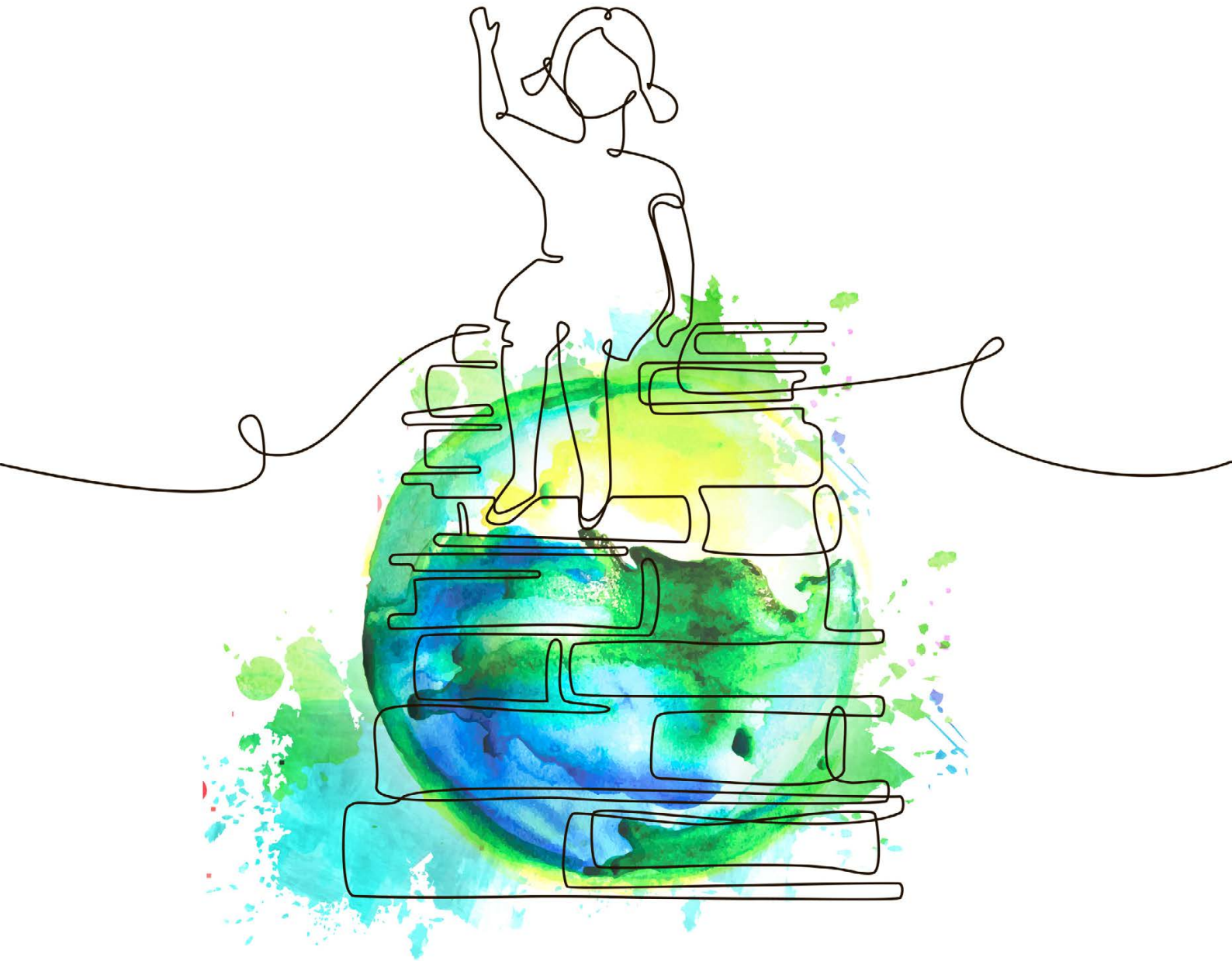


Yidan Prize
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WORLDWIDE EDUCATING FOR THE FUTURE INDEX 2019

From policy to practice



Produced and written by

The
Economist

INTELLIGENCE
UNIT

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About the report

This report is based on the findings of the Worldwide Educating for the Future Index, which was created by The Economist Intelligence Unit in 2017. The report and index are commissioned by the Yidan Prize Foundation. Our research and analysis proceed from the assumption that, to meet the challenges they will face in work and life in a rapidly changing landscape, today's young people need to develop capabilities and skills in areas such as critical thinking, problem-solving, leadership, collaboration, creativity and entrepreneurship, as well as digital and technical skills. The index was developed to assess the effectiveness of education systems in equipping students with these capabilities.

It is the first comprehensive global index to focus on the development of future-oriented skills, and to evaluate inputs to education systems rather than outputs such as test scores. The index concentrates on the 15-24 age band in 50 developed and developing economies. It is also based on a series of in-depth interviews with global experts on education.

Our thanks go to the following individuals for sharing their time and insights. Listed in alphabetical order by surname they are:

- Gerson Abesamis, executive director, Habi Education Lab
- Anant Agarwal, founder and chief executive officer, edX
- Leonor Briones, secretary of education, Government of the Philippines
- Derrick Chang, chief executive officer, PSB Academy
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- Daniel Edwards, research director, tertiary education, Australian Council for Educational Research
- Ulf-Daniel Ehlers, professor of education management and lifelong learning, Baden-Württemberg Cooperative State University

- Alexis Menten, managing director, Center for Global Education, Asia Society
- Martin Russell, director of Africa operations, Opportunity Education
- Anthony Salcito, vice president of worldwide education, Microsoft
- Jamil Salmi, global tertiary education expert
- Kyaw Moe Tun, founder and executive director, Parami Institute of Liberal Arts
- Robert Wagenaar, director, International Tuning Academy
- Scott Warren, co-founder and chief executive officer, Generation Citizen

The index also received input from an advisory panel of three experts, who provided feedback on indicator selection and other factors. We would like to thank the following individuals for their contributions:

- Simon Marginson, professor of higher education, Department of Education and Linacre College, University of Oxford
- Jamil Salmi, global tertiary education expert

- Robert Tijssen, chair, science and innovation studies, Leiden University.

The report was written by Denis McCauley and edited by Georgia McCafferty. Trisha Suresh and Michael Frank designed the index, and Shreya Mukarji oversaw the data

compilation. The Economist Intelligence Unit bears sole responsibility for the content of this report. The findings and views expressed do not necessarily reflect the views of the sponsor.



Executive summary

In the realm of education policy, debates rage among experts. What role should private schools play in a national education system? Should teachers and schools be judged on test scores, labour market outcomes or some other measure? There is one premise, however, on which consensus reigns: education systems urgently need to prepare students for the challenges that await them in work and society. There is also now broad agreement on the vital role that critical thinking, creativity, communication, entrepreneurship and other future-oriented skills, including digital capabilities, will play in helping students meet those challenges.

The 2019 Worldwide Educating for the Future Index offers evidence of this consensus. In the majority of the 50 index economies, national education strategies now explicitly recognise the importance of these abilities. More governments have signed on to the future skills agenda in the past two years through changes to their education policies. This is why the average policy environment score is now the highest of the three index categories, and has increased by 13% over 2018, contributing to an 11% increase in the index score overall. This improvement has occurred despite the addition of four low-income economies to the index.

Policy adoption, of course, is not enough to change an education system. The

experts we interviewed agree that implementation of policy changes leaves much to be desired everywhere. That work has only just begun in most economies, and it is a mission that policymakers and educators must focus on. An acceleration of progress is needed in adapting assessment systems, quality assurance frameworks and teacher training, among other things.

Other key findings of the 2019 study are:

Continuity and change in upper and middle tiers. Eight of the 2019 top ten economies were part of this elite group last year. Finland remains at the apex, with strengths across each category, and edged out its Nordic neighbour Sweden, which advanced to runner-up. New Zealand, unchanged from last year at third, is followed closely by Singapore—one of the index's notable improvers, having risen three places to fourth. Among the world's largest economies, the US, UK, France and Russia all fell back in the index, while China, India and Indonesia took steps forward.

Developing economies punch above their weight. For the first time, the 2019 index includes an income-adjusted ranking. When scores are adjusted, half of the original top ten relinquish their places to middle- and low-income countries—the Philippines, Ghana, Mexico, Vietnam and Indonesia. It suggests that the latter are putting

their more limited resources to good use in advancing a future skills agenda. For Finland and other high-income economies that remain in the top ten, it is confirmation that their success is due less to resources and more to policy foresight and follow-through.

The need to develop critical thinking has never been so vital. Continuing advances in technology such as artificial intelligence (AI) make it ever more important to cultivate the skills required to work with and complement AI. This includes the ability to analyse, reason and question decisions, including those made by algorithms. Critical thinking and related skills are also needed to make sense of the volumes of data that businesses and other organisations are collecting.

Future skills are vital to advancing global values. In contrast to the index's average policy and teaching environment scores, that of the socio-economic environment category has barely budged from 2018. This suggests a lack of progress in advancing values like respect for civil liberties and tolerance of religious diversity. With nativism, populism and similar forces on the march, students must be able to apply critical thinking and other future-oriented skills to fight back.



Introduction: Progress and inertia

This is the third Worldwide Educating for the Future Index. In an annual ranking like this, it is tempting to try to track an economy's scores and rank each year to discern its progress or regression over time. Caution is warranted, however, as the addition and removal of new indicators and economies each year alters the conditions under which each economy's performance is assessed. Nevertheless, some broad patterns are visible.

The most noteworthy of these is a sizeable increase of 11% in the overall average score, from 54.1 in 2018 to 59.8 this year. This has been helped by the addition of four developing economies to the index—the Democratic Republic of Congo (DRC), Myanmar, Tanzania and Uzbekistan—whose relatively low scores help increase the overall average based on the way the index is calculated. Improvement is most visible in the policy environment category (an average score of 65.3, compared with 58.0 in 2018, a 13% increase), where more economies have incorporated future-skills objectives into their national education strategies. The average teaching environment score has also risen, although the socio-economic environment has moved only slightly. (Discussion of the trends in each category is found in subsequent chapters.)

The changes to the composition of the index group¹ were made with the objective of capturing a larger share of the world's youth. The 50 economies assessed in 2019

account for 81.3% of global youth aged 15 to 24, and 88.3% of the world's population overall, both slight increases over the previous year.

The EIU also sought to place each economy's approach to its youth under a finer microscope. A new indicator—extra-curricular learning—has been included in the teaching environment category. This assesses different aspects of an economy's youth promotion strategy, including the existence of a government body responsible for co-ordinating it.

We can say many things about China, but one certainty is that the government will stay the course in the long term and keep building. That's a positive feature when it comes to education system reform.

JAMIL SALMI

Global tertiary education expert

Movers and shakers

Amid the changes there is also continuity. This is evident in the 2019 index top ten, which includes eight of 2018's contingent. Finland has retained overall leadership, with Sweden in second place. As in previous years, Finland's future skills strengths are almost universal across the index pillars. It is the category front-runner when it

comes to the teaching environment, where it is a leader or co-leader in extra-curricular learning, career counselling and classroom access to technology. The quality of its teachers is among the world's best, coming second only to South Korea.

Although difficult to quantify, another of Finland's advantages is the consistency of standards across a large expanse of territory. "Whether you attend a school in Helsinki or in a remote rural area, the educational experiences and opportunities are the same," says Jamil Salmi, a global tertiary education expert.

Sweden's advance to runner-up position in 2019 is partly attributed to improvements in its future skills policy. It achieves a perfect score for higher education governance, which indicates a quality assurance framework applicable to all universities (public and private) that specifically mentions acquiring future skills.

Singapore is another top-tier economy to advance up the ranks, climbing three places to fourth. Its key strengths include the integration of future skills in the curriculum framework for upper secondary education and their reflection in higher education governance. The island-state's policymakers have taken a leap forward in advancing the cause of learning future skills, agrees Derrick Chang, CEO of the PSB Academy, a private education institution for higher learning.

¹ The four new economies of the DRC, Myanmar, Tanzania and Uzbekistan take the place this year of four with higher income levels: Algeria, Costa Rica, Malaysia and Taiwan.

Figure 1: Worldwide Educating for the Future Index 2019 scores, overall and by category (out of 100)

■ High score ■ Medium score ■ Low score

OVERALL SCORE			POLICY ENVIRONMENT			TEACHING ENVIRONMENT			SOCIO-ECONOMIC ENVIRONMENT		
1	Finland	84.8	1	Sweden	93.2	1	Finland	82.0	1	New Zealand	87.4
2	Sweden	84.3	2	Finland	88.3	2	Singapore	78.9	2	Norway	87.1
3	New Zealand	79.9	3	Netherlands	88.1	3	Sweden	78.3	3	Finland	86.9
4	Singapore	79.7	=4	New Zealand	86.2	4	Germany	76.4	=4	Sweden	86.0
5	Netherlands	79.2	=4	Singapore	86.2	5	Canada	75.8	=4	Switzerland	86.0
6	Canada	79.1	6	Norway	86.0	6	Switzerland	75.6	6	Canada	85.5
7	Switzerland	78.5	7	Australia	82.4	7	New Zealand	73.2	7	Netherlands	85.2
8	Australia	77.8	8	South Korea	80.5	8	Australia	73.0	8	Germany	83.1
9	Germany	74.9	9	Canada	80.2	9	Japan	72.4	9	Australia	82.9
10	Japan	74.2	10	Peru	78.8	10	Hong Kong SAR	72.2	10	UK	82.0
11	Norway	73.5	11	Japan	78.6	11	Netherlands	71.4	11	France	78.1
12	Hong Kong SAR	73.0	12	Switzerland	78.2	12	South Korea	70.6	12	US	76.1
13	South Korea	72.6	13	Italy	75.7	13	Spain	70.2	13	Chile	73.6
14	France	69.9	14	Tanzania	75.5	14	UK	65.7	14	Hong Kong SAR	73.0
15	UK	69.8	15	Turkey	75.2	15	Poland	64.5	15	Japan	72.4
16	Spain	69.1	16	France	74.9	16	France	63.6	16	Singapore	71.9
17	Italy	66.7	17	Hong Kong SAR	74.3	=17	Mexico	63.2	17	Spain	71.7
18	UAE	66.5	18	UAE	74.1	=17	UAE	63.2	18	Italy	67.4
19	Poland	65.8	19	Kazakhstan	71.0	19	Italy	61.0	19	Poland	66.1
20	Mexico	63.9	20	Ghana	70.7	20	Norway	60.6	20	South Korea	66.0
21	Chile	62.5	21	Israel	70.6	21	South Africa	58.5	21	Argentina	65.6
22	US	61.4	22	Uzbekistan	70.5	22	Philippines	57.8	22	Colombia	65.0
23	Philippines	60.6	23	Chile	70.0	23	Indonesia	57.5	23	Brazil	64.9
24	Peru	59.9	24	Mexico	68.9	24	China	56.8	24	Israel	64.2
	AVERAGE	59.8	25	UK	68.4	25	US	56.2	25	UAE	63.2
25	Colombia	59.5	26	Colombia	67.9	26	Vietnam	56.1		AVERAGE	62.2
26	Ghana	59.2	27	Poland	67.6		AVERAGE	55.5	26	South Africa	61.9
27	South Africa	58.7	28	Germany	66.9	27	Chile	53.6	27	Ghana	59.8
28	Indonesia	57.9	29	Philippines	66.0	28	Colombia	52.3	28	Philippines	59.6
29	Israel	57.6	30	Myanmar	65.9	29	India	52.2	29	Peru	58.9
30	Kazakhstan	57.0	31	Spain	65.7	30	Ghana	52.1	30	Mexico	58.2
31	Vietnam	55.6		AVERAGE	65.3	31	Russia	50.9	31	Thailand	54.9
32	Turkey	54.9	32	Russia	65.1	32	Kazakhstan	50.4	32	Kazakhstan	52.4
33	Russia	54.1	33	Indonesia	63.8	33	Peru	48.8	33	Saudi Arabia	52.3
34	China	53.8	34	Vietnam	62.4	34	Thailand	47.6	34	India	50.1
35	India	53.0	35	Pakistan	61.2	35	Israel	47.2	35	Indonesia	49.9
36	Uzbekistan	52.0	36	US	60.4	36	Saudi Arabia	45.7	36	Turkey	49.1
37	Brazil	51.9	37	Ethiopia	60.3	37	Turkey	45.2	37	Kenya	48.7
38	Thailand	51.8	38	Brazil	58.4	38	Uzbekistan	44.5	38	China	46.7
39	Tanzania	51.7	39	South Africa	56.9	39	Bangladesh	43.6	39	Egypt	46.6
40	Argentina	49.9	40	Thailand	56.8	40	Argentina	43.0	40	Myanmar	45.9
41	Ethiopia	45.9	41	India	56.3	41	Brazil	42.8	41	Russia	45.6
42	Iran	44.3	42	China	53.5	42	Iran	42.3	42	Nigeria	44.6
43	Myanmar	42.6	43	Egypt	52.7	43	Tanzania	40.5	43	Ethiopia	44.4
44	Egypt	41.3	44	Iran	52.6	44	Kenya	39.1	44	Vietnam	44.2
45	Pakistan	41.0	45	Argentina	51.1	45	Nigeria	38.1	45	Tanzania	44.1
46	Saudi Arabia	40.9	46	Saudi Arabia	25.4	46	Ethiopia	37.9	46	Pakistan	43.8
47	Bangladesh	36.6	47	Kenya	22.2	47	Egypt	32.3	47	Uzbekistan	42.7
48	Kenya	36.0	48	Bangladesh	21.2	48	Pakistan	27.7	48	Bangladesh	42.2
49	Nigeria	33.5	49	DRC	20.3	49	Myanmar	27.3	49	Iran	36.5
50	DRC	21.3	50	Nigeria	18.5	50	DRC	17.0	50	DRC	33.4

Source: The Economist Intelligence Unit

Among the world's largest nations by population, China and India both improved their relative standing in the 2019 index.² China's strengths include classroom access to technology and higher education governance that seeks to hold institutions to meeting future skills objectives. India has made particular strides in the policy environment, with a new national education policy published in early 2019 that explicitly mentions future-oriented skills such as critical thinking, communication and entrepreneurship.

Standing still

Four other large economies—those of the US, UK, France and Russia—have each dropped back in the table. Generally speaking, when falls occur from one year to the next it is less a case of deterioration in an economy's performance and more of others registering faster improvement. This applies to the performance of these four countries, although each has weaknesses that are inhibiting progress. In France, for example, there is no evidence of strategy, curriculum or assessment frameworks being reviewed in recent years. While other governments incorporate future skills objectives into education policy, Russia's national strategy lacks mention of critical thinking, digital skills or problem-based learning.

In the US and UK, future skills policy environments have suffered from inattention—in part due to political factors. In the US, the pursuit of national policy objectives has long been weakened by the decentralised nature of its education system. The inclination of the US administration to reduce the federal government's footprint in education means that past weaknesses in future skills policy and implementation remain. In the UK, meanwhile, Brexit has dominated the political agenda in Westminster to such an extent in recent years that the government has paid little attention to education policy initiatives.

New entrants, familiar challenges

Each of the four new additions to the index are ranked in the lower third of the table, with the DRC at the bottom. All are impeded by common challenges, including limited resources and the overriding priority of ensuring access to basic education—but not necessarily by a lack of good policy intention. Myanmar's national education strategy, for example, addresses the need to develop future-oriented skills, including critical thinking, according to Kyaw Moe Tun, founder and executive director of the Parami Institute of Liberal Arts, a private, not-for-profit institution based in Yangon. "But reforms towards the

goal of establishing a world-class higher education system, as outlined in the NESP [National Education Strategy Plan], are going to take a lot of time, and we don't have enough resources to implement them" he says.

In Tanzania, Martin Russell, director of Africa operations at Opportunity Education, a private foundation, says education policymakers have been thoughtful about setting objectives for developing future-oriented skills in the nation's schools. "However, implementation of the syllabus in most schools fails to enable real skills learning," he adds. "Students passively listen to lectures, exploration and discussion is discouraged, and high-stakes exams dominate learning outcomes every two years, making true skills learning almost impossible."

As we will see in the following discussion, Tanzania's difficulties in implementing policy changes with future skills development as their aim are far from unique.

² Both advanced five places: China to 34th and India to 35th. The scale of their advance is partly diminished by the fact that three higher-standing economies in 2018 fell out of the index this year.

Resources tell a tale: Income-adjusted performance

The EIU intentionally designed the Worldwide Educating for the Future Index so that, wherever possible, it could avoid any potential bias by a country's income levels. Most indicators selected to calculate the index don't require significant financial resources—although they do often require a significant investment of time and human capital. Our baseline ranking assesses the performance of economies in promoting future skills education, regardless of their income levels. The focus is to try to measure

policy and strategy impact rather than financial clout.

Despite these efforts, a quick scan of the index reveals a discernible pattern: the wealthier an economy, the more likely it is to rank in the upper half. The inference from this is that education systems in wealthier economies are better able to put their ample resources towards designing and implementing education policies that prioritise future-oriented skills. Most lower-income economies, meanwhile,

still struggle to ensure access to basic education. The 2018 study, however, had some notable exceptions to this apparent “rule”, with some middle- and low-income economies ranking higher than wealthier ones, either overall or in certain index categories and indicators. This prompted questions about what the index would look like if income levels were controlled explicitly, rather than implicitly.

To answer this question, The EIU has included a group of income-adjusted rankings in the 2019 index report. These income-controlled results aim to compare like for like, so they represent a country's performance relative to how you would expect the average country at that level of income to perform. The mathematics is complex, but put simply, to create an even basis for comparison, we adjusted economy scores for national levels of income.³

The results are striking. When adjusted for GDP per capita income, half of the original top ten fall out of that elite group and are replaced by middle- and low-income economies. Finland remains the overall index leader,

Figure 2: Top ten index economies, baseline and income-adjusted ranks

RANK	ORIGINAL	INCOME-ADJUSTED
1	Finland	Finland
2	Sweden	Philippines
3	New Zealand	Ghana
4	Singapore	New Zealand
5	Netherlands	Mexico
6	Canada	Sweden
7	Switzerland	Vietnam
8	Australia	Indonesia
9	Germany	Japan
10	Japan	Canada

Source: The Economist Intelligence Unit

³ We regressed values for each category on GDP per capita using individual category scores for all 50 economies. The regression equation gave us the expected value of a variable for a nation's level of income. We used GDP values for 2018 in US dollars measured in Purchasing Power Parity (PPP) terms. The final scores expressed reflect the percentage deviation from expected value at an economy's level of GDP per capita.

confirming that its success in providing future skills education is due more to policy foresight, imagination and follow-through than an abundance of resources. New Zealand's position also remains largely unchanged, while Sweden and Canada, although falling a few rungs on the ladder, remain in the top ten. Japan, meanwhile, moves up a rung.

The economies that stand out the most from this exercise are the Philippines and Ghana, which rank second and third after adjusting for economic development. Mexico, Vietnam and Indonesia also figure within the

income-adjusted top ten. To put these results into perspective, Mexico ranks 15 levels higher than expected for a country at that level of GDP per capita. Canada, on the other hand, is four rankings lower than what would be expected from a country with its GDP per capita.

The income-adjusted ranking highlights the advances made by some lower income economies in their approach to future-skills education. However, it also shows that despite The EIU's best efforts to avoid income bias, there is still a correlation between income and education systems that

are geared for the future. There are many possible reasons for this result. It could be that higher income improves access to information or education networks. The impact of different political structures on policy making and implementation may also be a factor. The question of drivers does not have an easy answer, but it shows that as much as policy should drive results, in reality GDP also counts. Education systems in economies at an income disadvantage need to work harder than those with more financial resources to secure the future of its youth.



Chapter 1. Policy: The implementation imperative

The policy environment is the brightest component of the global future skills agenda. Governments in most index economies now acknowledge the importance of future skills development in national education strategies. In over three-quarters of economies, for example, national strategy for upper secondary education refers directly or indirectly to communication, entrepreneurship and global awareness. Two-thirds refer to critical thinking and eight out of ten mention digital skills.

Progress in future skills policy is ongoing. India's government, for example, published a draft national education policy in 2019 that mentions each of these skills in the context of upper secondary curriculum reform.

Policy reviews, in which future skills and other elements are updated, are now a regular occurrence in many index economies. Education strategy is reviewed on a continuing basis (or has been reviewed in the past year) in 29 of the 50 economies. It is now an established practice not just in the developed world but in middle and low-income economies, including the Philippines, Thailand and Brazil. In the Philippines, says education secretary Leonor Briones, the policy changes are relatively recent (adopted in 2016), and it's critical that the policies and their implementation are reviewed carefully. "Policy adoption is one thing," she

says, "but successful implementation is by no means guaranteed".

Practice makes perfect

Anthony Salcito, vice president of worldwide education at Microsoft, sees such widescale policy recognition as a major step forward for future skills development globally. "There's increasingly a connection at government, senior policy and education leader level on the need for future-oriented skills to become a core element of learning," he says. However, he warns that including future skills in policy is not enough to ensure a genuine shift. "Education systems need to get to the next level, to integrate future skills into curriculum and into assessment frameworks."

This is easier said than done, according to Robert Wagenaar, director of the Netherlands-based International Tuning Academy, a higher education research organisation. "Our research shows that few educational systems, in Europe or elsewhere, are taking action to translate policy on future-oriented skills into action," he says.

Implementing policy change means updating quality assurance frameworks for universities, among other things. "Almost all countries have a quality assurance framework for universities, but far from all have frameworks

that specifically address future-oriented skills," explains Jamil Salmi. He also notes the tension faced by quality assurance agencies when encouraging universities to be innovative in changing curriculum and pedagogical practices while also enforcing standards and norms.

In the future, universities will need to provide a learning experience for students that is fundamentally different from what exists today.

ULF-DANIEL EHLERS

Professor of education management and lifelong learning, Baden-Württemberg Cooperative State University

Assessment systems must also be adapted to support future skills learning. Only a handful of economies in the index receive high marks for this. Less than half, for example, prioritise student-centred feedback in assessment, relying almost wholly on testing. Australia meets the index criteria in this area, but Dr Daniel Edwards, research director of the Tertiary Education Research Programme at the Australian Council for Educational Research, notes that the frameworks at university level are too broad to be useful. "Assessment frameworks need to be much more specific," he says.

Figure 3: Index economies in which national upper secondary education strategy refers directly or indirectly to soft skills, digital skills and critical thinking

	SOFT SKILLS (EG, COMMUNICATION, ENTREPRENEURSHIP, GLOBAL AWARENESS)	CRITICAL THINKING	DIGITAL SKILLS
Argentina	✓		✓
Australia	✓	✓	✓
Bangladesh			
Brazil			
Canada	✓	✓	✓
Chile			✓
China	✓		✓
Colombia	✓	✓	✓
DRC			
Egypt	✓	✓	
Ethiopia	✓		
Finland	✓	✓	✓
France	✓	✓	✓
Germany		✓	✓
Ghana	✓	✓	✓
Hong Kong SAR	✓		✓
India	✓	✓	✓
Indonesia	✓		
Iran	✓		✓
Israel	✓	✓	✓
Italy	✓	✓	✓
Japan	✓	✓	✓
Kazakhstan	✓	✓	✓
Kenya			
Mexico	✓	✓	✓
Myanmar		✓	✓
Netherlands	✓	✓	✓
New Zealand	✓	✓	✓
Nigeria			
Norway	✓	✓	✓
Pakistan		✓	✓
Peru	✓	✓	✓
Philippines	✓		✓
Poland	✓	✓	✓
Russia	✓		
Saudi Arabia			
Singapore	✓	✓	
South Africa			✓
South Korea	✓	✓	✓
Spain	✓	✓	✓
Sweden	✓	✓	✓
Switzerland	✓	✓	
Tanzania	✓	✓	✓
Thailand	✓	✓	✓
Turkey		✓	✓
UAE	✓	✓	✓
UK	✓		✓
US	✓	✓	✓
Uzbekistan		✓	✓
Vietnam	✓		✓

Source: The Economist Intelligence Unit

Translating future-oriented policies into practice presents unique challenges to education systems in less economically developed countries, many of which have spent decades striving to provide even basic education to citizens. “We have finally achieved the goal we set for ourselves nearly 80 years ago — ensuring access to education for all Filipinos,” says Ms Briones. “Now our challenge is to improve its quality, and in many ways this will be more difficult.”

The right role for digital

Amid our discussion of soft skills and competencies, it is worth restating the importance of digital skills. As illustrated in Figure 3 above, digital competencies feature as a core future skill in the index and, in our view, should carry the same weight in education policy as creativity and leadership. These different skills are entirely complementary to one another. According to Mr Salcito, critical thinking and creativity are needed to solve problems relating to data and technology, and STEM (science, technology, engineering and mathematics) learning approaches should incorporate those.⁴ (See also “Why tomorrow’s data and AI specialists need soft skills”.)

For Anant Agarwal founder and CEO of edX, an online learning platform, the

ability to apply critical thinking will be vital to addressing the opportunities and challenges that newer technology fields such as AI and machine learning pose. Ethical dilemmas are among the challenges, says Robert Wagenaar: “As AI and other advanced technologies permeate the workplace, almost all levels of worker will need to be able to make decisions about how algorithms influence medical, financial, privacy and other matters that are critical to people’s lives,” he explains.

There's a misunderstanding that what we need to do is get students technology skills. Whereas what we need are students who understand how to unleash their human skills in a world of technology.

ANTHONY SALCITO

Vice president of worldwide education, Microsoft

The index looks at digital technology in one other dimension—as a tool to support learning in schools and universities. Not surprisingly, classroom access to technology is deemed most favourable in the developed world. However, one middle-income and one low-income economy—China and Uzbekistan—figure in the top ten of the index on

this measure. China’s government, for example, has placed the digitisation of education near the forefront of its drive to modernise education. Among other objectives, it aims to use the internet to give rural schools access to teachers and resources from more developed urban schools.⁵

⁴ Some experts also believe that the STEM concept should be widened to incorporate the arts, and the acronym expanded accordingly to STEAM. See, for example, “STEM And STEAM Education: Why We Need Them”, *Forbes*, August 28, 2019 and “STEM vs. STEAM: Why One Letter Matters”, American University School of Education website, May 12, 2018.

⁵ See, for example, “Using Tech to Close the Education Gap in China”, *Bloomberg*, April 17, 2019.

Lost in translation?

Academics and educators began recognising the importance of developing future-oriented skills two decades ago, yet there remains no uniform terminology to describe them. Are they skills or competencies? If the former, is the term “soft skills” sufficiently descriptive, particularly as few would dispute the need for young people to develop solid digital and technical skills? If they are competencies, are they core, higher order, or both? We ourselves do not claim a terminological solution, preferring “future” and “future-oriented” skills more as a matter of convenience.

Most experts may agree on the specific skills or competencies that need to be developed: critical thinking, creativity, leadership, analysis, problem-solving and entrepreneurship, among others. However, the lack of standard lexicon to describe these areas could cause problems when trying to design education programmes based on labour market needs.

Jed Cinnamon, senior programme manager for education at Nesta, a UK foundation which promotes innovation,

finds that educators and labour market researchers often do not speak the same language. “The definitions of terms are slightly different between them and sometimes when we think we’re talking about the same things, we’re actually not,” he says. “This is a quite a significant challenge.”

Mr Cinnamon cites the term “creativity” as an example. “The term could refer to originality, fluency of ideas and the interdisciplinary ability to creatively solve problems,” he says. “‘Creative skills’ sometimes refers to specific roles or technical skills in the creative economy. Sometimes it might mean both. These are related skills, but they’re not the same. It’s important to be precise in our language, particularly when educators are speaking to employers, and vice versa, when there is a risk of misunderstanding.”

Let’s be honest

There is another challenge when it comes to matching wider or soft skills to evolving occupations, according to Mr Cinnamon: a lack of evidence. “We don’t actually know how to develop

some of the wider skills that the labour market is telling us are important. We know more in some areas than others—for instance the pedagogies and approaches that work in developing social and emotional skills,” he says. But in contrast to the mass of existing evidence based on improving academic attainment, less is known about how to develop many of these wider skills, Mr Cinnamon says. “It’s really important that researchers, practitioners and policymakers are honest about what we know and don’t know, and that we don’t claim to have all the right answers.”

Q&A

Why tomorrow's data and AI specialists need soft skills

Derrick Chang, CEO of the PSB Academy (Singapore)

EIU:

You've said that technical skills such as programming will gradually become irrelevant as the future economy takes shape. What do you mean by this?

Mr Chang:

Singapore has made great strides in introducing technical skills such as programming into primary and secondary level education. Is having a programming language important? No, it isn't. It is the logic that comes with programming, the ability to reason, that is important. In the future economy, employers will prioritise not programming but adaptive skills such as critical thinking, creativity and sociability. These, together with lifelong learning, will take students and workers past the next technological disruption, and will stay relevant even as programme languages evolve or become obsolete.

EIU:

You've also said that the workforce of the future must have the ability

to apply and convert data into actionable, relevant and timely information. How will adaptive skills such as critical thinking help young people work with data more effectively?

Mr Chang:

Data by itself is unstructured, uninspired and cold. It presents a reader with mountains of information but not necessarily something that is useful. It can be made useful only through someone's ability to apply critical thinking. Anyone can crunch data, but it needs to be deciphered. You need to use critical thinking in order to see what is important in the data and draw insights. And it must be presented in a way that is inspiring, that people can understand and use to improve their lives in some way.

EIU:

How is the PSB Academy teaching its students to apply critical thinking to better understanding data?

Mr Chang:

We've been teaching our engineering students about problem-solving. For example, instead of just teaching them hard engineering skills, we take a step back and say, "Why don't we teach design thinking to our students?". Design thinking workshops help students reinvent the way that they approach problems. They will use that critical thinking to see a problem from totally different angles. That's what I mean by saying that data must be seen not just in the way it's presented to us but in several different lights. If you don't convert the data to something actionable that people can apply, it's quite useless.

Chapter 2. Teachers cannot go it alone

According to Mr Wagenaar, most university-level staff are “driving without a licence”. He believes they are “lacking the tools and methodologies to teach future skills,” largely due to scant teacher training and insufficient resources. “Teachers and administrators may say that creativity and collaboration are very important, but most have no way of supporting it, assessing it and building rigour into its teaching,” agrees Anthony Salcito. Without such support, both experts say teachers naturally fall back on teaching the way they were taught as students.

Teachers need to understand that, when it comes to education, they’re the best designers around, and their students can be as well.

GERSON ABESAMIS

Executive director, Habi Education Lab

Cultural resistance to new teaching methods puts a brake on the progress of future skills development. In the Philippines, Gerson Abesamis, executive director of Habi Education Lab, a not-for-profit education advisory group, has found teachers resistant to learning about different teaching approaches—such as the use of design thinking—when presented as a new methodology. “When we show them, however, that it’s

not necessarily new, that they’re already applying some of its principles, they become much more receptive.” (See also “In Africa, age-old teaching methods die hard”.)

Equally constraining in many education systems is a lack of guidance and support from above. Well-intentioned policy goals relating to future skills development often do not get filtered downward, a hazard in economies such as the US and India that have large, decentralised education systems.

Without evidence-based guidance and a focus through accountability measures, teachers and administrators will pay policy little attention and will simply carry on doing what they were doing.

JED CINNAMON

Senior programme manager for education, Nesta

In the UK, says Mr Cinnamon, the government education standards body Ofsted recently took a step in the right direction when it published a draft inspection framework which included a focus on personal development. However, he says the effort lacked clarity on what constitutes high-quality, evidence-based provision. “Without

evidence-based guidance and a focus through accountability measures, teachers and administrators will pay policy little attention and will simply carry on doing what they were doing,” Mr Cinnamon adds.

Students from all social groups, including under-represented ones, can thrive when they have more of a growth mindset about their abilities—when they truly believe they have the ability to grow. Teachers need such beliefs about themselves as well. We need to train teachers to create a growth mindset environment in their classrooms.

CAROL DWECK

Lewis and Virginia Eaton professor of psychology, Stanford University

In Australia, upper secondary and tertiary education suffers from what Dr Edwards calls a teacher supply problem. He notes that there has been a lack in strategy and planning at state and federal government levels to ensure a spread of expertise among teachers entering the system. There is evidence of teachers having to teach ‘out of discipline’ to cover deficiencies in specialist expertise when

it comes to STEM fields and teaching of languages other than English.

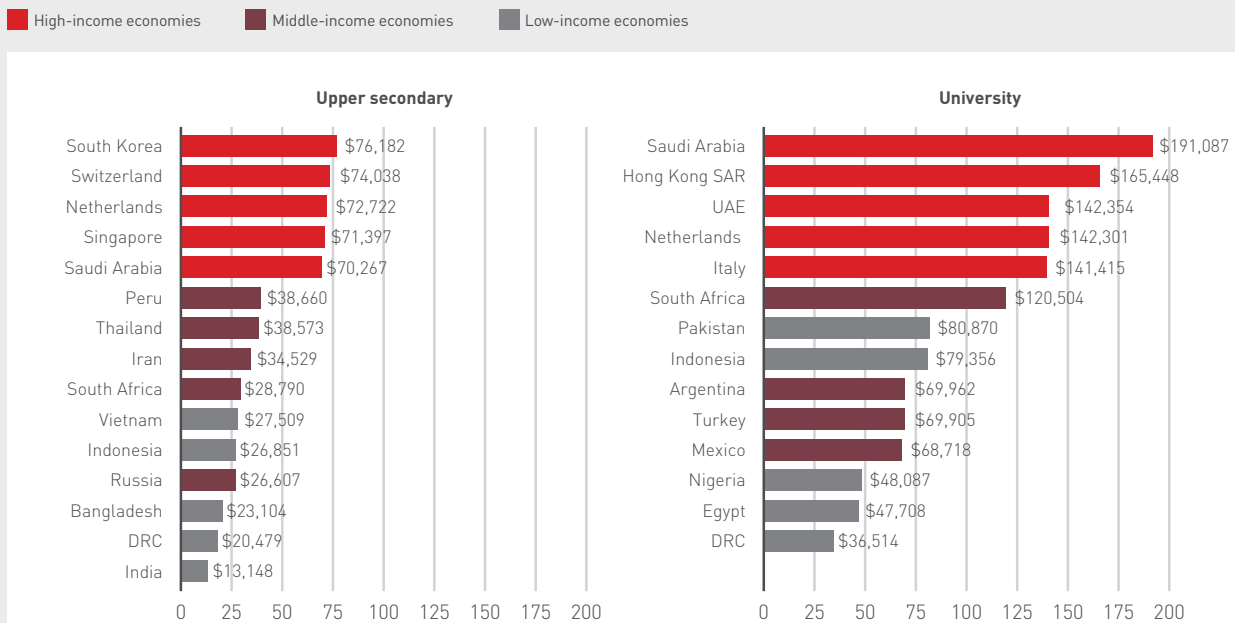
Australia is among the better performers in this year's index, both overall and in the policy and teaching environment categories. The aforementioned difficulties highlight the distance even index leaders have to travel before their education systems are well-positioned to help students develop future-oriented skills.

Supporting youth

The classroom is just one environment where students' future-oriented skills are developed. Extra-curricular activities provide many other opportunities, with sport, arts and music clubs and community volunteering just a few possibilities. These settings also provide an opportunity to hone skills like leadership, collaboration and creativity. Falling outside the traditional

boundaries of school learning, administrators and education officials often find it challenging to co-ordinate extra-curricular activities in ways that complement classroom learning. In many economies, government-level youth agencies fill this gap. For this reason, we have modified how extra-curricular learning is scored in this year's index.

Figure 4: Average teacher salaries, upper secondary and university levels, US dollars, 2019 (five highest high-income, middle-income and low-income economies)



Source: The Economist Intelligence Unit

Q&A

In Africa, age-old teaching methods die hard

Martin Russell, director of Africa operations, Opportunity Education (Tanzania)

EIU:

How does your organisation work with teachers to help them adapt to new requirements?

Mr Russell:

We spend quite a lot of time working with teachers. Part of what we do is to coach those who are really trying to make the shift to new methods of teaching and learning. It can be a lonely place for some teachers. Many are surrounded by colleagues who are unwilling to make the shift or go down a path that's more innovative or new. When you feel like you're standing alone, it's important to have those who walk alongside you, equip you and challenge you, to help you think through a process and become a better teacher.

EIU:

Why is the shift so difficult?

Mr Russell:

Teachers here are the product of a teacher-centred system where they were lectured at as students.

They've been lecturing for years, too, and all of a sudden they're being asked to make the leap to entirely new methods of teaching. The challenge that the education system must face is that traditional norms and expectations stifle real growth and skills development. Even teachers who are willing to shift their classroom work have limited ability and resources to support skills development, practice and assessment, and they typically revert to lecturing from the blackboard. But if they make that shift, the impact can be profound. When teachers let go of their authority position in the classroom and become a mentor to their students, and when they leave the blackboard, students thrive in ways not seen here before.

EIU:

What else must be done to support teachers making the transition?

Mr Russell:

The training of administrators is also important because they need to be able to understand and see what

teachers are doing and evaluate whether or not they are doing the right thing. If the teachers change but the in-school academic masters are still enforcing the old standards, it's a recipe for disaster.



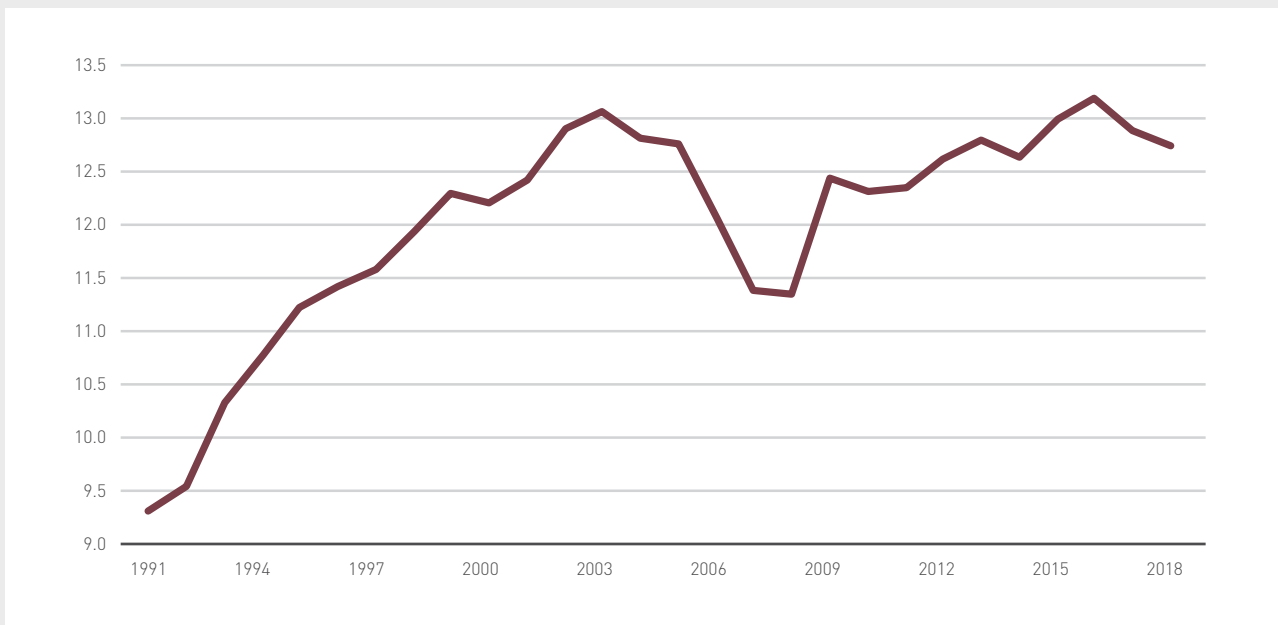
Rather than focussing on participation in academic competitions and sport, as in previous years, we now base the score on the existence of a government agency or department dedicated to promoting youth activities. This ensures that opportunities for youth to explore extra-curricular learning are part of a government’s policy and not just something offered to a select few.

Altogether 35 of the 50 economies have a ministry or agency which co-ordinates extra-curricular activities.

New Zealand’s Ministry of Youth Development, for example, works with young people aged between 12 and 24 “to develop and use knowledge, skills and experiences to participate confidently in their communities”.⁶ Germany’s Federal Ministry for Family Affairs, Senior Citizens, Women and Youth implements the government’s youth strategy. This includes organising national competitions and co-ordinating a programme for young people to provide social services to local communities or take part in environmental initiatives.⁷

The importance of co-ordinating youth activities at a national or regional level may be seen against the backdrop of worryingly high youth unemployment in many parts of the world. In developed markets, unemployment rates among 15- to 24-year-olds spiked following the 2008 financial crisis and remain well above pre-crisis levels. For example, unemployment in 2018 was as high as 39% in Greece, 34% in Spain and 32% in Italy (Figure 5).

Figure 5: World youth unemployment (% of total labour force, ages 15-24)



Source: International Labour Organization, ILOSTAT database.

⁶ Ministry of Youth Development Funding Guide 2019/20.

⁷ “Youth Strategy, Acting for a Youthful Society”, Federal Ministry for Family Affairs, Senior Citizens and Youth website.



Balancing abilities with academics in Asia

Contrary to some Western misperceptions about East Asia, the need for students to develop non-academic abilities such as creativity, communication and collaboration is well understood by educators, according to Cheng Kai Ming, emeritus professor of social contexts and policies of education at the University of Hong Kong. In China, Japan and other Confucian societies, such abilities are understood as personal or “internal qualities”, necessary “for the individual’s moral development”. By contrast, in the West they are considered skills.

Policymakers and educators also understand that the deeply-rooted exam-based approach to university entry impedes the ability of schools to

alter the pedagogical balance towards the development of such qualities. In the past five years, governments in China, Japan and Singapore, among other Asian economies, have tried to lessen the reliance on exam scores,⁸ however Mr Cheng believes it will be many years before this genuinely changes. He believes that it is the biggest impediment to advancing future skills learning in Chinese secondary schools.

Even in Shanghai, where reforms began in 2014, the gaokao (university entrance exam) is proving stubbornly resilient, says Mr Cheng. “Shanghai is making progress with its reforms, and its universities are starting to change their entrance criteria, but universities elsewhere in China are not, and

Shanghai students apply to those, too.” In Japan as well, teachers continue to feel pressured to help students achieve high entrance exam scores.

In China, there is an additional cultural factor that contributes to the gaokao’s resilience, says Mr Cheng. “Many educators worry that, unless university admission is based entirely on something objective, such as test scores, the influence of personal connections will grow.”

The exam focus will continue to weigh down learning in Asian schools for some time, says Mr Cheng. “Students cannot become active learners as long as the public examination continues to dominate school life.”



⁸ See, for example, “New Gaokao in Zhejiang China: Carrying on with Challenges”, *International Education News*, March 6, 2019; “Overhauling Japan’s High-Stakes University-Admission System”, *The Atlantic*, January 13, 2018; “Children in Singapore will no longer be ranked by exam results. Here’s why”, World Economic Forum website, October 11, 2018.

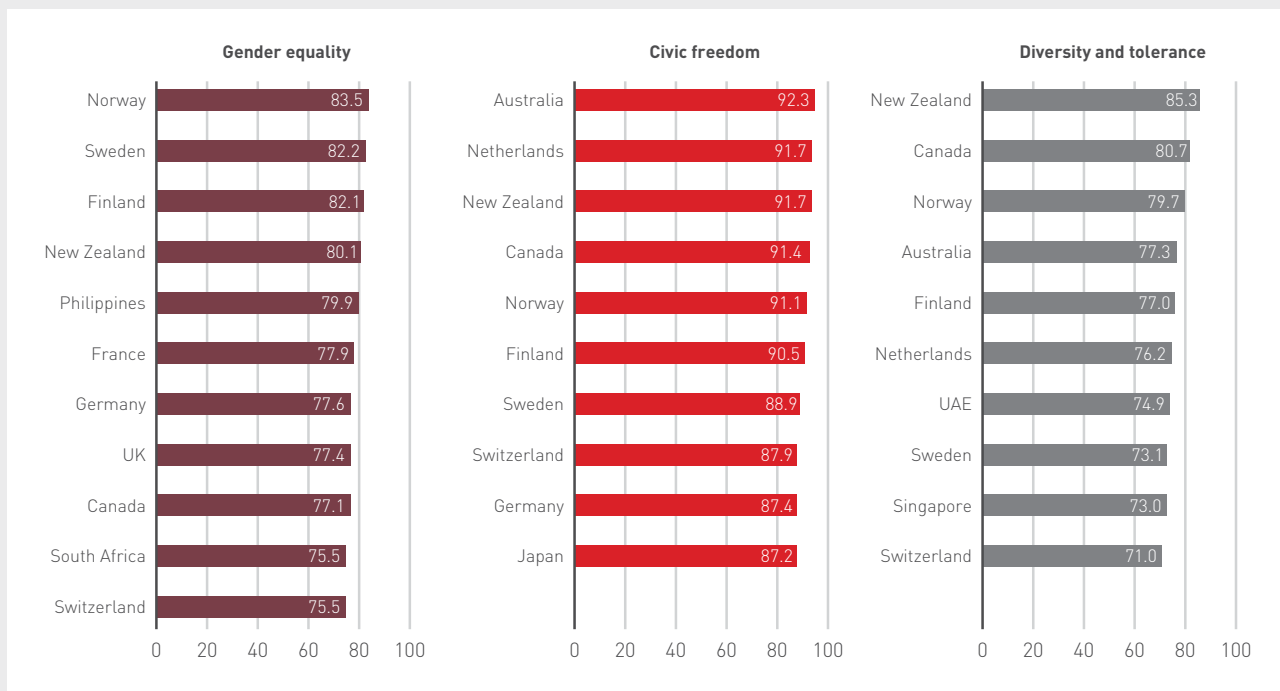
Chapter 3. Navigating the brave new world

In a debate held in Dubai in 2017, the former prime minister of Australia, Julia Gillard, argued that teaching global values should take precedence over national values. Her view was objected to by Michael Gove, once state secretary of education in the UK and, at the time of writing, the UK state secretary for environment, food and rural affairs. He questioned whether universally accepted values actually exist and, if so, what they are.⁹

The EIU strongly believes in the existence of such values, and that education systems should make every effort to ensure that students are exposed to them in classroom and extra-curricular settings. Such values feature prominently in the socio-economic environment category of the index, which compares freedom of religion and the press, gender equality, attitudes toward immigrants, and protecting the environment.

As in previous years, high-income economies have the most open societies, and are therefore conducive to learning future-oriented skills. In contrast to the policy and teaching environment categories, however, the average socio-environment score has barely moved from 2018. This suggests a lack of progress in adhering to global values. Jamil Salmi believes the reality is somewhat darker, and that progressive societies are at risk of taking steps backward.

Figure 6: Top ten economies, selected socio-economic environment indicators



Source: The Economist Intelligence Unit

⁹"Should Schools Teach National Values Over Global Values?", *YouTube*, March 30, 2017.

Q&A

Preparing students for a post-truth world

Jamil Salmi, global tertiary education expert

EIU:

What is it about the current political climate in many countries that is particularly challenging for young people?

Mr Salmi:

Education systems are trying to adapt to the need to foster critical thinking and positive ethical values, as enshrined in global citizenship, but some societies are moving in another direction. Take the discourse around Brexit in the UK, or efforts by governments in southern and eastern Europe as well as the US, to popularise rejection of refugees and immigrants. These are forces that do not support critical thinking and positive ethical values.

Along with that is a decreasing acceptance of, and respect for, objective science and research. This is creating an atmosphere in which alternative realities thrive. Students must learn to use critical thinking in a positive way, to be able to make their

own discerning judgments about what is and is not right or accurate.

EIU:

How can universities foster ethical values and promote critical thinking?

Mr Salmi:

First, they must be more inclusive. Some universities in the US have adopted a needs-blind admission policy, which means they assess applicants based on academic merit and not on their ability to pay. Generally speaking, the more diverse a university's student population, the greater its success in fostering tolerant and open-minded attitudes.

Second, universities must integrate ethical values firmly into all their academic programmes. This applies not just to arts and social sciences curricula but to technical and engineering ones as well. Technical schools could follow the example of the Olin College of Engineering in the US, which places a strong emphasis on the

"ethics of engineering", designed to help students address societal issues posed by emerging technology areas such as AI.

Third, there is no better institution in society equipped to promote honest, open and objective debate. This is the hallmark of critical thinking, and universities can be called upon to help students and societies differentiate between what is accurate and fictitious in current public discourse.

Jamil Salmi believes that educators must work harder to ensure that students have the wherewithal to reverse any retreat. (See “Preparing students for a post-truth world”.)

Are civics courses enough to foster global values?

Schools have traditionally used civics education courses to build awareness of social, economic and political issues. In US secondary schools, civics programmes are not doing their job well, according to Scott Warren, chief executive officer of the NGO Generation Citizen. He co-founded the latter with the objective of helping schools to revive civic education and make it more relevant to students’ lives. (See “Civics in action”.)

Alexis Menten, managing director of the Center for Global Education at Asia Society, an international NGO, believes civics courses are important but can only go so far. Her organisation, in concert with partners, has developed the concept of “global competence”, a set of capabilities that “enable students to understand and act on issues of global significance”. The issues, she says, are aligned with the United Nations’ Sustainable Development Goals (SDGs) on topics such as climate change, poverty and hunger, and the competencies include the ability to take action to “improve conditions both locally and globally”.¹⁰

Rather than use an individual course or programme to develop such abilities, Ms Menten believes that schools need to develop them in all forms of their

interaction with students. “Global competence can be developed across all subjects, including maths and science, and across all grade levels, both in school and in out-of-school programmes, and supported through teacher pre-service and in-service professional development. The world is changing rapidly, and students need multiple opportunities to develop these capacities and practise applying them in varying contexts. For example, addressing climate change requires students to conduct research, to understand science and maths, to recognise and evaluate different perspectives and to communicate their ideas and solutions effectively. Education for global competence needs to be embedded into everything that a school is doing.”



¹⁰The “four domains of global competence”, as set out in the “<https://asiasociety.org/education/what-global-competence>” Asia Society website, are the ability to learn about the world, to recognise different perspectives, to communicate ideas with diverse audiences and to take action on globally significant issues. The OECD has adopted the concept of global competence and built it into its 2018 PISA (Programme for International Student Assessment) exam, administered to 15-year-old students around the world.

Civics in action

“In the US, we don’t really teach civics anymore, and when we do it’s the most boring class in school,” says Mr Warren. “We need to figure out how to transform civics education. How do we make it the most exciting class in school?”

Generation Citizen’s answer is Action Civics, a semester-long course taught by expert staff in secondary schools in urban and rural areas across the US. “It is an in-class model with a curriculum we’ve developed, along with training and support,” Mr Warren explains. “Over the course of the semester young people choose a specific issue they care about, such as creating jobs, curbing police brutality, improving public transit or building more affordable housing. Through

research, they’ll identify the root cause of the issue. And after intense class debate, the students will take a real action of some sort through a political process, often working with local governments.”

Mr Warren cites success stories like the school in Oklahoma where students helped propel and organise the issuance of a financial bond so as to provide more funding for their school. The NGO helped students in Providence, Rhode Island, push for reforms to the public transit system so that students who live a certain distance from school could get free bus passes. It also helped students at a New York school obtain greater oversight of their cafeteria food.

“When action civics works well, it becomes part of the cultural fabric of the school and district. The course is led in a classroom setting, but it’s based on a student-centred pedagogy and approach, so it’s something that takes hold throughout the entire district,” says Mr Warren.

How does practical civics differ from traditional civics education? According to Mr Warren, the difference is translating knowledge into action. “We don’t want young people to just learn knowledge. It’s insufficient to know how government works. It’s also insufficient if all students do is protest. They need to use the knowledge and skills they’ve gained to directly participate in the process.”



Conclusion: The case for optimism

In 2015, the UN adopted the 2030 Agenda for Sustainable Development. Member states were tasked with achieving 17 SDGs. One of the goals is to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”. Of particular relevance to our index are SDGs 4.4 and 4.7. The first reads: “By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.” The second states that “by 2030, [member states should] ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development”.¹¹

During the UN secretary-general’s 2019 progress report on meeting the SDGs, António Guterres noted that, despite some progress, broader education goals remain a long way off from being achieved. This is particularly so in the world’s least developed countries.¹² Neither the SDGs nor the progress report mention future-oriented skills. They are nonetheless highly relevant to

the goals set out in the SDGs. What then would the secretary-general make of the trends evident in the index? In our view, he would be encouraged by the progress made in enshrining future skills in education strategies. As is clear in the policy environment ranks, such progress has been made in many middle- and low-income economies, as well as more uniformly across the high-income ones.

The secretary-general would surely share the frustration that is apparent with the more limited progress shown in translating policy into concrete measures. As mentioned by several of our expert interviewees, many education systems are yet to update quality assurance and assessment frameworks or provide adequate guidance to teachers on new policy objectives. If the education SDGs are to be met by 2030, educators need to step up policy implementation.

Optimism is also merited by the broad acceptance among educators of the need to foster global values. These values include respect for civic freedoms, diversity, gender equality, and the urgency of combatting climate change. The forces of nativism and populism may be on the march today in many parts of the world, but young people are often found in the front ranks of those who oppose it. With perseverance and imagination from educators, tomorrow’s youth will be even better equipped to

uphold global values and meet the grave challenges the world faces.

¹¹ UN Sustainable Development Goals: Knowledge Platform.

¹² United Nations Economic and Social Council, *Special edition: progress towards the Sustainable Development Goals: Report of the Secretary-General*, May 8, 2019.

Appendix. Index methodology

The Worldwide Educating for the Future Index (WEFFI) is a benchmarking exercise that objectively compares the commitment of governments to develop and promote education that equips youth with skills for the economic and social demands of tomorrow. The index covers 50 economies around the world across the development spectrum. The Index scores economies across three categories: policy environment, teaching environment, and socio-economic environment. The indicators fall into two broad categories:

- Quantitative indicators: 9 of the Index's 20 indicators are based on quantitative data—for example, government expenditure on education per student as a share of GDP per capita.
- Qualitative indicators: 11 of the Index's 20 indicators are qualitative assessments of an education system's orientation towards future skills. For example, "National broadband strategy" which is assessed on a scale of 1-3, where:
 - 3=Yes, the country has a strategy to promote broadband access in schools and libraries and provides guidelines/an action plan for its implementation.
 - 2=Somewhat, the country has a strategy to promote broadband access in schools and libraries,

but does not have an action plan or guidelines for implementation.

- 1=No, such a strategy does not exist.

To focus the analysis, this index assesses education for youth aged 15-24 (post-secondary level). The 50 economies selected represent 91.6% of global GDP and 81.3% of global youth population. We selected countries based on economic size, geographic representation and size of youth population.

For this year's index, we also chose to include countries with larger youth populations. As a result, we included Democratic Republic of Congo (DRC), Myanmar, Tanzania and Uzbekistan and removed countries with smaller youth populations (Algeria, Costa Rica, Malaysia and Taiwan).

Data sources

The Economist Intelligence Unit's research team collected data in June-August 2019. Wherever possible, publicly available data from official sources are used for the latest available year. The qualitative indicator scores are derived from publicly available information (such as government policies and reviews) and expert interviews to fill specific information gaps. Qualitative indicators are presented on integer scales.

Indicator scores are normalised and then aggregated across categories to enable

an overall comparison. To make data comparable, we normalised the data on the basis of:

$$\text{Normalised } x = (x - \text{Min}(x)) / (\text{Max}(x) - \text{Min}(x))$$

where Min(x) and Max(x) are, respectively, the lowest and highest values among the 50 economies for any given indicator. The normalised value is then transformed into a positive number on a scale of 0-100. The same process applies to quantitative indicators, where a high value indicates a better environment for a future-oriented education.

Categories and weights

We assessed 20 indicators (57 sub-indicators) across three thematic categories: policy environment, teaching environment, and socio-economic environment. We chose to make indicators more granular and specific in the 2019 Index (hence, we have more sub-indicators compared with the 2018 version). Our research team assigned category and indicator weights after consultations with internal analysts and external education advisors.

We allocated 30% of the index weight to the **policy environment** category. The indicators in this category assess the extent to which government policy explicitly calls for educating for the future. Education strategy, curriculum,

assessment and implementation are considered in this category.

The largest category, **teaching environment**, accounts for half of the index. Within this category, quality of teacher education (“teaching quality”) is the largest single indicator, accounting for 25% of the category. Other indicators similarly assess government expenditure, quality of teaching resources, and extra-curricular student support programmes.

The final category, **socio-economic environment**, measures the extent to which societies are prepared to educate youth for the skills of tomorrow. This category accounts for 20% of the index. Indicators in this category assess gender equality, future optimism, economic freedom, corruption, civic freedom, diversity and tolerance, and environmental stewardship at the societal level.

Adjusting ranks for economic development

For WEFFI 2019, we developed a separate ranking adjusted for economic development (see boxout on p.8). This adjusted ranking aims to benchmark economies in the context of resource availability. We built the adjusted rank by regressing GDP per capita values on raw category-level scores for each of the 50 economies. We used a simple linear regression approach and calculated the adjusted score of a variable for each economy in each category. Next, we calculated the difference between the original score and the adjusted score, and expressed this as a percentage of the average of the original and adjusted score. The derived value provided us with an overall percentage deviation relative to the original score i.e. the adjustment as a percentage after taking national levels of income into account for all 50 economies, at the category level.

In the final stage, we applied category weights in the same order as we had for the overall Index. Because of a high expected correlation between indicators in the socio-economic environment category and GDP per capita, we expressed the final deviations using the policy environment and teaching environment categories and created an overall economy ranking based on these adjusted scores.

Indicators, data sources and weights

The following table provides a brief description of indicators, data and weights:

*Note that category weights are as a share of the index; indicator weights are as a share of the category. Sub-indicators contribute equally to their respective indicators.

INDICATOR	SOURCE	RATING	WEIGHT*
1) POLICY ENVIRONMENT			30%
1.1. National education strategy (upper secondary)			38%
1.1.1. Strategy			
a. Current strategy	EIU analysis	Rating 1-3	
b. Frequency of review	EIU analysis	Rating 1-4	
1.1.2. Implementation			
a. Action plan and milestones	EIU analysis	Rating 1-2	
b. Responsibility / Accountability	EIU analysis	Rating 1-2	
1.1.3. Future skills			
a. Digital skills	EIU analysis	Rating 1-2	

INDICATOR	SOURCE	RATING	WEIGHT*
b. Critical thinking	EIU analysis	Rating 1-2	
c. Soft skills	EIU analysis	Rating 1-2	
1. 2. Higher education governance			12%
1.2.1. Quality assurance	EIU analysis	Rating 1-2	
1.2.2. Future skills	EIU analysis	Rating 1-2	
1.2.3. Implementation	EIU analysis	Rating 1-2	
1. 3. Curriculum framework (upper secondary)			25%
1.3.1. Framework			
a. Curriculum transparency	EIU analysis	Rating 1-2	
b. Problem-based learning	EIU analysis	Rating 1-3	
c. Curriculum framework review	EIU analysis	Rating 1-4	
1.3.2. Language			
a. Second language	EIU analysis	Rating 1-2	
b. Third language	EIU analysis	Rating 1-2	
1. 4. Assessment			15%
1.4.1. Framework			
a. Framework transparency	EIU analysis	Rating 1-2	
b. Student-centered assessment	EIU analysis	Rating 1-3	
c. Assessment framework review	EIU analysis	Rating 1-4	
1.5. Government effectiveness risk	EIU Risk Briefing	0-100 score	5%
1.6. Youth unemployment	World Bank/ILO	%	5%
2) TEACHING ENVIRONMENT			50%*
2.1. Teaching quality			25%
2.1.1. Requirements	EIU analysis	Rating 1-2	
2.1.2. Teacher qualifications (upper secondary ISCED 3)	EIU analysis	Rating 1-6	
2.1.3. Teacher education and skills for the future			
a. Policy framework	EIU analysis	Rating 1-3	
b. Future skills	EIU analysis	Rating 1-3	
c. Regular training	EIU analysis	Rating 1-3	
2.2. Average salary			10%
2.2.1. Average teacher salary (upper secondary ISCED 3)	EIU analysis	\$/year in PPP	
2.2.2. Average teacher salary (university professor ISCED 6)	EIU analysis	\$/year in PPP	
2.3. Government expenditure on education			15%
2.3.1. Upper secondary expenditure	UNESCO UIS/EIU	\$/per student as a share of GDP per capita	
2.3.2. Tertiary expenditure	UNESCO UIS/EIU	\$/per student as a share of GDP per capita	
2.4. Availability of career counselling for youth in schools	EIU analysis		20%
2.4.1) ISCED 3: Upper secondary education			
a. Requirement	EIU analysis	Rating 1-2	
b. Availability/supply	EIU analysis	Rating 1-2	
c. Classes	EIU analysis	Rating 1-2	

INDICATOR	SOURCE	RATING	WEIGHT*
2.4.2. ISCED 6: Bachelor's or equivalent level			
a. Requirement	EIU analysis	Rating 1-2	
b. Availability/supply	EIU analysis	Rating 1-2	
c. Classes	EIU analysis	Rating 1-2	
2.5. Extracurricular learning	EIU analysis		10%
2.5.1. Youth promotion			
a. Existence of dedicated agency	EIU analysis	Rating 1-3	
b. Extracurricular promotion	EIU analysis	Rating 1-2	
c. Extracurricular strategy recency	EIU analysis	Rating 1-2	
2.6. University-industry collaboration	Robert Tijssen (Leiden University, Netherlands)	%	5%
2.7. Classroom access to technology			15%
2.7.1. National broadband strategy	EIU analysis	Rating 1-3	
2.7.2. Broadband access	UNESCO UIS/Gallup/EIU	%	
3) SOCIO-ECONOMIC ENVIRONMENT			20%*
3.1. Gender equality	World Economic Forum - Global Gender Gap Report	Score 0-1	14.3%
3.2. Future optimism	Gallup World Poll	Score 0-10	14.3%
3.3. Economic freedom			14.3%
3.3.1. Property rights	EIU Risk Briefing	Rating 0-4	
3.3.2. Freedom of association	EIU Risk Briefing	Rating 0-4	
3.4. Corruption	EIU Risk Briefing	Rating 0-4	14.3%
3.5. Civic freedom			14.3%
3.5.1. Underage marriage	OECD Gender, Institutions and Development Database	%	
3.5.2. Civil liberties	EIU Democracy Index	Score 0-10	
3.5.3. Freedom of religion	Pew Research Center Government Restrictions Index	Score 0-10	
3.5.4. Freedom of press	Reporters Without Borders Press Freedom Index	Score 0-100	
3.6. Diversity and tolerance			14.3%
3.6.1. Community safety net	Gallup World Poll	%	
3.6.2. International students	UNESCO UIS/EIU	%	
3.6.3. Immigrants	Gallup World Poll	%	
3.6.4. Religious tolerance	Pew Research Center Social Hostilities Index	Score 0-10	
3.6.5. LGBTQ+	Gallup World Poll	%	
3.6.6. Anti-bullying	EIU analysis	Rating 1-2	
3.7. Environmental stewardship	Environmental Performance Index, Yale University	Score 0-100	14.3%

