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Creating thinking schools through 'Knowledge and Inquiry': the curriculum challenges for Singapore

Charlene Tan

Abstract

The importance of thinking skills in Singapore is seen in the launch of the Thinking Schools, Learning Nation (TSLN) vision in 1997. This vision aims to develop creative thinking skills, a lifelong passion for learning and nationalistic commitment in the young. In elucidating the concept of 'Thinking Schools', the former Prime Minister Goh Chok Tong stressed the urgency for Singapore schools to nurture thinking and committed citizens to keep Singapore vibrant and successful in future. A recent effort to teach critical thinking skills is seen in the revised Junior College curriculum which aims at developing thinking skills, and nurture the skills, spirit and values required for Singaporeans to thrive in a more globalised, innovation driven future (Ministry of Education, 2002). The government in Singapore announced that a new GCE 'A' level subject, Knowledge and Inquiry (KI) will be introduced from 2006. This paper focuses on the teaching and learning of critical thinking through KI. By examining the objectives as spelt out in the syllabus, the paper identifies and discusses the curriculum challenges in the government's attempt to create thinking schools through KI from 2006 onwards.

Key Words

thinking schools knowledge and inquiry Singapore

Introduction

In a knowledge based economy characterised by rapid technical and scientific breakthroughs and obsolescence of knowledge, intellectual capital is highly valued by the governments in many countries (Shapiro & Varian, 1999; Powell & Snellman, 2004). Consequently, schools have also shifted their emphasis from content knowledge to thinking skills (Trickey & Topping, 2004). The government in Singapore is aware of the need to nurture critical thinkers for the new economy. The former Minister for Education Teo Chee Hean pointed out that Singapore students entering the workforce must be able to think critically in order to succeed in the new economic landscape (Teo, 2000). This view was echoed by then Acting Minster for Education Tharman Shanmugaratnam who interviewed twelve industry leaders on the key gaps that needed to be addressed in education in Singapore. The feedback from the industry leaders was that '(m)any Singaporean employees are uncomfortable with questioning assumptions, especially if

these assumptions are espoused by their bosses' (Tharman, 2003). A leading entrepreneur was quoted as saying: 'Singapore staff are more conforming than independent. They are generally not curious enough about most things' (ibid.). It was in response to the above shortcomings that a number of education policies and initiatives were launched in recent years in Singapore under the Thinking Schools, Learning Nation (TSLN) vision. This vision aims to develop creative thinking skills, a lifelong passion for learning and nationalistic commitment in the young. In elucidating the concept of 'Thinking Schools', the former Prime Minister Goh Chok Tong stressed the urgency for Singapore schools to nurture thinking and committed citizens to keep Singapore vibrant and successful in future. He explained that 'thinking schools' are 'the crucibles for questioning and searching, within and outside the classroom, to forge this passion for learning among our young' (Goh, 1997). Students need to have a passion for learning, and not just study for the sake of getting good grades in their examinations. Admitting that this passion is generally lacking among students in Singapore, he cautioned that their knowledge will be fragile unless they have the desire and aptitude to continue discovering new knowledge after they graduated. On the part of the teachers, they are expected to constantly look out for new ideas and practices, and continuously refresh their own knowledge. This is possible, Mr Goh added, when teachers are given the time to reflect, learn and keep up-to-date.

To achieve that goal, the Ministry of Education (MOE) in Singapore has fundamentally reviewed its curriculum and assessment system to better develop the creative thinking skills and learning skills required for the future. A recent effort to teach critical thinking skills is seen in the revised Junior College curriculum which aims at developing thinking skills, and nurturing the skills, spirit and values required for Singaporeans to thrive in a more globalised, innovation driven future (Ministry of Education, 2002; 2005a). The government in Singapore announced that a new GCE 'A' level subject, Knowledge and Inquiry (KI) will be introduced from 2006. This paper focuses on the teaching and learning of critical thinking through KI. By examining the objectives as spelt out in the syllabus, the paper identifies and discusses the curriculum challenges for Singapore.

The subject 'Knowledge and Inquiry' (KI)

KI is an optional subject in which students in junior colleges and pre-university centres (17-19 years old) can choose to offer at the GCE'A' level examinations.[1] KI aims to imbue students with a spirit of learning and exploration. Students will investigate and evaluate the nature and construction of knowledge, develop the mental capacity to question and seek answers to observations and phenomena (Ministry of Education, 2005b). A key aspect of KI is asking questions:

> KI as a subject focuses on students asking questions: about themselves, their society, the world around them, and exploring the different possible answers to these questions. It is in this spirit of inquiry that the syllabus is structured (Ministry of Education, 2005b, p. 4).

Another significant aspect of KI is the explicit teaching and formal assessment of critical thinking skills. The focus of KI is critical reasoning skills where students will be formally tested in a written examination. Students are expected to analyse different kinds of arguments and information, identify and evaluate assumptions and points of view, verify claims and provide reasoned and supported arguments of their own (Ministry of Education, 2005b). Specific roles for teachers and students are spelt out in the KI syllabus. Teachers should create a learner-centred experience by acting as facilitators, resource persons and models of learning. They should also establish a positive and supportive learning environment where students are able to question ideas, beliefs and norms. To be such a teacher, the KI teacher should attend formal training sessions arranged by the Ministry of Education, engage in wide reading on the areas of exploration and share with fellow KI teachers. For students offering KI, they should be active and empowered learners who 'challenge and question fundamental assumptions about knowledge constructs' (Ministry of Education, 2005b, p. 17). They are also expected to articulate and define their learning, and be responsible for their own learning experiences.

The introduction of KI is a milestone for the educational landscape of Singapore for two reasons. First, it is the first time thinking skills, particularly critical thinking skills, are formally taught and assessed as an academic subject in schools. Prior to that, thinking skills are taught in schools under the Thinking Programme but they are not examined, and no formal grades are awarded to measure the students' thinking skills.[2] Secondly, a specific type of critical thinking skills – critical reasoning or informal logic – is highlighted and tested in examination. Among the thinking skills, critical reasoning skills are fairly new to students in Singapore. Critical reasoning skills are taught mainly to Philosophy undergraduates at the universities in Singapore. This is true of many countries where critical thinking skills are traditionally taught at the tertiary level as formal and informal logic (Paul & Elder, 2001). The only known structured programme where critical reasoning skills are taught in Singapore is the Philosophy for Children Programme (P4C). But P4C was only introduced to a few schools such as Henry Park Primary, Raffles Girls Secondary and Nanyang Primary (Lim, 1998), and not taught at the junior college / pre-university level. It is also not taken as a separate, examinable subject recognised by the Ministry of Education. Given the context, it is pertinent to identify and discuss the potential curriculum challenges school leaders, teachers and students may face when KI is introduced from 2006 onwards.

The curriculum challenges for Singapore

Thinking schools or thinking skills?

The KI syllabus specifically aims to teach critical reasoning skills to students. Students will be tested in an examination where they will be given texts and be asked to analyse the arguments critically. Schools in Singapore need to go beyond the teaching of critical thinking skills if they want to be 'thinking schools'. As pointed out by then Prime Minister Goh Chok Tong, schools should be the conduit for questioning and searching in order to forge a passion for learning among the students. It is important not to reduce

critical thinking to critical thinking skills, techniques, strategies, mental processes or procedures. Endres (1996) cautions against reducing critical thinking to a fixed set of rules which can be applied to solve all problems across a nearly universal range of subject matter. Such an approach views critical thinking as basically concerned with specific exercises in comprehending, analysing, predicting and evaluating (Bailin, Case, Coombs & Daniels, 1999a; Case & Daniels, 2002).

But a number of writers have pointed out the tendency for teachers in Singapore to focus on skills and testing in their teaching. Referring to Glasser's principles of certainty (1969), Moo (1997) avers that the curriculum in Singapore schools is generally presented in clearly structured forms where there is a right and wrong answer for almost everything. Knowledge is gained mainly from standard textbooks (Deng & Gopinathan, 1999), and students are accustomed to seek only 'correct' answers from the teachers and prescribed books. Sripathy (1998), in her study, also confirms that the teaching style in Singapore is one where accuracy of responses and correction of errors are emphasised at the expense of spontaneous participation and personal engagement. Most teachers in Singapore see their responsibility to be preparing students to do well in the examinations and to raise the percentage of passes in the school (Cheah, 1998). In the case of teaching thinking in schools, educators in Singapore tend to interpret a 'thinking school' as one where 'thinking skills' are taught explicitly with the help of 'thinking worksheets' and other paraphernalia taken from various 'thinking programmes' (Nathan, 2001). As a result, students are immersed in an environment where standardised and formal assessments are emphasised. In the case of KI, it is likely for teachers to focus on drilling students with critical reasoning skills such as the identification of deductive arguments, inductive arguments, and fallacies, and rules such as validity and soundness. These techniques and strategies may become ends in themselves and one's result in test scores may become the criterion of success for critical thinking (Bonnett, 1995; Tishman, Perkins & Jay, 1995).

The fixation on reducing learning to a set of skills measurable through the national examinations is part of the exam-oriented culture in Singapore. A recent survey revealed that parents still regard academic ranking as the sole concern. As one parent puts it: "Let's face it – academic ranking is still the most important thing" (Davie, 2005). Teachers in Singapore are also highly focused on testing and are known to drill their students to help them to ace the examinations (Ho & Lin, 2004). School principals are also constrained by the examination-oriented environment in Singapore. One principal noted that the school ranking league tables, introduced since 1992, was based on academic results alone and this signaled to teachers, parents and students that only academic results mattered (quoted in Davie, 2005). The school ranking league tables which ranked individual schools were replaced with the banding system in 2004. Known as the School Achievement Tables, the new system bands or groups schools based on the average aggregate of their students' academic performance in the GCE examinations. Although the exact ranking positions of the schools are no longer revealed under the banding system, schools are still assessed based on how high a band they are placed in. This means that schools still need to compete with one another to get into or remain in the desired band. While academic performance is no longer the main determinant of a school's ranking, it remains a significant indicator for a school to be favourably banded. As one Singaporean puts it: 'Every school is competing for honours … to make sure

children are thoroughly drilled to score 10 As and bring honour to the school' (P. Tan, 2005). It is arguable that school principals, teachers and students in Singapore may focus on drilling students on the critical thinking skills in KI such as identifying fallacies and analysing deductive arguments. This approach may help the students ace the tests and examinations, but it is doubtful that 'thinking schools' - where there is a culture of questioning and searching within and outside the classroom - can be created.

Student-centred or teacher-centred?

A focal point for KI is the need for students to ask questions. Students are encouraged to actively challenge and question fundamental assumptions about knowledge constructs regarding themselves, their society and the world around them. Underpinning this framework is a shift from a teacher-centred approach to a student-centred approach in teaching and learning. Students are expected to know what they want to learn, be given the opportunity to articulate and define their learning. Complementing this is the role of teachers as facilitators, resource persons and models of learning. A non-threatening learning environment should be cultivated by the teachers to ensure that students are free to question ideas, beliefs and norms.

However, Asian values, especially Confucianist teaching, do not endorse an individual's right to question, challenge, and demand reasons and justifications for what is being taught. The Confucian value of filial piety to one's elders means that the teacher cuts an authoritative figure as a dispenser of knowledge and a disciplinarian, and children are expected to obey and not question (Kwok, Chang & Ko, 1993; Kinney, 1995; Ho, 2001). Commenting on the hindrances to developing critical thinking in Singapore students, Chong (2005) avers that the prevailing culture where 'elders are revered and where their word is practically law' means that 'there is often little room for children to express disagreement with views or policies laid down by parents and grandparents'. Arguing that teachers should be less dogmatic and more flexible, she writes: 'I am sure many of us have often suggested alternative methods and alternative viewpoints to our children on school matters only to be told it must only be done the teacher's way' (Chong, 2005). Given the cultural context, it is unsurprising that the dominant teaching approach in Singapore schools is teacher-centred (Gopinathan, 1996; Chew, Ng, Lee, & D'Rozario, 1997; Deng & Gopinathan, 1999; C. Tan, 2005). Deng and Gopinathan (1999) note that students in Singapore are expected to absorb knowledge and skills through passive listening, watching, drilling, and practising. A study on the learning styles of Secondary 4 (16 years old) students in Singapore showed that they prefer traditional ways of teaching where they can observe, listen and learn passively (Lim, 1995; 1996).

The syllabus for KI also states that students should challenge and question fundamental assumptions about knowledge constructs, including their deep-seated convictions. They should critically inquire into ideas, beliefs and norms, and explore different possible answers to the questions raised. But this is possible only if there is a culture of openness and freedom of expression. This also implies that the stakeholders of education in Singapore - the government, school leaders and teachers, parents and community at large - are prepared for students to critique sensitive and potentially explosive issues, particularly issues concerning politics, race, culture and religion. After all, part of the process of inquiry is to express one's frank opinions and surface one's

presuppositions and biases. To do so, students need to be given a secure environment where they know that what they say or write as part of the questioning process will not be held against them. This may be extremely challenging, given the prevalent culture and practice in Singapore.

First, it is culturally difficult for Asians to handle disagreements as the person's cultural background prompts him/her to perceive a difference of opinion as an attack on both himself/herself and the group of which he/she is a part of (Osterloh, 1986). This is particularly so when one's deep-seated convictions, especially in cultural, moral and religious matters, are under scrutiny. For example, can parents and teachers schooled in Asian or Confucian values accept their children and students who question why they need to respect the elders? How far can students be open about how they feel about people of other races and religions in Singapore? Secondly, there are no clear guidelines on what constitutes acceptable questioning and challenging in the spirit of inquiry, and what constitutes seditious acts. Recently there has been a number of people who have been charged under the Sedition Act for their allegedly hate speech on their blogs against other races in Singapore (*The Straits Times*, 22 September 2005; Ho, 2005). The local newspaper reported that 'the sedition charges have led many to wonder where Singapore society is headed when it comes to talk on race and religion, and on the related issue of online expression' (Lim, Zakir & Han, 2005). The Sedition Act states that words to promote feelings of ill will and hostility between different races and classes of the population would be considered seditious. This is regardless whether the person charged is doing it out of naivety or malice; the Act states that the intention of the person charged is irrelevant if the act itself has a seditious tendency. Prime Minister Lee Hsien Loong maintained that Singaporeans need to 'learn that there are certain limits and they have to respect one another" (quoted in Lim, Hussain & Han, 2005). Such a view has been supported by a number of Singaporeans who argue that social cohesion and harmony should take precedence over any talk on individual freedom (e.g. see Chan, 2005; Teo, 2005; Skadian, 2005). However there are others who feel that rather than using the law to clamp down on alternative views and negative remarks, efforts should be made to debate about the issues openly (e.g. see *The Straits Times*, 24 September 2005). Students themselves have commented that some schools have over-acted in their zeal to punish students who post offensive remarks online. For example, one student shared that students in his school who made comments about teachers in jest, or who unknowingly quoted certain paragraphs from a peer's blog were 'chastised and given a sound lecture' (Au Yong, 2005). Without a supportive culture of inquiry from the stakeholders in education and guidelines on the limits of questioning, students may be hesitant about speaking their minds in the pursuit of truth.

More time or no time?

There are also practical constraints faced by teachers and students in the teaching and learning of KI. In order for teachers to be resource persons and models of learning for KI, they are expected to attend formal training sessions arranged by the Ministry of Education, engage in wide reading on the areas of exploration, and share with fellow KI teachers. The goal is for them to have a spirit of life-long learning – to be informed of

new ideas and practices, and continuously refresh their own knowledge. As then Prime Minister Goh Chok Tong rightly pointed out, all this entail that teachers need the time to reflect, learn and be kept up-to-date.

But it will be difficult for teachers in Singapore to read widely, be resource persons and models of learning due to time constraint. There have been complaints about the heavy workload faced by teachers and the overwhelming pressure from the school management (Liew, 2004). Added to the challenge is the fact that most KI teachers in Singapore are not trained in informal logic which is the type of critical thinking identified in the KI syllabus. They would need much time to undergo formal training, read extensively on epistemology and metaphysics, and inquire into how knowledge is constructed in the various disciplines. It may also be challenging for KI teachers to share ideas with fellow teachers, especially for teachers who may be the only KI teacher in the school. Given the intense competition among schools to boost their schools' positions in the school achievement tables (Tan, 2003), it may not be feasible for teachers of different schools to share ideas on teaching critical thinking to their students.

Students themselves are also hard-pressed for time. Then Prime Minister Goh Chok Tong agreed that students in Singapore are known for being exam-oriented, and generally lack the passion for learning. To move away from the exam-oriented mindset, students need to be given the time and space to be critical and reflective thinkers. But many students in Singapore are simply too busy to reflect and be passionate about learning. There has been a spate of letters to the newspapers on the long hours that students in Singapore spend in schools (e.g. see Teh, 2005; Goh, 2005; Istyana, 2005). It is typical for students to go to bed well past midnight, especially when revising for exams. A student who is studying in a junior college explained the constraints faced by students and teachers:

> Assignments and tutorials take up most of our free time; weekends are seldom spared. It is no wonder then that most of my classmates have stopped trying to keep up with schoolwork. For a person who does his homework religiously and tries to keep up with school, any free time would be welcomed as a break, and is unlikely to be spent pursuing even more knowledge. A teacher once said: "Many children come to us naturally creative and curious, with a sense of wonder and excitement, only to be turned off shortly after they start school." … To go beyond conventional teaching methods would be too much of a hassle, and might also be deemed too risky (Istyana, 2005).

This observation is corroborated in an empirical study on the students' perceptions of recent educational changes in Singapore (Ng, 2005). The study reported that students find studying in Singapore too stressful and tiring. This was due to the many assignments and tests that they have to complete. The following are typical views from students interviewed (ibid.):

- *Let's face it. What counts in the education system and for schools is really the exam results and academic ranking.*
- *We hardly have time to breathe when we have so many tests each week.*

- *The trouble is not with the teachers and the principal. I mean teachers and principals all have this obsession with results. But if you look at some of your own friends, they are worse.*

Implications: towards thinking schools

How then can thinking schools be created in Singapore so that students are able to think critically and be imbued with a passion for learning? First, it is important for teachers to inculcate not just thinking skills but attitudes and dispositions in their students. Proponents of critical thinking regard certain dispositions as essential to a critical thinker. Siegel (1988) describes such a person as having a critical spirit to seek reasons and evidence. Ennis (1987; 1996) maintains that a critical person should have a tendency to seek reasons while Paul (1988) describes a critical thinker in the strong sense as one who has the disposition to seek clarity, accuracy and fairmindedness. Secondly, it is pertinent for teachers to go beyond thinking skills to include the appropriate context for critical inquiry. Weinstein (1996) points out that critical thinking always takes place in a particular context in response to a particular task, question, problematic situation or challenge. Puolimatka (1996) argues that the teaching of critical thinking should be set within a larger framework where factors such as political, social, economic, and cultural factors, and viable alternatives are taken into account (Kaplan, 1991; Puolimatka, 1996, Burbules & Berk, 1999; Koh, 2002). Knowing the context will guide teachers and students on what, how and when to question. While questioning is important in critical thinking, this does not mean that students are encouraged to question everything. Neither is critical thinking equated with criticism where the student becomes judgemental, negative, harsh, mean spirited and cynical, doubting or discounting everything one reads and hears (Case & Daniels, 2002). While critical thinking is essential, students should also learn about the fallibility and finiteness of critical thought. Puolimatka (1996) maintains that 'the dogmatic presumption of man's self-sufficient rationality … paradoxically tends to make thinking uncritical in its basic orientation' (1996, p. 114).

In the case of Singapore, teachers should ensure that the students are cognisant of the local context before they are encouraged to question, challenge and debate on sensitive topics such as religion, race and culture. Take for example the topic of religion in Singapore. Teachers could start by introducing to the students the social, political, cultural and religious background in Singapore. As a city-state with about 4.2 million people, Singapore is a plural society with Chinese (78%), Malays (14%), Indians (7%) and Other (1%). A majority of the population are Buddhists (42.5%), followed by Islam (14.9%), Christianity (14.6%), Taoism (8.5%) and Hinduism (4.0%). There are also adherents of other religions (0.6%) as well as those who profess to have no religion (14.8%). The pluralistic nature of Singapore, coupled with the recent terrorist attacks in New York, Bali and London, and the arrest of a group of Muslim terrorists in Singapore, makes the discussion of religion potentially explosive and divisive in Singapore. Historically, Singapore experienced the disastrous consequences of racial and religious riots in the Maria Hertogh Riots which took place in 11 Dec 1950. During the 1980s, there were religious revivalism and shifts which led to fears of inter-religious tensions among adherents of different religions (Chua, 1985). The Singapore government is

understandably careful not to allow any discussion on religion to heighten religious differences and cause inter-religious tensions. An understanding of this context will enable KI students to debate on issues relating to religion in Singapore in an informed, mature yet critical manner. While it is salutary for students to question and even challenge the assumptions of certain religious beliefs and practices – after all, these are part of the 'deep-seated convictions' listed in the KI syllabus – the discussion should not inflame racial or religious animosity. To prepare students to question and challenge in a responsible way, it is helpful to get them to understand and appreciate a particular religion first. This is to ensure that students will not base their critical comments on unwarranted beliefs or prejudices. For example, a 3-day Ramadan camp was organised by the Islamic Religious Council of Singapore (Muis) and the Southeast Community Development Council to introduce the significance of Islamic beliefs and practices to 216 youths aged 14 to 17 (*The Straits Times*, 30 November 2000). That helped the youths to go beyond a superficial understanding of the religions and question the practitioners about their religious beliefs and practices in an informal setting where religious phenomena are rooted in the real world. The extent to which students in Singapore are allowed to openly debate on sensitive issues like race and religion depends on how confident the society is about the current harmonious state of relations (Lim, Zakir & Han, 2005). Prime Minister Lee Hsien Loong recognises the need for a fine balance between allowing freedom of expression while enforcing the laws at the same time (quoted in Zuraidah & Li, 2005). In the case of blogging, for example, students need to know that freedom of speech comes with responsibility and accountability (Skadian, 2005). KI teachers need to provide the dos and don'ts of blogging for their students, as what some teachers in Singapore have already done in their schools (Davie & Liaw, 2005).

Thirdly, a crucial component for the creation of thinking schools is more time for teachers and students to learn. The Ministry of Education in Singapore has also announced specific steps to address the time constraint that teachers face. The latest initiative from the government is to encourage schools to 'teach less, learn more'. The aim is for teachers to teach better by engaging the students and preparing them for life, rather than merely teaching more for tests and examinations. Recognising that this is possible only if teachers have more time to reflect, the Ministry of Education has announced plans to free up more time for teachers. One way is for the schools to hire more support staff such as part-time teachers (known as Adjunct Teachers) and Co-Curricular Programme Executives (CCPEs) to help teachers run their school activities outside the classroom (known as Co-Curricular Activities or CCAs). Another is to further reduce the content in the curriculum so that teachers have the space to make learning more engaging and effective. This also means that students will have less content to study and more time to explore areas of learning in which they are passionate about. Perhaps the most exciting change is for schools to set aside time-tabled time, known as 'white space' for teachers to engage in professional planning, reflection and sharing. The Ministry of Education explains that schools can use this space to customise and develop instructional content and materials, and use effective pedagogy and authentic assessments that best suit their students (Ministry of Education, 2005c). The extra time for teachers could then be used for teachers to identify, adapt and design appropriate pedagogy to promote critical thinking in their students. In particular, teachers of critical thinking

should adopt strategies that take into consideration the cultural factors. Davidson (2004) recommends less explicit approaches to teaching critical thinking in Asian countries through friendly, cooperative and face-saving activities. This includes group work where the group presents the answers to the class, thus avoiding the embarrassment and sense of isolation if individual students were to present. Intellectual games are also recommended with their own set of rules which permit open disagreement. Films can be another excellent source where students are stimulated to reflect critically on the issues raised in the film. The discussion on the dilemmas and problems faced by the characters in the film puts the spotlight on these fictional characters and not on the students themselves, thereby making the questioning and challenging more palatable to them. It is encouraging to note that some school principals in Singapore have already exercised their discretion to introduce the timeout system to allow teachers more time for research and lesson planning. A school principal of one such school noted the importance of free time for teachers:

> Many teachers have a lot of good ideas, but with the current timetable, they don't have time to put these ideas into practice and it's a pity. Giving teachers time off to do this has an important impact on development of materials, and coming up with effective pedagogies. It's worth the time (Mrs Teo Khin Hiang, quoted in "Weekly days off for lesson research", *The Straits Times*, 23 Sep 2005).

Concluding thoughts

The preference for a didactic teaching style is not unique to Singapore; it is prevalent in other Asian-Chinese societies such as Japan, China and Taiwan (Stevenson & Stigler, 1992; Feinberg, 1993; Stapleton, 1993). Some writers have averred that critical thinking is culturally insensitive and inappropriate in Asia where social harmony and submission to authority are preferred to public confrontation (Wilson, 1993; Atkinson, 1997; Davidson, 2004). A recent study found that British-Chinese pupils and their parents are exam-oriented, and teachers in England found their Chinese students passive, quiet and conforming (Francis & Archer, 2005; Neo, 2005). The attempt by the Singapore government to create thinking schools provides a useful case study on the need for curriculum planners and educators to be mindful of the factors that influence the creation of 'thinking schools'. In particular, there is a need to consider the social and cultural factors at work. Degenhardt (1988) points out that an in-depth knowledge of the historical development of a country and other contrasting societies is needed before one can look at that society in an informed critical perspective. Otherwise, he adds, 'critical thinking about a society is of little value, and potentially dangerous, if it is not informed by an awareness of the difficulties and unintended consequences that arise when critiques of institutions are translated into attempts to change them' (1988, p. 64). For example, students in some cultures may be encouraged or expected to question the tenets of their religion while such pursuits may be discouraged in other cultures (Case & Daniels, 2002).

The time constraint faced by Singapore teachers is also reflective of the situation in many parts of the world. Hall and Ford (1987) point out that teachers are burdened

with a heavy workload and immense pressure from the school management. Teachers everywhere need the time to learn, reflect on, and practise the requisite knowledge and skills in critical thinking before they can possess the attitudes and dispositions of critical thinkers themselves (Adelman, Walking-Eagle & Hargreaves, 1997). Teachers need to be skilful facilitators and adept at probing with suitable questions in order to foster critical thinking among the students (Lim & Loo, 1997). This means that they need to go beyond seeing critical thinking as a set of skills and dispositions, and promote it as a 'form of life' (Splitter & Sharp, 1995). There is also a need for the teachers to switch from seeing their role as an expert and dispenser of information to that of a questioner and facilitator (Lim, 1996). To achieve this, time is needed for the teachers to develop their skills as questioners and facilitators since inquiry cannot be reduced to a set of techniques that a teacher can learn quickly. It should also be pointed out that it is not easy for teachers to create an environment conducive to promoting dialogue in the class. This is because the teacher is usually concerned with achieving specific behavioural outcomes and their perception of their role as behaviour managers, and this appears to conflict with listening to and building upon what children were saying (Trickey & Topping, 2004).

This paper has highlighted the curriculum challenges and the corresponding implications in the government's attempt to create thinking schools through KI in Singapore. The Singapore case study reveals that critical thinking assumes and demands a supportive culture and political structure. Can Singapore provide the necessary conditions for the flourishing of critical thinking in general and KI in particular? There has been expressed concerns about the extent of media and academic freedom in Singapore. In a recent report, Singapore was ranked 140th out of 167 countries by 'Reporters Without Borders' on media freedom (Peh, 2005). It was also reported that Warwick University's governing council has aborted its plan to set up a campus in Singapore due to its concern about the lack of academic freedom in Singapore (Ho & Davie, 2005). In response, the government in Singapore reiterated its stand that there will not be any fundamental change to the political and social structures in Singapore. On the poor ranking of Singapore, Senior Minister Goh Chok Tong said that the index was 'a subjective measure computed through the prism of Western liberals' (quoted in Peh, 2005). He added that 'it remains crucial for Singapore to maintain our own unique and tested system of political governance and media model' (ibid.). Unsurprisingly, there has been scepticism about the outcomes of thinking in the current political state (Sim & Print, 2005). Commenting on education reform initiatives in Singapore towards creativity and innovation, Tan and Gopinathan (2000) maintain that a 'desire for true innovation, creativity, experimentation, and multiple opportunities in education cannot be realised until the state allows civil society to flourish and avoids politicising dissent' (p. 10, cited in Sim & Print, 2005, p. 68).

However, the government is pragmatically aware of the utilitarian benefit of critical thinking to help Singapore economically, and the corresponding need to promote active citizenship (Han, 2000). The political leadership in recent years has been more open to contrary political perspectives and views, and has engaged and consulted citizens in various nation-wide initiatives such as the 'Singapore 21' and the 'Remaking Singapore' (Sim & Print, 2000; Sharpe & Gopinathan, 2002). The year-long public debate on whether Singapore should have a casino also indicates a greater willingness on the part of the government to involve the citizens in decision making. The casino issue

saw a flurry of letters from the public to the press, statements from religious groups, surveys conducted to elicit feedback from the public, and an online petition signed by thousands of Singaporeans to register their opposition to a casino in Singapore. The whole consultative process led a writer to observe the following:

> [T]he year-long feedback process has allowed many parties to voice their concerns. … While it is good that the casinos will provide more jobs and draw more tourists, it is even better that the PAP Government is feeling comfortable in giving us space to speak and act. The casino decision-making process is a small step in the right direction for Singapore's political development (Ooi, 2005).

There are indications that this practice of allowing more parties to voice their concerns and participate in public debates will continue in Singapore. Noting that there is some way to go to develop 'a spirit of question in our schools and universities'. Education Minister Tharman Shanmugaratnam declares that the intellectual climate in Singapore has to evolve towards more openness with a new generation of Singaporeans (quoted in Lim, 2005). What this evolution of intellectual climate in Singapore entails, and whether it is sufficient for critical thinking to flourish in Singapore, are issues which will be of interest and relevance when KI is implemented from 2006 onwards.

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Notes

[1] Under the new 2006 GCE'A' level curriculum, all students may select subjects at 3 levels of study: Higher 1 (H1), Higher 2 (H2) and Higher 3 (H3). All students are required to take 3 H1 subjects: General Paper, Project Work, and Mother Tongue Language. On top of that, they have to offer 3 H2 and 1 H1 content-based subjects, at least one of which is a 'contrasting subject'. A contrasting subject aims to provide a broad base of learning for the students by preparing them for a multi-disciplinary approaches in tertiary learning. For example, a student who takes 3 subjects from the Mathematics and Sciences group (eg. Mathematics, Chemistry and Physics) would have to offer 1 subject from the Humanities and the Arts group, and vice versa. The Ministry of Education explains that as KI is multi-disciplinary, it can be taken as a contrasting subject for students whose main specialisation is in either the Humanities and the Arts or the Mathematics and Sciences disciplines. Students who choose Knowledge and Inquiry (KI) will be exempted from General Paper. For more information on the 'A' level curriculum, see Ministry of Education, 2005a.

[2] A Thinking Programme was piloted by the Ministry of Education in 1996 where thinking skills based on Marzano's framework were taught to the students. By 1999, the Thinking Skills programme was introduced to all secondary schools (Ministry of Education, 2000). The Thinking Programme aims to enable students to acquire and understand the core thinking skills and the processes involved in using them (Chua & Leong, 1998; Hong & Yee, 1998). Eight core thinking skills based on Marzano's framework are selected: focusing, information-gathering, remembering, organising, analysing, generating, integrating and evaluating (Marzano et al., 1988). The programme also aims to help students apply these skills in the learning of content subjects and in real-life decision making and problem-solving situations. Positive habits are also inculcated to help them become critical, creative and self-regulated thinking learners. Two pedagogical approaches which ran concurrently were adopted for the Thinking Programme (Chua & Leong, 1998). The first approach is direct teaching of thinking where students are taught the thinking skills explicitly in non-curricular contexts for one period (35 minutes) per week. This is supplemented by the infusion approach where thinking skills are infused into the core subjects of English, Science, Maths, Geography and History. Chua and Leong (1998) report that about 30% of the curriculum time for the teaching of the subjects consists of such infusion lessons. Teachers are encouraged to facilitate the teaching of thinking by creating a classroom climate that is conducive for thinking. The strategies suggested include questioning, co-operative learning, active learning, language of thinking, establishing positive attitudes and perceptions about learning, promoting productive habits of mind (Marzano, 1992, quoted in Chua & Leong, 1998).