

地理研究 第59期 民國102年11月
 Journal of Geographical Research No.59, November 2013
 DOI: 10.6234/JGR.2013.59.04

Changing Perspectives of Geographical Education in Singapore: Staying Responsive and Relevant

Geok-Chin Ivy Tan ^a

Abstract

Investment in education has always been a key national strategy to ensure Singapore's economic competitiveness and growth. Before the turn of the century, in 1997, a major educational reform with the official vision of *Thinking Schools, Learning Nation* (TSLN) was introduced by the then Prime Minister at the 7th International Conference on Thinking. The aims of *Thinking Schools, Learning Nation* were to develop critical and creative thinking, instil lifelong learning passion, and promote nationalistic commitment in the young. To support the TSLN vision several initiatives were implemented to promote thinking skills, National Education, and information technology in schools.

Sequentially, to enable schools to implement these new initiatives another thrust called *Teach Less, Learn More* (TLLM) was introduced by the Ministry of Education. This paradoxical phrase is a call to teachers to be less dependent on the use of rote learning and to move away from teaching for tests and examinations. Instead, they are to engage their students with more student-centered pedagogies to prepare them for the challenges of the 21st century. The focus of *Teach Less, Learn More* was on the transformation of teaching pedagogies in order to promote more active learning on the part of the learners. To support all these new thrusts and initiatives, the curriculum review committee boldly recommended a content reduction in all subjects thereby freeing up more curriculum time for more student-centered pedagogies in the classrooms.

Against this background, geographical education in Singapore has undergone critical transformations to be responsive and relevant to the needs of the changing educational scene in Singapore since the turn of the century. This paper will critically discuss the changes in terms of geographical content, pedagogy and assessments and also highlight the challenges in geographical education in Singapore as a result of these changes.

Keywords: geography education, geography curriculum, curriculum change

^a 新加坡南洋理工大學人文與社會學科教育學部副教授
 Associate Professor, Humanities & Social Studies Education, Nanyang Technological University,
 Singapore

Introduction

Singapore is an island city of 714.3 sq km and with a population of 5.1 million (Department of Statistics Singapore, 2012). She has no natural resources and the one treasured resources is her people. Since independence in 1965, Singapore has successfully built up a robust economy through several phases of economic restructuring. Singapore has placed significant importance in the role of education to ensure sustainable economic growth through the years since her independence. In an ever dynamic economy, educational policies must change to be in tandem with national visions and directions so as to ensure that our youths will be prepared to meet the demands of the changing economy in the future (Lee et al., 2008). As the Senior Minister Mr Goh Chok Tong has stated:

‘Singapore started from a low base in education and skills in 1965. At that time, our literacy rate was 60 per cent. Only three out of 100 of each year’s cohort went to university. Today, 40 years later, our literacy rate has gone up to 94 per cent. And one in five of each cohort makes it to university. We continue to invest heavily in education. Our government budget for education is almost 4 per cent of GDP. I should stress that it is not simply the amount of money poured into education that counts but how the money is channelled and whether it is being used productively.’ (Goh, 2005)

Education is not only an important strategy to strengthen our global economic competitiveness but it is also a means to enable social mobility and help level up the living standards of the people. Education is also ‘the channel for values transmission and the platform for strengthening national identity and loyalty’ (Ng, 2008). Hence, it is critical that the education system in Singapore has always to be in alignment with the nation’s visions and directions.

The key aim of this paper is to outline the changes in the national and educational scenes in Singapore from 1997 and the corresponding changes in geography at the secondary school level in response to the changes. Three critical curriculum reviews and revisions in response to the period of educational policies and initiatives will be the center for discussion. Attempts will be made to highlight and discuss these changes in terms of the syllabus content, pedagogy and assessment in the geography curriculum. Finally, it will conclude with a reflection on the key enablers and the challenges.

Geography in Singapore

Compulsory education was introduced in 2003 (Tan, 2008; Ministry of Education, 2013a). A child who is a Singapore citizen must attend a national primary school for 6 years. At the end of 6 years, the child will sit for the first major national examination called the Primary School Leaving Examination (PSLE). The results of the Primary School Leaving Examination will be used to determine the course the child can take in a secondary school according to the child’s ability and interest. Those on the Special/Express course will take the national GCE Ordinary Level Examination and complete their

secondary education within 4 years. Those on the Normal Academic course take the GCE Normal Academic Level examination at the end of year 4 and GCE Ordinary Level Examination at the end of year 5. Those who have done well at the GCE Ordinary Level examination will have a choice to proceed with their education at the Junior Colleges or Polytechnics. For those in the Normal Technical course, they will take the GCE Normal Technical Examination at the end of year 4 and can decide to go to the Institute of Technical Education which provides vocational and technical education.

Presently, at the primary level, geography is taught within the subject of primary Social Studies. At the lower secondary, geography is still a compulsory subject except for those in the Normal Technical course. The students in the Normal Technical course have to read secondary Social Studies. At the upper secondary, Combined Humanities is the core humanities subject. It is compulsory for all students to do the Combined Humanities which is 50% Social Studies and for the other 50%, the students can choose either Elective Geography, History or Literature. Full Geography is also offered as an elective humanities subject for students who would like to take double humanities subjects. At the junior college level, geography is offered as an elective subject. Geography as a subject has come under intensive review through the years in order to be responsive to the changing educational scenes in Singapore. The following section will review three critical periods leading from the turn of the century which have shaped the geography curriculum and how it has been taught and assessed in schools in Singapore. The three periods are broadly classified as the period of the educational vision of Thinking School, Learning Nation (1997-2005), Teach Less, Learn More initiative (2005-2012) and towards inquiry in post 2012.

Thinking School, Learning Nation (1997-2005)

Before the turn of the century, in 1997, the then Prime Minister, Mr Goh Chok Tong, introduced *Thinking Schools, Learning Nation* (TSLN) as the vision for Singapore at the opening of the 7th International Conference on Thinking (Goh, 1997).

‘Singapore’s vision for meeting this challenge for the future is encapsulated in four words: *Thinking Schools, Learning Nation*’. It is a vision for a total learning environment, including students, teachers, parents, workers, companies, community organisations and the government.’(Goh, 1997)

Singapore has to be transformed into a nation with thinking and committed citizens who are dedicated to lifelong learning. The aims of TSLN were to develop critical and creative thinking, instil lifelong learning passion, and promote nationalistic commitment in our youths. In order to support the TSLN vision, the Ministry of Education (MOE) launched three initiatives to promote thinking skills, information and communication technologies (ICT), and National Education (NE) in schools.

In 1997/1998, the Ministry of Education embarked on a major curriculum and assessment review. One of the recommendations of the review was the need to cut back on the amount of content knowledge that students are required to learn, and to encourage teachers to incorporate the three MOE

initiatives. Teachers were encouraged to infuse the use of thinking skills into their subjects. The Ministry of Education provided examples of lessons for the teaching of different types of thinking skills explicitly and for infusing thinking skills implicitly within the different subject areas. Under the ICT Masterplans, schools were encouraged to adopt the use of information technology so as to equip the students with ICT skills through the integration of ICT in the curriculum. The first ICT Masterplan, (1997-2002) focused on setting up the basic infrastructure for schools and to train the teachers to use ICT for teaching (Cheah & Koh, 2001; Koh & Lee, 2008). This was followed by the second ICT Masterplan (2003-2008) which focused on the effective integration of ICT into the curriculum.

The National Education initiative had great impact on school curriculum and in particular the Humanities. The National Education initiative aimed at developing national cohesion through fostering the Singapore identity and instilling core values such as meritocracy and multiracialism; and developing confidence in the nation by teaching about Singapore's developmental challenges, constraints and vulnerabilities (Tan & Lee, 1999; Sim & Adler, 2004; Tan, 2008). In schools, teachers are encouraged to infuse whenever possible the six key National Education messages in their lessons. The six key National Education messages are:

- Singapore is our homeland; this is where we belong.

We treasure our heritage and take pride in shaping our own unique way of life.

- We must preserve racial and religious harmony.

We value our diversity and are determined to stay a united people.

- We must uphold meritocracy and incorruptibility.

We provide opportunities for all, according to their ability and effort.

- No one owes Singapore a living.

We find our own way to survive and prosper, turning challenge into opportunity.

- We must ourselves defend Singapore.

We are proud to defend Singapore ourselves, no one else is responsible for our security and well-being.

- We have confidence in our future.

United, determined and well-prepared, we have what it takes to build a bright future for ourselves, and to progress together as one nation. (Ministry of Education, 2013b)

In response to the three initiatives, in the curriculum review in 1997/98, the geography syllabus was revised to incorporate teaching of thinking skills, use of technology and most importantly to promote understanding of Singapore's strategic vulnerabilities and constraints as a city-state and the strategies used to overcome them. More case studies on Singapore were incorporated in both the lower and upper geography syllabuses to convey the National Education messages. The lower secondary syllabus included relevant case studies on our tropical rainforest, ageing population, water supply, land reclamation and conservation of resources. For the upper secondary syllabus, topics on coastal protection, internal structure of Singapore City, high-tech farming, planned industrialisation and tourism

were included. In terms of pedagogy, teachers were encouraged to use more student-centered approaches, infuse thinking skills and incorporate the use of IT in their geography lessons. Assessment was revised to promote thinking and reasoning. The geography paper 2 which comprised of 40 multiple choice questions was removed. The structure of the geography examination paper was changed. Students have to answer 5 structured questions. More data response questions were included.

Another impact of the National Education initiative was the introduction of the compulsory Combined Humanities as a core humanities subject for all upper secondary students. The younger generations of youths were perceived to lack a knowledge of and interest in Singapore's history of nation-building and that was of critical concern to the nation. The younger generation might take peace and prosperity for granted. Hence there is a need to develop in the youths a sense of national consciousness and belonging (Sim & Adler, 2004; Tan, 2008). The Combined Humanities is one of the direct responses to address this problem with the introduction of the compulsory Social Studies component. For the other component of the subject, the students can choose either Elective Geography or History or Literature. Elective Geography is half the curricular time and content of the Full Geography. The topics for Elective Geography were all Human Geography topics: Changing Agriculture, Changes in Manufacturing, Changing Tourism, Development and Environmental Management.

The most visible and direct implication of the compulsory Combined Humanities subject was the decline in candidature for the GCE Ordinary level full Geography. However, more students opted for Elective Geography compared to Elective History or Literature. Another implication of the introduction of Combined Humanities was the decline in candidature at the GCE Advance level geography. The performance of the Physical Geography paper at the GCE Advance level examination was also affected as most of the students had very little Physical Geography background if they had done Elective Geography.

Teach Less, Learn More (2006-2012)

By 2004, in the Prime Minister Lee Hsien Loong's National Day Rally speech, he encouraged the teachers to teach less to our students so that they will learn more (Lee, 2004). This paradoxical quote '*Teach Less, Learn More*' (TLLM) became another initiative under the TSLN umbrella. According to the Minister of Education, Tharman Shanmugaratnam, TLLM is about transforming education and learning from the focus of quantity to quality.

‘We are progressively shifting the balance in education, from learning content to developing a habit of inquiry. We are renewing our emphasis on an all-round education, so that we can help our young develop the strength of character that will help them ride out difficulties and live life to the fullest.’ (Tharman, 2005)

This paradoxical phrase was a call to teachers to be less dependent on the use of rote learning and to move away from teaching for tests and examinations. The chief aim of TLLM was to equip students

with the necessary skills to be innovative, resourceful and creative so as to meet the challenges of the 21st century. In schools, there should be a greater emphasis on the acquisition of skills related to processes, such as problem-solving, decision-making, judgment and communication. Figure 1 shows the framework for 21st century competencies and desired student outcomes (Ministry of Education, 2010). Schools were given the important tasks of equipping their students with the necessary knowledge, skills and values for them to be ready as working adults in the 21st century. The academic curriculum, teaching approaches and assessment methods in schools have to be refined to incorporate the achievement of these competencies.

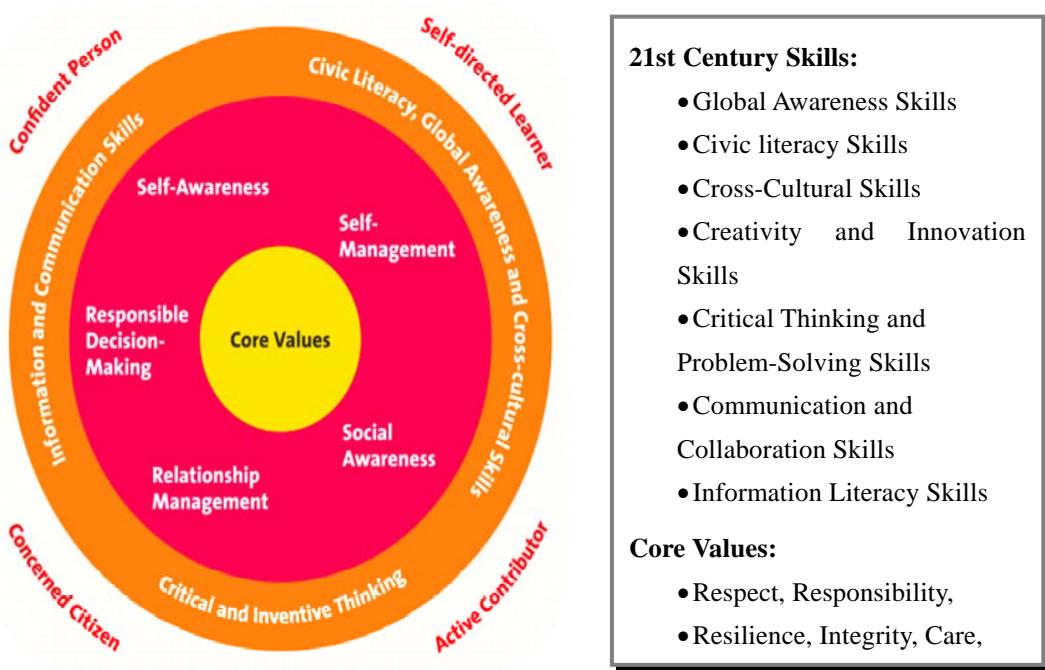


Fig. 1 Framework for 21st century competencies

(Ministry of Education, 2010)

Upon completion of the formal education in Singapore, the desired student outcomes are for every student to be:

- ‘a *confident person* who has a strong sense of right and wrong, is adaptable and resilient, knows himself, is discerning in judgment, thinks independently and critically, and communicates effectively;
- a *self-directed learner* who takes responsibility for his own learning, who questions, reflects and perseveres in the pursuit of learning;
- an *active contributor* who is able to work effectively in teams, exercises initiative,

takes calculated risks, is innovative and strives for excellence; and,

- a *concerned citizen* who is rooted to Singapore, has a strong civic consciousness, is informed, and takes an active role in bettering the lives of others around him'. (Ministry of Education, 2009)

Responding to the TLLM initiative, a post 2006 curriculum review was done leading to the introduction of the 2006/7 Geography Syllabuses. More time and space within the school curriculum were set aside for teachers to adopt innovative and interactive teaching methods to engage their students and to enable them to take more ownership of their learning. More contemporary local and global geographic issues are included in the syllabuses.

In terms of the geography syllabus content, it was further reduced and changed. One physical topic on Weathering and one human topic on Population were removed. Both these topics would be covered at the junior college level. The upper secondary geography syllabus was hence reduced from 10 to these 8 topics:

1. Plate tectonics and resulting landforms
2. Weather and climate
3. Natural vegetation
4. Rivers and Coasts
5. Geography of Food (replace Agriculture)
6. The Industrial World
7. Tourism
8. Development

In terms of assessment, students are to attempt two structured questions from paper 1: Physical Geography and another two structured questions from paper 2: Human geography. The most drastic difference from the previous assessment is the inclusion of an open-ended 6 and 8 mark question for each structured question. This question would require the students to evaluate an issue and it would be marked according to 3 level-descriptors instead of point marking.

As for Elective geography in the Combined Humanities, there is a balance of two Physical Geography topics (*Natural Vegetation*, and *Rivers and Coast*) and two Human Geography topics (*Geography of Food* and *Development*). For the GCE O level examination, students have to attempt one question from the Physical Geography section and another question from the Human Geography section. Like the full Geography paper, a 6-8 mark open-ended structured question is included in each structured question of the Elective Geography paper. This will likewise be marked using level descriptors.

Moving Forward with Inquiry and Fieldwork (2013 onwards)

Moving forward, the curriculum has recently been revised to highlight the significance of inquiry and fieldwork in Geography. There was a mapping exercise to map the MOE framework of 21st century learner through Geography Education in schools (see Figure 2).

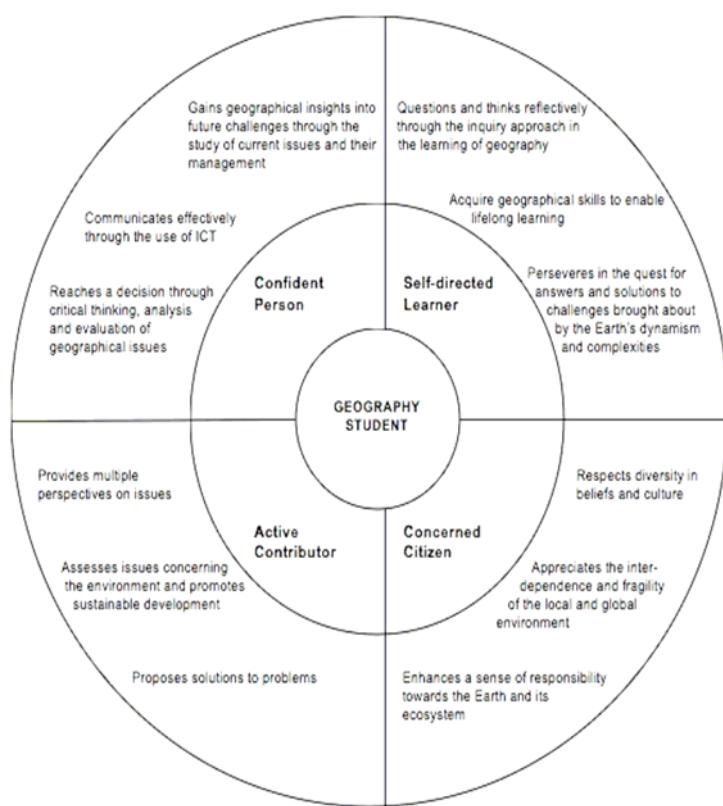


Fig. 2 Desired outcome of education through Geography
(Singapore Examinations and Assessment Board, 2013)

The new Geography syllabus, which was implemented this year and with the first examination in 2014, adopts an inquiry-based approach to the teaching and learning of Geography. Adopting the inquiry-based approach will give students a deeper and critical understanding of the changing world and help prepare them for the complexities of the world. Geographical Inquiry requires students to participate in an investigation into an authentic geographical issue essentially through fieldwork. It involves the geographical inquiry process of formulating questions, gathering data, exercising reasoning and reflective thinking as illustrated in Figure 3.

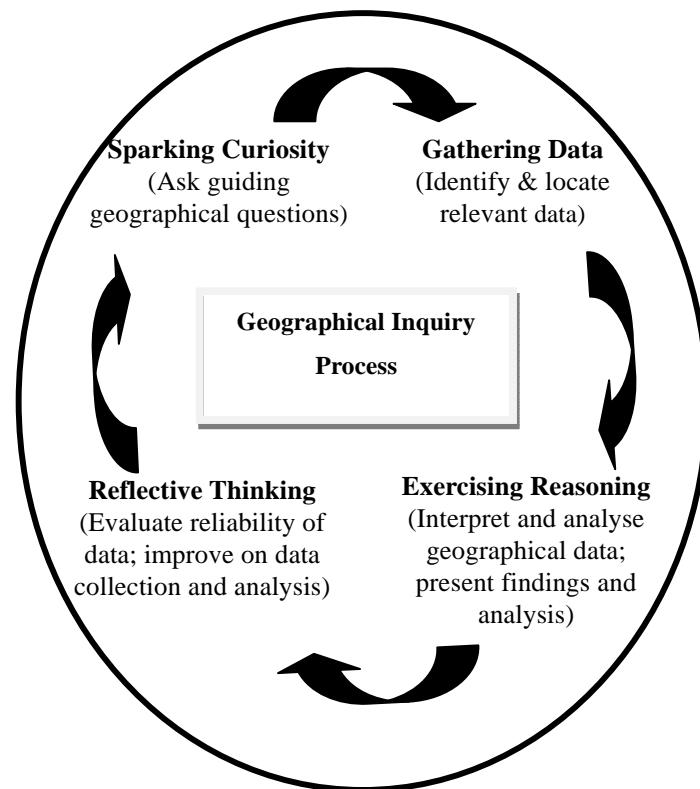


Fig. 3 Geographical inquiry process (Roberts, 2003)

To enable both teachers and students to be engaged in the inquiry process, the syllabus content has been reduced further from 8 topics to 6. The three Physical Geography topics are *Coasts*, *Living with Tectonic Hazards*, and *Variable Weather and Climate*. The three Human Geography topics are *Global Tourism*, *Food Resources*, and *Health and Diseases*. Assessment for the GCE Ordinary level has been changed to include structured questions on Geographical Investigation in the form of a fieldwork case study on *Coasts* and *Global Tourism*.

Concluding Thoughts

The status of Geography in Singapore depends very much on how Geography can stay relevant in addressing the needs of the nation. The geography curriculum in Singapore has perpetually changed from period to period in order to stay relevant to the needs of the nation and to respond to the changing educational scene. It has evolved through periods of intensive curriculum reviews to ensure that the subject is both current and future oriented and embraces both local and global issues. One chief enabler is the concerted effort of the Curriculum Planning and Development Division (CPDD) at the Ministry of Education that has organised and conducted the continuous and periodic curriculum reviews. The curriculum has to be a forward looking one which will provide opportunities for teachers to engage in

pedagogies to promote student engagement and inquiry. The syllabus content has been changed with the phasing out of less relevant topics such as *Agriculture* and replacing it with *Food Resources* which students can relate to. The syllabus content has also been changed to include relevant and current topics such as the *Health and Diseases*. Even more drastically, the syllabus content in terms of the number of topics to be covered has been reduced over time to make sure that more time can be freed up for teachers to use inquiry and student-centered pedagogies. Teachers should not be rushing through to complete a tight syllabus with the conventional teacher-centred teaching pedagogy. Assessments have also been modified through the periods of curriculum reviews. The multiple choice questions were removed, structured questions with levels of descriptor marking were included, and recently structured questions on Geographical Investigation based on fieldwork case studies will be included in the GCE Ordinary level examination.

Another key enabler has been the close collaborative relationship between the Ministry of Education, National Institute of Education, National University of Singapore and the schools. The Geography curriculum review working committees for lower secondary, upper secondary and Junior College levels comprise of curriculum officers from the Ministry of Education, Geography educators from the National Institute of Education, Geographers from the National University of Singapore and geography teachers from schools. The close working partnership and collaboration has enabled rich, professional discussions and discourse to critically evaluate the curriculum.

Another key enabler is the alignment of the initial teacher preparation programme at the National Institute of Education with changes in the curriculum to prepare the young teachers for teaching in the 21st century. The curriculum studies programme has been redesigned to engage student teachers into reflecting on the what, why and how of curriculum planning and instruction (Tan & Lian, 2007). Teachers need to have strong conceptual understanding of the topics to be taught and be able to address the essential questions and enduring understanding of each teaching unit.

The status of Geography depends very much on the quality of Geography teachers in schools. One of the challenges is the provision of profession development to prepare the teachers for the demand of each change in the curriculum. The Ministry of Education would conduct needs assessment with the teachers and collaborate with the National Institute of Education to offer professional development workshops for teachers. Recently, the National Institute of Education has conducted a series of workshops for Geography teachers to introduce and familiarise them with the Geographical inquiry process (Roberts, 2003) and the use of inquiry in Geographical Investigations through fieldwork. The Ministry of Education has also established the Academy of Singapore Teachers in 2010 to raise teacher professionalism. Within the Academy is the Geography Chapter which serves to enable teachers to network, collaborate and learn together to raise professional standards and practice. There must be an alignment in goals across the Ministry of Education, universities and schools and strong collaborative partnerships to sustain continual efforts at making the curriculum relevant and responsive to the national visions and directions.

References

- Cheah, H.M. & Koh, T. S. (2001): Singapore: Integration of ICT into Education. *Journal of Southeast Asian Education*, 2(1): 147-164.
- Department of Statistics Singapore. (2012): *Yearbook of Statistics Singapore 2012*. Department of Statistics, Ministry of Trade and Industry, Singapore.
- Goh, C. T. (1997): *Shaping our Future: Thinking Schools, Learning Nations*. Speech presented by Prime Minister Goh Chok Tong at the opening of the 7th International Conference on Thinking.
- Goh, C. T. (2005): *Investment in People pays off for the Country*. Speech presented by Senior Minister Goh Chok Tong at the Jeddiah Economic Forum, Saudi Arabia. The Straits times. Retrieved on April 21, 2013, from <http://www.straitstimes.com>.
- Koh, T.S. & Lee, S.C. (2008): Digital skills and education: Singapore's ICT master planning for the school sector. In S. K. Lee and C.B. Goh (Eds.) *Towards a Better Future: Education and Training for Economic Development in Singapore since 1965* (pp.167-190). Washington DC: The World Bank.
- Lee, H. L. (2004): *Our Future of Opportunity and Promise*. Speech presented by Prime Minister Lee Hsien Loong at the 2004 National Day Rally at the University Cultural Center, National University of Singapore.
- Lee, S.K., Goh, C.B., Fredriksen, B. & Tan, J.P. (Eds.) (2008): *Towards a Better Future: Education and Training for Economic Development in Singapore since 1965*. Washington DC: The World Bank.
- Ministry of Education. (2009): *Desired Education Outcomes*. Retrieved on April 5, 2013, from <http://www.moe.gov.sg/edcuation/desire-outcomes/>
- Ministry of Education. (2010): *Nurturing Our Young for the Future: Competencies for the 21st Century*. Ministry of Education, Singapore.
- Ministry of Education. (2013a): *Compulsory Education*. Retreived April 20, 2013, from <http://www.moe.gov.sg/initiatives/compulsory-education/>
- Ministry of Education. (2013b): *National Education Messages*. Retrieved April 20, 2013, from <http://www.ne.edu.sg/index.htm>
- Ng, P. T. (2008): Thinking schools, learning nation. In J. Tan and P.T. Ng (Eds.), *Thinking Schools, Learning Nation: Contemporary Issues and Challenges*, (pp. 1-6). Singapore: Pearson Prentice Hall.
- Roberts, M. (2003): *Learning Through Enquiry: Making Sense of Geography in the Key Stage 3 Classroom*. Sheffield: Geographical Association.
- Sim, J.B.Y. & Adler, S.A. (2004): The Role of Secondary Social Studies in Educating Singapore's Citizens. *Teaching and Learning*, 25(2), 161-169.
- Singapore Examinations and Assessment Branch. (2013): *Geography GCE Ordinary Level Syllabus 2236*. Retrieved April 20, 2013, from http://www.seab.gov.sg/oLevel/2014Syllabus/2236_2014.pdf

- Tan, G. C. I. & Lian, L. C. (2007): Teaching for understanding: Designing curriculum for instruction using the understanding by design framework for geography teachers' pre-service education. In Reinfried, S, Schleicher, Y. and Rempfler, A. (Eds.) *Geographical Views on Education for Sustainable Development: Proceedings Lucerne-Symposium, Switzerland*, (pp.94-101). Lucerne: International Geographical Union.
- Tan, I. & Lee, C. (1999): Infusion of national education in the teaching of geography in Singapore. *Geographical Education*, 12, 24-27.
- Tan, J. (2008): Whither national education? In J. Tan and P.T. Ng (Eds.), *Thinking Schools, Learning Nation: Contemporary Issues and Challenges*, (pp. 72-86). Singapore: Pearson Prentice Hall.
- Tan, J. (2010): Compulsory education in Singapore – who benefits? *Asia Pacific Journal of Education*, 30(4), 401-418.
- Tan, Y. K., Chow, H. K. & Goh, C. (2008): *Examinations in Singapore: Change and Continuity (1891-2007)*. Singapore: World Scientific.
- Tharman, S. (2005): *Achieving Quality: Bottom Up Initiative, Top Down Support*. Retrieved April, 20, 2013, from <http://www.moe.gov.sg/media/speeches/2005/sp20050922.htm>.

投稿日期：102年8月30日
修正日期：102年9月30日
接受日期：102年10月2日