional Report*, https://asean.org/wp-content/uploads/2021/04/TVET_HRD_readiness_ASEAN_regional_report_29-Apr-2021.pdf (accessed on 19 January 2022). [85]

ASEAN (2020), *ASEAN Declaration on Human Resources Development for the Changing World of Work and its Roadmap*, https://asean.org/wp-content/uploads/2021/08/ASEAN-Declaration-on-Human-Resources-Development-for-the-Changing-World-of-Work-and-Its-Roadmap.pdf. [30]

ASEAN (2020), *ASEAN Education Sector Charts Way Forward Post-COVID-19*, https://asean.org/asean-education-sector-charts-way-forward-post-covid-19/ (accessed on 23 November 2022). [24]

ASEAN (2020), *Education: Overview*, https://asean.org/our-communities/asean-socio-cultural-community/education/. [9]

ASEAN (2019), *Bangkok Declaration on Advancing Partnership in Education for 2030 Agenda for Sustainable Development in ASEAN*, ASEAN, https://asean.org/wp-content/uploads/2019/11/5-Bangkok-Declaration-on-Advancing-Partnership-in-Education-for-2030-Agenda-for-Sustianable-Development-in-ASEAN.pdf (accessed on 23 November 2022). [23]

ASEAN (2016), *ASEAN Declaration on Strengthening Education for Out-of-School Children and Youth (OOSCY)*, ASEAN, https://asean.org/wp-content/uploads/2016/09/ASEAN-Declaration-on-OOSCY_ADOPTED.pdf (accessed on 23 November 2022). [21]

ASEAN (2016), *Vientiane Declaration on Transition from Informal Employment towards Decent Work Promotion in ASEAN and its Regional Action Plan*, https://asean.org/wp-content/uploads/2016/09/Vientiane-Declaration-on-Employment.pdf. [22]

ASEAN (2015), *ASEAN Early Childhood Care, Development and Education Quality Standards*, ASEAN, Jakarta, https://asean.org/wp-content/uploads/2016/09/ASEAN-Declaration-on-OOSCY_ADOPTED.pdf (accessed on 23 November 2022). [26]

ASEAN Secretariat (2021), *ASEAN Policy Brief on Safe School Reopening, Learning Recovery and Continuity*, ASEAN, https://asean.org/wp-content/uploads/2022/04/ASEAN-Policy-Brief-on-Safe-School-Reopening_FIN.pdf (accessed on 23 November 2022). [25]

Baker, B. (2017), *How Money Matters for Schools*, Learning Policy Institute, https://learningpolicyinstitute.org/sites/default/files/product-files/How_Money_Matters_REPORT.pdf. [130]

Bakken, L., N. Brown and B. Downing (2017), "Early Childhood Education: The Long-Term Benefits", *Journal of Research in Childhood Education*, Vol. 31/2, pp. 255-269, https://doi.org/10.1080/02568543.2016.1273285. [52]

Boccuzzi, E. and P. Uniacke (2021), *Accelerating Women's Advancement in STEM: Emerging Lessons on Network Strategies and Approaches in Asia*, The Asia Foundation, https://asiafoundation.org/wp-content/uploads/2021/06/Accelerating-Womens-Advancement-in-STEM_Report_update7.26.21.pdf (accessed on 24 November 2022). [201]

Bok, G. (2021), "Adult learners' challenges in distance learning: A case study in Universiti Sains Malaysia", *Issues in Educational Research*, Vol. 31/1, https://www.iier.org.au/iier31/bok.pdf (accessed on 23 November 2022). [102]

Brunei Darussalam Ministry of Education (2018), *Department of Schools*, https://www.moe.gov.bn/SitePages/Department%20of%20Schools.aspx (accessed on 24 November 2022). [179]

Brunei Darussalam Ministry of Education (2018), *Primary Education*, https://www.moe.gov.bn/SitePages/Primary%20Education.aspx (accessed on 23 November 2022). [17]

Bustos-Orosa, M. (2022), "Private higher education in developing economies in Southeast Asia: challenges to and prospects for its sustainability in a post-pandemic world", *Higher Education in Southeast Asia and Beyond* 11, pp. 24-27, https://headfoundation.org/wp-content/uploads/2022/02/HESB-11_2022.pdf (accessed on 16 May 2022). [95]

CEDEFOP (2022), *Tax allowance for students continuously preparing for future employment*, https://www.cedefop.europa.eu/en/tools/financing-adult-learning-db/search/tax-allowance-students-continuously-preparing-future (accessed on 24 November 2022). [199]

CEDEFOP (2009), *Using Tax Incentives to Promote Education and Training*, CEDEFOP, https://www.cedefop.europa.eu/files/5180_en.pdf (accessed on 24 November 2022). [168]

CEDEFOP, ETF and European Commission (2019), *Investing in Career Guidance*, Inter-Agency Working Group on Career Guidance WGCG, https://www.cedefop.europa.eu/en/publications/2227 (accessed on 24 November 2022). [176]

Chau, Q. (2022), "Vietnam: Public-private higher education debates in a Communist state", *Higher Education in Southeast Asia and Beyond* 11, pp. 31-33, https://headfoundation.org/wp-content/uploads/2022/02/HESB-11_2022.pdf (accessed on 16 May 2022). [96]

CISCO and Oxford Economics (2018), *Technology and the Future of ASEAN Jobs: The Impact of AI on Workers in ASEAN's Six Largest Economies*, CISCO, https://www.cisco.com/c/dam/global/en_sg/assets/csr/pdf/technology-and-the-future-of-asean-jobs.pdf. [148]

Colorado Department of Education (2015), *Industry Certificate Guidebook*, https://www.cde.state.co.us/postsecondary/ic-standards-alignment (accessed on 24 November 2022). [167]

Congress of the Philippines (2018), *Republic Act No. 112016: An act establishing a career guidance and counselling program for all secondary schools and appropriating funds therefore*, Congress of the Philippines, https://issuances-library.senate.gov.ph/sites/default/files/2022-10/ra%252011206.pdf (accessed on 24 November 2022). [180]

Cunningham, W. et al. (2022), "The Demand for Digital and Complementary Skills in Southeast Asia"*, Policy Research Working Paper*, No. 10070, World Bank Group, https://openknowledge.worldbank.org/bitstream/handle/10986/37503/IDU015d114c30628f046a20a644099df1ade479f.pdf?sequence=1&isAllowed=y. [149]

Dalberg (2017), *Advancing Women's Empowerment: ICT Skills for Girls and Women in Southeast Asia*, Dalberg, https://dalberg.com/wp-content/uploads/2017/05/ICT-Skills-for-Girls-in-Southeast-Asia.pdf (accessed on 24 November 2022). [202]

Employment, P. (2021), *Career Guidance Advocacy Program (CGAP)*, https://ro12.dole.gov.ph/career-guidance-advocacy-program-cgap-2/ (accessed on 24 November 2022). [184]

Euro Guidance (2020), *Guidance System in Sweden*. [204]

European Commission (2021), *Preventing Early Leaving from Education and Training (ELET): Belgium-Flemish Community*, https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/belgium-flemish-community/63-preventing-early-leaving-from-education-and-training-elet (accessed on 23 November 2022). [71]

European Commission (2017), *A Ticket to Better Training for Polish SMEs*, https://ec.europa.eu/regional_policy/en/projects/poland/a-ticket-to-better-training-for-polish-smes (accessed on 24 November 2022). [169]

Formosa, M., A. Fragoso and B. Schmidt-Hertha (2019), "Editorial: Active ageing, social inclusion and wellbeing: Benefits of learning in later life", *European Journal for Research on the Education and Learning of Adults*, Vol. 10/3, pp. 207-213, https://doi.org/10.3384/rela.2000-7426.relae19. [99]

Gartenschlaeger, U. (ed.) (2019), *Rethinking Adult Learning and Education – Asian Perspectives*, DVV International, Bonn, https://www.dvv-international.de/fileadmin/files/Inhalte_Bilder_und_Dokumente/Materialien/IPE/IPE77_EN_web.pdf (accessed on 23 November 2022). [101]

GIZ (2020), *Toolkit: Learning and working in the informal economy*, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, https://www.dcdualvet.org/wp-content/uploads/2020_GIZ_toolkit-learning-working-informal-economy_EN.pdf (accessed on 24 November 2022). [165]

Government of Portugal (2022), *Receber vouchers para manuais escolares gratuitos*, https://eportugal.gov.pt/pt/servicos/receber-vouchers-para-manuais-escolares-gratuitos (accessed on 23 November 2022). [75]

Harrison, M. (2022), "The professional identity of school counsellors in East and Southeast Asia", *Counselling and Psychotherapy Research*, Vol. 22/3, pp. 543-547, https://doi.org/10.1002/capr.12546. [194]

Hobbs, A. (2021), *Upskilling and retraining the adult workforce*, https://post.parliament.uk/upskilling-and-retraining-the-adult-workforce/ (accessed on 24 November 2022). [159]

Hulshof, K. and H. Tapiola (2021), *It is time to reopen Southeast Asia's schools: Pandemic reveals weaknesses in education but also ways to improve it*, https://www.unicef.org/eap/it-time-reopen-southeast-asias-schools (accessed on 23 November 2022). [62]

Humber College (2020), *Become a Program Advisory Committee Member*, https://communityservices.humber.ca/industry/partnerships/program-advisory-committees-pacs.html (accessed on 24 November 2022). [170]

ICCDPP (2017), *Country Paper: Cambodia*, International Centre for Career Development and Public Policy (ICCDPP), http://iccdpp2017.org/download/Country_paper_Cambodia_ENG.pdf (accessed on 24 November 2022). [178]

ILO (2020), *#WOMENCANDOIT Scholarship Programme*, https://www.ilo.org/manila/aboutus/WCMS_632711/lang--en/index.htm (accessed on 24 November 2022). [203]

ILO (2019), *Extension of Social Security to Workers in Informal Employment in the ASEAN Region*, ILO, Thailand, https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_735512.pdf. [76]

ILO (2016), *Compilation of Assessment Studies on Technical Vocational Education and Training (TVET): Lao People's Democratic Republic, Mongolia, the Philippines, Thailand and Viet Nam*, https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_458131.pdf (accessed on 2 May 2022). [82]

Intad, D. (2021), "Determinants of Career Paths Among Grade 12 Students, Division of Agusan del Norte, Philippines", *SMCC Higher Education Research Journal*, Vol. 8/1, https://doi.org/10.18868/sherj8j.08.010121.05. [191]

Jackson, C., R. Johnson and C. Persico (2014), *The Effect of School Finance Reforms on the Distribution of Spending, Academic Achievement, and Adult Outcomes*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w20118. [132]

Japan Ministry of Health, Labor and Welfare (2020), *Jobtag: About This Site*, https://shigoto.mhlw.go.jp/User/about (accessed on 24 November 2022). [206]

Kis, V. (2016), "Work, train, win: work-based learning design and management for productivity gains"*, OECD Education Working Papers*, No. 135, OECD Publishing, Paris, https://doi.org/10.1787/5jlz6rbns1g1-en. [153]

Kusumah, C. (2021), "12-Years Compulsory Education Policy and Education Participation Completeness: Evidence from Indonesia", *The Journal of Indonesia Sustainable Development Planning*, Vol. 2/2, pp. 187-201, https://doi.org/10.46456/jisdep.v2i2.138. [53]

Lafortune, J., J. Rothstein and D. Schanzenbach (2018), "School Finance Reform and the Distribution of Student Achievement", *American Economic Journal: Applied Economics*, Vol. 10/2, pp. 1-26, https://doi.org/10.1257/app.20160567. [131]

Lee, M. (2016), "Contemporary education policies in Southeast Asia: common philosophical underpinnings and practices", *Asia Pacific Education Review*, Vol. 17/3, pp. 465-478, https://doi.org/10.1007/s12564-016-9443-8. [36]

Lehrl, S., M. Evangelou and P. Sammons (2020), "The home learning environment and its role in shaping children's educational development", *School Effectiveness and School Improvement*, Vol. 31/1, pp. 1-6, https://doi.org/10.1080/09243453.2020.1693487. [63]

Lugaz, C. and A. De Grauwe (2016), *Improving School Financing: The Use and Usefulness of School Grants: Lessons from East Asia and the Pacific*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000246372/PDF/246372eng.pdf.multi (accessed on 23 November 2022). [138]

Malaysia HRD Corp (2021), "HRD Corp Placement Centr", https://hpc.hrdcorp.gov.my/ (accessed on 24 November 2022). [182]

Malaysia Ministry of Human Resources (2020), *Employment Insurance System (EIS) – Home*, https://eiscentre.perkeso.gov.my (accessed on 24 November 2022). [181]

Martinez-Fernandez, C. and K. Choi (2012), "Skills Development Pathways in Asia"*, OECD Local Economic and Employment Development (LEED) Papers*, No. 2012/12, OECD Publishing, Paris, https://doi.org/10.1787/5k94hdlll7vk-en. [162]

Ministère de l'Enseignement supérieur, D. (2017), *Higher education and research in France, facts and figures – Summary*, https://publication.enseignementsup-recherche.gouv.fr/eesr/10EN/EESR10EN_RESUME-.php (accessed on 23 November 2022). [106]

Ministère de l'Europe et des Affaires étrangères (2022), *Finance your studies/scholarships*, https://www.diplomatie.gouv.fr/en/coming-to-france/studying-in-france/finance-your-studies-scholarships/ (accessed on 23 November 2022). [107]

Muhamad, H., M. Salleh and M. Nordin (2016), "Factors influencing career choice of accounting students in University Putra Malaysia: Qualitative pilot study", *Journal of Advanced Research in Social and Behavioral Sciences*, Vol. 5/1, pp. 25-34, https://www.akademiabaru.com/doc/ARBMSV5_N1_P25_34.pdf. [192]

Muhamad, S., N. Sulaiman and J. Saputra (2018), "The role of human capital and innovation capacity on economic growth in ASEAN-3", *Jurnal Ekonomi Malaysia*, Vol. 52/1, pp. 257-268, https://www.ukm.my/jem/issue/v52i1/ (accessed on 23 November 2022). [89]

Musset, P. (2019), "Improving work-based learning in schools", *OECD Social, Employment and Migration Working Papers*, No. 233, OECD Publishing, Paris, https://doi.org/10.1787/918caba5-en. [79]

N26 (2021), *How to get grants and housing assistance as a student in France*, https://n26.com/en-fr/blog/how-to-get-higher-education-grants-in-france (accessed on 23 November 2022). [108]

National University of Singapore (2022), *FAQ: Overview*, https://nusit.nus.edu.sg/services/computers/notebooks/overview/ (accessed on 23 November 2022). [97]

New South Wales Government (2022), *Rural Access Gap program*, https://education.nsw.gov.au/about-us/strategies-and-reports/schools-digital-strategy/rural-access-gap (accessed on 23 November 2022). [72]

New Zealand Ministry of Education (2022), *Having a say – statutory consultations about schools*, https://www.education.govt.nz/school/new-zealands-network-of-schools/have/ (accessed on 23 November 2022). [127]

Ngoy, M. et al. (2019), "Finance in Public Higher Education in Cambodia", *Working Paper Series*, No. 115, Cambodia Development Resource Institute. [196]

Oblina, A., T. Linh and H. Phuong (2021), "Job Satisfaction of Basic Education Teachers in Southeast Asia: Key Issues and Policy Recommendations", *VNU Journal of Science: Education Research*, https://doi.org/10.25073/2588-1159/vnuer.4438. [116]

OECD (2022), *Education at a Glance 2022: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/3197152b-en. [117]

OECD (2022), *Skills for Jobs Database: Skill needs by country*, https://stats.oecd.org/Index.aspx?DataSetCode=S4J2022 (accessed on 24 November 2022). [151]

OECD (2021), *Adapting to Changing Skill Needs in Southeast Asia [2021 OECD Southeast Asia Regional Forum Discussion Note]*, https://www.oecd.org/southeast-asia/events/regional-forum/OECD_SEA_RegionalForum_2021_Discussion_Note.pdf (accessed on 20 January 2022). [45]

OECD (2021), *Adult Learning and COVID-19: How much informal and non-formal learning are workers missing?*, OECD Publishing, Paris, https://www.oecd.org/coronavirus/policy-responses/adult-learning-and-covid-19-how-much-informal-and-non-formal-learning-are-workers-missing-56a96569/ (accessed on 23 November 2022). [98]

OECD (2021), *Career Guidance for Adults in a Changing World of Work*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/9a94bfad-en. [205]

OECD (2021), *Learning for the jobs of the future*, https://www.oecd.org/skills/learning-jobs-future.pdf. [43]

OECD (2021), *OECD Skills Strategy Southeast Asia Policy Questionnaire*. [69]

OECD (2021), *OECD Skills Strategy Tlaxcala (Mexico): Assessment and Recommendations*, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/13925818-en. [105]

OECD (2021), *Starting Strong VI: Supporting Meaningful Interactions in Early Childhood Education and Care*, Starting Strong, OECD Publishing, Paris, https://doi.org/10.1787/f47a06ae-en. [50]

OECD (2021), *The State of School Education: One Year into the COVID Pandemic*, OECD Publishing, Paris, https://doi.org/10.1787/201dde84-en. [70]

OECD (2021), *Towards a Skills Strategy for Southeast Asia: Skills for Post-COVID Recovery and Growth*, OECD Publishing, Paris, https://doi.org/10.1787/6db0907f-en (accessed on 20 December 2021). [8]

OECD (2021), "Towards equity in school funding policies", *OECD Education Policy Perspectives*, No. 41, OECD Publishing, Paris, https://doi.org/10.1787/6a3d127a-en. [134]

OECD (2020), *Curriculum (re)design: A series of thematic reports from the OECD Education 2030 project*, OECD Publishing, Paris, https://www.oecd.org/education/2030-project/contact/brochure-thematic-reports-on-curriculum-redesign.pdf (accessed on 24 November 2022). [156]

OECD (2020), *Economic Outlook for Southeast Asia, China and India 2020 – Update: Meeting the Challenges of COVID-19*, OECD Publishing, Paris, https://doi.org/10.1787/e8c90b68-en. [200]

OECD (2020), *Labour Market Relevance and Outcomes of Higher Education in Four US States: Ohio, Texas, Virginia and Washington*, Higher Education, OECD Publishing, Paris, https://doi.org/10.1787/38361454-en. [157]

OECD (2020), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/ca768d40-en. [125]

OECD (2019), *Economic Outlook for Southeast Asia, China and India 2020: Rethinking Education for the Digital Era*, OECD Publishing, Paris, https://doi.org/10.1787/1ba6cde0-en. [47]

OECD (2019), *Getting Skills Right: Future-Ready Adult Learning Systems*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/9789264311756-en. [100]

OECD (2019), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, OECD Publishing, Paris, https://doi.org/10.1787/9789264313835-en. [77]

OECD (2019), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/. [39]

OECD (2019), *PISA 2018 Results (Volume I): What Students Know and Can Do*, OECD Publishing, Paris, https://doi.org/10.1787/5f07c754-en. [188]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en. [38]

OECD (2019), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/301005d1-en. [49]

OECD (2019), "Snapshot of trends in reading, mathematics and science performance", in *PISA 2018 Results (Volume I): What Students Know and Can Do*, OECD Publishing, Paris, https://doi.org/10.1787/b6b543d5-en. [37]

OECD (2019), *Spending on tertiary education*, https://data.oecd.org/eduresource/spending-on-tertiary-education.htm (accessed on 23 November 2022). [104]

OECD (2019), *Working and Learning Together: Rethinking Human Resource Policies for Schools*, OECD Reviews of School Resources, OECD Publishing, Paris, https://doi.org/10.1787/b7aaf050-en. [112]

OECD (2018), *PISA 2018 results*, https://www.oecd.org/pisa/publications/pisa-2018-results.htm (accessed on 23 November 2022). [135]

OECD (2018), "The role of technical and vocational education and training (TVET) in fostering inclusive growth at the local level in Southeast Asia"*, OECD Local Economic and Employment Development (LEED) Papers 2018/01*. [83]

OECD (2018), "The role of technical and vocational education and training (TVET) in fostering inclusive growth at the local level in Southeast Asia"*, OECD Local Economic and Employment Development (LEED) Papers*, No. 2018/01, OECD Publishing, Paris, https://doi.org/10.1787/5afe6416-en. [80]

OECD (2018), *Vocational Education and Training (VET) and Adult Learning*, https://www.oecd.org/education/innovation-education/vet.htm (accessed on 23 November 2022). [78]

OECD (2017), *Financial Incentives for Steering Education and Training*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/9789264272415-en. [177]

OECD (2017), *The Funding of School Education: Connecting Resources and Learning*, OECD Reviews of School Resources, OECD Publishing, Paris, https://doi.org/10.1787/9789264276147-en. [133]

OECD (2016), *Bridging the Gap: The Private Sector's Role in Skills Development and Employment*, OECD Publishing, Paris, https://www.oecd.org/employment/leed/Summary-Report-2016-SouthEast-Asia-%20FINAL.pdf. [81]

OECD (2016), *Enhancing Employability*, OECD Publishing, Paris, https://www.oecd.org/g20/topics/employment-and-social-policy/Enhancing-Employability-G20-Report-2016.pdf (accessed on 24 November 2022). [171]

OECD (2016), *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/9789264252073-en. [189]

OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264258051-en. [3]

OECD (2013), *Innovation in Southeast Asia*, OECD Reviews of Innovation Policy, OECD Publishing, Paris, https://doi.org/10.1787/9789264128712-en. [5]

OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, https://doi.org/10.1787/9789264204256-en. [4]

OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://doi.org/10.1787/9789264190658-en. [145]

OECD (2003), *Pre-primary Education (ISCED 0)*, Glossary of Statistical Terms, https://stats.oecd.org/glossary/detail.asp?ID=5409#:~:text=Pre%2Dprimary%20education%20(ISCED%200)%20is%20defined%20as%20the,and%20a%20school%2Dbased%20atmosphere (accessed on 23 November 2022). [10]

OECD, UNESCO UIS and World Bank (2021), *Survey of National Education Responses to COVID 19 School Closures*, https://covid19.uis.unesco.org/data/. [118]

OECD/Eurostat/UNESCO Institute for Statistics (2015), *ISCED 2011 Operational Manual: Guidelines for Classifying National Education Programmes and Related Qualifications*, OECD Publishing, Paris, https://doi.org/10.1787/9789264228368-en. [11]

Official Gazette of the Philippines (2013), *Republic Act No. 10612: Fast-Tracked S&T Scholarship Act of 2013*, https://www.officialgazette.gov.ph/2013/08/23/republic-act-no-10612/ (accessed on 24 November 2022). [207]

Omar, S., L. Arokiasamy and M. Ismail (2009), "The Background and Challenges Faced by the Small Medium Enterprises. A Human Resource Development Perspective", *International Journal of Business and Management*, Vol. 4/10, https://doi.org/10.5539/ijbm.v4n10p95. [163]

Palmer, R. (2020), *Lifelong Learning in the Informal Economy: A Literature Review*, International Labour Organization, Geneva, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_741169.pdf (accessed on 24 November 2022). [166]

Parr, G. and N. Sum (2021), *Educational leadership and COVID-19: ASEAN reflections on continuity, community and innovation*, https://lens.monash.edu/@education/2021/05/25/1383238/educational-leadership-and-covid-19-asean-reflections-on-continuity-community-and-innovation (accessed on 23 November 2022). [124]

Philippines Department of Education (2022), *DepEd's References and Resources*, https://www.deped.gov.ph/cce-deped-references-and-resources/ (accessed on 23 November 2022). [74]

Philippines Department of Education (2021), *DepEd empowers parents for a better home learning experience with children*, https://www.deped.gov.ph/2021/11/17/deped-empowers-parents-for-a-better-home-learning-experience-with-children/ (accessed on 23 November 2022). [73]

Philippines Department of Education (2015), *Guidelines on School-based Management (SBM) Grants for Fiscal Year (FY) 2014*, Philippines Department of Education, https://www.deped.gov.ph/wp-content/uploads/2015/09/DO_s2015_45-1.pdf. [140]

Philippines Department of Education (2015), *School-Based Management Grant*, https://www.deped.gov.ph/2015/10/28/school-based-management-grant/ (accessed on 23 November 2022). [139]

Philippines Department of Labor and Employment (2020), *About Public Employment Services (PES)*, https://www.dole.gov.ph/public-employment-services-pes-contents/ (accessed on 24 November 2022). [183]

Pont, B., D. Nusche and H. Moorman (2008), *Improving School Leadership Volume 1: Policy and Practice*, OECD Publishing, Paris, https://doi.org/10.1787/9789264044715-en. [119]

Prakash, A. and I. Isono (2012), *ASEAN in the Global Economy- An Enhanced Economic and Political Role*, ERIA, https://www.eria.org/publications/asean-in-the-global-economy--an-enhanced-economic-and-political-role/ (accessed on 23 November 2022). [6]

Raghupathi, V. and W. Raghupathi (2020), "The influence of education on health: an empirical assessment of OECD countries for the period 1995–2015", *Archives of Public Health*, Vol. 78/1, p. 20, https://doi.org/10.1186/s13690-020-00402-5. [1]

Rahman Ahmad, A., K. Siok Yee and A. Farley (2020), "Exploring the Rationale of Performance Based Funding for Malaysian Public Universities", *Journal of Education and e-Learning Research*, Vol. 7/1, pp. 15-21, https://doi.org/10.20448/journal.509.2020.71.15.21. [197]

Rouvrais, S. et al. (2020), *University-Industry Collaboration Themes in STEM Higher Education: An Euro-ASEAN Perspective*, HAL, Gothenburg, https://hal.archives-ouvertes.fr/hal-02959169/document (accessed on 24 November 2022). [195]

Saputra, R. and P. Sudira (2019), "Management of Career Guidance Program in Vocational High Schools in Yogyakarta Special Territory (DIY) of ASEAN Economic Community (AEC)", *Journal of Physics: Conference Series*, Vol. 1273/1, p. 012008, https://doi.org/10.1088/1742-6596/1273/1/012008. [193]

SEAMEO (2022), *SEAMEO Regional Centres*, https://www.seameo.org/Main_centres/117. [20]

SEAMEO (2016), *SEA-TVET Consortium Overview*, https://seatvet.seameo.org/overview (accessed on 23 November 2022). [31]

SEAMEO INNOTECH (2021), *Regional Research on Achieving Inclusive Early Childhood Care and Development in Southeast Asia*, https://www.seameo-innotech.org/wp-content/uploads/2021/06/Inclusive-ECCD-Policy-Notes.pdf. [55]

SEAMEO INNOTECH (2020), *Southeast Asian School Leadership Program (SEA SLP)*, https://www.seameo-innotech.org/portfolio_page/excellence-in-school-leadership/#. [111]

SEAMEO INNOTECH (2015), *Assessment Systems in Southeast Asia: Models, Successes and Challenges*, SEAMEO INNOTECH, Quezon City, https://www.seameo-innotech.org/wp-content/uploads/2020/04/SIREP_Assessment-151021.pdf (accessed on 23 November 2022). [141]

SEAMEO INNOTECH (2015), *Success Competencies of Southeast Asian School Heads: A Learning Guide*, SEAMEO INNOTECH, https://www.seameo-innotech.org/wp-content/uploads/2016/03/FINAL-CF-guidebook-october-2016.pdf (accessed on 23 November 2022). [122]

SEAMEO INNOTECH (2012), *Decentralization of Educational Management in Southeast Asia*, SEAMEO INNOTECH, https://www.seameo-innotech.org/wp-content/uploads/2020/04/PolRes_DecentralizationOfEducationalManagementInSea.pdf. [121]

SEAMEO INNOTECH (2010), *Teaching Competency Standards in Southeast Asian Countries*, SEAMEO INNOTECH, https://www.seameo.org/SEAMEOWeb2/images/stories/Publications/Centers_pub/2012TeachingCompetencyStandards/TeachingCompetencyStd.pdf. [114]

SEAMEO-UNESCO (2016), *Southeast Asian Guidelines for Early Childhood Teacher Development and Management*, https://unesdoc.unesco.org/ark:/48223/pf0000244370.locale=en (accessed on 16 June 2022). [113]

SEA-PLM (2022), *Homepage*, https://www.seaplm.org/index.php?lang=en (accessed on 24 November 2022). [144]

SEA-PLM (2019), *SEA-PLM 2019 Begins in Myanmar*, https://www.seaplm.org/index.php?option=com_k2&view=item&id=1:sea-plm-2019-begins-in-myanmar&lang=en (accessed on 24 November 2022). [146]

Seel, F. and T. Phuong (2020), *Implementing the Future ASEAN Agenda for TVET: A Compendium of Case Studies*, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, https://asean.org/wp-content/uploads/2021/08/GIZ-2020_Future-ASEAN-Agenda-Compendium.pdf (accessed on 23 November 2022). [103]

Senate of the Philippines (2016), *Republic Act No. 10912: Continuing Professional Development Act of 2016*, Senate of the Philippines, https://legacy.senate.gov.ph/lisdata/3221230250!.pdf (accessed on 24 November 2022). [160]

Seneca College (2022), *Program Advisory Committees*, https://www.senecacollege.ca/about/advisory.html (accessed on 24 November 2022). [172]

Shoraku, A. (2008), *Educational Movement toward School-based Management in East Asia: Cambodia, Indonesia and Thailand*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000178720 (accessed on 23 November 2022). [120]

Singapore Ministerial Committee on Ageing (2019), *What is the Action Plan about?*, https://www.moh.gov.sg/ifeelyoungsg/about/what-is-the-action-plan-about. [109]

Singapore Ministry of Education (2022), *Singapore Student Learning Space (SLS)*, https://www.learning.moe.edu.sg/sls/index.html (accessed on 23 November 2022). [68]

Singapore Ministry of Education (2021), *Overview of compulsory education*, https://www.moe.gov.sg/primary/compulsory-education/overview. [19]

Singapore Skills Future (2022), *Education and Career Guidance*, https://www.skillsfuture.gov.sg/ecg (accessed on 24 November 2022). [185]

Symaco, L. and M. Tee (2019), "Social responsibility and engagement in higher education: Case of the ASEAN", *International Journal of Educational Development*, Vol. 66, pp. 184-192, https://doi.org/10.1016/j.ijedudev.2018.10.001. [91]

Taylor's University (2022), *Industry advisory panel (IAP)*, https://university.taylors.edu.my/en/study/undergraduate/business/industry-advisory-panel-iap.html (accessed on 24 November 2022). [173]

TESDA (2018), *Implementing Guidelines on the Establishment of Institutional Arrangements with Industry Boards or Industry Associations*, https://intranet.tesda.gov.ph/circulariframe/DownloadFile/1000035537 (accessed on 24 November 2022). [174]

Texas Education Agency (2002), *Training and other resources*, https://tea.texas.gov/finance-and-grants/grants/training-and-other-resources (accessed on 24 November 2022). [147]

Thailand Department of Skill Development (2002), *B.E. 2545 (A.D. 2002): Skill Development Promotion Act*, https://ilo.org/dyn/natlex/docs/ELECTRONIC/82881/128497/F-833541087/THA82881%20Eng2.pdf. [161]

Thailand Ministry of Labour (2022), *e-Labour*, https://lb.mol.go.th/en/ (accessed on 24 November 2022). [186]

The HEAD Foundation (2022), *Higher Education in Southeast Asia and Beyond: Riding the Waves of Change*, https://headfoundation.org/wp-content/uploads/2022/02/HESB-11_2022.pdf. [92]

The HEAD Foundation (2020), *How is COVID-19 impacting higher education?*, The HEAD Foundation. [93]

Trading Economics (2022), *Repetition Rate In Primary Education (all Grades), Both Sexes*, https://tradingeconomics.com/cambodia/repetition-rate-in-primary-education-all-grades-both-sexes-percent-wb-data.html (accessed on 23 November 2022). [28]

Trawick-Smith, J. (2014), *Early Childhood Development: A Multicultural Perspective*, Pearson, Boston. [54]

Tullao, T. and C. Cabuay (2013), *Education and Human Capital Development to Strengthen R&D Capacity in the ASEAN*, ERIA, https://www.eria.org/ERIA-DP-2013-36.pdf (accessed on 23 November 2022). [90]

UIL (2017), *Lifelong Learning in Transformation: Promising Practices in Southeast Asia*, https://unesdoc.unesco.org/ark:/48223/pf0000253603 (accessed on 2 February 2022). [86]

UK Department of Education (2022), *Teacher training to ensure excellent teachers in every classroom*, https://www.gov.uk/government/news/teacher-training-to-ensure-excellent-teachers-in-every-classroom (accessed on 23 November 2022). [128]

UK Department of Education (2021), *Research and Analysis: LMI for All 2017 to 2018*, https://www.gov.uk/government/publications/developing-and-enhancing-a-labour-market-information-database-lmi-for-all/lmi-for-all-2017-to-2018 (accessed on 24 November 2022). [208]

UN ESCAP (2017), *Inequality of Opportunity in Asia and the Pacific: Education*, UN ESCAP, Bangkok, https://www.unescap.org/sites/default/files/Education%20Inequality%2029012018.pdf. [48]

UNESCO (2021), *TVET Country Profiles*, https://unevoc.unesco.org/home/TVET%20Country%20Profiles (accessed on 23 November 2022). [88]

UNESCO (2021), *Work-based learning*, TVETipedia Glossary, https://unevoc.unesco.org/home/TVETipedia+Glossary/filt=all/id=463 (accessed on 24 November 2022). [152]

UNESCO (2020), *Education expenditure per student by level of education and source of funding*, http://uis.unesco.org/en/glossary-term/education-expenditure-student-level-education-and-source-funding (accessed on 23 November 2022). [136]

UNESCO (2020), *Large-scale Learning Assessments in Asia-Pacific: A Mapping of Country Policies and Practices*, UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific, Bangkok, https://unesdoc.unesco.org/ark:/48223/pf0000375107. [143]

UNESCO (2020), *Technical and vocational education and training (TVET)*, TVETipedia Glossary, https://unevoc.unesco.org/home/TVETipedia+Glossary/filt=all/id=474. [15]

UNESCO (2018), "Adult education", https://uis.unesco.org/en/glossary-term/adult-education (accessed on 3 March 2023). [13]

UNESCO (2017), *Six Ways to Ensure Higher Education Leaves No One Behind*, https://unesdoc.unesco.org/ark:/48223/pf0000247862/PDF/247862eng.pdf.multi (accessed on 23 November 2022). [110]

UNESCO (2017), *Virtual Conference Report on Pathways Between TVET and Further Education*, UNESCO, https://unevoc.unesco.org/up/VC_synthesis_19_en_2.pdf (accessed on 23 November 2022). [87]

UNESCO (2015), "Transversal Skills in TVET: Policy Implications", *Asia-Pacific Education System Review Series*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000234738 (accessed on 24 November 2022). [154]

UNESCO (2014), "Education Systems in ASEAN+6 Countries: A Comparative Analysis Selected Educational Issues", *Education Policy Research Series*, Vol. 5, https://www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/UNESCO_Education_Systems_in_Asia_Comparative_Analysis_2014.pdf (accessed on 23 November 2022). [14]

UNESCO (2013), "Decentralized Finance and Provision of Basic Education", *Asia-Pacific Education System Review*, No. 4, UNESCO. [137]

UNESCO (2011), *World Data on Education: Lao People's Democratic Republic*, UNESCO, http://www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Lao_PDR.pdf. [142]

UNESCO (2006), *Compulsory Education*, https://learningportal.iiep.unesco.org/en/glossary/compulsory-education (accessed on 23 November 2022). [12]

UNESCO Bangkok (2017), *The Economic Cost of Out-of-School Children in Southeast Asia*, https://unesdoc.unesco.org/ark:/48223/pf0000233993?1=null&queryId=c083be2d-cc59-42fe-be76-e6ba6e4d56cd (accessed on 1 April 2022). [61]

UNESCO Institute for Statistics (2022), *SDG4 Indicator Dashboard*, http://sdg4-data.uis.unesco.org/ (accessed on 23 November 2022). [18]

UNESCO Institute for Statistics (2021), *Education*, http://data.uis.unesco.org/ (accessed on 23 November 2022). [27]

UNESCO Institute for Statistics (2021), *UIS Statistics Database*, http://data.uis.unesco.org/ (accessed on 18 January 2022). [59]

UNESCO Institute for Statistics (2019), *Other policy relevant indicators (full dataset)*, http://data.uis.unesco.org/. [158]

UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific (2017), *Situation Analysis of Out-of-School Children in Nine Southeast Asian Countries*, https://unesdoc.unesco.org/ark:/48223/pf0000252749.locale=en (accessed on 21 January 2022). [46]

UNESCO et al. (2021), *Investing in Career Guidance: Revised Edition 2021*, UNESCO, Paris, https://unesdoc.unesco.org/ark:/48223/pf0000378215 (accessed on 24 November 2022). [209]

UNICEF (2022), *Primary education*, https://data.unicef.org/topic/education/primary-education/ (accessed on 23 November 2022). [51]

UNICEF and ASEAN (2021), *Digital Literacy in Education Systems Across ASEAN: Key Insights and Opinions of Young People*, UNICEF East Asia and Pacific Regional Office, https://www.unicef.org/eap/media/7766/file/Digital%20Literacy%20in%20Education%20Systems%20Across%20ASEAN%20Cover.pdf. [67]

UNICEF and Countdown to 2030 (2019), *Country profiles for early childhood development*, Countdown to 2030, https://nurturing-care.org/wp-content/uploads/2021/12/English.pdf (accessed on 23 November 2022). [64]

UNICEF, ILO and WIEGO (2021), *Family-friendly Policies for Workers in the Informal Economy*, https://www.unicef.org/media/102821/file/Family-Friendly%20Policies%20for%20Workers%20in%20the%20Informal%20Economy%20.pdf. [65]

UNICEF-SEAMEO (2020), *SEA-PLM 2019 Main Regional Report: Children's Learning in 6 Southeast Asian Countries*, https://www.seaplm.org/PUBLICATIONS/regional%20results/SEA-PLM%202019%20Main%20Regional%20Report.pdf (accessed on 17 January 2022). [44]

UNICEF and SEAMEO INNOTECH (2022), *SEA-PLM 2019 Latest Evidence in Basic Education: Supporting Teachers to Improve Learning in 6 Southeast Asian countries*, https://www.seaplm.org/images/DOWNLOADS/Supporting_teacher/Download.pdf. [115]

UNICEF and UNESCO (2021), *Situation Analysis on the Effects of and Responses to COVID-19 on the Education Sector in Southeast Asia*, https://www.unicef.org/eap/media/9316/file/Southeast%20Asia%20Situation%20Analysis%20of%20the%20Impacts%20of%20COVID-19%20on%20Education.pdf (accessed on 23 January 2022). [33]

Van Noy, M. and J. Cleary (2017), *Aligning Higher Education and the Labor Market: Guiding Principles and Open Questions*, Rutgers Education and Employment Research Center, https://smlr.rutgers.edu/sites/default/files/Documents/Centers/EERC/eerc_lma_issue_brief_final%20%281%29.pdf (accessed on 24 November 2022). [150]

Vargas Zúñiga, F. (2015), *Skills Anticipation: The Transfer of the SENAI Prospective Model*, International Labour Organization, https://www.oitcinterfor.org/sites/default/files/file_publicacion/oit_Prospectiva_ing_sec.pdf (accessed on 24 November 2022). [175]

Victoria Department of Education and Training (2022), "Consultation with School Based Staff", https://www2.education.vic.gov.au/pal/consultation-school-based-staff/policy-and-guidelines (accessed on 23 November 2022). [129]

Vu, T. (2021), "Early childhood education in Vietnam, history, and development", *International Journal of Child Care and Education Policy*, Vol. 15/1, p. 3, https://doi.org/10.1186/s40723-020-00080-4. [57]

Watson, D. et al. (2018), "Well-being through learning: a systematic review of learning interventions in the workplace and their impact on well-being", *European Journal of Work and Organizational Psychology*, Vol. 27/2, pp. 247-268, https://doi.org/10.1080/1359432X.2018.1435529. [2]

Welch, A. (2021), *Private Higher Education in East and Southeast Asia: Growth, Challenges, Implications*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000380093 (accessed on 23 November 2022). [94]

Wilson, R. (2013), "Skills anticipation—The future of work and education", *International Journal of Educational Research*, Vol. 61, pp. 101-110, https://doi.org/10.1016/j.ijer.2013.03.013. [155]

Workforce Singapore (2020), *Career Advisory Programme (CAP)*, https://www.wsg.gov.sg/programmes-and-initiatives/career-advisory-programme.html (accessed on 24 November 2022). [187]

World Bank (2022), *Literacy rate, adult total (% of people ages 15 and above)*, https://data.worldbank.org/indicator/SE.ADT.LITR.ZS. [40]

World Bank (2022), *Primary school starting age (years)*, https://data.worldbank.org/indicator/SE.PRM.AGES?locations=BN-KH-ID-LA-MY-MM-SG-TH-VN. [16]

World Bank (2021), *Lower secondary completion rate, total (% of relevant age group)*, https://data.worldbank.org/indicator/SE.SEC.CMPT.LO.ZS (accessed on 14 December 2022). [60]

World Bank (2021), *World Development Indicators*, https://databank.worldbank.org/source/world-development-indicators (accessed on 20 December 2021). [29]

World Bank (2020), *Education Statistics*, https://databank.worldbank.org/source/Education-Statistics (accessed on 23 November 2022). [32]

World Bank (2020), *Enterprise Surveys*, https://www.enterprisesurveys.org/en/data (accessed on 20 December 2021). [34]

World Bank (2017), *Vietnam School Readiness Promotion Project: Implementation Completion and Results Report*, World Bank, https://documents1.worldbank.org/curated/en/360901514912748005/pdf/ICR00004231-12282017.pdf. [58]

World Economic Forum (2019), *ASEAN Youth: Technology, Skills and the Future of Work*, https://www3.weforum.org/docs/WEF_ASEAN_Youth_Survey_2019_Report.pdf (accessed on 10 January 2022). [41]

Zhong, S. and B. Su (2021), "Investigating ASEAN's Participation in Global Value Chains: Production Fragmentation and Regional Integration", *Asian Development Review*, Vol. 38/02, pp. 159-188, https://doi.org/10.1142/S0116110521500025. [7]

Notes

1. Gross enrolment rates account for students of all ages, including those whose age exceeds the official age group for the specified level of education. Therefore, if there is early enrolment, late enrolment or grade repetition, gross enrolment can exceed 100%.

2. Gross enrolment rates at the primary level were also higher in 2000 than in 2019 in Brunei Darussalam and Lao PDR. Data to explore whether this is due to high repetition rates are not available.

3. Estimate is based on data from 2017.

4. Participating countries in the latest round of PISA in 2018 include Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. All Southeast Asian countries participate in the UNESCO surveys mentioned. See Chapter 5 for more details on other international surveys in which Southeast Asian countries participate.