Education in East Asia

The education systems of Asian nations such as South Korea, Japan and Singapore are the envy of the western world in terms of measured achievements against global standards. But behind the successes, lurk growing problems of inequality, overemphasis on rote learning, academic corruption and graduates poorly prepared for the world of work. Much needs to change.
sons in the top five or 10, but this data is rarely made available publicly.

Zhao also points out that PISA measures student performance on questions deemed to be “right” in three subjects: mathematics, reading and science. How this translates into being a successful citizen or improving the economy is never discussed, but educators have noted that the successful countries are mainly those that already have a culture of testing, are authoritarian in their structure, have a highly flourishing tutoring school industry, have curricula organised in traditional subject areas and are characterised by rote learning. The OECD counters that the “problem solving” section dismisses the rote learning assertion. Yet, an examination of the types of problems included in the test indicate that they do not pose authentic or practical problems, but rather discipline-based problems that need formulaic responses, which can be taught. A testament to this is evident on the public transport system in Hong Kong when you can frequently observe students with their practice test books cramming for examinations. There are many similar examples (see Figure 1 opposite).

Even when the “problem” is related to students’ experiences of eating pizza, it is viewed as a mathematical issue (surface area, cost in zeds), and no consideration is made of the fact that you may not be hungry enough to eat the larger pizza — so does that affect whether it is “value for money”? What if you throw half of it away? I would suggest it’s a waste of pizza.

Others have raised issues about the technical flaws of PISA that invalidate its ability to be considered as the quality indicator for a country’s education system. Further, it ignores skills and knowledge from other domains such as the humanities and social sciences including history, geography and the arts; it does not consider personal traits such as creativity, the ability to communicate effectively and collaborate in teams, all of which have been included as skills necessary for being a citizen in these new times. As Zhao so aptly states, “If the United States and the rest of the West are concerned about being overtaken by China, the best solution is to avoid becoming China.”

**EMULATING TESTS**

Yet western governments continue to want to emulate Asian education systems simply based on these international high-stakes tests. And Australia has also instigated national testing of literacy and numeracy (NAPLAN) at years 3, 5, 7 and 9 in order to ensure that the system has “valuable data to support good teaching and learning, and school improvement.”

In 2012, the previous Australian government set an agenda for engagement in the Asian Century with a white paper. Australia’s roadmap to becoming a more prosperous and resilient nation was accompanied by a strategic plan to engage with Asia in a number of sectors including education. Building capabilities through schools was an integral part of a plan that stipulated: “During the Asian century, the importance of education to Australia’s economic performance will continue to grow. We can only remain a world-beating economy if we also deliver world-class education.” A major indicator of a world-class education was for Australia to aspire to be in the top five schooling systems in the world on the basis of the PISA results.

The discussion around global high-stakes testing often attempts to isolate the features of top-performing countries that enable their high scores. They focus on school variables, such as teacher quality, curriculum, assessment and pedagogical issues and more detailed (secondary) analyses of the data derived from the tested populations around demographic issues, such as gender and social class. There is also data

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**Lichen**

A result of global warming is that the ice of some glaciers is melting. Twelve years after the ice disappears, tiny plants, called lichen, start to grow on the rocks. Each lichen grows approximately in the shape of a circle.

The relationship between the diameter of this circle and the age of the lichen can be approximated with the formula:

\[ d = 7.0 \times \sqrt{t - 12} \quad \text{for } t \geq 12 \]

where \( d \) represents the diameter of the lichen in millimetres, and \( t \) represents the number of years after the ice has disappeared.

**Question 2: LICHEN**

Ann measured the diameter of some lichen and found it was 35 millimetres. How many years ago did the ice disappear at this spot?

Show your calculation.

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**Pizzas**

A pizzeria serves two round pizzas of the same thickness in different sizes. The smaller one has a diameter of 30 cm and costs 30 zeds. The larger one has a diameter of 40 cm and costs 40 zeds.

**Question 1: PIZZAS**

Which pizza is better value for money? Show your reasoning.

**PIZZAS SCORING 1**

**QUESTION INTENT:** Applies understanding of area to solving a value for money comparison

**Code 2:** Gives general reasoning that the surface area of pizza increases more rapidly than the price of pizza to conclude that the larger pizza is better value.

- The diameter of the pizzas is the same number as their price, but the amount of pizza you get is found using diameter², so you will get more pizza per zeds from the larger one

**Code 1:** Calculates the area and amount per zed for each pizza to conclude that the larger pizza is better value.

- Area of smaller pizza is 0.25 x 30 x 30 = 225 cm²; amount per zed is 23.6 cm²
- Area of larger pizza is 0.25 x 40 x 40 = 400 cm²; amount per zed is 31.4 cm²

so larger pizza is better value.

**Code 0:** Other incorrect responses OR a correct answer without correct reasoning.

**Code 9:** Missing.
regarding education funding by governments, not including private tutorial schools, measures of equity, commentary about teacher preparation and the professional lives of teachers. There is little discussion about the consistency of educational policy in East Asian nations in which five-year plans can be made and followed up on, without deconstructing what has come before. Hong Kong, for example, has implemented a change strategy since 2000 with its “Learning to Learn” focus that has been consistently built upon with subsequent initiatives.

Singapore started even earlier, in 1998, when it realised it needed to reform its schools to “foster creative thinking and entrepreneurial spirit among the young.” In fact, these statements are clear and concise and rarely replicated in the West. The overall concept was “Thinking schools, learning nation” and it has carefully evolved since this time in a coherent and designed way, to now encapsulate “Teach less, learn more.” Not only do these systems have long-term policy plans that have been implemented and mandated by governments that don’t change on a regular basis, like in Australia, but also, importantly, education is viewed as an investment not a cost. Further, there is a culture that believes in the value of education and an ethic of hard work that enables the systematic implementation of policies in a systematic manner. This cultural aspect is under-researched in academic work.

It has been noted, for example, by Heckman (2005), the Nobel Prize-winning economist, that most of the effects that correlate with strong student performance are related to out of school variables. This was supported by Goldhaber, Brewer and Anderson (1999), who maintained that back-to-school policies account for 60 per cent of student achievement in school. We still don’t know the precise ways in which such factors impact on performance in schools, but we do know that tests that require simple, factual answers that can be studied for in a diligent and systematic way take many hours of dedication and practice.

AN ASIAN BIAS?
This suits the Asian systems. China in particular has a long history of tests, with imperial examinations (Kéjù) often regarded as the fifth great invention of China, coming into being to select civil servants in 605 AD. Yet, as Yong Zhao points out, the great inventions failed to turn China into a modern and scientific nation because the system was too rigid. They did not allow creativity to flow but rather stuck to predictable and controllable scenarios in the context of an authoritarian regime. Such limitations and control make the system well suited to being successful in high-stakes testing, and the narrow definition of accomplishment and obedience to the right answers limits individual potential. Zhao notes the “power lies in the ability to homogenize.”

Suffice to say, the inter-relationships between the various factors in education systems are complex, and Finland's presence in the top five until recently has confounded the issues, since its schooling system is the total opposite of everything in East Asia.

HOW TO EXCEL?
What is the way forward? We all want excellence in our school systems, but it’s the definition of what it looks like and how we measure it that makes the situation complex. The rhetoric around the purpose of education would seem to indicate that our goal should be to create systems that prepare students to transition into society and play a valuable role. As Dr Martin Luther King said, “The function of education, therefore, is to teach one to think intensively and to think critically. But education which stops with efficiency may prove the greatest menace to society.”

In the West, we seem to have forgotten about the concept of education for the public good and perpetually talk about the costs associated with providing schools for the 21st century while providing a system more suited to the Industrial Revolution. Policies that focus on the basics — reading, writing and arithmetic — are more easily measured than enabling students to realise their creative abilities, work collaboratively to solve authentic problems and being able to communicate effectively.

We have used the rhetoric of “closing the gap” as shorthand to justify more explicit teaching about facts and learning supposedly basic skills. As a result, those students who don’t do well on tests are subjected to more of these regimes, while those who are already good at them are able to conduct investigations and explore ideas creatively and collaboratively. Are we indeed expanding the gap? It may be the case that the latter group are provided with more opportunities to become fluent in using 21st century skills. The countries who perform well at PISA are often not those whose patents and innovations are changing the modern world. Where are the Nobel Prize-winners coming from? Which countries are doing the best on global indexes of innovation? Education involves a complex set of decisions and we should be wary of equating “world class” with the results of a test that only considers 21st century skills.

We would do well to ponder the words of Nicholas Negroponte in 1995 when he stated:

Let me point out the heavy price paid in those countries for requiring young minds to master this apparent font of knowledge. Children in Japan are more or less dead on arrival when they enter the university system. Over the next four years they'll feel like marathon runners asked to go rock climbing at the finish line. Worse, those young people didn’t learn a thing about learning and, for the most part, have had the love of it whipped out of them.”

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The latest OECD Program for International Student Assessment survey was in 2012. The core survey assessed the competencies of 15-year-olds in reading, mathematics and science (with a focus on mathematics) in 65 countries and economies. Around 510,000 students aged between 15 years 3 months and 16 years 2 months participated, representing about 28 million 15-year-olds globally.

The students took a two-hour paper-based test with a mixture of open-ended and multiple-choice questions that were organised in groups based on a passage setting out a real-life situation. Students and their school principals also answered questionnaires to provide information about the students' backgrounds, schools and learning experiences and about the broader school system and learning environment.

Results here are taken from the full country rankings at www.oecd.org/pisa/keyfindings/pisa-2012-results.htm

The stories in this cover package assess East Asian countries' effectiveness in education against present and future challenges. Among the worries are:

**China**
- A Confucian tradition of education for the collective good of the nation is in danger of collapse as society becomes more individualized.
- Tensions between western values in higher education and Chinese traditions reduce effectiveness of universities.
- Academic culture has become decadent, including plagiarism, bribery, falsification of research and conflicts of interest among academics.

**Japan**
- Poor quality of university education, a legacy of employers' focus on entrance exams only, is outdated as university places have expanded.
- Globalization and increased competition in higher education has pressured Japan to focus heavily on English-medium teaching at the expense of general learning quality.

**South Korea**
- Pressures on students to achieve in exams and on parents to pay for private tuition is increasing. Student stress is the world's highest.
- Growing competition for high-skill, high-wage jobs has added to pressures in large middle class.
- Sharp rise in number of universities has lowered education quality. Jobless rates for graduates are high as higher education fails to prepare students for later life.

**Singapore**
- Education system that successfully built a strong middle class now looks outdated amid economic and social pressures of globalization and technological progress.
- Growing income inequality and competition for jobs provides challenge as private tuition is seen as necessary to succeed.