A.T. Kearney

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# Learning to Learn: Adapting to Continuous Workforce Disruption

Faced with technology disruption and fundamental societal changes, Asia needs a new education model that will prepare its workforce for relevance and lifelong employability.

## About Ecosperity

The United Nations Sustainable Development Goals (SDGs) have helped build momentum toward a more resilient and inclusive world. As the countdown to 2030 begins, there is growing consensus on the importance of public–private sector collaboration to achieve the SDGs. Businesses are starting to seize the $12 trillion worth of opportunities available in addressing our most pressing social and environmental challenges. Technological disruptions and demographic shifts will significantly change the way we learn, work, and live. Now is the time to translate our collective action into impact and tangible outcomes for future generations.

Ecosperity is a series of sustainability-focused conferences presented by Singapore-based investment company Temasek. The conference brings together corporate leaders, innovators, policymakers, and experts from around the world to explore the latest issues on sustainability growth. The name Ecosperity brings together ecology and prosperity, recognizing that growth can and should take place in a sustainable manner.

The fifth Ecosperity Conference will be held on June 5, 2018 in conjunction with United Nations World Environment Day. Themed "Tomorrow Starts Today! From Ideas to Impact," it will explore new approaches to education, food, and healthcare to achieve impact at scale and build resilient societies in an increasingly digital and urban future.

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# Today's education model is not enough for tomorrow

### While more young people are going to school...

- 74% gross enrollment ratio, up from 60% just 10 years ago[1]
- Near-universal primary school enrollment with gender parity achieved
- Asia claims seven of the top 10 spots in global PISA math rankings

### ... Education is not adequately preparing them for the workforce

- Nearly 50% of subject knowledge acquired during the first year of a four-year technical degree will be outdated by the time students graduate[2]
- 46% of Asia's employers report difficulties filling jobs today[3]
- Only 40% of executives believe new employees have requisite job skills

### Living and working longer magnifies these challenges

- Today's 20-year-olds have a 50% chance of living to more than 100[4]
- Workers need to ensure relevance while working 60 to 70 years
- 65% of children entering primary school today will have jobs that do not yet exist[5]

# How do we prepare Asia's workforce for relevance and lifelong employability?

## School to work: paving progression to employment

### Boost preschool enrollment for a head start in life

- Early education is a crucial foundation for learning
- Investing in early childhood programs generates a 13% annual lifetime "return to society"[6]
- Asia's pre-primary enrollment is just 56%, lagging behind Europe and North America's 84%[7]
- Ensure access to preschool education for all

### Teach future-ready skills essential to succeed in the workforce

- Transform education approach:
  - — From acquiring knowledge to inquiry-based learning
  - — From teacher-centric to personalized learning
  - — From high-stakes exams to project-based assessments

## Lifelong employability: being relevant for life

### Ensure skills stay relevant across changing jobs and careers

- 85% of Asia's jobs will be transformed in the next three years[8]
- Workers now average 2.85 jobs in their first five years of working, up from 1.60 jobs 20 years ago[9]
- Ensure skills are transferable across jobs, employers, and careers

### Adopt partnership approach for lifetime employability

- Individuals should continuously up-skill and reskill professionally and personally
- Businesses should design jobs for more variety and flexibility, and help employees develop portable skills and knowledge
- Governments and educators should promote lifelong learning through an enabling framework (regulations, incentives, fundings, accreditations)

[1] UNESCO Institute for Statistics, A.T. Kearney analysis
[2] The Future of Jobs, World Economic Forum, 2016
[3] Talent Shortage Survey, ManpowerGroup, 2016–2017
[4] *The 100Year Life*, Linda Gratton and Andrew Scott
[5] The Future of Jobs, World Economic Forum, 2016
[6] The Heckman Curve, James J. Heckman
[7] UNESCO Institute for Statistics, A.T. Kearney analysis
[8] Unlocking the Economic Impact of Digital Transformation in Asia Paciic, Microsoft and IDC Asia/Paciic, 2018
[9] Millennials Job-Hop More Than Previous Generations, & They Aren't Slowing Down, LinkedIn, 2016

## Business opportunities in Asia's large and growing education market

**600 million students**
2017 enrollment in primary and secondary education

**$1.6 trillion**
2017 public and private education expenditure

**$300 billion**
2017 market for private education

**5–15%**
2017–2020 growth in emerging markets[10]

Examples of fast-growing segments include:

**Edtech:**
China to reach $41 billion in 2019, growing 20% annually from 2016[11]

**Corporate learning:**
53% of Asia's employers are choosing to develop and train their own people, up from 20% in 2015[12]

## Transforming education requires a holistic ecosystem approach

**Governments and educators** will need to define and implement lifelong learning ecosystems

- Develop responsive policies, including preschool and future-readiness
- Align businesses to close gaps between education and employment
- Promote lifelong learning and enabling framework across stakeholders (regulations, incentives, funding, accreditations)

**Businesses** have to adapt to disruption and build talent

- Work with governments and educators to grow their talent pool (for example, vocational training)
- Align corporate practices for lifelong employability (recruitment, continuous learning and development, pay and performance)

**Individuals** will have to take charge of their learning journeys

- Build lifelong learning mindset
- Actively pursue professional and personal learning opportunities

[10] Analyst reports, A.T. Kearney analysis, 2018
[11] iResearch and Decebo as cited in China's online education market to grow 20pc annually, bolstered by new technologies, South China Morning Post, 2017
[12] Talent Shortage Survey, ManpowerGroup, 2016–2017

# Key Insights

- **As technology disruption and fundamental societal changes accelerate, today's education model will not be enough for tomorrow.** Asia has achieved much progress in education over recent years; many more of its 1.7 billion young people are going to school, and Asian countries regularly dominate global math and science rankings. However, it appears this education is not adequately preparing them for the workforce. Nearly 50 percent of subject knowledge acquired during the first year of a four-year technical degree will be outdated by the time those students graduate, and 46 percent of Asia's employers have reported having difficulties filling jobs.[1,2] Living and working longer magnifies these challenges. Today's 20-year-olds have a 50 percent chance of living to be more than 100 and will need to ensure they remain relevant to the workforce while working as long as 60 to 70 years.[3]

> Forty-six percent of Asia's employers have reported having difficulties filling jobs.

- **Asia needs a new education model, "learning to learn," that will prepare its workforce for relevance and lifelong employability.** The major shifts are:
  - **From acquiring knowledge, to learning to learn.** Governments should develop responsive policies to ensure inclusive, high-quality education for all. One priority will be to boost preschool enrollment, which provides a crucial foundation for learning and gives learners a head start in life. Outperforming in academics is also no longer enough. Asia's education curriculum should also teach future-ready skills such as collaboration, communication, and problem-solving, which are increasingly essential in the workforce. This will mean shifting the focus of education from acquiring knowledge to inquiry-based learning, from teacher-centric to personalized learning, and from high-stakes exams to project-based assessments.
  - **From lifetime employment to lifelong employability.** Eighty-five percent of Asia's jobs will be transformed in the next three years, and workers now average 2.85 jobs in their first five years of working, up from 1.60 jobs 20 years ago.[4,5] We need to ensure skills stay relevant and transferable across different jobs, employers, and careers. Governments and educators can partner with businesses to develop technical and vocational education that builds these necessary skills. Lifelong learning—self-directed, online, or on-the-job—is also crucial and calls on individuals to take ownership of their own relevance and employability. Governments can support this in partnership with businesses by establishing an enabling framework of regulations, incentives, funding, and accreditations.
  - **From passive employers to active businesses that collaborate to develop talent for lifelong employability.** Governments and educators have traditionally been responsible for equipping young people with skills, but this has failed to satisfy employers' demands.

[1] The Future of Jobs, World Economic Forum, 2016

[2] Talent Shortage Survey, ManpowerGroup, 2016-2017

[3] *The 100-Year Life*, Lynda Gratton and Andrew Scott, Bloomsbury Business, 2017

[4] Unlocking the Economic Impact of Digital Transformation in Asia Pacific, Microsoft and IDC Asia/Pacific, 2018

[5] Millennials Job-Hop More Than Previous Generations, & They Aren't Slowing Down, LinkedIn, 2016

Instead, businesses should actively develop talent via a more strategic, holistic approach. Firstly, they should work with governments and educators to grow the talent pool by anticipating needed skills and co-developing the relevant content, standards, and learning programs. Businesses should also align their corporate practices for lifelong employability. Instead of simply filling current vacancies to satisfy specific tasks or immediate demand, they should consider the future evolution of the role and its required skills and invest in the employee's own professional and personal development potential. This means moving toward skills-based recruitment rather than relying wholly on formal education qualifications; promoting continuous on-the-job learning by allocating time and funds and developing modular programs for rapid reskilling; building learning into pay and performance assessments; and facilitating diverse career development pathways via internal and external rotations and flexible programs for older employees.

- **This transformation requires a holistic ecosystem approach,** facilitated by multisector collaboration between governments, educators, businesses, and individuals:
  - **Governments and educators** will need to define and implement lifelong learning ecosystems.
  - **Businesses** will have to adapt to disruption and build talent.
  - **Individuals** will have to take charge of their learning journeys.
- **Asia's private education industry, valued at around $300 billion, offers potential opportunities for businesses to participate,** particularly in education technology (edtech), corporate learning, preschool education, and higher education.

**Asia's future education model and implications for stakeholders**

| From acquiring knowledge... | Formal education | Lifelong employment |
|---|---|---|
| ... to learning to learn | **School to work**<br>Paving progression to employment | **Lifelong employability**<br>Being relevant for life |
| **Governments and educators will need to define and implement lifelong learning ecosystems** | • Develop **responsive policies** for inclusive quality education for all, including **boosting preschool enrollment and future-ready skills**<br>• **Align businesses** to develop skills and learning experiences for employment readiness | • **Promote lifelong learning and build enabling framework across stakeholders** (regulations, incentives, funding, accreditations) |
| **Businesses have to adapt to disruption and build talent**<br>**This is also an industry that presents business opportunities** | • **Work with governments and educators to grow talent pool** (for example, anticipate needed skills and develop the relevant content, standards, and learning experiences)<br>• Provide education **products and services** | • **Align corporate practices for lifelong employability** (recruitment, continuous learning and development, pay and performance)<br>• Provide education **products and services** |
| **Individuals will have to take charge of their learning journeys** | • **Build lifelong learning mindset** and actively pursue professional and personal development opportunities | |

Source: A.T. Kearney analysis

# Chapter 1—Rethinking Education: From Acquiring Knowledge to Learning to Learn

## Highlights

- As technology disruption and fundamental societal changes accelerate, today's education model will not be enough for tomorrow.
- Education can no longer be about just acquiring knowledge and developing abstract skills; it must also encourage learning to learn, and learning how to adapt to continuous workforce disruption.

## Accelerating technology and workforce disruption

The technology and globalization revolution is affecting all countries, industries, and organizations. This produces two key results: jobs are disrupted by automation, transforming the existing skills required; and jobs are created, requiring potentially new skill sets. It is estimated that 65 percent of children entering primary school today will one day end up in jobs that do not yet exist and for which their education will fail to prepare them. This situation carries a high risk of unemployment or underemployment for the next generation of workers. On top of this, underdeveloped adult training and skilling systems have left the current active global workforce of 3 billion people poorly equipped to adapt promptly to changing work conditions.[6] Incorporating e-learning in the classroom or teaching skills such as coding is far from sufficient. It is essential to shift the focus from chasing relentless skills gaps to fundamentally rethinking what jobs people should do. Humans have crucial competitive advantages over machines: problem-solving, creative thinking, innovation, judgment, and empathy, just to name a few. The successful workers will be those who can use these attributes to their advantage, and quickly adapt through continuous reskilling and upskilling.

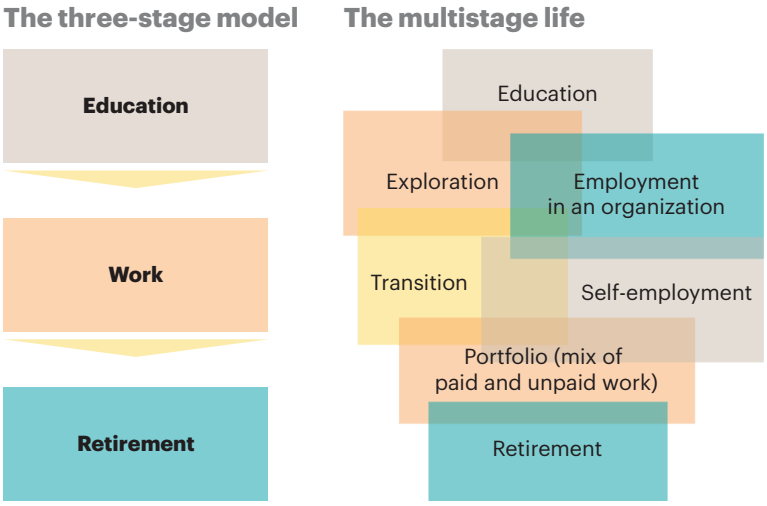
## Living and working longer

Life expectancy is steadily increasing: Today's 20-year-olds have a 50 percent chance of living to be more than 100, and our 60-year-olds have a 50 percent chance of making 90 or more. This puts immense pressure on people and societies, as individuals will need to work well into their 70s or even 80s to afford retirement. But our traditional linear three-stage life—education, career, retirement—was not designed to stretch over a 100-year lifespan; to do so would require a very long second stage of continuous employment, which could become too hard, too exhausting, or just too boring. Individuals must rethink how they actively manage their lives and careers to make the most of a longer life. This means making a greater investment in health, relationships, finances, and long-term productive abilities. The book *The 100-Year Life*, by Lynda Gratton and Andrew Scott, explains that a social revolution will realign society toward a multistage life model that has more transitions, different stages, and considerable options for far more diverse individual sequencing, depending on personal preferences and circumstances (see figure 1 on page 7). Individuals can have two or three different careers: perhaps one where they work long and hard to maximize their finances; another where they balance work with family; and even another where they position their lives around jobs that have a strong social contribution.

[6] Shaping the Future of Education, World Economic Forum, 2017

Figure 1

**The 100-Year Life—from a three-stage model to a multistage life**

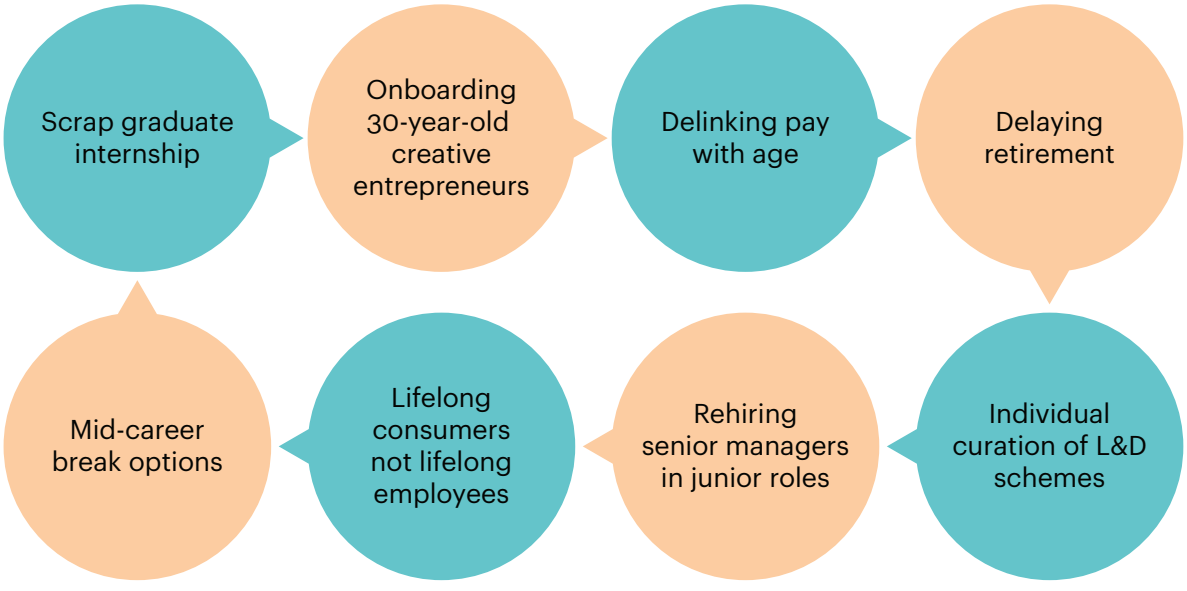



Source: The Corporate Implications of Longer Lives, MIT Sloan Management Review, Lynda Gratton and Andrew Scott, 2017

Businesses can no longer expect conformity and predictability in their organizations. They should rethink the work–life balance they offer to different groups, while at the same time transforming recruitment practices, learning and development, and pay and performance assessment (see figure 2). Governments should create a regulatory and legislative framework that helps people to plan out the multiple stages of their lives and ensures the well-being of those less fortunate.[7]

Figure 2

**The 100-Year Life: a new HR strategy**




Source: *The 100-Year Life*, Lynda Gratton and Andrew Scott, 2017

[7] *The 100-Year Life*, Lynda Gratton and Andrew Scott, Bloomsbury Business, 2017

## Adapting learning and working to suit older people

Older workers find it more challenging to find work and stay employed. They face age discrimination, particularly stereotypes that they are less motivated, slower to learn, unwilling or unable to change, poor at collaborating with younger colleagues, and more expensive to employ. However, studies show that older workers can be more productive; often display more consistent and reliable cognitive performance; and are good at organization, writing, and problem-solving. While aging undeniably brings physical and mental changes, experience helps older workers compensate—by anticipating situations and being more careful, for example. "Fluid intelligence" (the ability to solve new problems) and "crystallized intelligence" (an individual's stock of accumulated knowledge) continue to increase with age. Technology and automation can also help older workers stay more productive. The bottom line is that humans are adaptable and can learn throughout their lives if they are given the opportunity. Older people learn best by acquiring new tricks in familiar fields where they can build on their existing knowledge, but may not do as well in an entirely new area.[8] Jobs that favor older workers tend to require higher dependability and outdoor work, but lower levels of active learning, numerical ability, and physical skills.[9]

In this context, education can no longer be just about acquiring knowledge and developing abstract skills. There must be a shift toward learning to learn and adapting to continuous workforce disruption.

[8] How older employees perform in the workplace, *The Economist*, 2017

[9] More older people are finding work, but what kind?, *The New York Times*, 2016

# Chapter 2—School to Work: Paving Progression to Employment

## Highlights

- Inclusive, high-quality education for all generates significant positive impact for individuals, families, and nations.
- While access to education has greatly improved, Asia's preschool enrollment rate of 56 percent still lags behind Europe and North America's rate of 84 percent. Investing in early childhood education provides a crucial foundation for learning, giving young people a head start in life.
- There is a need to continue improving the quality and relevance of education. Outperforming in knowledge is no longer enough; future-readiness and learning to learn will be vital. Technology can be a powerful enabler in this area.
- Sustainable education reform ultimately requires a holistic ecosystem approach that brings together all stakeholders.

## The benefits of inclusive education for all

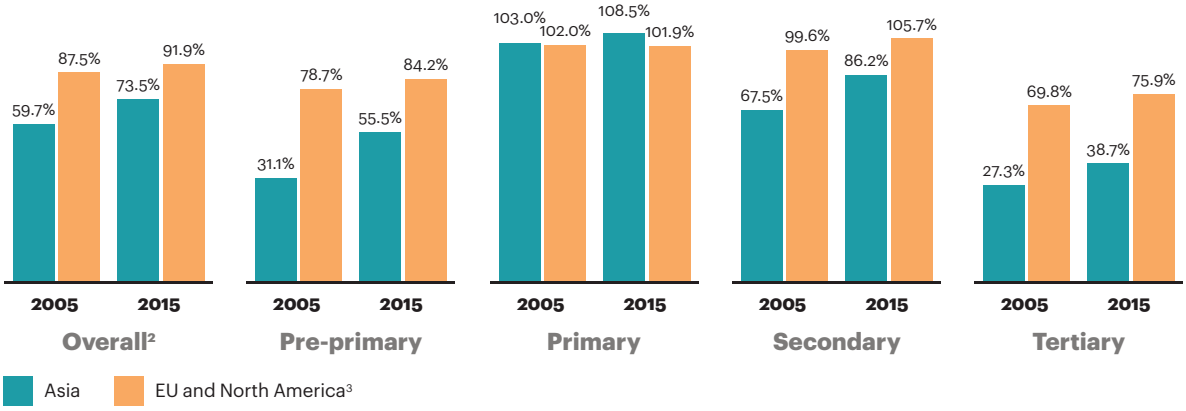
Education is an inherent right for everyone and investing in inclusive education also has clear long-term benefits for economic growth alongside more equitable outcomes. An additional year of education can boost a person's income by 10 percent, increase gross domestic product (GDP) per capita by 18 percent, and reduce the Gini coefficient (a measure of income inequality) by 1.4 percent.[10] There are also clear human development outcomes, such as good health, empowerment, individual and community resilience, and civic engagement.

Because of this, a key goal is to ensure all children have equitable access to education and that no one is left behind. This also serves as the foundation for improving the quality and relevance of learning experiences for the future and producing adults whose skills are relevant and needed in the workforce.

The gross enrollment ratio (GER) shows the general level of participation in a given level of education, indicating the capacity of the system to enroll students of a particular age group. In the past decade, Asia's overall GER has grown 14 percent (see figure 3 on page 10). Most countries have achieved or are close to achieving universal primary education and have seen a rise in students making the transition from primary to secondary education and those completing secondary education. This is the result of increased affordability—increased household incomes coupled with a reduction in the costs of school fees and uniforms, and a shorter distance to school, for example—and increased investment in school infrastructure, improved school quality, and better awareness of the importance of education. Technology has also helped improve access for hard-to-reach groups such as those living in China's Gansu province, where more than 1,000 rural schools each have fewer than five students enrolled. China's Ministry of Education is requiring governments at all levels to invest at least 8 percent of education budgets in digitalization, and many of these remote schools are now equipped with high-speed wireless Internet connections and tech infrastructure that enables cheaper

[10] The Investment Case for Education and Equity, UNICEF, 2015

Figure 3
**Global GER[1]**




[1] Number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education. For the tertiary level, the population used is the 5-year age group starting from the official secondary school graduation age.

[2] Average of pre-primary, primary, secondary, and tertiary education

[3] Ratio of EU and North America in 2015 is presumed the same as 2014 because data is not available.

Note: GER is gross enrollment ratio.

Sources: UNESCO Institute for Statistics; A.T. Kearney analysis

and more efficient learning.[11] As an example, New Oriental Education & Technology Group has opened up its online courses and teaching resources to teachers and students in remote or impoverished areas, and has trained more than 25,000 teachers to date.[12]

## The importance of boosting preschool enrollment

The highest rate of return on human capital comes from investing as early as possible (see figure 4 on page 11). The period from conception to the start of school is crucial in shaping a child's brain and overall cognitive, emotional, and social development. Spending on early childhood programs can generate around a 13 percent rate of return on investment to society annually, with benefits such as better education and health outcomes, lower crime, and individual adult earnings of up to 25 percent higher than without early learning support. It is also a powerful lever for tackling inequality. Every dollar invested in early childhood development programs can provide a return of up to $17 for the most disadvantaged children, making it a much more effective approach than subsequent remediation later in life.[13] This is why UNICEF calls for all countries to provide two years of tuition-free preschool education.

Although Asia's pre-primary GER has improved significantly to 55.5 percent, it is still far below that of Europe and North America, and GER still varies widely across Asian countries (from as high as 94 percent for Korea to as low as 12 percent for India).[14] Diverse challenges include lower demand for early education due to a lack of awareness about its benefits; affordability and accessibility challenges, especially in low-income or rural contexts; insufficient sector investment; and inadequate supporting policies such as day care subsidies for working parents.[15]

[11] China wants to bring artificial intelligence to its classrooms to boost its education system, *South China Morning Post*, 2017

[12] New Oriental helps train 25,000 rural teachers in 10 years, *China Daily*, 2017

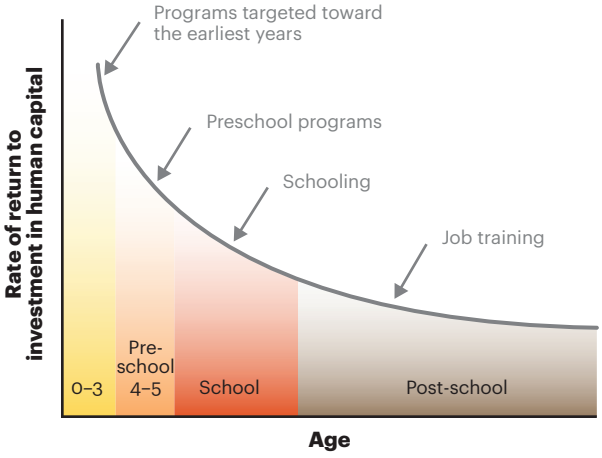
[13] Early Moments Matter for Every Child, UNICEF, 2017

[14] UNESCO Institute for Statistics

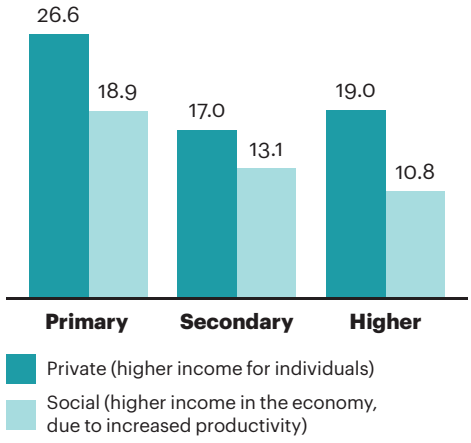
[15] Early Moments Matter for Every Child, UNICEF, 2017

Figure 4
**Returns on investment in education**

**Rate of return to investment in human capital**
(Heckman)[1]




**Returns to investment in education**
(World Bank)[2]




[1] Return to a unit dollar invested at different ages from the perspective of beginning of life, assuming one dollar initially invested at each age

[2] Social returns are defined as private benefits but total (private and external) costs. This is because of the public subsidization of education and the fact that typical social rate of return estimates are not able to include social benefits.

Sources: "Schools, Skills and Synapses," James J. Heckman, 2008; "Returns to Investment in Education: A Further Update," George Psacharopoulos (World Bank), 2004

China's three-year Action Plan for Preschool Education aims to progressively universalize one to three years of preschool by 2020. This requires governments at all levels to increase budgetary investment in preschools, which will include local governments building a large number of kindergartens and private investors funding the establishment of private kindergartens. To improve quality, the Ministry of Education has issued regulations on how to manage kindergartens, working relations, and professional standards for kindergarten teachers. China's three-year preschool enrollment ratio reached 70 percent in 2014, an increase of nearly 20 percent in just five years.

> Investing in early childhood programs can generate a 13 percent annual "return to society."

## Investing in education for all—more needs to be done

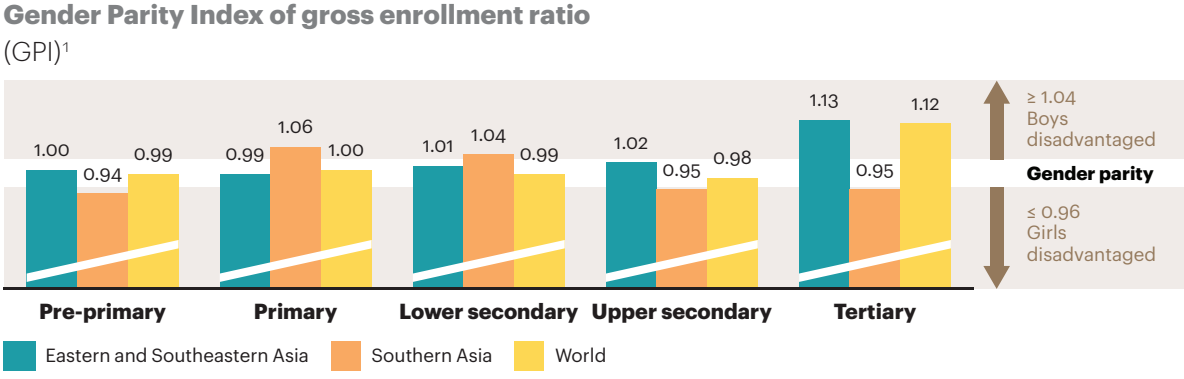
Back in 2000, participation in pre-primary to tertiary education throughout Asia generally favored male children. Female students faced the challenges of affordability, accessibility, and dropping out of school to work. But investing in female education actually drives significant returns; a 1 percent increase in female education can raise average GDP and annual GDP growth by 0.2 percent.[16]

[16] Why Educating Girls Makes Economic Sense, Global Partnership for Education, 2014

Today, Asia has largely achieved gender parity for primary education enrollment, and participation now favors female students at the tertiary level (see figure 5). Notwithstanding the overall progress in increased enrollment, countries will face challenges as they target harder-to-reach groups of children and address disparities in completion and learning outcomes at different levels of education.

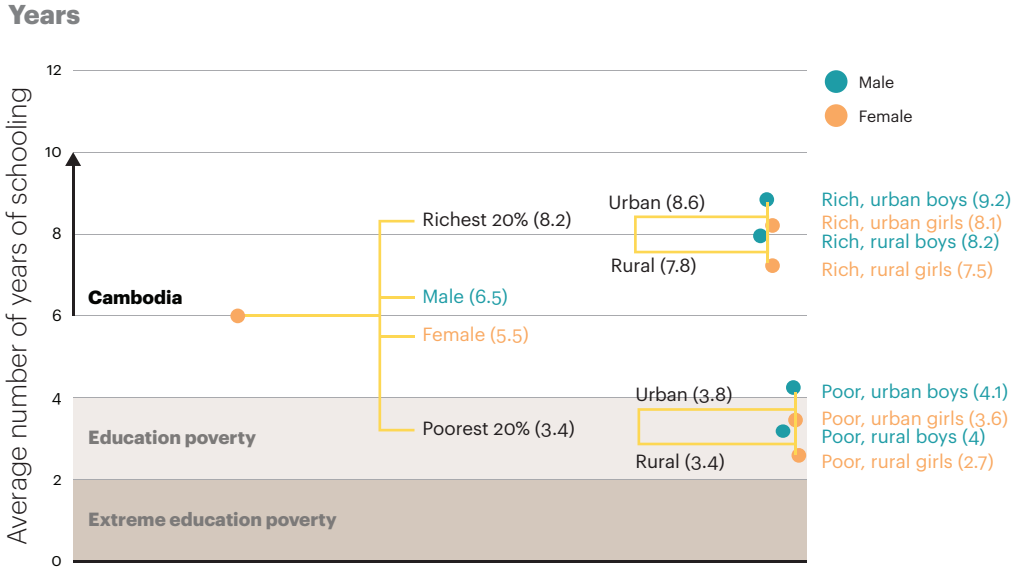
These disparities are linked to factors of marginalization—such as poverty, rural residence, and gender—that can have a compounding impact. For example, figure 6 shows that young Cambodian adults age 17 to 22 have an average of 6.0 years of education, but there is a huge disparity between rich urban boys (9.2 years) and poor rural girls (2.7 years).[17]

Figure 5
**Gender parity in Asia's schools (2015 or most recent year)**




[1] Girls disadvantaged (≤0.96), gender parity (0.97–1.03), boys disadvantaged (≥1.04)
Source: Global Education Monitoring Report 2018: Gender Review, UNESCO, 2018

Figure 6
**Education inequity in Cambodia**




Source: The Investment Case for Education and Equity, UNICEF, 2015

[17] The Investment Case for Education and Equity, UNICEF, 2015

## Tertiary education is growing, but concerns remain on cost and relevance

Tertiary education refers to postsecondary education and includes universities as well as vocational education. Tertiary education in Asia is rapidly evolving from an elite pursuit to a mass market pursuit in developing Asia. In the past decade China's tertiary GER has leapt from 20 percent to 43 percent; India's has grown from 11 percent to 27 percent; and Vietnam's from 16 percent to 29 percent. This has been fueled by increased participation in education, growing demand for a skilled workforce, and the emergence of a middle class where adults can afford post-secondary options for their children. For developed Asia, the tertiary market is already mature: the GER for Japan has reached 63 percent, and Korea's 93 percent makes it the highest in the world. The trend is set to continue as countries develop.

However, this rapid growth makes it difficult to ensure affordable and equitable access and to continuously improve the quality and relevance of higher education. Costs can be a barrier in many countries. In India the tuition cost of a four-year degree is 503 percent of the county's average annual income; the figures are 347 percent in Indonesia and 100 percent in China.[18]

The growth in tertiary education has been fueled by increased participation in education, growing demand for a skilled workforce, and the emergence of a middle class where adults can afford post-secondary options for their children.

Tertiary education should remain relevant. For example, Taiwan expects university enrollments to fall by a third between 2016 and 2026, with more than 300,000 fewer students from 2013 to 2023, and expects that it will need to merge or close up to 52 institutions.[19] Contributing factors include Taiwan's declining birth rate, and the "brain drain" now that China's universities are open to Taiwanese students and faculty members. But the primary cause appears to be a skills mismatch with the job market. University graduate unemployment is now 6 percent (up from 2.7 percent in 1993), making it the highest unemployment rate across all levels of education. In addition, only a quarter of recent university graduates are successful in finding a job related to their field of study. And yet there is an insufficient supply of talent from Taiwan's universities for the nation's most important high-tech industries such as semiconductor manufacturing, information and communication technology (ICT), and biotechnology.[20] Going forward, Taiwan's Ministry of Education aims to promote the links between industry, academia, and research; enhance learning effectiveness; implement technical and vocational policies and programs; and support young people in their efforts to find employment.[21]

[18] QS university rankings, university websites, EIU forecasts

[19] Taiwan's higher education enrolment starts a downward slide, ICEF Monitor, 2016

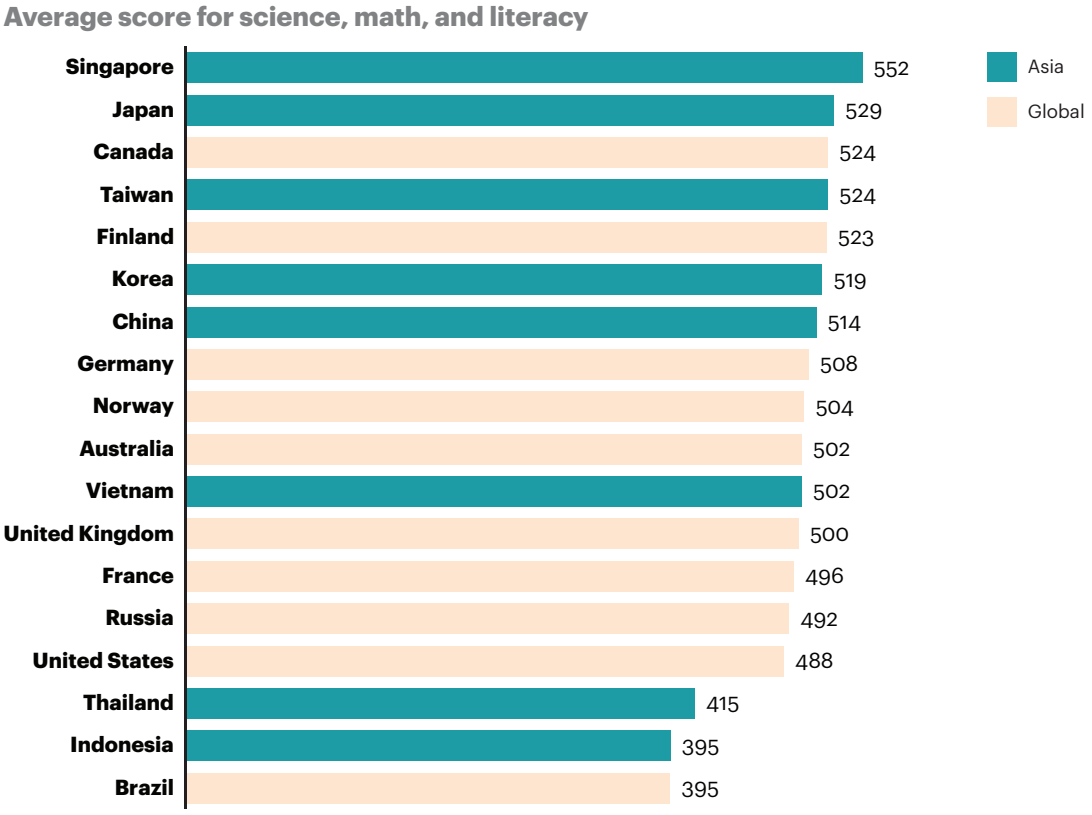
[20] Education in Taiwan: Taiwan's Colleges and Universities, Brookings Institution

[21] Ministry of Education Objectives for 2018, Ministry of Education, Republic of China (Taiwan), 2017

## Outperforming in knowledge, but at a cost

Singapore and East Asian countries have consistently dominated the Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) rankings in science, reading, and mathematics (see figure 7).[22]

Figure 7
**PISA 2015 results**




Sources: OECD–Volume I of the PISA 2015 Results; A.T. Kearney analysis

Factors contributing to this strong performance include attracting and investing in quality teachers, setting clear and ambitious targets, enabling teachers to collaborate and work with autonomy, and supporting students' mindsets and motivations (such as their belief that achievement is a product of hard work rather than intelligence).[23]

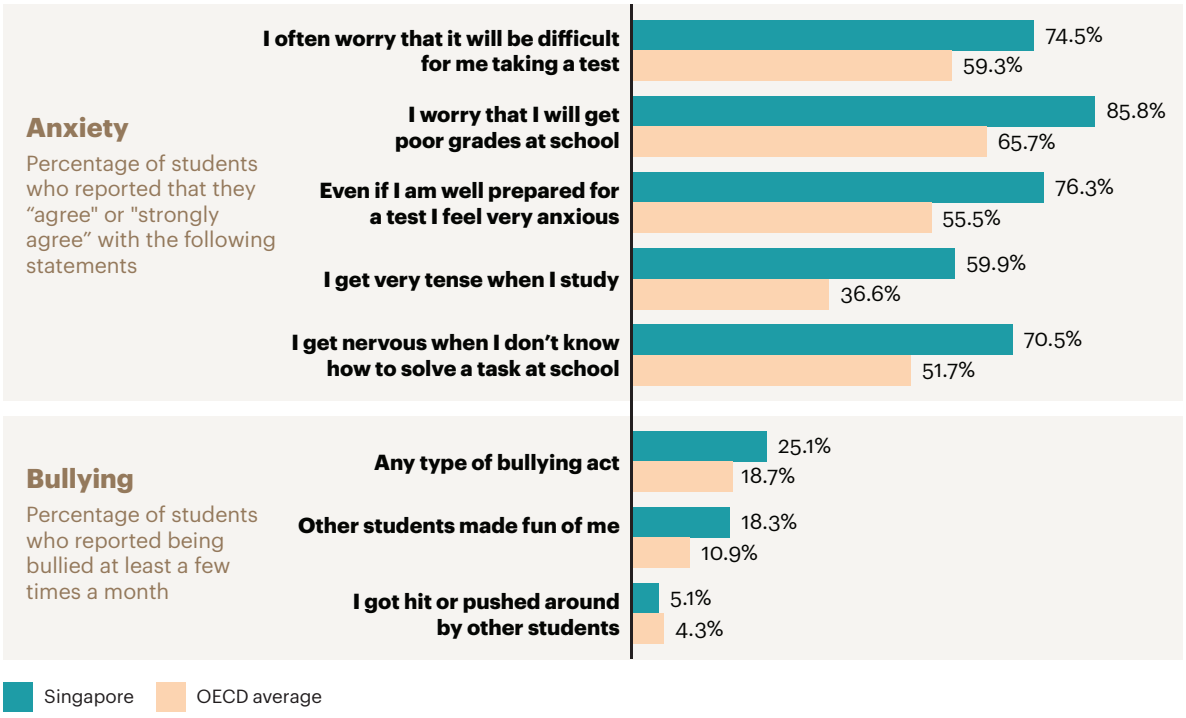
However, this strong performance comes at a cost to students' well-being. High-stakes national exams—such as Singapore's Primary School Leaving Examination (PSLE) or China's *gaokao* (National Higher Education Entrance Examination)—are often perceived as life-changing events that can be immensely stressful for students, parents, and educators alike. Despite topping global PISA rankings, students from China, Hong Kong, Japan, Macau, Singapore, and Taipei consistently reported far more academic anxiety compared to the OECD average, even if they were actually prepared for a test (see figure 8 on page 15).

[22] PISA 2015 Results in Focus, OECD, 2017

[23] Opinion: What Asian schools can teach the rest of us, Andreas Schleicher, 2016

Figure 8

**PISA 2015 Students Well-Being Study**




Sources: OECD–PISA 2015 Students Well-Being Study; A.T. Kearney analysis

Asia's strong performance also comes at a financial cost. Asia's shadow education or tuition industry is worth more than $100 billion and has become an integral part of the education system. Japan's two- and three-year-olds head to *jukus* (cram schools) to get a head start on learning, and around 80 percent of Korean students go to *hagwon*, where the government has had to regulate late-night operating hours. Singapore's tiny population of 5.5 million spent more than $1 billion on tuition in 2016, almost double its spending from 2004, partly motivated by *kaisu* (a Hokkien word meaning "afraid to lose") attitudes.[24] Given the value Asian families often place on education, this shadow industry is likely to continue growing and attracting commercial investment.

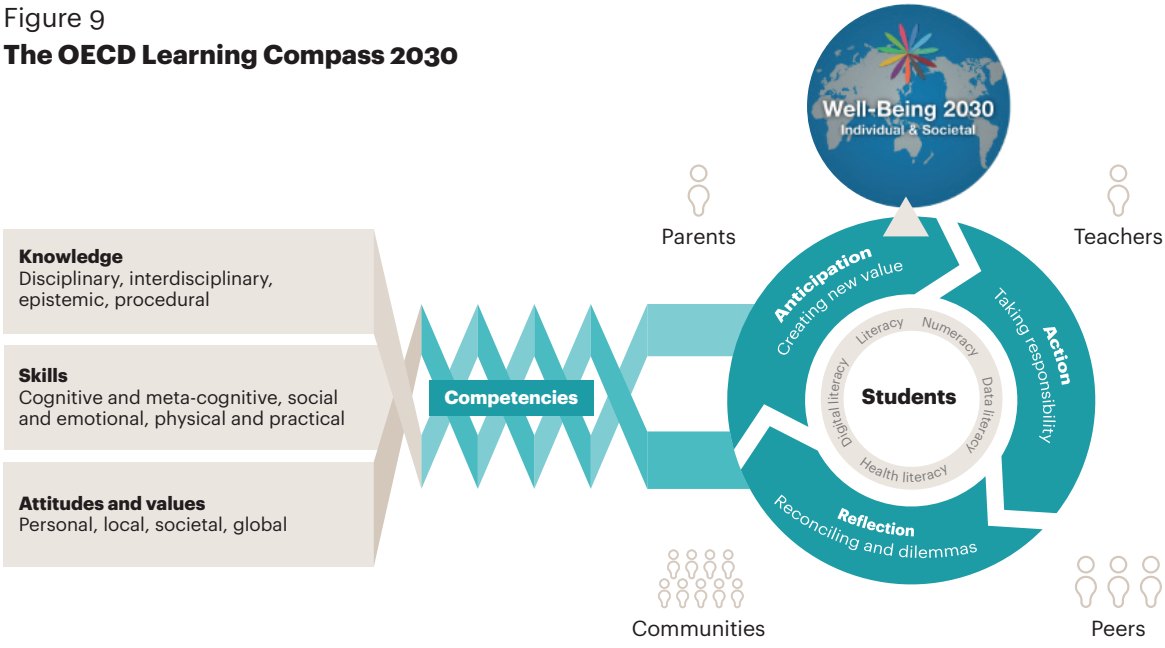
Singapore and East Asian countries have consistently dominated global assessment rankings, but this comes at a cost, both to students' well-being as well as financial.

[24] Tuition industry worth over $1b a year, *The Straits Times*, 2016

## Changes required for future-readiness

Recognizing the urgency of moving beyond academics, the OECD Learning Compass 2030 outlines a broad set of knowledge, skills, attitudes, and values required for future-ready students to navigate a complex and uncertain world (see figure 9).[25] Future-ready students need both broad and specialized knowledge (including numeracy, literacy, and disciplinary expertise), though this alone is not enough in the digital age, when information is increasingly commoditized with just the touch of a button. Students will need to apply this knowledge using diverse skills: cognitive and meta-cognitive skills such as critical thinking, creative thinking, learning to learn, and self-regulation; social and emotional skills such as empathy, self-efficacy, and collaboration; and practical and physical skills such as using new ICT devices. How they use the knowledge and skills they have learned will be mediated by attitudes and values such as motivation, trust, respect for diversity, and virtue. They will also need further "transformative competencies" such as the ability to be innovative, responsible, and aware; to create new value; to reconcile tensions and dilemmas; and to take responsibility.

Figure 9
**The OECD Learning Compass 2030**




Source: The Future of Education and Skills: Education 2030, OECD

The transformation from acquiring knowledge to learning to learn will require a shift in mindsets and practices. Governments and educators, together with families and communities, are working on updating curricula, extra-curricular activities, and assessments:

- **From acquiring knowledge to inquiry-based learning,** a form of active learning where learners develop critical thinking skills by exploring problems, questions, or scenarios
- **From teacher-centric to personalized learning,** so instead of listening to teachers exclusively, learners are encouraged to actively interact with each other and the teacher, and to direct their own learning to suit their own unique interests and abilities

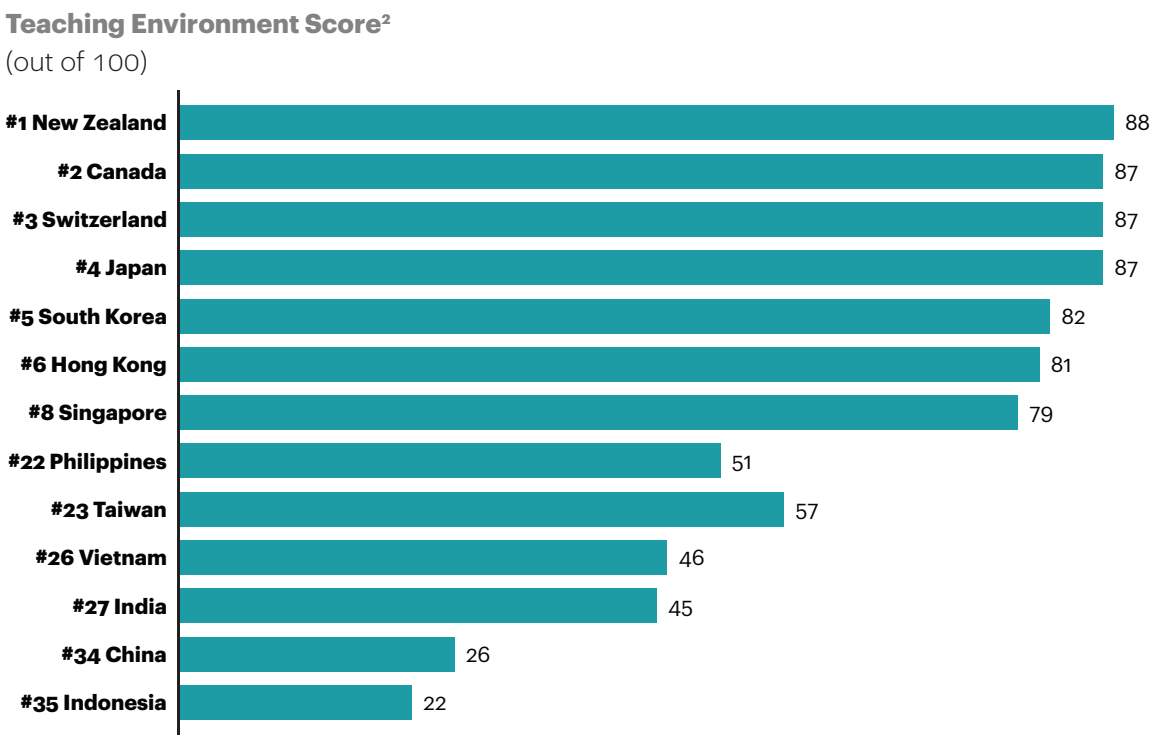
[25] The Future of Education and Skills: Education 2030, OECD, 2018

- **From high-stakes exams to project-based assessment,** to nurture key capabilities such as collaboration, problem-solving, and critical thinking; well-designed approaches can offer rich insights that help to understand learners' progress and development needs and inform teachers' own practices

## Improving teaching quality and effectiveness

Several factors influence the quality of Asia's teachers and the teaching environment (see figure 10). It can depend on the quality of teacher education, teacher qualifications, teacher salaries, government expenditure on education, and collaboration beyond the classroom—for example, between universities and industries.

Figure 10
**Quality of the teaching environment[1]**




[1] The 35 economies selected (selected for diversity of income levels and population size) represent 88% of global GDP and 77% of global population.

[2] Teaching Environment Score: 20% quality of teacher education, 15% teacher qualifications, 10% average teacher salary (high school), 10% government expenditure on education (post-secondary), 15% availability of career counseling for youth in schools, 15% availability of opportunities for students to collaborate beyond classrooms, 15% university-industry collaboration

Source: Worldwide Educating for the Future Index EIU

Countries across Asia have adopted diverse approaches to boost teacher effectiveness. For example, in 2005 Indonesia introduced an ambitious reform to improve teacher quality and welfare. Teachers were required to hold a four-year degree and demonstrate certain competencies, and their salaries were doubled. This resulted in an upsurge in higher-quality training candidates and increased the number of teachers holding a four-year degree from 23 percent to 63 percent by 2012. Indonesia's system is still being refined and strengthened today, with the recognition that effective reform will involve addressing all aspects of the

teacher life cycle—from induction, probation, and competency testing, through to classroom observation and continuous professional and career development.[26]

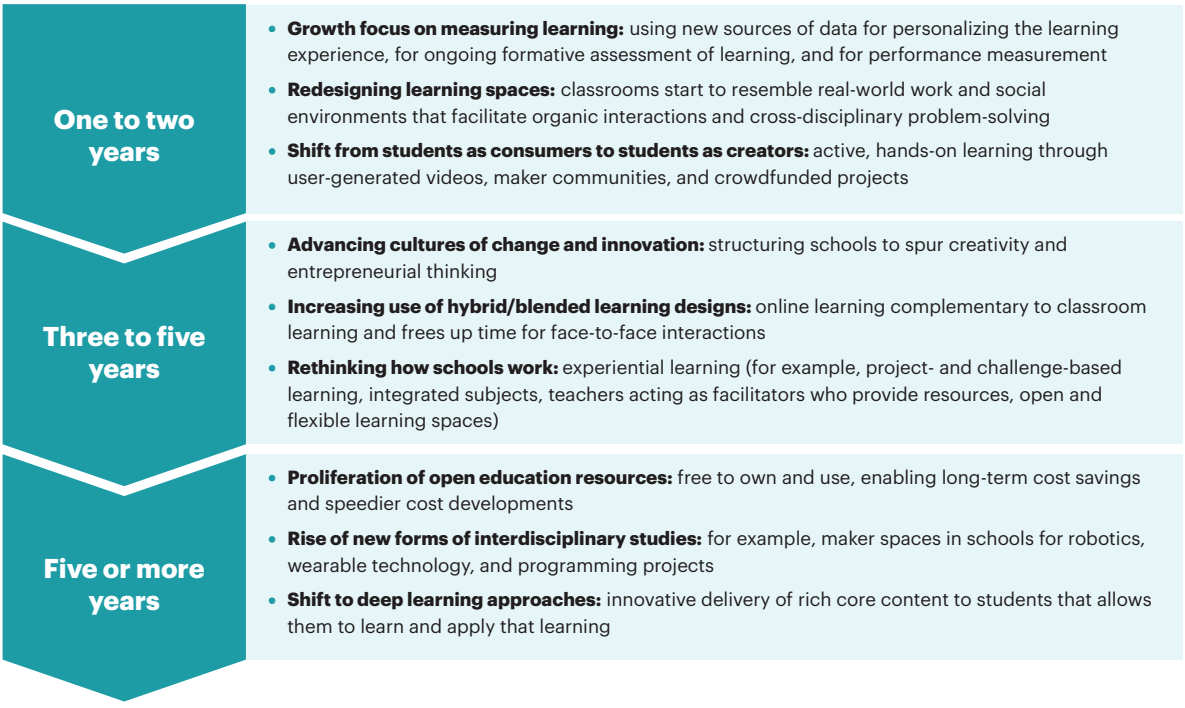
School administrators are exploring commercial best practices to help improve operational efficiency and the student experience. This can include weighing the benefits of insourcing or outsourcing administrative functions and career services or optimizing investments in IT infrastructure for student data or customer relationship management solutions. The right model will depend on each school's mission and positioning, student demographics, budget, location, and so on.

## Enabling better learning and teaching through technology

Ours is an unprecedented era, in which technology has altered the education landscape, widening its reach to more students and exposing them to innovative methods of learning (see figures 11 below and 12 on page 19).[27] Digital classrooms, self-learning platforms, collaborative curricula, remote co-presence, and exposure to authentic situations and environments via augmented reality all enable students to learn many practical skills they will need in life's complex situations. Technology can break down formal classroom silos, enable learning to become mobile, and support the development of personalized learning.

Affordability and digital accessibility are key factors that influence the rate of technology adoption. Content is now easily accessible on various digital platforms and no longer entails

Figure 11
**Trends driving edtech adoption**




Source: 2016 New Media Consortium (NMC) Technology Outlook – International Schools in Asia: A Horizon Project Regional Report

[26] Reflections on Indonesia's teacher reform, World Bank, 2014

[27] New Media Consortium (NMC) Technology Outlook – International Schools in Asia: A Horizon Project Regional Report, 2016

Figure 12
**Education technologies to watch**

| | K-12 | International schools in Asia | Nordic schools |
|---|---|---|---|
| **One year or less** | • Bring your own device<br>• Cloud computing<br>• Maker spaces<br>• Online learning | • 3D printing<br>• Cloud computing<br>• Maker spaces<br>• Social networks | • 3D printing<br>• Games and gamification<br>• Maker spaces<br>• Mobile learning |
| **Two to three years** | • 3D printing<br>• Adaptive learning technologies<br>• Robotics<br>• Virtual reality | • Augmented reality<br>• Bring your own device<br>• Drones<br>• Wearable technology | • Adaptive learning technologies<br>• Artificial intelligence<br>• Mixed reality<br>• Robotics |
| **Four to five years** | • Artificial intelligence<br>• Next-generation batteries<br>• Volumetric/holographic displays<br>• Wearable technology | • Affective computing<br>• Flexible displays<br>• Telepresence<br>• Virtual reality | • Speech-to-speech translation<br>• Virtual and remote laboratories<br>• Virtual assistants<br>• Wearable technology |

Source: 2016 New Media Consortium (NMC) Technology Outlook – International Schools in Asia: A Horizon Project Regional Report

massive spending to acquire. For example, there are nearly 120,000 educational apps on the Apple App Store and Google Play, most of which are free or affordable. Massive online open courses (MOOCs) are enabling access to higher education with flexible, no-cost, or low-cost offerings. However, given the reliance on digital access, cost is still a hurdle for developing countries where digital penetration is poor.

## Innovative education technology can enable better learning and teaching.

Successful technology adoption requires integrating an effective pedagogical approach and evidence-based learning outcomes. Despite attracting millions of registrations, MOOCs offered by top-ranked universities have average completion rates of less than 7 percent.[28] A focus on technology and content alone is not enough; effective online learning thrives on interactive exercises, peer-to-peer learning, and recognized credentials. Edtech players could engage educators and businesses in co-creating relevant content and services aligned to their needs.

[28] Massive Open Online Course Completion Rates Revisited, *International Review of Research in Open and Distributed Learning*, 2015

A more holistic approach to edtech will also rely on developing a better understanding of systemic topics—such as governance, data privacy, and the potential effect of technology overuse in the classroom.

## Sustainable reform requires a holistic approach

Finland is a unique success story, producing students who are excelling today, are ready for the future, and score high on happiness and well-being (see figure 13). This ideal balance was achieved by cohesively addressing major elements of the learning ecosystem within the broader sociocultural context. Finland combined a strong belief in equity and quality, a curriculum that focuses on how to learn and empowers personal learning pathways, and highly trained and respected teachers.

Figure 13
**Education in Finland**

| | |
|---|---|
| **Students** | • Consistently ranked top 5–10 in PISA, although learning outcomes have weakened recently<br>• High student life satisfaction (ranked 5/47), low student anxiety (ranked 51/55), few hours spent studying after school (11.9 hours/week, ranked 54/55), low achievement motivation to want to be one of the best students (ranked 51/55), high tertiary attainment (44%, ranked 9/46) |
| **Learning environment** | • Free "full-service" schools: free tuition, school transport, school material, and hot meal, with health and dental services, psychological counseling, and inclusion. No private schools<br>• Small classes (19 persons, ranked 69/69) with low time spent learning (24.2 hours/week, ranked 54/55)<br>• School selection, formal exams, or streaming by ability is not allowed; first national exam is at age 18 |
| **Teacher quality** | • Very selective (only 10% qualify), requiring master's degree; well-respected career with low attrition<br>• Highly autonomous, trained to adapt to different learning needs, ongoing professional development 2 hours per week<br>• Tutors assigned to guide other teachers, support new pedagogy, advance digitalization of teaching |
| **Policy and curriculum** | • Strong focus on equity and quality—focus not on academic success, but how to live, learn, and find passion<br>• New curricula steers learners toward new skills and competencies, strengthened interdisciplinary approach through inquiry-based learning, and provides educators with digital resources<br>• Spends 1.2% of GDP on pre-primary education, 98% enrollment in optional preschool for 6-year-olds |
| **Sociocultural context** | • Ranked #1 happiest nation in UN's 2018 World Happiness Report: safe, stable, well-governed, with a robust social security and public health system<br>• Small nation that thrives on creativity, solidarity, and equality to compete in the global economy |

Sources: OECD; A.T. Kearney analysis

Pasi Sahlberg, author of the book *Finnish Lessons: What Can the World Learn from Educational Change in Finland?*, has summarized the key implications of her findings for education reformers.[29] **Whole-system reform can only succeed if it is inspiring to all involved, energizing people to work together.** Since the 1970s, the "Finnish dream" has been to provide a good public school for every child, which inspired and united many to push through difficult political and educational challenges to achieve a long-term win. A different, more narrowly defined

[29] What can we learn from educational change in Finland?, Pasi Sahlberg, 2011

goal—such as a set percentage of economic growth or topping the PISA rankings—would not have brought about this transformative change.

- **Educational change is driven by building social capital within the system, alongside individual professional growth.** Unlike the system in many other countries, Finnish teachers and leaders develop professionally as a collective group, not just as individuals. Learning to work together improves schools as social organizations and builds shared and distributed leadership.
- **Successful reforms adopt systemic approaches that rely on collective professional and institutional (or social capital) development, enhanced conditions for teaching and learning for all, and more equal educational opportunities within education systems.** Typical piecemeal strategies such as standardization, testing, accountability, and competition have not proven successful in driving sustainable system change. Instead, Finland shows that effective and sustainable education success can be achieved by adopting good policies and pursuing the overall well-being of all people.

# Chapter 3—Lifelong Employability: Being Relevant for Life

## Highlights

- As workforce disruption accelerates, the need to bridge the skills gaps between education systems and employment markets becomes increasingly urgent.
- Governments and educators can partner with businesses to develop technical and vocational education that addresses these skills gaps.
- Lifelong learning is crucial for individuals' relevance and employability, so governments, educators, and businesses should support it.
- In a future of living and working longer, businesses will need to consider developing employees' intangible assets, bringing variety and flexibility to work, and moving away from age-related stereotypes.

## Bridging skills gaps amid workforce disruptions

Competitive wages and a relatively broad base of human capital with basic educational qualifications have enabled Asia's rapid economic growth in the past few decades. Its future growth potential will depend on the region being able to sustain productivity growth and align its human capital with its economic needs.

The World Economic Forum's *The Future of Jobs* report, based on a survey of executives in 15 of the world's largest economies, notes that macro trends are disrupting industries and business models and changing the skills that employers need. A wide range of occupations will need a higher degree of cognitive abilities—such as creativity, logical reasoning, and problem-solving (see figure 14 on page 23).[30] There is relatively lower demand for content-related and technical skills. The study also anticipates that the shelf life of existing employees' skill sets will shorten; a popular estimate is that nearly 50 percent of the subject knowledge acquired during the first year of a four-year technical degree will be outdated by the time students graduate. ManpowerGroup, the world's third-largest staffing and recruitment firm, led a survey between 2016 and 2017 in which almost half (46 percent) of Asian employers reported hiring difficulties, with employers in Japan, Taiwan, and Hong Kong experiencing the greatest challenges. Employers are also increasingly looking inside their own organizations for solutions: 53 percent now choose to develop and train their own people, up significantly from 20 percent in 2015.[31]

## The urgent need to bridge gaps between education and employment

Young people are three times more likely to be unemployed than adults, and 71 million of them worldwide are looking for work—of which, 33 million are in Asia Pacific.[32] Furthermore, job vacancies remain unfilled much longer today than before the global financial crisis—an

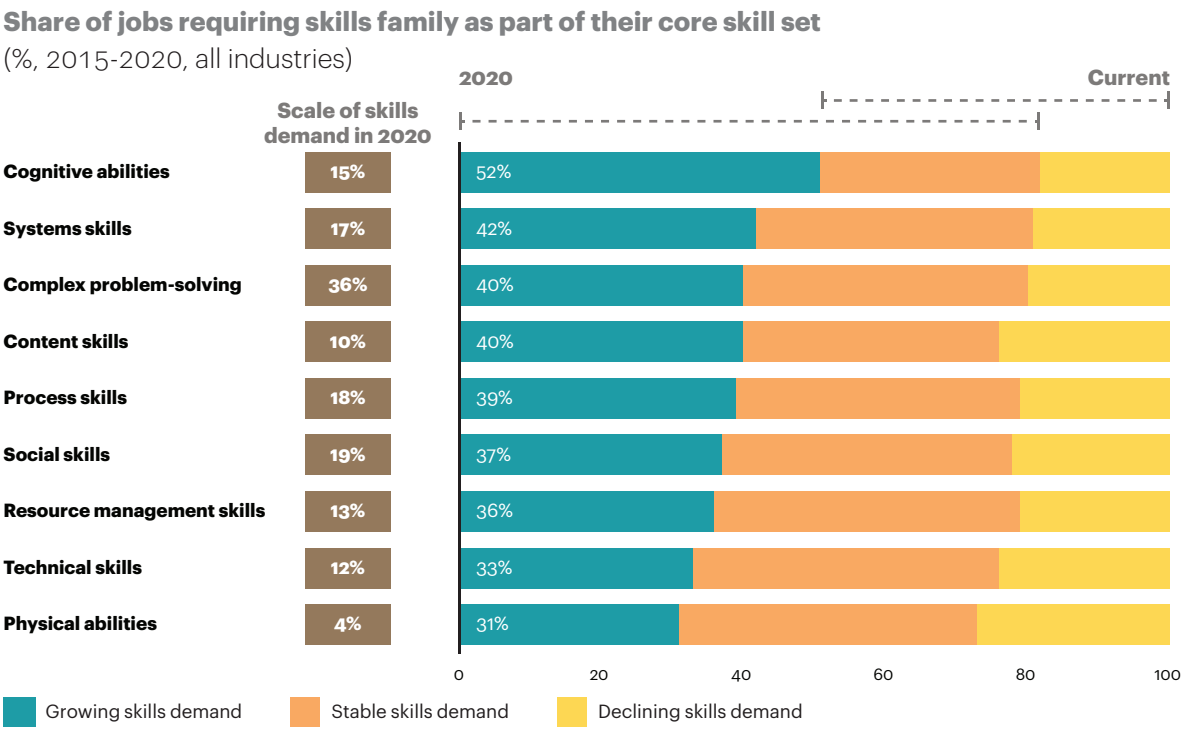
[30] The Future of Jobs, World Economic Forum, 2016

[31] Talent Shortage Survey, ManpowerGroup, 2016–2017

[32] Global Employment Trends for Youth, 2017, International Labour Organization

Figure 14

**Change in demand for core work-related skills**




Source: Future of Jobs Survey, World Economic Forum

average of 25 business days now compared to 14 days then.[33] While these findings may be due to macroeconomic factors, they also indicate a mismatch between education and employment. There is certainly a clear gap in perceptions, with 72 percent of education providers believing their graduates are prepared for work despite less than 50 percent of young people and employers agreeing with them. Career counseling for young people is not widespread in Asia, and more than half of new graduates claim to be unhappy with their field of study or unable to find the right jobs (see figure 15 on page 24).[34]

Taking the case of China, in 2016 nearly 10 percent of university graduates (0.7 million of 7.6 million) failed to find a job within six months of graduating.[35] Even the more than 90 percent of China's graduates who managed to find employment still face the challenges of dissatisfaction, high turnover, and underemployment. In 2017, 30 percent of graduates ended up pursuing professions unrelated to their university major due to the career expectation gap (34 percent) and life pressure (23 percent).[36] Another 34 percent of graduates quit their jobs within half a year of graduating, and one in four Chinese university students have a salary that is below the average salary of a migrant worker.[37,38] In an OECD study, Chinese graduates felt they had not acquired necessary social and emotional skills before graduating (see figure 16 on page 24).[39]

[33] "The Establishment-Level Behavior of Vacancies and Hiring," Davis, Faberman, and Haltiwanger, *The Quarterly Journal of Economics*, 31 January 2013

[34] Worldwide Educating for The Future Index, EIU, 2017

[35] 2017 Chinese College Graduates' Employment Annual Report, MyCOS, 2017

[36] 2017 Chinese College Graduates' Employment Annual Report, MyCOS, 2017

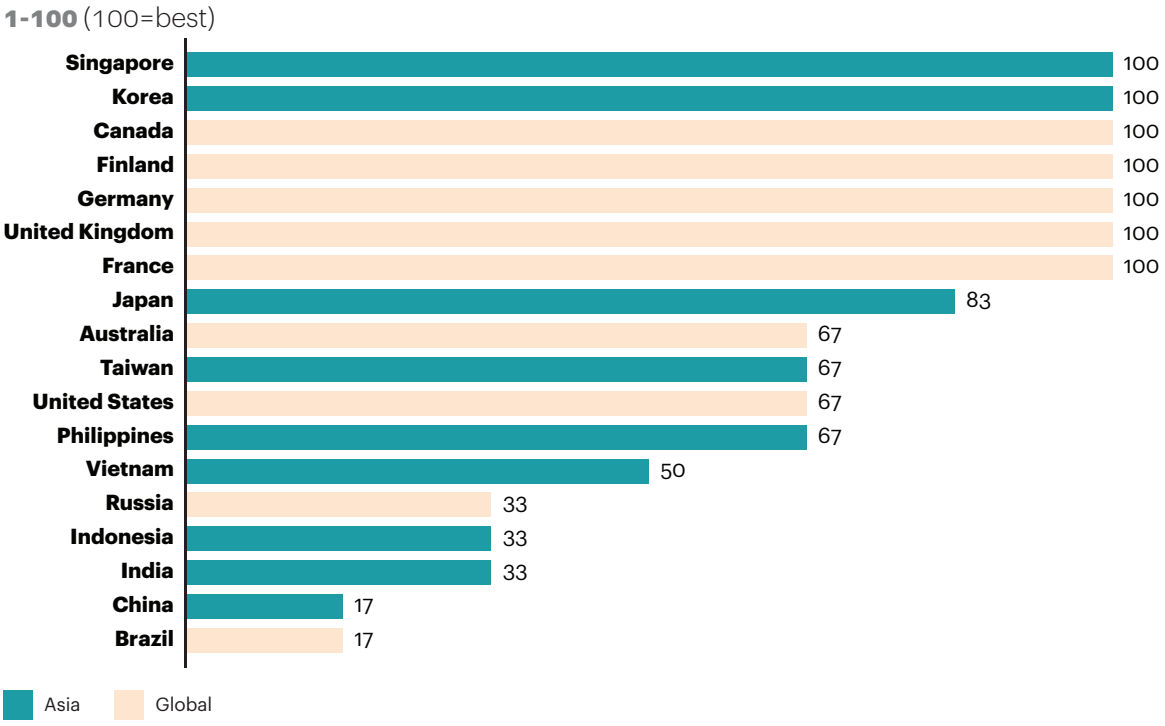
[37] Assessing China's skills gap and inequalities in education, OECD, 2015

[38] China now produces twice as many graduates a year as the US, WEF, 2017

[39] Assessing China's skills gap and inequalities in education, OECD, 2015

Figure 15

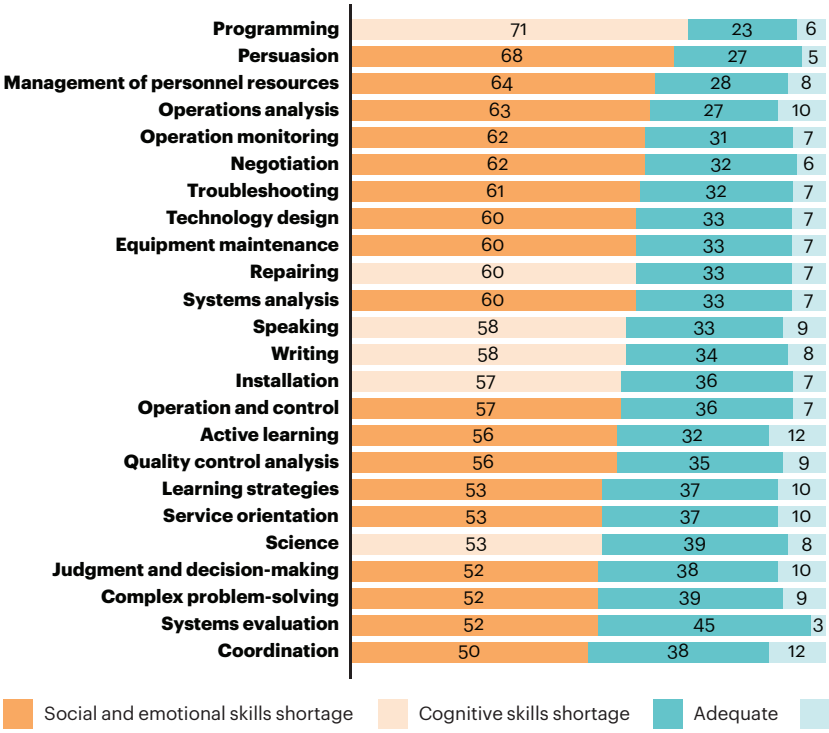
## Availability of career counseling for youth in schools




Sources: EIU–Worldwide Educating for the Future Index; A.T. Kearney analysis

Figure 16

## Chinese university graduates' perceptions of skills gaps




### Methodology

- The assessment was based on a survey by a Chinese education authority, MyCOS.
- In the survey, university graduates were asked to enumerate the five skills they considered most necessary and whether they had acquired those skills before graduation.
- If the extent of necessity and acquired skill are equal, the skill is considered adequate. If the former is larger than the latter, there is a shortage of the skill; if the skill is larger than necessity, the skill is regarded as a surplus.

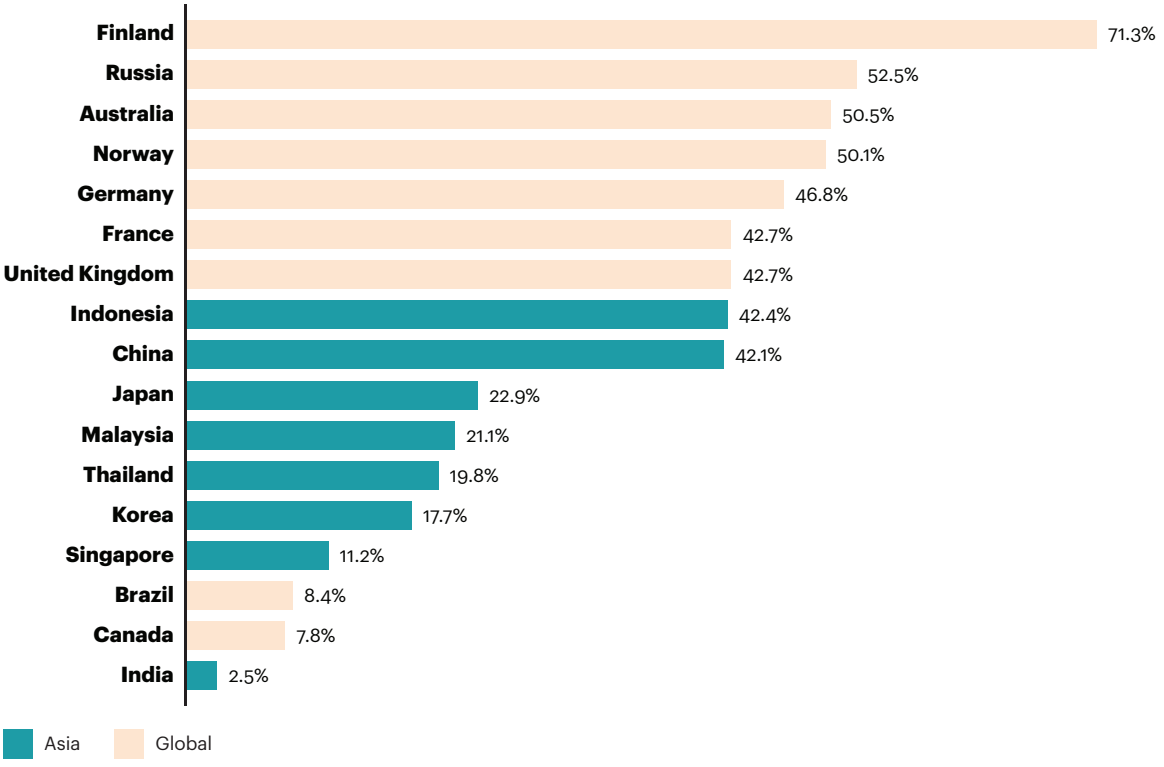
Sources: OECD–Assessing China's skills gap and inequalities in education; A.T. Kearney analysis

This must change. Young people need more practical, high-quality, and timely input when evaluating their study and career choices; educators can work more closely with young people and employers to ensure the relevance of their curriculum; and employers can proactively nurture their talent pipelines by working with educators to design the right learning experiences. This is especially important in a more fluid job market, where Millennials are more likely to job-hop or industry-hop than previous generations. For example, a LinkedIn study showed that workers who graduated between 2006 and 2010 averaged 2.85 jobs during their first five years of working, compared to 1.60 jobs for those who graduated between 1986 and 1990.[40]

## Technical and vocational education present underdeveloped opportunities

Technical and vocational education (TVET) enrollment rates in Asia are generally lower than in Europe (see figure 17). An Asia Development Bank report attributes this to a few factors: social bias where TVET is seen as "second-class education" for academic underperformers, fading distinctions between general and vocational education, and declining investment compared to the funds going into universities.[41] Yet an expensive four-year degree is not at all necessary for many careers. In fact, apprenticeships, on-the-job-training, and vocational programs can be far more practical, providing solid, transferable skills and direct entry to the workforce.

Figure 17
**Enrollment in vocational programs[1]**




[1] Percentage of students in upper secondary education enrolled in vocational programs, both sexes
Sources: UNESCO, Institute for Statistics; A.T. Kearney analysis

[40] Millennials Job-Hop More Than Previous Generations, & They Aren't Slowing Down, LinkedIn, 2016
[41] Challenges and opportunities for skills development in Asia, Asia Development Bank, 2015

While many Asian countries already have TVET policies that align with their educational and economic policies, the key challenges are professionalizing the image of TVETs and enabling or scaling up true cross-sectoral collaboration. Figure 18 summarizes the lessons learned from Germany's successful TVET system, where strong private–public partnerships combine with robust qualifications and regulatory frameworks provide quality assurance. Many German apprentices go on to have successful careers, such as Volkswagen's CEO Matthias Müller (who was an apprentice toolmaker at Audi), Deutsche Bank's CEO Christian Sewing (who started out as an apprentice there before graduating with a diploma), and UBS Group's CEO Sergio P. Ermotti (who started at the stock exchange department of a small Swiss bank).

Figure 18
**Vocational training in Germany**

| "The Dual System" | Impact | Key success factors |
|---|---|---|
| • Programs usually last 2–3.5 years, with theoretical and practical elements<br>• 1–2 days a week (or several weeks at once) at a vocational trade school, with the rest of the time at on-the-job training at a participating company supervised by skilled mentors<br>• Trainees are paid a stipend of several hundred euros, which increases year to year<br>• 342 government-recognized training occupations (including engineering, commerce, healthcare, ICT, and plumbing) | • Excellent employment prospects for trainees:<br>—~50% of young Germans graduate from dual VET apprenticeships<br>—Two-thirds of all trainees get a permanent job with their companies after completing training<br>• 350 officially recognized training programs in Germany<br>• Pillar of Germany's economy: positive image and reputation | • **Combines theory with practice right from the start**<br>• **Up-to-date curriculum**, refreshed with changing business needs and latest technology developments<br>• **Close collaboration** between employers, trade unions, and government<br>• **Shared responsibility and joint financing:** 75% private, 25% government<br>• **Career guidance** for students<br>• **Standardized content** and examinations across Germany<br>• **Training the trainers**<br>• **Checks and balances** (for example, professional associations monitor quality)<br>• **Institutionalized research network** to support continuous VET improvement |

Source: Germany "Dual System" case studies, TVET

A World Economic Forum working group has identified key actions stakeholders can take to build a robust TVET education ecosystem:[42]

- **Increase access** to well-developed and modern TVET study and qualifications
- **Evolve certification and credentialing systems** based on agreed industry standards and the identified needs of learners and employers and update these systems on a rolling basis to ensure their continued relevance
- **Improve the social status of TVET** as a viable education pathway among learners, families, employers, policymakers, and other stakeholders

[42]Realizing Human Potential in the Fourth Industrial Revolution, WEF, 2017

## Lifelong learning is crucial for individuals' relevance and employability

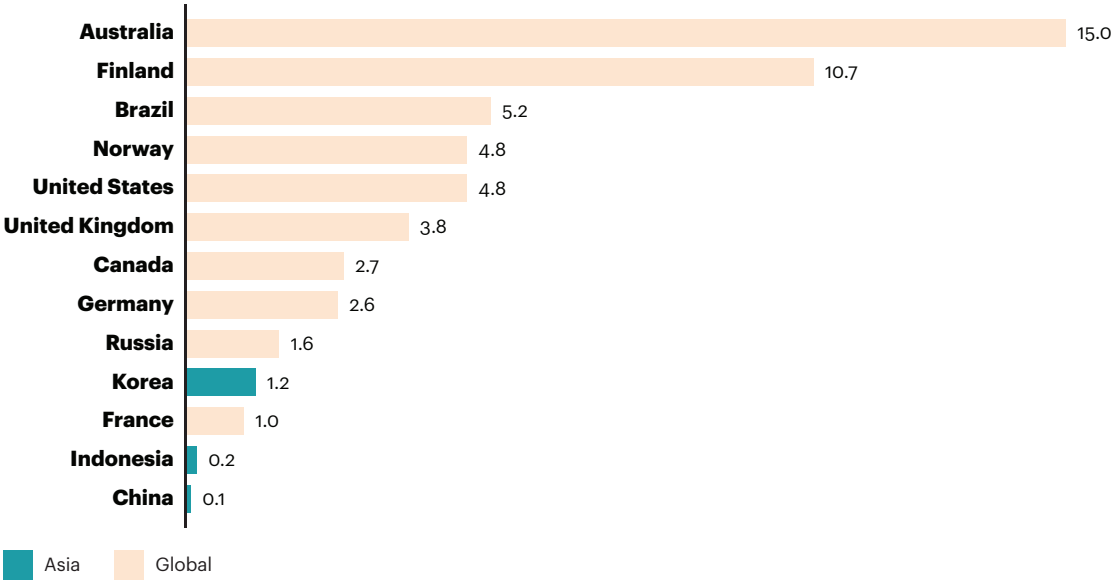
According to the UNESCO Institute for Lifelong Learning's 2015 Recommendation on Adult Learning and Education, the revised definition of adult learning and education (ALE) now distinguishes three core areas of skills and learning:

- Equipping adults with literacy and basic skills
- Providing continuing training and professional development
- Promoting active citizenship through what is variously known as community, popular, or liberal education

As home to nearly two-thirds of the world's illiterate adults—500 million people—Asia has made adult literacy a priority for ALE in recent decades. National policy statements now increasingly link ALE to income-generating activities, employment and entrepreneurship skills, and poverty reduction strategies. Governance is also being developed to implement policy effectively and bring together relevant stakeholders.[43] For example, Korea has launched lifelong learning initiatives such as K–MOOC strategies for providing nationwide MOOC services, and the Damoa Lifelong Education Information Network, which collects and distributes information on lifelong education nationwide. Malaysia has developed a national directory of lifelong learning programs available from the country's various ministries and agencies, giving the public easy, on-demand access to information on lifelong learning programs. While adult education enrollment in Asia is still lagging significantly behind the rest of the world, these reforms should have a positive impact in years to come (see figure 19).[44,45]

Figure 19

**Adult enrollment in full-time and part-time learning programs[1]**




[1] Students age 30–65 in full-time and part-time programs in both public and private institutions (survey results)

Sources: OECD–Education at a Glance 2017; A.T. Kearney analysis

[43] The status of adult learning and education in Asia and the Pacific, CONFINTEA VI, 2017

[44] Education at a Glance 2017, OECD, 2017

[45] Modelled Estimates, International Labour Organization, 2017

Employers have a crucial role here in enabling lifelong learning. Diverse approaches include on-the-job training or rotations, career guidance tools, internal and external courses that provide marketable micro-accreditations, flexible-format online resources, supporting self-education and retraining (during company or personal time), and recognizing personal and professional development in job evaluations. Technology—especially social media, algorithms that match candidates to jobs, gamification, analytics, and so on—is reshaping employers' recruiting and talent development practices. For example, MOOCs enable companies to design and deliver training in a flexible, personalized, inexpensive, results-focused, and scalable way. Microsoft uses custom MOOCs to develop core skills and broader competencies, targeting current employees as well as customers and potential new hires. Google is collaborating with Udacity to identify high-performing MOOC learners for its recruiting talent pool. And Bank of America is partnering with Khan Academy to create BetterMoneyHabits.com, a co-branded MOOC that educates consumers about personal finance.

## Businesses should prepare for a future of working and living longer

In a future of aging populations and longer life expectancies, many businesses have focused on capturing the "silver dollar"—the purchasing power of elderly consumers—but far fewer businesses have truly understood what this means for their own organizations. According to professors Lynda Gratton and Andrew Scott, the social revolution from a traditional three-stage life (education, work, retirement) to a multistage life will create some friction points with today's corporate practices.[46] Businesses currently want conformity and standardization, while individuals will increasingly seek personalization and flexibility. Businesses tend to connect age markers with linear career progression (graduate schemes, passage from "junior" to "senior" roles, then retirement), but in the future age and stage should no longer be so intertwined—an undergraduate can be 20 or 60, and a senior manager can be 30 or 70. Businesses can consider adapting their corporate practices for longevity in a number of ways.

- **Shift from tangible to intangible assets.** In a three-stage life, the core of the business–employee relationship is primarily the accumulation of tangible assets, the offer of tiered earnings based on length of service, and career progression followed by a retirement pension. In a future multistage life, employees will find it equally important to secure long-lasting intangible assets such as skills and knowledge that are portable and externally accredited, and also transformational skills such as self-insight and the ability to build diverse networks. Organizations that can move rapidly to develop, acknowledge, and measure these intangible assets will benefit from more engaged and productive employees.
- **Bring variety and flexibility to work.** Longer working lives mean that businesses have to balance the productivity enhancement that comes with stability and continuity while still creating space for employees to grow and transform. Employers can help incentivize and retain employees who have new tasks and skills, help them transfer their skills elsewhere, or explore flexible options—such as working at a different pace, taking on a different workload, or moving to another location or role to help them recharge.
- **Move away from age-related stereotypes.** Recruiting needs to diversify from formal qualifications and narrow age bands (such as focusing on fresh university graduates) to broader talent pools that include non-traditional candidates who have gaps in their work experience but have acquired relevant skills and experiences, or mid-career candidates

[46] The Corporate Implications of Longer Lives, *MIT Sloan Management Review*, Lynda Gratton and Andrew Scott, 2017

returning to the workforce. Age-related workplace stereotypes, where older workers are viewed more as a liability than an asset, also need to be addressed. Today's older individuals are healthier and fitter than previous generations and can remain more productive with advances in technology and automation. Organizations can benefit from two-way cross-generation mentoring and coaching, where the young learn from the old how to control work and be financially proficient, and the old learn from the young how to build diverse networks and develop a reputation.[47] This avoids costly brain drain from talent attrition, and also makes for far more productive organizations. Businesses should align their expectations for older employees around their options and preferences, including in relation to their transition to retirement, working hours, responsibilities, and salaries.

[47] What younger workers can learn from older workers, and vice versa, *Harvard Business Review*, 2016

# Chapter 4—The Way Forward

## Highlights

In summary, Asia needs a new education model based on learning to learn that will prepare its workforce for relevance and lifelong employability. The key implications for stakeholders are detailed below (see figure 20).

Figure 20
**Asia's future education model and implications for stakeholders**

| **From acquiring knowledge...** | **Formal education** | **Lifelong employment** |
|---|---|---|
| **... to learning to learn** | **School to work**<br>Paving progression to employment | **Lifelong employability**<br>Being relevant for life |
| **Governments and educators will need to define and implement lifelong learning ecosystems** | • Develop **responsive policies** for inclusive quality education for all, including **boosting preschool enrollment and future-ready skills**<br>• **Align businesses** to develop skills and learning experiences for employment readiness | • **Promote lifelong learning and build enabling framework across stakeholders** (regulations, incentives, funding, accreditations) |
| **Businesses have to adapt to disruption and build talent**<br>**This is also an industry that presents business opportunities** | • **Work with governments and educators to grow talent pool** (for example, anticipate needed skills and develop the relevant content, standards, and learning experiences)<br>• Provide education **products and services** | • **Align corporate practices for lifelong employability** (recruitment, continuous learning and development, pay and performance)<br>• Provide education **products and services** |
| **Individuals will have to take charge of their learning journeys** | • **Build lifelong learning mindset** and actively pursue professional and personal development opportunities | |

Source: A.T. Kearney analysis

## Governments and educators: defining and implementing lifelong learning ecosystems

Governments and educators should develop responsive policies that ensure inclusive, high-quality education for all. One priority should be boosting preschool enrollment, as early childhood development provides a crucial foundation for subsequent success in education and work. A holistic approach is needed to improve affordability and accessibility for everyone—for example, by co-funding preschool programs, professionalizing the workforce, and monitoring the quality of education outcomes. Outperforming in academics is also no

longer enough. Asia will need to reform its education curriculum and assessment systems to equip its 1.7 billion young people with future-ready skills that allow them to create new value, reconcile tensions and dilemmas, and take responsibility.[48]

A robust TVET education ecosystem will be key to bridging the education–employment gap and will require several key actions as outlined by the World Economic Forum study:

- Increase access to well-developed and modern TVET study and qualifications
- Evolve certification and credentialing systems based on agreed industry standards and the identified needs of learners and employers, and update them on a rolling basis to ensure they remain relevant
- Improve the social status of TVET as a viable education pathway among learners, families, employers, policymakers, and other stakeholders

By its very nature, TVET can only be as good as what employers contribute to its design. Policymakers, investors, and politicians should develop a balance between academic and TVET education reform and funding, and better understand the connections and complementary nature of both routes, for individuals, businesses, and economies.

Finally, rapid workforce disruption will demand continuous upskilling and reskilling. Governments have a key role in working with businesses and citizens to empower lifelong learning and continuous reskilling for all adults. They will do this by encouraging individual ownership of diverse career and learning pathways; partnering with employers; enhancing policy, governance, and funding; and building structures for recognition, development, and accreditation—including micro-credentialing—to recognize skills acquired during one's lifetime. See figures 21 and 22 on page 32 for some examples across Asia that illustrate high-impact multisector partnerships.

An innovative example is India's National Association of Software and Services Companies (NASSCOM), an industry-driven public–private partnership in collaboration with the government's National Skills Development Corporation (NSDC) to create a sustainable national pipeline of work-ready ICT talent, high in quality and quantity.[49] NASSCOM's Sector Skills Council is working to identify future skills requirements in 39 industry sectors, leveraging the technology and knowledge of its member companies. Through its education and skills development initiative, it has identified National Occupation Standards as a set of qualifications that can be validated and transferred across sub-sectors according to market requirements. It is also partnering with the government and nongovernmental organizations to enable digital literacy across the country.

## Businesses: adapting and building talent in the face of disruption

Businesses must shift from being passive employers to operating as active businesses collaborating to develop talent for lifelong employability. Traditionally, governments and educators have been responsible for equipping young people with skills, but this has clearly failed to satisfy employers' demands. Instead, businesses must take a more strategic, holistic approach to actively develop talent.

[48] The Future of Education and Skills: Education 2030, OECD, 2018

[49] Shaping the Future of Education, World Economic Forum, 2017

Figure 21

## Building an inclusive ecosystem for workforce reskilling

**Not exhaustive**

| Key pathways | Key public sector actions | Key private sector actions | Other stakeholder actions |
|---|---|---|---|
| • Recognize existing skills and understand skills demand | • Develop qualifications framework, conduct employer surveys, forecast demand, coordinate working groups | • Move toward skills-based recruitment, develop relevant skills assessments<br>• Participate in working groups | • Unions and professional associations can assess skills<br>• Global organizations can measure skills and global best practices |
| • Adopt the right mix of financing instruments | • (Co-)Fund adult learning, create financial incentives for adults and businesses | • Invest in developing human capital, in-house and external; support employee learning | • Co-fund/financial matching<br>• Study global best practices |
| • Foster learning via active labor market policies, accessible resources, governance<br>• Connect different stakeholders<br>• Reach those who need it most: SMEs, lower-skilled/older workers | • Build cohesive strategies that incorporate training, labor market info, and career guidance, and promote learning for all<br>• Coordinate working groups, set curricula and standards | • Build learning into employee performance assessment<br>• Incorporate career guidance and advancement incentives<br>• Link training to new roles | • Unions and professional associations as strong motivating factor for adult education |
| • Create shorter learning modules that foster continued learning | • Offer shorter, more specific courses aligned with employment | • Create modular learning programs for rapid reskilling, partner with universities/others | • Create targeted training, coordinate basic education with public institutions |
| • Promote on-the-job training and maximize informal learning<br>• Offer customized teaching for adults<br>• Harness powerful and scalable blended online courses | • Create financial incentives and programs for adult apprenticeships<br>• Build training infrastructure to bring together educators and employees in innovation and joint research facilities | • Put in place job rotation programs, adult apprenticeship<br>• Create corporate culture to reward individual innovation and learning<br>• Design hands-on practical training, adapted to diverse learners | • Inform workers about learning opportunities, support with peer support networks<br>• Unions can adapt training formats to best suit diverse adult learning styles with direct applications in professional settings |

Source: Accelerating Workforce Reskilling for the Fourth Industrial Revolution, World Economic Forum, 2017

Figure 22

## Adult learning education case studies

| Initiative | Description |
|---|---|
| • Lifelong Learning for Farmers (L3F): Nepal, India, Sri Lanka, global | • Farmers, learning institutions, banks, and ICT providers partner to facilitate learning for development in rural areas through ICT kiosks<br>• Farmers are empowered to collaborate on topics (for example, acquiring better lifestock, growing new crops, or how to market their produce)<br>• Every US dollar invested yielded $9 worth of social returns to farming communities<br>• Banks earned 8x more income from L3F participants due to improved productivity, ROI, and loan repayment, and a larger market for bank credit |
| • Cambodia's Community Learning Centers (CLCs) | • Local CLCs are a cost-effective and enjoyable way to develop capacity in skills (for example, tailoring, hairdressing, beauty training, carpentry, use of computers, English, small-scale agriculture)<br>• Able to remain operational despite limited public funding<br>• Included a Mobile Life Skills program, offering training from a van that traveled to remote areas |
| • India's National Digital Literacy Mission (NDLM) | • Launched in 2014, in recognition of ICT's importance for development and to bridge the digital divide<br>• Aims to provide digital literacy to 5 million Indians, including women, the disadvantaged, and the poor<br>• Physical delivery of IT literacy training uses public-private partnerships<br>• On completion of training, participants take an online evaluation and receive a certificate |
| • Korea: enhancing quality ALE systems | • Established national certification system for professional educators in lifelong education; must obtain a predetermined number of academic credits in the related field from a university and graduate school or go through training courses provided by designated institutions, including the National Institute for Lifelong Education<br>• Mandatory for lifelong learning centers to employ lifelong learning educators |

Source: The status of adult learning and education in Asia and the Pacific, CONFINTEA VI, 2017

Firstly, businesses should work with governments and educators to grow the talent pool by anticipating needed skills and co-developing the relevant standards and curricula (that is, partnering for vocational education). See figure 23 for more details.

Figure 23

**Businesses play a key role in closing education–employment skills gaps**

| Target area | Activities | Examples |
|---|---|---|
| Basic education | • **Partner with educational institutions to improve foundational skills** of current students in basic literacy, numeracy, digital fluency, financial literacy, and/or social-emotional skills | • **LEGO Foundation's Connecting Play and Education** program **focuses primarily on making play an integral part of development and learning** for students in the 5-12 age group. |
| Technical vocational education and training (TVET) | • **Organize work-based learning for current TVET students** (work exposure activities, internships, apprenticeships)<br>• Partner with local educational institutions to **ensure that curricula development is informed by market-demand skills**<br>• Design and deliver **interventions that strengthen technical skills,** including STEM and digital skills, **as well as employability skills** (for example, complex problem-solving, critical thinking, creativity, and people management) | • **Junior Achievement's Job Shadow Program** is a visit to a professional work environment where **students can shadow a mentor and learn the skills needed to land and keep their dream jobs.** The goals of the program are career research and preparation, job-hunting tools, professionalism and ethics in the workplace, professional action plans. |
| Higher education | • **Organize work-based learning for current college or university students** (work exposure activities, internships, apprenticeships)<br>• Partner with local educational institutions to **ensure that curricula development is informed by market-demand skills**<br>• Design and deliver **interventions that strengthen technical skills,** including STEM and digital skills, **as well as employability skills** (for example, complex problem-solving, critical thinking, creativity, and people management) | • **CIMB Foundation's Be$MART** financial literacy program is targeted at pre-university students and undergraduates to **provide fundamental financial management skills.** Modules of the program cover a wide range of money management lessons such as unit trust investments, share investments, and financial and investment planning. The program is structured around two-day workshops at partner education institutions. There are now plans to launch the program in Indonesia, Thailand, and Cambodia. |
| Adult learning | • Support **continuous on-the-job learning and specific reskilling and upskilling** through individual, specific, and agile training modules in partnership with educational institutions and training providers | • **HP LIFE e-Learning** is a free, online training program that **enables students, teachers, and entrepreneurs to gain the business and IT skills that help create jobs and stimulate economic growth.** The program is accessed directly by independent learners and is also used by educators, trainers, and mentors to enrich the curriculum. |

Sources: Closing The Skills Gap, World Economic Forum, 2017; CIMB launches Be$SMART, theSundaily, 2017; CIMB to triple annual CSR spend from 2018 to 2020, theSundaily, 2017

Businesses should also align their corporate practices for lifelong employability. Instead of simply filling current vacancies to satisfy specific tasks or immediate demand, they should consider the future evolution of the role and its required skills and invest in the employee's own professional and personal development potential. This means moving toward skills-based recruitment rather than focusing only on formal education qualifications; promoting continuous on-the-job learning by allocating expenses and time and developing modular programs for rapid reskilling; building learning into pay and performance assessments; and facilitating diverse career development pathways by offering internal and external rotations and flexible programs for older employees. See figure 24 on page 34 for some examples.

Figure 24

**Aligning corporate practices for workforce relevance and lifelong employability**

| Target area | Activities | Examples |
|---|---|---|
| Recruitment | • **Move toward skills-based recruitment,** instead of strictly adhering to formal education qualifications<br>• **Develop relevant skills assessments** to identify potential talent<br>• **Identify diverse talent** who bring unique skills | • **PwC Australia's Higher Apprenticeship Program allows students without a university degree to join either the Tax or Audit practice.** Candidates are **assessed based on PwC's Professional Framework** (leadership, trust-building, business acumen, technical capability, and global acumen) and are given the same training and gain the same professional qualification as university graduates. |
| Learning and development | • **Support continuous on-the-job learning** (for example, allocating expenses and time, organizing peer learning groups)<br>• **Create agile, modular learning programs for rapid reskilling,** in partnership with educational institutions and training providers | • **Tata Consultancy Services** has a **focus on understanding employee knowledge and skill acquisition.** Across the company, an internal platform called Knome enables **employees to track their skill development, use online training to boost and broaden their skills,** and build their reputation through virtual badges earned for skills. |
| Pay and performance assessment | • **Build learning into work objectives and performance assessment** (for example, training KPIs)<br>• **Create a corporate culture to reward individual innovation** and learning | • **Samsung's C-Lab** program allows talented employees to nurture creativity by pursuing innovative side projects. They are **encouraged to develop their own tech projects** which often become commercially viable products. |
| Career development/ transferability | • **Incorporate career guidance** and advancement incentives<br>• **Put in place job rotation programs** to enable employees to gain more skills and become more adaptable and versatile<br>• **Aid employees to explore external opportunities for learning** (for example, apprenticeships or secondments) | • At **Coca-Cola Singapore,** employees spend a minimum of 18 months in their original position before making a lateral change. Other **internal job opportunities are opened up so employees can apply for job roles in the direction they want to move forward.** |
| Retirement | • Allow **part-time options for older employees** to enable them to continue to contribute, but on their own terms<br>• **Change job scope and adapt** according to learnings gained | • **National Australia Bank (NAB)** offers flexible options to employees transitioning into retirement. Options include moving to part-time, job sharing, or even choosing to move to a less senior role. |

Sources: Accelerating Workforce Reskilling for the Fourth Industrial Revolution, World Economic Forum, 2017; The Corporate Implications of Longer Lives by Lynda Gratton and Andrew Scott, MITSloan Management Review, 2017; Higher Apprenticeship Program, PwC Australia, 2018; Samsung C-Lab debuts smartglasses, portable speakers and a hearing device, Digital Trends, 2018; Climb the ladder or cross the lattice?, HR in Asia, 2016; Case Study: Working flexibly in a large company, Workplace Gender Equality Agency, 2018

Finally, businesses can consider the opportunity to participate in a sizable and growing education market. The global market for education reached $6.3 trillion in 2017, with more than 1.4 billion students and 62.5 million educators worldwide.[50] Of this, Asia's education expenditure is estimated at around $1.8 trillion, making it the fastest-growing region. The private education market in Asia is worth around $300 billion and offers diverse opportunities for businesses to participate, particularly in edtech, corporate learning, preschool education, and higher education (see figure 25 on page 35). Products and services are generally aimed at individual learners (as with K–12 learning, higher education, employees seeking professional education, and adult learners) or institutions (governments, educators, businesses, and employers).

[50] Longer Term Investments: Education services, UBS, 2017

Figure 25

**Examples of Asian education businesses**

| Target area | Activities |
|---|---|
| Early childhood education | • Singapore-based education group franchisor **MindChamps PreSchool** operates 47 preschools in Singapore, 20 in Vietnam, and 10 in Myanmar, with FY17 revenue of US$22.8 million.<br>• The group has a unique curriculum based on research in early childhood education, neuroscience, child psychology, and theater.<br>• The team is setting up a $200 million fund to expand its franchise into China.[1] |
| Tuition | • **The Learning Lab,** a provider of K–12 academic enrichment and tutorial services in Singapore (via its private equity owner Advent International), has invested in Best Learning, an English language training institute for juniors in China, to build a regional after-school education network.[2]<br>• Both providers have a research-based curriculum that goes beyond conventional school needs by developing knowledge and skills that help students succeed in life outside the classroom. |
| Education technology | • **17ZUOYE** is a Beijing-based online K–12 education platform serving more than 60 million users in approximately 120,000 schools.<br>• The online study platform allows teachers, parents, and students to do homework together, and provides supplementary digital textbooks with tailor-made premium content generated using big data and artificial intelligence.<br>• The founders have raised a total of $585 million in funding; Temasek Holdings led a recent $250 million Series E round of financing.[3] |
| Content provider | • Singapore-based **Marshall Cavendish Education** provides curriculum content across Southeast Asia, Australia, the United States, Chile, and Europe using conventional paper-based and innovative digital formats.[4] |
| Corporate learning | • Online education leader **Coursera** has 30 million users and 500 corporate customers (up from 30 in 2016, with bookings growth of 400 percent) and approximate revenues of $100 million.[5,6]<br>• In addition to higher education institutions, corporations such as **Google, Goldman Sachs, IBM,** and **PwC** are now offering courses on the platform.<br>• Coursera has raised a total of $210 million in funding, including a recent $64 million in Series D funding to expand its corporate business. |
| Lifelong learning | • **Duolingo** is the most popular language learning app on the Apple App Store and Google Play, with over 170 million users worldwide.<br>• It uses a mobile gamification aspect to encourage high-frequency use.<br>• The company raised a total of $108 million in funding, including a recent $25 million Series E round led by Drive Capital.[7] |
| Education investors | • **GSV** partners with and invests in entrepreneurs whose technology companies are driving an outsized return on education and talent and transforming the learning and employment sector[8]<br>• Notable investments include Coursera, General Assembly, and Course Hero (peer-to-peer marketplace for educational resources and expert tutors) |

[1] Singaporean education companies expand overseas presence, Nikkei Asian Review, 2018

[2] The Learning Lab unites with Best Learning, Advent International, Advent International, 2018

[3] 17ZUOYE Raises US$250 Million to Consolidate K-12 Edtech Market Leader Position in China, Sunny Education, 2018

[4] A Holistic Educational Solutions Provider, Marshall Cavendish Education, 2018

[5] Coursera Fights To Keep The Promise of MOOCs Alive With Corporate Customer Push, Forbes, 2017

[6] Coursera's 2017: Year in Review, Class Central, 2017

[7] Duolingo raises $25M at a $700M valuation, TechCrunch, 2017

[8] GSV, 2018

Source: A.T. Kearney analysis

Key considerations for private education players entering this space include government regulations, the need to balance diverse stakeholders, and the complexities of establishing reputation and credibility.

- **Government regulations.** Regulations for private education vary across Asia, especially in terms of obligations to align with the national education agenda, the degree of operating freedom, and accreditations or other controls. For example, for-profit higher education institutions are allowed in several countries but are illegal in Indonesia, significantly reducing the incentive for foreign institutions to enter into any partnership with a local university.[51] Even in the case of K–12 private institutions where there are no for-profit restrictions, Indonesia has a 49 percent cap on foreign ownership unless the foreign party can obtain a special license. Other key government regulations to consider in Asia are K–12 fee caps or the need for an allocated percentage of students from certain ethnic groups, which can significantly impact operations and profitability.
- **Balancing diverse stakeholders.** Education has relatively diverse stakeholders compared to other sectors, including administrators, business operators, families, governments, parents, regulators, shareholders, staff members, students, and teachers. Successful businesses can balance the interests of key stakeholders—collaborating with teachers to effectively incorporate technology into curricula, for example, rather than just selling hardware or software.

> Traditionally, governments and educators have been responsible for equipping young people with skills, but this has failed to satisfy employers' demands. Instead, businesses must take a more strategic, holistic approach to actively develop talent.

- **Establishing reputation and credibility.** Reputation and credibility determine how people perceive the short- and long-term value and quality of education. Parents and students both strongly believe the reputation of an educational institution impacts learners' future career prospects. This means that less-established entrants need to initially invest more in strengthening their reputation, and investors might have to accept slower growth and smaller initial returns while focusing on long-term gains.

## Individuals: taking charge of the personal learning journey

Last but not least, it will be crucial to empower individuals to take charge of their own learning journeys. Many of the world's most successful people are committed lifelong learners. Former US president Barack Obama dedicated an hour a day to reading despite his incredibly demanding workload; the world's richest person, Bill Gates, read a book a week during the most active years of his career and took a two-week reading vacation every year. Learning is a highly effective investment, and it generates powerful incidental benefits. In the 1980s, for example, as part of a labor bargaining agreement, Britain's Ford Motor Company agreed to allocate 0.3 percent of its wage bill to a scheme—jointly managed at the plant level

[51] Indonesia; Investing in Education, Global Business Guide, 2014

by managers and blue- and white-collar unions—to support staff learning outside of company training. Workers learned to drive, plaster walls, do more advanced math, and speak Spanish. Learning for pleasure generated powerful effects for the business: absenteeism rates dropped, retention rates improved, and the major bi-annual pay strikes symbolic of poor labor relations came to an end.[52]

With this in mind, governments, educators, and employers should invest in the enabling infrastructure that allows individuals or employees to upskill and reskill professionally and personally.

## Conclusion

In summary, in the coming decades education will undergo profound changes on a scale it has not yet seen in its history. Shaping the education agenda and transforming the learning ecosystem will require dedicated multisector collaboration. A key learning from Finland's experience is that this requires a holistic vision supported by the right policies—one that considers the overall well-being of all stakeholders. It is time to design and implement a collective system that will help future generations in Asia remain relevant and employable throughout their lives.

### Authors


**Pei Yun Teng,** global director social impact, The Netherlands
peiyun.teng@atkearney.com

**Soon Ghee Chua,** partner, Singapore
soonghee.chua@atkearney.com


[52] Lifelong learning helps people, governments and businesses. Why don't we do more of it?, World Economic Forum, 2017

# Appendix: Country Snapshots

## China

### Education context and challenges

- **Largest education system in the world** with 260 million students and 15+ million teachers in ~514,000 schools
- **Steady investment in education:** government expenditure on education to be maintained at ≥4% of GDP (up from 3% in 2006)
- Despite universal primary school enrollment, **many of China's 36 million migrant students remain disadvantaged** (for example, in taking local entrance exams) given *hukou*/ residency restrictions
- **Aims to universalize 1–3 years of preschool by 2020** with investments mandated at all levels of government; achieved 70% enrollment in 2014 (up ~20% in 5 years)
- **Strong emphasis on academics and assessment,** with Shanghai students topping all PISA subjects in 2009 and 2012 and high-stakes gaokao university entrance exams
- **Significant gaps between school and work:** nearly 10% (0.7 million out of 7.6 million) of university graduates failed to find a job within 6 months, 34% of graduates quit their jobs within 6 months, and 1 in 4 have a salary below that of a migrant worker
- **Adult learning** receives 1–1.9% of public spending; a key focus is **upskilling rural migrants for employability**

### The way forward

- **Reform *hukou* or residency policy to close rural-urban and regional gaps**
- **Drive quality of preschool education, alongside access:** the Ministry of Education has issued regulations on managing kindergartens and professional standards for kindergarten teachers
- **Introduce future-ready skills into curriculum and assessment at all levels** (for example, social and emotional skills, project-based learning, inquiry-based teaching, and collaborative problem-solving)
- **Develop employment-oriented vocational education:** the Ministry of Education is formulating curriculum catalogs, establishing standards for teaching and assessment, and improving occupational counseling. Some provinces have "vocational education reform zones" to bolster cooperation between education institutions and industry
- **Promote lifelong learning for employability** (for example, by establishing rural vocational education and adult education training institutions for workers, farmer training, and rural labor transfer training)

Sources: Education in China: A Snapshot, OECD, 2016; 2017 Chinese College Graduates' Employment Annual Report, MyCOS, 2017; Assessing China's skills gap and inequalities in education, OECD, 2015

## India

### Education context and challenges

- Education for All Program (Sarya Shiksha Abhiyan, SSA) is **one of the largest elementary education programs in the world,** catering to ~200 million children
- **Steady investment in education:** government expenditure on education at ≥4% of GDP (up from 3.2% in 2006)
- **Significant progress made to raise gross enrollment ratio** to 96.7% for primary and secondary education sector (6-14 years old)
- **Marginalized groups are still being left behind:** lower castes drop out at far higher rates than their peers, female literacy rates are still lagging behind, and rural students are being significantly outperformed by urban students
- **Working population to expand from 750 million to 1 billion** between 2010 and 2030, resulting in a serious risk of widespread unemployment or underemployment if skills gap is not addressed by better access to higher quality education
- **Major skills deficit:** only 40% of executives believe new employees have requisite job skills
- 54% of education leaders believe there is a **clear lack of interaction between industry and academia**

### The way forward

- **Open educational institutions specifically for marginalized groups:** the Telangana government is launching a university to cater to Scheduled castes and tribes
- **Provide incentives to stay in education longer:** the Women and Child Development Ministry has a scheme to enable cash transfers to families to help girls enroll in and stay in school up to grade 8
- **Upgrade basic school facilities to enable a conducive learning environment** (for example, by improving sanitation, providing drinking water, and having stable electricity)
- **Introduce future-ready skills into curriculum and assessment at all levels** (for example, social and emotional skills, project-based learning, inquiry-based teaching, and collaborative problem-solving)
- **Encourage industry players to partner with higher education providers** (for example, introduce mandatory industry internships for all penultimate-year university students as part of their degree program)

Sources: IBM Study Finds Higher Education to Play a Pivotal Role in Bridging India's Skill Gap, IBM, 2017; Education Statistics at a Glance, Government of India Ministry of Human Resource Development Department of School Education & Literacy New Delhi, 2016; Gender based Literacy rate in % from 1951-2011, Open Government Data Platform in India, 2015

## Indonesia

### Education context and challenges

- **Third-largest education system in Asia and fourth-largest globally** with over 50 million students and 2.6 million teachers in more than 250,000 schools
- **Steady investment in education:** government expenditure on education at ~4% of GDP (up from 2.9% in 2006)
- **Near universal primary and secondary education enrollment:** primary gross enrollment ratio is 106% and secondary is 86%
- Yet, **pre-primary education enrollment is low at 57%** (EU and North American average is 84%): funding allocated to early childhood development is just 1.2% of the education budget, compared to the international benchmark of 4-5%
- **Below OECD average literacy and numeracy** skills assessment scores stem from **poor quality of teachers**: only 45% and 48% of primary and secondary school teachers, respectively, are appropriately trained
- **Vocational education** is crucial for Indonesia to be competitive in Asia but it is **allocated only 9% of the education budget**: vocational education graduates are negatively perceived by employers as having poorer competencies

### The way forward

- **Increase government expenditure on pre-primary education:** priority should be given to children from poor or rural households for whom the benefits are felt the greatest
- **Continue to drive teacher reforms and treat it as a continuous and holistic process:** build upon the ambitious teacher reform introduced in 2005 (for example, aim to increase 4-year degree holders to 90% by 2020, introduce performance- and student feedback-based salary bonuses, and include more on-the-job training)
- **Ensure active private sector involvement in vocational education to improve perception** (for example, incorporate industry perspectives and standards into curricula, introduce work shadowing and internships as compulsory modules)

Sources: World Bank and Education in Indonesia, World Bank, 2014; PISA 2015 Results in Focus, OECD, 2016; Education in Indonesia, OECD, 2015; Right to Education Index 2016, RESULTS Educational Fund, 2016; Technical and Vocational Education and Training in Indonesia: Challenges and Opportunities for the Future, Lee Kuan Yew School of Public Policy, 2016

## Singapore

### Education context and challenges

- **With approximately 475,000 students in primary and secondary education,** Singapore has **consistently topped** the Program for International Student Assessment (PISA) and Trends in International Math and Science Study (TIMSS) rankings for decades
- **Steady investment in education:** government expenditure on education at 3.4% of GDP (up from 2.9% in 2006)
- **Preschool is an area where there is significant room for improvement:** ranked 30th in terms of quality and 25th in availability in a recent Economist Intelligence Unit (EIU) study of preschool environments in 45 countries
- **Exam-centric education system:** one-size-fits-all curriculum, age-based cohorts, and streaming based on standardized exams can contribute to anxiety at an early age with students consistently reporting 15-20% higher anxiety than the OECD average
- **Risk of skills mismatch** as the nature of jobs evolves with technology and industry transformation: largest share of job vacancies lie in professionals, executives, and technicians (PMET) positions

### The way forward

- **Prioritize development of preschools:** the Ministry of Education (MOE) aims for 40,000 childcare places to be added and will run 50 kindergartens by 2023. To ensure quality of teaching staff, a new National Institute of Early Childhood Development will also be set up for preschool teachers and annual spending on the preschool sector would be doubled to S$1.7 billion in 2022
- **Introduce curriculum that balances academic achievement with more holistic development** (for example, mandatory study of creative arts, life skills classes, and collaborative problem-solving)
- **Promote lifelong learning for employability:** Ministry of Manpower leads the SkillsFuture Singapore initiative which seeks to develop skills within the population to create a highly competitive future workforce through tailor-made training

Sources: What can school systems learn from Singapore?, Teachers 21, 2015; Starting well: Benchmarking early education across the world, EIU, 2012; Why Singapore's education system needs an overhaul, todayonline.com, 2017; Job Vacancies 2017, Manpower Research and Statistics Department, Ministry of Manpower, 2018

## About A.T. Kearney

A.T. Kearney is a leading global management consulting firm with offices in more than 40 countries. Since 1926, we have been trusted advisors to the world's foremost organizations. A.T. Kearney is a partner-owned firm, committed to helping clients achieve immediate impact and grow their advantage with their most mission-critical issues. We work with more than two-thirds of the Fortune Global 500, the world's largest companies by revenue, and with the most influential government and non-profit organizations. Our global team is more than 3,600 people strong, and we have more than 20,000 people in our extended professional and alumni network.