

2006

Technical Education 2020 in Singapore: Better Quality, Higher Performance and More Choices through a Market Approach

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Originally published in the Proceedings of the EDU-COM 2006 International Conference. Engagement and Empowerment: New Opportunities for Growth in Higher Education, Edith Cowan University, Perth Western Australia, 22-24 November 2006.

This Conference Proceeding is posted at Research Online.

<http://ro.ecu.edu.au/ceducom/112>

Yek, T. Institute of Technical Education, Singapore. Technical Education 2020 in Singapore: Better Quality, Higher Performance and More Choices through a Market Approach

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ABSTRACT

This article aims to create a vision for technical education in Singapore in the year 2020, and the likely outcomes in terms of quality, performance and choice. Singapore is today one of the world's most globalised nations and it has achieved notable economic success. The current technical education system with the Institute of Technical Education (ITE) as the principal provider can be considered highly successful after more than 40 years of development. By analysing the evolution of a contemporary governance model employed by ITE and juxtaposing it with growing global trends in school choice, privatisation and marketisation, there is reason to expect further changes in institutional governance towards more empowerment and use of the Public Private Partnership (PPP) approach to promote greater engagement of the private sector. Visions are created through conceptual analysis of the evolution of a contemporary governance model and concept plans already in place for further development of technical education in Singapore. To date, ITE has introduced the 'One ITE System, Three Colleges' governance model for greater autonomy in frontline operations and has proceeded to use the PPP approach to develop its planned new campuses. With Singapore well known as a nation which strives for excellence in everything it does and ITE embracing the vision to be 'A Global Leader in Technical Education', it is likely that in 2020, technical education in Singapore would offer better quality, higher performance and more choices. This article systematically looks at key governance issues and the PPP approach for technical education, anticipating how they would affect the quality, performance, and delivery of technical education in Singapore and arriving at visions for 'Technical Education 2020 in Singapore'.

INTRODUCTION

Aim: This article aims to create a vision for technical education in Singapore in the year 2020 and the likely outcomes in terms of quality, performance and choice. The starting point is the need to look 10 to 20 years ahead for a guiding light – sort of a North Star – to overcome the preoccupation with short term operational parameters, concerns and constraints when charting our journey into the future. A probable scenario for the state of technical education in 2020 – in short, Technical Education 2020 – in Singapore is useful as we move ahead with a general idea of the end in mind.

Context: Technical education in Singapore is the education sector and geographical territory of interest for this paper. In Singapore, technical education is synonymous with 'vocational education', 'vocational and technical education' and 'career and vocational education' – terms used to describe similar sectors in other countries. Quality, performance and choice are terms used in the specific context of technical education. Good quality technical education means the education and training received by students are relevant to the needs of industry, are authentic and rigorous, and result in graduates who are ready for employment. Hence quality is measured by the employability of graduates and employers' satisfaction index (which assesses the graduates they have hired). A technical education system that is performing well is one that is able to attract school leavers and adult learners to join the system, and help them find the meaning and purpose to complete the education and training successfully. As such, performance is measured by the intake rate of school leavers (percentage of secondary school leavers taking up technical education), or enrolment as a proxy, and the success rate (percentage of students completing their course of study successfully).

Choice refers to the range of courses and the options (electives) within each course available to students.

Given its aims and context, this paper starts by looking at the conceptual framework and methodology deployed to support this visioning exercise. The review findings are discussed next, followed by visions of 'Technical Education 2020 in Singapore' in terms of the future governance model and the likely outcomes.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

Envisioning the future is never easy. Technical Education 2020 in Singapore is based on extrapolations made through analysis of the past developments of Singapore's technical education sector, with emphasis on the conceptual evolution of its governance model. This analysis was carried out by reviewing official publications and published papers as well as through the auto-ethnographic observations of the author. Lessons from the past offer empirical as well as circumstantial evidence and insights into the direction the future might take. It was followed by a study of the published plans-in-place for the future development of technical education in Singapore.

Visions of the future in learning and education were collated through a literature review of open access materials on the Internet. A total of 23 articles retrieved from nine websites and five papers from other sources were reviewed. The findings were then classified thematically for use as guides in the visioning process. Juxtaposing the visions with plans-in-place for technical education helps to gauge the feasibility and probability of realising these plans, and the probable future of technical education in Singapore.

REVIEW FINDINGS

Past developments of technical education in Singapore

Technical education in Singapore began as a single vocational institute 'within the school system in 1964' (Law 1990, p.4). In the beginning, a national system of technical education was adopted primarily to support the growing human resource needs after independence when industrialisation was identified as a means to diversify and grow the economy. The system was described by Wong (2000, ¶11) as an 'efficiency-driven model' that 'concentrated on providing mass education in order to equip our young with employable skills that suited our earlier phase of industrialisation'. The main concern was 'how best to expedite and expand the vocational training system to meet the human resource requirements of the emerging industry' (Law 1990, p.4). The first phase lasted until 1972, with technical education delivered through vocational institutes within the school system, under the direct control of the Ministry of Education. By then, there were nine vocational institutes and the 'annual output of graduates increased over ten-fold from 324 in 1968 to over 4,000 [in 1972].' (ibid)

The system has since undergone several transformations (Law 1996, pp.9-11): From creation of the Industrial Training Board (ITB) outside the school system in 1973 to formation of the Vocational and Industrial Training Board (VITB) as a statutory board in 1979, and finally in 1992, establishment of the Institute of Technical Education (ITE) as a post-secondary institution and also as a statutory board. The changes started in 1973 clearly involved governance issues. Creation of the ITB outside the school system provided more focus and empowerment for those within the confines of technical education. Formation of the VITB and subsequently the ITE as statutory boards – considered as autonomous agencies outside the civil service – is really a step towards greater empowerment and autonomy of the technical education system. However, establishment of the ITE as a post-secondary institution arose out of concerns with quality and performance. With the emphasis on post-secondary technical education and training, all students enrolling into a course with ITE would need to complete at least 10 years of primary and secondary education before they can be admitted.

From 1992 through to 2005, ITE underwent two waves of transformation, driven by strategic plans developed by its senior management and guided by its board of governors. The first strategic plan – the ITE 2000 Plan (1995-1999) – was driven by the vision ‘To build ITE into an established post-secondary technical institution by the year 2000’ and guided ITE towards becoming an established post-secondary institution. The second strategic plan – the ITE Breakthrough Plan (2000-2004) – was driven by the vision ‘To become a World-Class Technical Education Institution for a Knowledge-Based Economy’ and guided ITE towards becoming a world-class technical education institution. In October 2005, ITE achieved the distinction of being the first and only education institution in Singapore to win the prestigious Singapore Quality Award (SQA), joining an elite club of 22 organisations who have won the award since it was launched in 1994. Examples of other winners include: Motorola Electronics Pte Ltd – (1996), Sony Display Device (Singapore) – (2001), and Singapore Police Force – (2002). The award endorsed and recognised ITE as a world-class technical education institution.

The government, through the Ministry of Education (MOE), played a supervisory cum supporting role, scrutinising and approving projects and programmes as well as providing funding. In terms of governance, while the relationship between ITE and MOE has not changed significantly (ITE remains a statutory board and an autonomous agency within the purview of MOE), the governance arrangement within ITE has undergone significant changes. In the experience of the author, it was observed that ITE initially operated as a single hierarchical organisation with central planning and operational control residing at its headquarters. The training institutes or campuses within the ITE system were headed by training managers who reported to the training division at headquarters. In 1998, professional leadership was established with the appointment of principals to head each campus within the ITE system. The principals were given the mandate to manage their campus autonomously. Subsequently, the ‘One ITE System, Three Colleges’ governance model was introduced in January 2005 (ITE 2006, p.11). The basic motivation for the new governance model is to refine technical education in Singapore by promoting autonomy and flexibility at ITE colleges, while encouraging innovation, diversification and competition under one consistent system. Students can therefore look forward to more choices to match their diverse talents and aptitudes.

Summarily, technical education for pre-employment youths in Singapore started in the public sector in 1964 and has remained there. The government’s willingness to fund education is clear. In a speech delivered at the Ministry of Education Work Plan 2000, then Minister for Education, Teo (2000, ¶3), spoke about the government’s commitment ‘to increase spending on education from 3.6% to 4.5% of GDP ... equivalent to an extra [S]\$1.5 billion every year, on top of the [S]\$6 billion we spend now each year for education’. Over the past 10 years, the actual expenditure by the government had increased from S\$3.44 billion in Fiscal Year (FY) 1995 to S\$6.26 billion in FY 2004 (Ministry of Education 2005, pp.44-47).

Visions of the future in learning and education

The literature review concerning visions of the future in learning and education yielded a number of themes, namely visions of: learning and education in 2020 (Branigan 2002; McQueen 1997), virtual schools (Clark 2001; Russell 2003; Young 2003), technology in education (Papert n.d.; Paulsch 2002; Strauss 1999; Williams 2002), privatisation and marketisation (Fitz & Beers 2002; Marginson 2005; NEA n.d.) and innovation in educational governance (Caldwell 2005; Caldwell & Keating 2004; Mintzberg 1996).

Learning and education in 2020: 2020 is a popular milestone when looking into the future. A ‘google search’ of the web on May 23, 2006 yielded: 64,200,000 entries for the keyword ‘2020’, 548 entries for the key phrase ‘education in 2020’ and 76 entries for the key phrase ‘learning in 2020’. Cara Branigan’s (2002, September 30) report on the ‘forecasts [of] what education will look like in the year 2020’ – a summary of 14 papers authored by 16 experts (original papers can be found on the Internet by following the web-link in the report) – and Harvey McQueen’s (1997) paper are the sources for this section. Relevant features of the educational landscape envisioned by Branigan (2002) include immersive environments, the personalisation of education for each student, multiple roles for teachers, self-paced student learning, increased student-teacher ratios and technology-facilitated one-on-one tutoring and apprenticeship relationships. McQueen (1997) postulated that

education institutions would face the 'demand [of] a responsive and flexible system' and that there would be 'portability of qualifications', devolution of responsibilities to 'local management' and internationalisation of the curriculum.

Virtual schools: There are numerous references to virtual schools. Essentially, virtual schools offer access anytime anywhere and students can choose to learn any topic at any pace. The Executive Director of Florida Virtual School (FLVS), Julie Young (2003), wrote that 'FLVS offers flexible online learning opportunities for students throughout Florida, the nation and around the world.' A study of virtual schools in the United States by Tom Clark (2001) shows that virtual schools are already here. In fact, the study covered 44 virtual schools and estimated (p.i) that '40,000 to 50,000 K-12 students will enrol in an online course in 2001-2002'. Going forward to 2020, will virtual schools remain a growing niche or they will become mainstream, replacing the traditional schools and making them obsolete? The jury is still out. While there have been positive evaluations of virtual schools such as FLVS, questions 'about socialization are also largely unanswered... [and] it is very difficult to predict whether students will be well equipped to be citizens' (Russell 2003, p.15).

Technology in education: The influence of technology in education, especially ICT, is a recurrent theme in many articles. In fact, visions of learning and education in 2020 hinge on technology, and future concepts of growth in virtual schools are driven by technology. From the literature review, technology is a key driver of new ideas and changes to come in education. Some experts predict radical changes – albeit without stating a timeframe – such that the brick and mortar education institutions as we know them today will no longer exist (Papert n.d.; Strauss 1999). Others like Randy Paulsch (2002, p.59) believe that while 'technology will be there, ...Telepresence won't take over: children will still physically go to schools, because there's just so much of us, as primates, that requires physical touch and general proximity'. A view that was supported by Stanley Williams (2002, p.67) who talked about a future of education that would involve both technology and teachers such that 'tomorrow's educational environment should be greatly enhanced by future information technology, which can engage more of the senses in the learning experience for vastly improved comprehension'.

Privatisation and marketisation: Leveraging on privatisation and marketisation of education as a solution to the demand for efficiency, flexibility and choice is a common theme. A pro-market website (www.schoolchoices.org), the School Choice, provides rich information on the merits of privatisation and marketisation. Its editor, Coulson (1998), wrote about '[t]he superiority of market school system' in its position statement, reflecting an extreme position. Simon Marginson (2005) spoke about education as a business and discussed Australia's global market position. Education is looked upon as an industry with an international market, and in his words, 'Australia's relative export position has strengthened since 2001 and we currently provide about 10% of worldwide places, 200,000 students.' Visions of such a market-driven future considered include: 'growth in cross-border' networking and activity, a competitive 'provider market in cross-border teaching' and portable qualifications as 'a source of comparative advantage' (Marginson 2005). In a review of possible future scenarios titled 'Market Driven Futures', the National Education Association (n.d.) outlined several possibilities: 'MacCollege, Inc' – a franchised model enabled by technology; 'Wired U' – an electronic distance education model; 'Outsourced Tech' – an outsourced model with for-profit education contractors that was also supported by John Fitz and Bryan Beers (2002) who presented an evolving market-driven education model in this direction; 'Warehouse A&M' – an extended education and training model; 'Education Maintenance Organization' – a model with systems that focus on striving for greater efficiency and lower costs. Significantly, either reduced funding or decreased government support is used as a prelude to all these future scenarios. As a result, quality and performance are compromised.

Innovation in educational governance: This theme is about 'self-managing schools, that is, schools for which there has been decentralised significant authority and responsibility while continuing to operate within a centrally determined framework of goals, policies, standards and accountabilities.' (Caldwell 2005, p.6) It is about using Public Private Partnership (PPP) in the building and refurbishment of education institutions and outsourcing of management services to the private sector. Conceptually, Caldwell and Keating (2004, p.31) concluded 'that the creation of public

private partnerships does not constitute the privatisation of public education'. They (pp.19-28) gave a range of examples 'to illustrate the different approaches to public private partnerships' (p.19). PPP represents an innovation in educational governance, distinct from the solely public or private institutions with corresponding service provisions. Such new governance arrangements allow educational providers and systems to accommodate the pressure for diversity and flexibility anticipated in the future. This seems a promising approach in the light of Mintzberg's (1996, p.76) observation that 'state control seems to have given way to equally devastating control by the private sector' when some countries privatise their publicly-owned organisations. It is thus important to look 'beyond public and private' to new governance arrangements through PPP and other forms of organisational structure such as self-managing schools, non-owned organisation and co-operatives. Innovative governance arrangements for education beyond the extremes of a wholly public-owned institution, funded and operated by government or a private institution, funded by the market and operated for-profit, will be needed for educational institutions to serve the public good and be efficient and effective at the same time.

Plans-in-place for technical education in Singapore

Having established itself as a world-class technical education institution, ITE mounted on its third and current strategic plan – the ITE Advantage Plan (2005-2009) – with the vision of becoming 'A Global Leader in Technical Education' (ITE 2005). New ideas (goals, strategies and programmes) are already in place for the next wave of transformation. These ideas and refinement of existing ones will continue to shape a dynamic ITE as it progresses. Key aspects of the ITE Advantage Plan include: flexibility and choice within system, greater on-demand access, collaborations with industry and community, pioneering core capabilities and going global.

Flexibility and choice: Flexibility and choice is an important aspect of the ITE Advantage Plan. Firstly, the college education system under the 'One ITE System, Three Colleges' governance model implies a choice of preferred college by the students. Secondly, as the colleges are allowed to develop their own niche courses, it also implies more courses being made available for students to choose from. Thirdly, Strategy 1 of the ITE Advantage Plan is to 'provide flexibility to customise learning' and this means students will be able to choose – to some extent – what they learn in a particular course (ITE 2005). In fact, the CEO of ITE, Law (2001, p.7) observed the overall trend of the educational system as moving towards 'increasing flexibility and opportunities in responding to the new economy'.

Greater on-demand access: 'Deliver on-demand Continuing Education and Training' was highlighted as Strategy 4 of the ITE Advantage Plan (ITE 2005). It is about encouraging greater flexibility in programme design and leveraging on technology to ensure on-demand, just-in-time delivery of courses anytime, anywhere to equip adult learners with relevant up-to-date skills.

Collaborations with industry and community: Collaborations with industry and community are given prominence in the ITE Advantage Plan. It involves 'local and international partners' (ITE 2005) and includes plans to step up 'collaboration with industry partners, to leverage on their resources, expertise and network to expand and enhance our programmes and services, through joint certifications' (ibid). It speaks of 'new overseas alliances and creative partnerships with international employers that operate in Singapore' (ibid). These are crystallised in Strategies 5 and 6: 'Widen collaborative partnership with industry' and 'Building strategic alliances in global community' respectively (ibid).

Pioneering core capabilities: 'Pioneering Core Capabilities in Vocational and Technical Education' is positioned as Strategy 9 in the ITE Advantage Plan (ITE 2005). This strategy shows that ITE is willing and ready to explore the uncharted waters of future technical education.

Going global: In the ITE Advantage Plan, 'going global' is the key overarching theme and with it, ITE has set its sights firmly on becoming 'A Global leader in Technical Education' focusing on global outreach and realising new frontiers in technical education (ITE 2005).

VISIONS OF TECHNICAL EDUCATION 2020 IN SINGAPORE

Juxtaposing visions of the future in learning and education with plans-in-place for technical education in Singapore shows that the outlook for 'Technical Education 2020 in Singapore' is an optimistic one. While there exists a plethora of visions for the future with many contributing factors cited, to make the future uncertain and difficult to predict, it is however reasonable, based on current trends, to expect technical education in Singapore to continue to evolve and change in a positive manner.

Socio-economic and political environment

First and foremost, the vision of an optimistic future is based on a firm belief that technical education in Singapore will continue to receive attention and adequate funding from the government. The author, who has been a resident of Singapore since 1983, has firsthand experience of the rapid development of Singapore as an independent city-state over the last 22 years. He considers the economic growth of Singapore – from being a third world country with per capita GDP of US\$512 when it became independent in 1965 to a thriving global city-state with per capita GDP of US\$26,833 in 2005 (Statistics Singapore 2006) – as nothing short of a miracle and a testimony of what is possible with good government and united people. While it is difficult to envision the future, he believes that the fundamentals in current economic and political environment of Singapore will not change in the foreseeable future. It is largely because of the very stable political environment and general trust that Singaporeans have in the current political leadership. In the latest election – the 10th since independence – conducted on May 6, 2006, the ruling party PAP (People's Action Party) won all but two seats in the 84-member parliament. It also clinched 66.6% of popular votes. Right after the election, a local reporter, Jasmin Yin (2006, May 8) reported that a senior politician, Minister Mentor Lee Kuan Yew, considered the 'results a boost for investors [and it] shows that Singapore is a stable country with a rational government'.

A key factor for the development of a world-class technical education system in Singapore today is linked to strong governmental support and belief in the value of technical education. The Prime Minister (PM) Lee Hsien Loong (2006, ¶16) stated that 'To stay ahead of competition, we are encouraging peaks of excellence in education to promote many routes up and many ways to succeed. This is why we allocate about 0.13% of Singapore's Gross Domestic Product (GDP), or [S]\$240 million, to ITE annually'. Compared to the OECD (Organisation for Economic Co-operation and Development) countries, which includes Australia, Germany, Greece, Hungary, Ireland, New Zealand, Poland and Switzerland, the funding level 'is relatively high' (ibid). A complementary factor is that the technical education system was responsive and developed in tandem with the nation's economy; it has performed well in supplying the economy with much needed skilled human resource. These factors formed a virtuous cycle that drove – and drives – both the education system and economy forward. Examples of virtuous cycles and its opposite, vicious cycles, were studied and documented by Ranis and Stewart (2001, p.16) in Latin American countries from 1960 to 1992. With PM Lee Hsien Loong born in 1952 and having assumed the Prime Ministership only on 12 August 2004 (Singapore Government 2005), this virtuous cycle is predicted to continue with the capable political leadership team leading the country for the next 10 to 15 years at least. Considering plans for the technical education system announced by the government and the ITE Advantage Plan, strong governmental support should continue and the technical education system should continue to deliver quality education and training and perform well.

Possible ITE strategic directions

Since its inception, ITE has consistently used a five-year strategic planning cycle successfully. With three consecutive strategic plans: the ITE 2000 Plan (1995-1999), the ITE Breakthrough Plan (2000-2004) and the ITE Advantage Plan (2005-2009), the vision was continually enlarged with each of the five-year plan. So assuming that ITE would achieve its vision to become 'A Global Leader in Technical Education' by year 2009, what could then be a longer term strategic direction or vision for ITE in 2020? While there is no long-term strategic development map for technical education in Singapore today, I believe it can stay within the course of success, continue its current pace of development and enlarge its sphere. With today's initiative to 'go global' and the start of 'One ITE System, Three Colleges' governance model, by 2020, there could be an established

international brand for Singapore's technical education with its three colleges as established global leaders holding different niches of technical education. The colleges should be expanding their enrolment; besides taking in local students and fulfilling local needs, they could be hosting a significant number of international students pursuing technical education in Singapore and contributing to the national goal of becoming 'a thriving international education hub' (Ko 2004). Singapore's technical education should also be recognised internationally and its international certification a sought-after qualification by students and employers. Overall, the governance foundations of ITE will probably remain. While ITE will continue to pursue more ambitious strategic plans with the most suitable governance models, ITE will remain focused on 'public good', realising the state's human resource and economic needs and receiving state funding.

The governance of technical education

In term of governance, visions of the future highlighted a number of key trends which point to the need for the technical education system in Singapore to respond to greater demand for an even more responsive and flexible system that will lead to higher quality education and training, better performance and more choices. It means that the governance arrangement must allow for greater flexibility and ability to respond quickly to market demands and changing needs. Some see privatisation and marketisation of education services as the solution. For example, the website School Choice reflects an extreme position for privatisation and marketisation (Coulson 1998). Others envision 'market driven futures' (NEA n.d.), devolution of responsibilities with more autonomy and 'local management' (McQueen 1997) and 'self managing schools, that is, schools to which there has been decentralised significant authority and responsibility' (Caldwell 2005, p.6). So what will the governance of technical education in Singapore look like in 2020?

This will be better answered by first looking at past developments of the technical education system in Singapore. It started in the public sector 'within the school system in 1964' (Law 1990, p.4). Since then, it has remained within the public sector domain but has undergone significant changes in governance arrangement five times, with the latest 'One ITE System, Three Colleges' governance model introduced in January 2005 (ITE 2006, p.11). Each time, there was decentralisation and devolution of authority and responsibilities, with more autonomy and empowerment for the colleges. In fact, the latest governance arrangement allows the colleges much greater autonomy to respond to the market and carve out future niches. It also encourages innovation, diversification and competition so that students can look forward to more choices. For example, each college has identified its own niche areas and core competencies: ITE College East specialises in Nursing, the Life Sciences and Logistics Management; ITE College Central specialises in Wafer Fabrication and Digital Media Technology; while ITE College West specialises in Precision Engineering, Automotive and Chemical Process Technology. Each college has also identified its own collegial vision or aspiration for further development; ITE College East's vision is 'To be an Institution of Choice for Post-Secondary Technical Education and A New Benchmark for Transforming Technical Training in Singapore' (ITE College East 2005), ITE College Central's vision is 'An ITE College of Choice Known for Inspiring Staff, Student Focus, Innovative Culture and Entrepreneurial Spirit' (ITE College Central 2006) and ITE College West's vision is 'The Preferred Partner for ITE Education, Committed to Students and Innovation' (ITE College West 2005). Being a responsive and dynamic system operating within a fast-changing environment, it is easy to predict that further changes in governance arrangement will materialise before 2020 in response to changing needs. So the question is: Will the system be completely privatised and left to operate according to market forces?

The author believes that this will not happen. Mintzberg (1996, p.76) highlighted that a simple leap from state to private ownership would not help as 'state control seems to have given way to equally devastating control by the private sector'. Education and training is a professional service, it requires the passion, dedication and commitment of the professionals who deliver the service with a purpose. We need to 'free professionals from both the direct controls of government bureaucracy and the narrow pressures of market competition' (Mintzberg 1996, p.82). While it is important to reform and introduce good practices from the private sector and the market into public education institutions to improve efficiency, responsiveness and flexibility, a balanced approach is needed. Governmental bureaucracy can be stifling, inflexible, unresponsive and inefficient but there are

dangers in the market as well. The dangers of full privatisation and marketisation of public education institutions include: the replacement of a service for public good with a market propensity for profits, quality of education and training giving way to bottom-line, with dedication and commitment giving way to greed, and stakeholders becoming shareholders rather than industry and community.

With continued governmental focus and strong support, coupled with a greater need for flexibility and responsiveness from the system, the author predicts the development of a quasi-market for technical education and training to promote greater engagement of the private sector and more empowerment for the stakeholders (students, teachers, educational professionals and employers). A quasi-market is envisioned as a market that is regulated for public good by the government through a technical education agency. The providers in this market would be licensed and audited regularly for them to receive government funding, albeit through a market mechanism such as 'education voucher programmes' which provide parents with public grants to send their children to schools or colleges of their choice (Magaret n.d.). With such a quasi-market, funding policies for citizens and special interest groups would be formulated to ensure that public good is upheld. The market should also be opened up to accommodate self-funded private students or international students with quality-assured educational services. Independent not-for-profit education institutions could be empowered to innovate and provide the flexibility to respond quickly and effectively to market demands. The current 'One ITE System, Three Colleges' governance model could evolve into one with a technical education agency performing the regulatory role and three or more colleges operating as independent autonomous education institutions within the market, with board supervision provided by key stakeholders and community leaders. Looking at the plans-in-place for technical education in Singapore, specifically the new ITE College West integrated campus which is scheduled for completion in 2009, the new college will be acquired under the new PPP framework, described as 'a long-term partnering relationship between the public and private sectors to deliver services' – in this case, educational services (Ministry of Finance Singapore 2006). It is to be followed by the new ITE College Central integrated campus, which will also be acquired through PPP and is scheduled for completion in 2011. New governance arrangements will need to be negotiated for PPP to work well. The PPP governance arrangement for the development of two new colleges could hasten the need to review the governance model for technical education in Singapore.

Implications for outcomes (quality and performance) and their management

With visions of the creation of a quasi-market, decentralisation, internationalisation of qualifications, global competition, fast ever-changing economy and skills, what are the implications for quality and performance, and their management in technical education when 2020 arrives? In terms of quality and performance, the creation of a quasi-market and decentralisation should allow independent colleges to enjoy greater flexibility and hence able to respond faster and more effectively to the new environment. Colleges will be able to leverage on technological advances by collaborating with partners from industry and community. Key success factors would include: ability to focus on education and training with a constancy of purpose (education and training for public good and not for-profit), and emphasis of normative-control which is 'rooted in values and beliefs' and about 'service and dedication' rather than performance-control (Mintzberg 1996, pp.80-81).

The ability to respond to changing technology and global education landscape is dependent upon a decentralised governance model that empowers education institutions to act and implement changes timely and effectively. With the evolving governance toward decentralisation and greater empowerment, the author predicts that the quality of technical education and training in Singapore will continue to improve through the use of technology (simulation, virtual reality, illustrated pictures, graphical depictions, and videos, etc) to engage more of the senses in the learning experience and collaborative partnerships with industry and community to ensure relevance. The fact that technology will enhance learning, provide greater access and empower the user is not in dispute (Williams 2002; Tan 2006). With increasing rates of change in an ever-changing world, this access and empowerment of the user will continue to expand. Growth in demand for technical education and training can come from different channels for a global leader in technical education. There will be demand for new technical skills and skill updating. With global competition, portability

of qualifications and the internationalisation of curriculum (McQueen 1997), international access and collaborations should be more common. If technical education in Singapore is able to stay in focus and continue with its successful trends in responding to change and staying relevant, the overall performance of the technical education and training system in Singapore should improve. Going forward, there will be multiple student intake channels including pre-employment students, in-employment lifelong learners and international students.

In terms of management, decentralisation would give rise to an increased demand for internal accountability. To strike a balance between control and flexibility with empowerment, accountability needs to exist. There needs to be a way to evaluate or measure performance accurately and yet not become rigid and bureaucratic. In this regard, the Balanced Scorecard (BSC) approach proposed by Kaplan and Norton (1992) comes in useful as it allows, through cascading, colleges to differ on their approaches to similar overall goals for technical education system and at the same time, be judged on negotiated measurable indicators. In the context of quality and performance management, it is important to note that market conditions, such as globalisation, not only call for change of governance structures but also changes within the structures. In other words, the changing marks of quality and performance must be reflected in the management system. With globalisation influences and growing internationalisation of qualifications, the indicators of quality and performance would need to be revised to reflect the changing environment at appropriate times. Instead of measuring quality by the employability of graduates and employers' satisfaction index, quality could be measured by the number of incoming international students and graduates employed overseas as these numbers can be proxies for the international credibility of qualifications awarded as well as for the global recognition of the quality of training and education provided. Given the fast-changing work environment and rapid changes in technology, the quality of technical education can not be adequately captured by just the employability of graduates upon graduation. This is because their skills set may turn obsolete so quickly that their continued employability is affected. Thus, quality would be more accurately captured by initial and continued employability. Adaptability of the graduates to changing conditions would be as important as their preparedness for the workplace upon graduation. Thus, pursuit of quality may involve a longer term relation between the colleges and their students such that their continued education is accessible and encouraged, and a shift towards more enduring lifeskills such as thinking skills, language skills and independent learning skills can be effected. With quality performance, the technical education system can then attract students to join the system and complete their training. Therefore, performance can and should continue to be measured by enrolment and the success rate. To reflect the importance of continued education and training, another indicator of performance could be the enrolment for continued education and training courses and number of repeat customers.

CONCLUSION

The outlook for 'Technical Education 2020 in Singapore' is an optimistic one. This optimism is based on a firm belief (or assumption) that Singapore will continue to have a stable government and reasonably good economic growth for the next 15 years. The development of a world-class technical education system in Singapore today is linked to strong governmental support, which forms a virtuous cycle propelling both the education system and economy forward.

In terms of governance, the technical education system in Singapore will need to adapt to a future that will see greater demand for flexibility. In this regard, the development of a quasi-market for technical education and training is likely to be in place by 2020. There are plans to develop two new colleges using the PPP framework which may hasten the change in governance arrangement. With the creation of a regulated quasi-market, the independent colleges should deliver higher quality technical education and training, and with improved performance through multiple student intake channels.

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