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PERSPECTIVES

Learning in an era of uncertainty in Singapore: diversity, lifelong learning, inspiration and paradigm shift

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Abstract
This is an era of uncertainty, during which adaptability is a key capability to survival and future success. What has Singapore done to develop an education system that facilitates its young to learn in such an era? Firstly, Singapore enhances the adaptive capacity of its education system by increasing its diversity. In particular, it is developing more educational pathways, areas of learning and types of schools. Secondly, Singapore emphasizes lifelong learning. In particular, Singapore will be focusing on providing more learning opportunities for working adults and enhancing support for mid-career reskilling. In these educational changes, Singapore has been addressing both hardware (changing policies) and software (addressing culture), in order to develop an education system that can facilitate learners to learn in an era of uncertainty. What will help Singapore in further developing such a system? This paper suggests two software "upgrades", namely "inspiration by design" and "readiness for paradigm shift". Firstly, instead of a paradigm of competence, Singapore adopts a paradigm of inspiration. In this paradigm, the aim is for students to find their inspiration to learn, and such inspiration is provided through a systemic approach. This is "inspiration by design". Secondly, Singapore nurtures the spirit of readiness for paradigm shifts in education. An example of a paradigm shift is to be ready for the advent of artificial intelligence in education. Such readiness is about reflecting on fundamentals so that the use of *artificial* intelligence enhances the development of *real* human intelligence.

Keywords Singapore · Uncertainty · Diversity · Lifelong learning · Inspiration · Paradigm shift

1 Introduction

Consider waking up to a piece of news like this: Affected by steep cost rises and muted growth, one of the region's largest ride-hailing and food delivery company, based in Singapore, is implementing cost-cutting measures, including hiring and salary freezes, to cope with macroeconomic uncertainties (CNA, 2022). For some, if not most local readers, I suspect the reaction would be a shake of the head and a shrug of the shoulders—what is new?

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News media has been carrying all sorts of reports and analyses of headwinds and uncertainties. What is certain is that uncertainty is here to stay.

With increasing uncertainty, forecasts become unreliable. Past successful strategies in a relatively stable and predictable world become obsolete. With all this talk about uncertainty, the word that comes to mind frequently as a response would be "adaptability". When situations change quickly, instead of just being able to perform existing business well, one must learn how to adjust to new circumstances by doing something different but appropriate. If the former is a competence, the latter is a meta-competence. This meta-competence is a necessity in uncertain circumstances.

Singapore is a small country that has no natural resources except its people. With increasing uncertainty, Singapore needs a new playbook, one that builds on the wisdom of past experiences, but is not constrained by past practices. Adaptability becomes the keyword for survival and future success. Education is a critical piece of the puzzle to help citizens develop such a capability. So, what has Singapore done to develop an education system that facilitates its young to learn in an era of uncertainty? There are many things I could say. But I will share two points here, namely diversity and lifelong learning.

2 Diversity

The first point is about "adaptability" at the system level. How can an education system develop greater adaptive capacity? Here the adaptive capacity of a system refers to its ability to adapt to sudden and disruptive changes. Without going into technicalities, one concept that is associated frequently with "adaptability" is "diversity". Consider two groups of people—one in which all members have the same skills, and another in which the members have diverse skills. The latter is able to adapt better to changing circumstances! The same could be said about systems. Generally, the greater the diversity in a system, the greater is its adaptive capacity. An education system that caters to different learners is better at adapting to changing circumstances than a "cookie cutter" system.

In recent years, the Singapore education system has been diversifying by developing more educational pathways and celebrating more areas of success (Chan, 2022; Ng, 2017). For example, the Full Subject-Based Banding (FSBB) in secondary schools, which will be fully implemented by 2024, allows students to take different subjects at a higher or lower level based on their strengths, and progress at a pace suitable for them (Chan, 2022). Actually, efforts at diversifying the system and catering to different types of students are not new! From a "one-size-fits-all" centralized system in the 1970s, Singapore has been diversifying the school system in a systematic manner since. Starting from the Independent Schools in 1988, today Singapore has developed various types of schools to better serve different students, including the Singapore Sports School, School of the Arts and Northlight School. There is increasing diversity in the areas of learning as well. Instead of focusing only on the traditional subject areas, the scope of education has been broadened to focus on holistic education (Ng, 2017). This includes more emphasis on applied learning, social emotional learning and discussions about global situations, local current affairs and climate change.

Paradoxically, diversity in the system does not mean any less need for unity. As I wrote in my book: "The system is not a loose collection of schools with no central direction. It is a tight knit community of schools coming together to serve the higher order needs of the country, where each school is a crucial piece of the whole." (Ng, 2017, p. 77)

Therefore, under a management approach of "centralized decentralization", the school system achieves strategic alignment for system-level synergy, and tactical empowerment for professional agency. During Covid-19, even though schools had to close for a short period of time, learning continued in Singapore through a national portal for learning that linked all schools in Singapore and allowed teachers to share teaching material online (Ng, 2021). Teachers collectively rose to the occasion to teach and care for their students in the best way they could, even during the peak of the pandemic. The Singapore education system was able to respond to change because there was unity in diversity.

3 Lifelong learning

The second point is about lifelong learning. Given the uncertainty in the world, it is now recognized that the knowledge and skills gained from formal schooling will not last a lifetime, sometimes hardly a few years. Therefore, Singapore's SkillsFuture initiative, which was launched in 2015, encourages and supports people to continue growing their skillsets so that they will be nimble in switching to other areas when necessary or when promising opportunities emerge (SkillsFuture Singapore, nd). But lifelong learning is not just about individuals staying economically productive in a fast-evolving world. It is the human and knowledge capital for the country to adapt positively to shock waves. Minister for Education said in Parliament in 2022 that going forward, Singapore would be focusing on providing more opportunities for working adults to pursue degrees or diplomas, and enhancing support for mid-career reskilling (Chan, 2022).

Again, lifelong learning is not a new concept in Singapore. In 1997, the Thinking School Learning Nation vision, which is still the umbrella vision for education in Singapore today, has already mapped out a blueprint for lifelong learning in the country (Goh, 1997). The current economic challenges have simply given lifelong learning a refreshed impetus. The love for learning should be cultivated from a young age and, twinned with the increased emphasis on learning that can be applied in real life, continued into adulthood.

However, the success of lifelong learning is an issue involving not just educational institutions but also industries. Therefore, the government will be working more actively with industrial partners, so that companies will play their part in changing their hiring stance to attract and retain their employees, and also increase the opportunities for internships and upskilling while on the job. Institutes of higher learning should also become sites of continual learning and ensure that they stay relevant to industry (Chan, 2022). Employers in the United States are warming up to skills-based hiring practices, including Boeing, Walmart, and IBM. By removing the requirements for paper academic qualifications, and looking for real skills, companies actually find quality employees who could do the job and create a broader and more diverse employee pool (Hancock et al., 2022). But in Singapore, many employers currently still look for paper qualifications. Moreover, even if the Ministry of Education (MOE) is emphasizing a broader definition of merit, many job seekers still feel the pressure to stand out among the crowd to secure the job in a competitive job market (Ng, 2022). For lifelong learning to succeed, there is a need to change mindsets and culture as a society, and to develop stronger partnerships between government, education institutions and industries. For example, the Education Minister called for parents to work with the schools "to support the wellbeing and development of our children, not to chase after the marginal last mark, instil fear of failure, or excessively compare our children's achievements with others." Also, he called for industries to "work closely with our

institutes for continual learning, to provide learning opportunities for our students to prepare them for the workforce and transform themselves to create good jobs for our graduates." (Chan, 2022).

In educational change, many education systems are grappling with the "hardware" (changing policies). But the danger is to miss "upgrading" the "software" (addressing culture). Such upgrading is crucial and has to be nurtured over time, rather than added onto the existing educational model like a piece of lego brick. Singapore has been addressing both hardware (for example diversifying its education and emphasizing lifelong learning) and software (for example the call not to excessively compare children's achievements), in order to develop an education system that can facilitate learners to learn in an era of uncertainty. What will help Singapore in further developing such a system? Here, I would like to suggest two software "upgrades", namely "inspiration by design" and "readiness for paradigm shift".

4 Inspiration by design

Generally, Singapore students are driven to excel, but there is a sense that most are working very hard because they are driven by examinations or external expectations. In moving forward, a very helpful "software upgrade" is that they will find the inspiration to learn. When one watches a cooking competition on TV, one often sees the eyes of the competitors light up when the chef demonstrates how a dish is done. That is inspiration—an intense motivational force for positive development or action. When people are inspired, a whole new world opens up before them. They become totally alive. They overcome great obstacles to succeed. Competence brings people up to a certain level. Inspiration brings them to a different plane. Inspiration moves people in their hearts and minds to be the best they can be, in every field of learning or line of work, at every level of sophistication.

Singapore hopes to develop every student to become an engaged learner (Ng, 2017). But the students are engaged in learning not because they are forced to learn, but because they want to learn. Why? Because they are inspired by someone or something to learn. When students are inspired, they own their learning and are self-directed learners. They savour the challenge and enjoy the process, even when it is not easy. They will chew on a problem until they solve it. They are more resilient and adaptable. They achieve much more and generally have less mental health issues.

This sounds like something at the individual level, but it has every implication at system level. Consider this scenario: two mothers met. One said to the other that she was so fortunate this year that her son, who hated mathematics, had begun to love it and do better, because he had finally met a good teacher who inspired him in the subject. Is this a good thing? It sounds like one, but it is not. It means the child has not met a good teacher for many years. In a good education system, a child does not meet a good teacher by good fortune. A child meets a good teacher by design.

In the same way, inspiration is not by chance. It is by design. In the next phase of Singapore's educational development, conditions and opportunities can be created for students to interact with sources of inspiration, not just information. If young people are inspired in their areas of strength and interest, the result can be phenomenal! The vision is to have all students inspired by someone or something in their field of learning, so that they can draw strength from within to excel. In the Singapore education system, teachers and school leaders are to "lead, care and inspire". "Lead" and "care" are well developed in concept and in

practice. Both are very much an organic part of the education fabric. Comparatively and understandably, "inspire" seems to be something ad-hoc. The challenge is to now make "inspiration" systemic.

Competing on technical competence has gotten Singapore this far. To move Singapore up a notch in the future economy and global landscape, the subtle "software upgrade" is to move from a paradigm of competence to a paradigm of inspiration. In this new paradigm, inspiration, as the fuel for imagination and innovation, is provided through a systemic approach. This is "inspiration by design". Instead of delivering a curriculum, education is viewed as a bubbling well of inspiration for the young, whether in science or outdoor education. Career guidance goes beyond furnishing students with information about their career choices, but helps students find a path where they feel inspired to excel. A practical implication is that teachers will have the tall challenge to inspire students in their subject areas. This may entail re-examining the fundamentals of teaching and learning to better engage students in the learning process. But it may begin with teachers asking themselves what inspired them in their subject areas in the first place. A practical idea is to develop a programme where people from different fields are invited to do a five-minute inspirational video, explaining an aspect of their work or inventions. Each video should explain things in such an easy manner that students (at different levels as appropriate) can understand the content (especially when it is linked to what students learn in school) and be excited by it. Singapore can develop a national collection of such videos. Any jurisdiction or organization can do so too.

5 Readiness for paradigm shifts

Another helpful "software upgrade" is to nurture a readiness for paradigm shifts in education. Educators in Singapore are used to change. Change is part of the Singaporean psyche (Ng, 2017). But, to learn in an era of uncertainty, we need to be ready for a new learning paradigm, not just change within an existing one. Recently, the educators have risen to the occasion to continue teaching and learning during the COVID-19 pandemic (Ng, 2021). Although teachers struggled with many challenges, they adapted very quickly when physical classes were replaced with online learning for a certain time period. It is precisely that spirit of rising up to the occasion when faced with a drastic change that we need to keep nurturing. One particular area that requires educators to be ready for an educational paradigm shift is the advent of artificial intelligence in education.

Digitalization has been driving the deployment of human resources into the "higher" parts of value chains, usually associated with "intelligent" work. Now, artificial intelligence has encroached this "intelligent" work domain and at an increasing pace. This is not new. Since Deep Blue, a super-computer chess programme, defeated the reigning World Champion at chess in 1997 (Deep Blue lost to the same champion in 1996), the writing was already on the wall. With machine learning, mental health chatbots today can even help in treating symptoms of depression (Sharon, 2022), and will get even more effective in the future. Traditionally, this is one of the most difficult areas for machines to move into the "human" domain.

In Singapore, technology is integral to the education landscape, especially during and after Covid-19. To mitigate the potential pitfalls of technology, the MOE has put in place cyber wellness education for students and parental engagement on how they could support their children in digital learning (Wong, 2022). But now, the challenge is no longer about

students searching for information on the internet and using digital learning tools. With machine learning, artificial intelligence tools can generate essays and create artwork that can even ace an examination (Lim, 2022). Such works can evade anti-plagiarism checking tools because they are not the conventional "plagiarism". Yes, we can think of practical solutions to solve this problem (develop a way to tell whether essays were generated by artificial intelligence), but it will be missing the point. This is the impetus and opportunity for educators to reflect on their assessments and how these may be changed to provide better support for students' learning. Instead of fear, educators should find and embrace the positives of artificial intelligence (Illingworth, 2023).

The current challenge with artificial intelligence is in some ways a similar leap when calculators first appear years ago. In the past, we expected students to be able to do long divisions. When a kid did long divisions really quickly, we thought the child was intelligent. Now, as long as children learn how to do long division once, they can use a calculator for the rest of their lives. Many adults have forgotten how long divisions were done. Instead of being banned, calculators now become a tool in a test because the test examines higher order thinking, rather than whether students could do divisions manually. It is the same here with artificial intelligence. This "threat" is the opportunity to think what examinations really test. But I believe we can and should go further.

Readiness for a paradigm shift is not just about figuring out what tools we can use, what technical solution and safeguards we can implement, or what assessments we should set. It goes beyond that. It is about embracing and capitalizing on the opportunity to first reflect on fundamentals. Since *artificial* intelligence has arrived, it is the opportune timing to ask what *real* intelligence is in the context of education and children's lives, now and in the future! We have to figure out how artificial intelligence can *enhance* human intelligence, not just how we can use artificial intelligence to do our current work more efficiently or effectively. Education should not let *artificial* intelligence deprive learners of *real* human intelligence. If computers can outperform a human in cognition (note a computer will never tire), is *metacognition* the next educational frontier? Change in curriculum, pedagogy and assessment follows from this new understanding. We need to ask fundamental questions and be ready for a fundamental change.

Paradoxically, while some fundamental changes are on the horizon, I do not think that solid basics will become obsolete any time soon. Consider planes that can be flown on autopilot. Artificial intelligence can make navigational decisions for most situations (even take-off and landing in due course). But when there is a computer malfunction, would not one wish that there is a qualified and experienced pilot on board who can do a manual override and deal with the emergency?

6 Conclusion

Since its independence in 1965, Singapore has never really lived through an era of relative certainty. Singapore is always poised for uncertainty, of course at times more so than at other times, depending on local and global situations. Somewhat paradoxically, the Singapore education system is certain of its overall direction of holistic education and empowerment to educators, to educate students for an uncertain future. But the challenges it faces are going to be more and more complex. Although my reflection is based on Singapore, it speaks to many other jurisdictions in the world. Both the directions and gaps in Singapore's developments can be helpful mirrors to other jurisdictions which are looking for ways to

prepare their own young people for an uncertain future. Today's uncertainty is a challenge. But it also offers an opportunity to write a better educational narrative, one that is full of humanness and hope for tomorrow.

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