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# Is Singapore's school geography becoming too responsive to the changing needs of society?

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In understanding the divergences and commonalities in the representations of geography across different national settings, the case of Singapore is examined through the notion of politicisation of school curricula to meet the needs of "significant power groups". In particular, the development of school geography in Singapore and its response to changes in the education system are discussed, followed by an analysis of its development in relation to changes in academic geography. This is followed by a discussion on the place of school geography in responding to social and cultural concerns. Through content analyses of syllabus documents and secondary data, this article examines the role of each of the significant power groups in academic geography and the state and how they have shaped Singapore's school geography curriculum. While Singapore's school geography has been very responsive to changing educational processes, social demands and, to some extent, the development in academic geography, this has come at a price where the subject is now under threat from falling student intakes and what could be described as an abridged geography. The author argues that while responsiveness is a key factor to ensure the continued existence of the subject, stakeholders should not lose sight of a holistic understanding of geography as a discipline of study.

Keywords: school geography; curriculum; paradigm shifts; politicisation; teacher readiness

## Introduction

In the concluding remarks to a presentation on the development of Singapore school geography at a special session on "International Geography Education Standards and Frameworks" at the 2013 Association of American Geographers meeting, the author raised the question whether Singapore's school geography curricula revisions have become too responsive to changes in educational needs (Tan & Chang, 2013). The context for the statement arose as the presentation reviewed cycles of curricula changes over the past four decades that were attributed to a responsive government in aligning school geography curricula to the needs of the nation, not unlike Marsden's (1989) notion of politicisation of school curricula to meet the needs of "significant power groups" (p. 509). This article endeavours to analyse how geography is expressed in Singapore's national curriculum with the goal of seeking resolution to the question posed in the title.

In Singapore, the national curriculum in geography from primary to pre-university level is described by a national syllabus document. Consequently, the curriculum has been commonly referred to as the syllabus, both by teachers and educators alike. Singapore's school geography curriculum has undergone changes at the conceptual

organisation level over the last four decades. The curriculum organising concepts have moved from studying about regions, to understanding the inter-relationship between humans and their changing environment, reflecting the paradigm shifts in academic geography (Agnew & Livingstone, 2011; Agnew, Livingstone, & Rogers, 1996; Cloke, Philo, & Sadler, 1991). Upon closer inspection, the syllabus aims and objectives, however, are directed more at meeting national needs, within a global setting. This approach is also evident when inspecting the range of topics included in each of the syllabi. The author argues that these changes in school geography curricula have all responded and corresponded to unprecedented changes on Earth, while contextualised for needs at a national level. Indeed, school geography is a key avenue to teach our children how to engage with these changing times (Tan & Chang, 2008). As a result, two questions are raised in this article.

(1) What are the dominant influences on Singapore's school geography curriculum?
(2) How do these influences shape school geography in Singapore?

To answer these two questions, the article will examine key artefacts such as subject syllabi, transcripts of official speeches and statistics from official sources, framed within the concept of the politicisation of geography by significant power groups (Marsden, 1989). Secondary data on student enrolment numbers will also be used as a dipstick on the state of the subject in school. To this end, the article will examine briefly the development of school geography in Singapore and its response to changes in the education system, followed by an analysis of its development in relation to changes in academic geography, and then discussing the place of school geography in responding to the social and cultural concerns. Finally, the question posed in the title will be addressed by considering the influences of the various significant power groups on school geography.

## School geography and educational goals

Children in Singapore receive 6 years of primary and 4 years of secondary compulsory education. At the end of primary and secondary school, the child has to sit for a national level examination each, for placement purposes. Students may also choose to study a 2-year or 3-year post-secondary, pre-university course or a technical education programme at a polytechnic. Geography is taught, both within the integrated subject of social studies and as an independent subject from primary to post-secondary level (grades 1–12 equivalent in the American grade levels). For ease of referencing, the American grade system will be used to refer to the various levels of study.

Singapore's education system has been touted as a responsive one, punctuated by four main phases to describe a system, which has progressed through survival-driven (1959–1978), efficiency-driven (1979–1996), ability-driven (1997–2011) to student-centric values-driven (from 2012), in nature (Ministry of Education [MOE], Singapore, 2012). Indeed, Singapore views education as an agent for social change (Yip, Eng, & Yap, 1997), and these changes in the overall approach to education reflect this underlying philosophy. Several initiatives were introduced over the past two decades in addressing the changing needs of the nation, from its "Thinking Schools and Learning Nation" (TSLN) reform in 1997 to the "Teach Less Learn More" in 2004. At the same time, the MOE also undertakes regular and periodic syllabus reviews for school subjects. Consequently, several syllabi reviews for school geography across primary to

pre-university levels were conducted, basically in alignment with the shifting needs of the nation and the world.

Geography is not taught as an independent subject at the primary school level in Singapore but is incorporated as part of a social studies subject (from grades 3–6 (Fang, 2002). For lower secondary, geography is a compulsory subject while it is an elective subject at the upper secondary (grades 9 and 10) and pre-university levels (grades 11 and 12).

Primary school children understand the world they live in through learning spatial and human–environment concepts in the social studies subject. There is a deliberate attempt to align the syllabus aims to the Singapore's Desired Outcomes of Education (DOE). The DOE refer to attributes that MOE would like to observe in children "by the completion of his[/her] formal education" (MOE, Singapore, 2009). A student who has attained the DOE would have "a good sense of self-awareness, a sound moral compass, and the necessary skills and knowledge to take on challenges of the future. He[/She] is responsible to his[/her] family, community and nation. He[/She] appreciates the beauty of the world around him[/her], possesses a healthy mind and body, and has a zest for life" (MOE, Singapore, 2009). Among the objectives listed in the syllabus, it is thus unsurprising that the primary social studies syllabus aims to teach students to

- understand people's interaction with places and the relationships between people, places and the environments;
- understand the importance of making informed choices about the use of resources;
- develop respect for and positive attitudes towards their own, and other people's cultures; and
- develop a sense of responsibility towards the environment (Curriculum Planning and Development Division, 2008).

Indeed, the key concepts of appreciating the world and taking on responsibility for one's own action can be seen in the four objectives extracted from the social studies syllabus document. A similar alignment in the aims and objectives of lower secondary school geography can be observed, and the details will not be included in this discussion.

At grades 9 and 10, students are prepared to sit for a national level Singapore-Cambridge General Certificate of Education (Ordinary Level) Examination or the GCE 'O' Levels in short. A mandatory combined humanities subject was introduced in 2001 for all students at grades 9 and 10. The first of the two papers is a compulsory paper on social studies, and the second an elective humanities paper which is chosen from the subjects of geography, history or literature. Students who opt for a literature or history elective may also opt to study a second humanities subject, which can be geography, called the pure subject, as opposed to the elective subject (Singapore Examinations and Assessment Board, 2010). The scope of topics in the elective geography paper is a subset of the topics taught for the full paper. The syllabus aims are similar for both the papers.

This syllabus aims to enable candidates to

- acquire knowledge of the characteristics, distribution and processes of physical and human phenomena;
- develop a holistic understanding of physical–human relationships at local, regional and global scales;
- gain geographical insights and global awareness into future challenges through the study of current issues and their management;

- become inquiring and self-directed learners who ask geographical questions and seek understanding through the collection and analysis of geographical information;
- develop skills in communicating and applying geographical knowledge; and
- make informed judgements and sound decisions through the analysis, synthesis and evaluation of geographical information (Singapore Examinations and Assessment Board, 2012b).

While the syllabi aims described above are aligned to and probably derived from the Singapore's DOEs as espoused by the Education Ministry, there is some similarity to the concepts presented by an international "GeoCapabilities project". The GeoCapabilities project attempts to uncover a common set of capabilities that can be used to "research the potential of improving curriculum making in geography" (Solem, Lambert, & Tani, 2013) across national boundaries. In the report of their first phase of study, the following GeoCapabilities have been identified.

(1) Promoting individual autonomy and freedom, and the ability to use one's imagination and to be able to think and reason [GC1].
(2) Identifying and exercising one's choices in how to live based on worthwhile distinctions with regard to citizenship and sustainability [GC2].
(3) Understanding one's potential as a creative and productive citizen in the context

These GeoCapabilities can be cross referenced to the key concepts in Singapore's DOE and the geography syllabi aims. To illustrate this cross referencing, Table 1 highlights the three GeoCapabilities in the DOE and the relevant sections of the grades 9 and 10 geography syllabus.

GC1 is concerned about individuals who can think and reason. This is evident in the DOE and the school geography syllabus as a thinking individual is manifested as someone who can collect and analyse geographic information. GC2 describes how individuals exercise choice in considering the environmental future of earth. This is an extension

Table 1. GeoCapabilities as manifested in Singapore's DOE and school geography syllabus.

| Singapore's DOE | Syllabus aims for grades 9 and 10 geography |
|---|---|
| A student who has attained the DOE would have "a good sense of self-awareness, a sound moral compass, and the necessary skills and knowledge to take on challenges of the future [GC3]. He is responsible to his family [GC2], community and nation. He appreciates the beauty of the world around him [GC1], possesses a healthy mind and body and has a zest for life" | • Develop a holistic understanding of physical–human relationships at local, regional and global scales [GC3]<br>• Gain geographical insights and global awareness into future challenges through the study of current issues and their management [GC3]<br>• Become inquiring and self-directed learners who ask geographical questions and seek understanding through the collection and analysis of geographical information [GC1]<br>• Make informed judgements and sound decisions through the analysis, synthesis and evaluation of geographical information [GC2] |

Source: Ministry of Education, Singapore (2009) and Singapore Examinations and Assessment Board (2012b).

from GC1 in that thinking is in itself a necessary but not sufficient condition for action. Geographers must "make informed judgements and sound decisions through the analysis, synthesis and evaluation of geographical information" (Singapore Examinations and Assessment Board, 2012b). It is also important that individuals are grounded in deep understanding of the "beauty of the world around him" (MOE, Singapore, 2009) so as to understand the context for how he can be a creative and productive citizen of the world (GC3) (Solem, Lambert, & Tani, 2013).

It is not a coincidence that the GeoCapabilites are manifested in Singapore's school curricula. Indeed, the presence of GeoCapabilities as described in the Singapore case implies that there is universality of the idea across national curricula. In addition to the cases of the United States, the United Kingdom and Finland reported in the study (Solem, Lambert, & Tani, 2013), the vocabulary used to investigate and describe GeoCapabilities can be potentially used to examine geography curricula in other national contexts outside the western world.

Set against a rapidly globalising context, Singapore's education system has been driven to recognise the skills required of a twenty-first century individual. The DOEs were designed specifically to address this need (MOE, Singapore, 2009). As a small island state with virtually no natural resources but blessed with a strategic geographical location along routes, its role as a hub for the confluence of economic, cultural and political activities requires individuals who can generate ideas and perform tasks that will add value to the resources that flow through the state. In describing how the foresight of Singapore's leaders in investing in human resources through education has contributed to the countries' current development status, Marsden's (1989) idea of politicisation comes to mind. It is out of the necessity, that the state has introduced ideas that has shaped the curricula aims described above. Undoubtedly, the educational processes have then influenced the way school geography has been designed, at least at the broad syllabi aim level. However, the state is not the only agency that influences how school geography has developed over the last five decades in Singapore. Like other countries, school geography is also "characterised in terms of its disciplinary heritage" (Butt & Lambert, in press) in addition to the influence of the state as a significant power group.

### The slow dance between school and academic geography

In the early years of Singapore's nationhood, from 1959 to the early 1970s, school geography was focused on learning about countries in the world. The topics at grades 7 and 8 were organised by locational and descriptive information about places and human activities through a regional lens, which persisted through the 1970s, but was later replaced by a systematic geography syllabus in 1983. The syllabus was organised around concepts of location, direction, scale and environment flavoured by a focus on the Singapore environment. "Earth as home for people" and "Earth's natural resources and how humans can improve or damage the environment" was introduced by the 1990s at the lower secondary level. In the following decade, the lower secondary school geography syllabus was organised according to human or physical geography topics, around a central theme of physical–human relationships (Chang, 2012).

A similar trend can be observed for grades 9–12 school geography syllabi. In the 1970s, upper secondary geography was concerned with regions such as Australia and New Zealand, while the curriculum in the 1980s was explicitly taught as systematic geography. By the 2000s, a more conceptual approach highlighting the human–environmental and spatial relationships was adopted. Indeed, the "more recent syllabi are focused on . . .

conceptual understanding of humans and their relationship with the environment" (Chang, 2012, p. 7). Indeed, students learn about human ingenuity in managing environmental challenges as each environmental topic ended with the need for students to evaluate the strategies implemented by humans to manage them (Singapore Examinations and Assessment Board, 2010).

Interestingly, there has been a revival of the regional approach to understand geographical issues of our time. The subject of China Studies was introduced in 2007 for grades 11 and 12 with the aim to introduce students to geopolitical, economic and sociocultural issues related to China's development since 1978, and how they will shape future trends in China (Singapore Examinations and Assessment Board, 2012a; Singapore Examinations and Assessment Board, 2012b). While this is not a subject to replace geography at the pre-university level, it is a syllabus designed for humanities education and inevitably provides geographical perspectives to students. There is also perhaps political motivation as China is a rising economic power in the Asian region.

If we are to analogise the epistemological shifts in school geography, it could be described as a slow waltz involving three "steps" of regional studies, systematic geography and thematic geography, and the current trend has brought school geography back to the first step.

Meanwhile, academic geography has endured several paradigm shifts. Thomas Kuhn's concept of paradigms was originally developed to describe "a normative framework that a science imposes on itself", and thus a paradigm shift refers to the "historical progression of theoretical assumptions and methodological procedures that a discipline experiences in more or less regular intervals" (Kuhn, 1962). While physical geography has focused on the human–environment relationship through the last 50 years, human geography has experienced paradigm shifts from environmental and regional approaches to the systematic spatial science of the 1960s, on to Marxism, humanism, realism, structuration and post-modernism in the decades that followed (Agnew & Livingstone, 2011; Cloke, Philo, & Sadler, 1991). More recently, the approaches of critical thinking, spatial information sciences and a renewed look at environmentalism characterised geographic discourse (Golledge, 2002; Nayak & Jeffrey, 2011). Interestingly, there has been a revival in an integrated regional approach to geography in the 2000s in which the "emergence of global communities and global domains that required integrations of knowledge about place, culture, interactions, politics, economic, resources, and natural environmental characteristics" has dominated geographic discourse (Golledge, 2002, p. 1).

While the paradigm shift in school geography is not a perfect reflection of what is going on in academic geography, the similar movement from regions to systems, to themes and then back to regions again can be analogised as a slow waltz. Indeed, where school geography lagged behind in the vernacular articulation of the paradigms within academic geography (Marsden, 1997), the relationship could be best described by academic geography taking a lead in this waltz with school geography trailing behind, at least in the case of Singapore.

The question that arises will be how does academic geography lead school geography in these movements across paradigms? This is perhaps best answered by considering the national curriculum-making process. Following the introduction of the 1956 White Paper on Education Policy, a nationwide curriculum for geography was introduced to primary and secondary schools. Since then, a national curriculum for geography, in the form of a syllabus document providing guidance in the instruction of geography for each of primary, lower secondary, upper secondary and pre-university levels was developed and

reviewed periodically. Each subject goes through a curriculum review cycle of approximately 6 years with a mid-term review in between (Center for Curriculum Redesign, 2012). In each review process, a syllabus development committee (SDC) was formed by representatives from the Curriculum, Planning and Development Division at the MOE, schoolteachers, teacher educators and university academics. It is no wonder that there is a close alignment between the scope of school geography and the shifting paradigms in academic geography, given the direct involvement of academics, as well as having teachers who are consistently kept abreast of developments in academic geography through teacher in-service programmes (Chang, 2012). The lagging behind in school geography could be due in large part to the 6-year revision cycles. Ironically, the 6-year turn-around time is already rather quick when compared to other national contexts. The United States "Geography for Life" national standards were revised only after 18 years (from 1994 to 2012), for example.

While it is important to consider "the nature of geography and its relevance in schools", Lambert argues that the geography curriculum "needs to be placed in wider social, economic and political context" as well (Lambert, 2011, p. 8). The article will next consider how school geography in Singapore has been shaped by politicisation to meet the needs of "significant power groups" (Marsden, 1989).

### Economic gloom and environmental doom as agents of curricular change

While the general observation across the primary, secondary and pre-university geography syllabi indicates that the topics chosen for each of the syllabi reflected the issues of the time, this section of the article first provides a tabulation of the topics taught across various levels and then focuses on the upper secondary geography syllabus for a deeper analysis.

Table 2 shows that while the range of topics covers the broad concerns of human–environment interaction at both the local and global scales, some topics are learned only at some grade levels while others are taught across grade levels. For instance, weather

Table 2. Coverage of topics across school geography curricula in Singapore.

| Topics | Grades 3–6 | Grades 7 and 8 | Grades 9 and 10 | Grades 9 and 10 (fr 2013) | Grades 11 and 12 |
|---|---|---|---|---|---|
| Plate tectonics and landforms | | | @ | @ | @ |
| Weather and climate | @ | @ | @ | @ | @ |
| Rivers | | @ | @ | | @ |
| Coasts | | | @ | @ | |
| Natural vegetation | | @ | @ | | |
| Population geography | | @ | | | @ |
| Development geography | @ | @ | | | @ |
| Industrial geography | | | @ | | @ |
| Transport geography | @ | @ | | | @ |
| Urban geography | | | | | @ |
| Geography of tourism | | | @ | @ | |
| Geography of food | | | @ | @ | |
| Geography of diseases | | | | @ | |

Note: Shaded column refers to the new syllabus.
These topics are only found in the full geography subject.

and climate are taught throughout the grade levels while urban geography is only found in grades 11 and 12. Another interesting observation is the inclusion of the new syllabus for implementation in 2013, some topics that were previously featured have been removed and new topics such as the geography of diseases have been included. In considering the view that school geography is a product of politicisation (Marsden, 1989), an examination of the social and cultural concerns of Singapore will provide evidence to validate this stand. For this analysis, three topics of coast, climate change and the geography of diseases were chosen as an illustration of how the societal concerns in Singapore have been translated into the key topics included at a key stage of students' learning – the GCE 'O' level.

Singapore is an island. The coastline of the main island in the 1970s was only 106 km (Chia, Khan, & Chou, 1988) but massive land reclamation added another 84 km of coastline, bringing the figure to 190 km in 2012 (Wong, 2012). With human-induced global-warming-related climate change as an impending threat to the lived environment, coastal resources could be severely compromised. By 2100, Singapore's sea level is expected to rise between 0.2 and 0.86 m costing the economy more than $16 million to protect her coast (Ng & Mendelsohn, 2005). It is of little wonder that coasts as a topic was introduced in 2007 to the grades 9 and 10 syllabus and is kept in the 2013 revision to the syllabus. The topic is taught with an understanding of the physical processes that shape the landforms, moving on to the impact of coastal erosion on human livelihood before ending off with discussing coastal protection strategies. Students also have to evaluate each strategy and explain how each strategy might present advantages or further problems. Coasts were taken out of the syllabus since the 2001 implementation but it was not until about 2007 that Singapore's government paid attention to the concerns of rising sea level that this topic was re-introduced into the curriculum. Indeed, Singapore is low lying and almost flat, and rightly included in the Intergovernmental Panel on Climate Change (IPCC) categorisation as a small island state. The highest point is Bukit Timah Hill at 165 m, and most of its economic activities in its business districts and airport lie less than 2 m above sea level. With a slow but impending eventuality of becoming a submerged island, the government has engaged Dutch consultants to combat rising sea levels. The government is "already in consultations with Delft in Holland to learn how [they] can build dikes" (Arnold, 2007). As Singapore is a developmental state where the "state legitimacy is largely derived from the state's ability to develop the country" (Neo, 2007, p. 186), the economic externality in environmental costs presents a formidable challenge. As such, the timely introduction of the environmental issue will educate people about the problems as well as management strategies that they will encounter in their daily lives.

Weather and climate, as a topic, has been included at grades 9 and 10 in Singapore for the past four decades. While Singapore lies in the doldrums, just 1.5$^{o}$ north of the equator, the curriculum planners have never really removed this topic from the school subject. There is renewed interest, however, in including climate change within the topic. From 2001 until 2012, the topic of global warming has been included in the grade 8 syllabus and it was not until 2013 that the topic was taught at grade 9 (Chang, 2012). The change in curriculum which includes an entire unit on "variable weather and changing climate" is not purely coincidental as the National Climate Change Secretariat (NCCS) works closely with the MOE's Curriculum Planning Design and Development unit to ensure that the topic is given sufficient coverage. This is probably due to a greater focus by the government on the climate change issue.

Singapore became a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 but ratified the Kyoto Protocol in 2006. In that same

year, a revision to the Singapore Green Plan 2012 was revised with clear targets set for reducing carbon emissions for the nation. It was perhaps not coincidental that a major study was commissioned by the government to look into the long-term impact of global warming on Singapore. The National University of Singapore's Tropical Marine Science Institute that leads the study predicted impending temperature and sea-level rise (Gunasingham, 2010). In response, the government has consulted engineers and set in place measures to combat sea-level rise by raising land levels in reclamation projects (Hussain, 2007). This is a further corroboration of the political motivation that could have shaped the syllabus in terms of the inclusion of coast as a topic of study.

By 2010, the NCCS was formed under the Prime Minister's Office to act as an inter-ministerial secretariat to coordinate the climate change mitigation and adaptation efforts for the island state. While it is charged with the purpose to raise the general level of awareness on the issue among citizens, the NCCS has also played a more active role in influencing the inclusion of the climate change topic in the new syllabus (Chang, 2012). In addition to posing a substantial economic cost to the developmental state, climate change presents unprecedented challenge to the environment and how people's quality of life can be altered.

The third example of how a new topic has been included in the 2013 grade 9 syllabus illustrates how current issues in society have shaped the curriculum. The geography of diseases has never been introduced into school geography until now. As a rapidly ageing society, disease and health issues are among some of the immediate concerns. At the university level, the topic of epidemiology has been peppered within human geography in understanding spatial diffusion. While the impact of several epidemics in the last decade, such as SARS and H1N1, has left an indelible mark on public health awareness, and altered social behaviour in Singapore, tropical diseases such as dengue fever have remained a perennial problem to society.

Over the period 2008–2013, the number of dengue cases has been low and fairly consistent, remaining at around 150 cases per week after its last outbreak in 2005. The highest number of cases per week in 2010 was 182, while the highest number of cases per week in 2012 is 151 (Google.org, 2013). Ironically, in the implementation year of the new grade 9 syllabus, the number of dengue cases in 2013 is at the highest since the last major outbreak in 2005 at 510 cases in the week ending 20 April 2013. There have been a total of 5230 cases since the start of 2013 (Koh, 2013). Dengue fever has and remains a key disease threat to Singapore. In the new syllabus, not only do students learn about vector-borne diseases, but dengue fever is featured as a specific case study to illustrate the concept of spatial diffusion. The key to combating the disease lies in managing the population of the Aedes mosquito. Public education focuses on galvanising the nation into diligent checks for stale water accumulation around the household to limit the breeding habitat for the Aedes mosquito. Perhaps, the aim of the topic is both to educate as well as to raise awareness of the issue, with the aim to contain the potential spread of the disease. Indeed, public education has been stepped up to engage students as agents of change. As the month of June is a peak period of travel for Singapore families, capitalising on the school vacation, some travel agents have worked with schools to remind students to ensure that their homes are not breeding grounds for mosquitoes while they are travelling (Channel NewsAsia, 2013).

Clearly, significant power groups like the government can influence school geography through its "choice of content and definitions of social purpose" (Marsden, 1989). The case in Singapore can be described as a relationship between school geography and the processes involved in designing the curriculum in which the topics chosen for inclusion

in the syllabi reflect the social issues of its time. It is the way that curriculum design is highly responsive to the changing needs in the education process, and progress in academic geography and social issues that have given rise to the question raised in the title.

**Has Singapore's school geography curriculum become too responsive?**

To understand if the quick turn-around time for each iteration of a new syllabus is beneficial or detrimental to school geography, it is instructive first to understand the state of health of the subject in schools. In 2001, there were about 21,500 students taking the GCE 'O' level geography paper. This constituted 64% of the cohort of grade 10 students taking the national level examination. By 2012, the candidature was 4520 or 12.1% of the cohort. However, 52% (about 19,600 candidates) of the cohort taking the compulsory combined humanities subject chose geography as the elective (Koh, 2013). This trend shows that there were fewer students taking the independent geography subject at grade 10 in 2012 compared with 2001. It also shows that while geography as an independent subject has seen a drastic decrease in enrolment, more than half of the students at grade 10 have at least a rudimentary exposure to geography as a subject.

The recent trend of decreasing enrolment in geography trainee teachers at the National Institute of Education is perhaps a reflection of this trend in school geography. Between 2010 and 2012, the total number of student teachers enrolled into the pre-service training programme taking geography as a curriculum subject has fallen from 163 to 116 candidates (statistics were tabulated from student records kept at National Institute of Education, Singapore). This is in no small part a reflection of a shrinking pipeline of geography students who can become geography teachers. If this trend continues, there is little hope for the future of school geography in Singapore. While Singapore's school geography curricula have remained highly responsive to the changing needs, there is perhaps a need to slow down and examine other "real threats" that impact the existence of geography as a subject in school (Rawling, 2004).

In addition to dwindling numbers of geography students and consequently the supply of geography teachers, the readiness level of teachers to teach geography is also threatened by the quick turn-around time of the national syllabi. While the geography teaching training in pre-service and in-service programmes in Singapore are rigorous and highly responsive to changes in school curriculum (Chang, 2012), there is the practical issue of time. In what are termed as "Content upgrading in-service courses", teachers undergo an intensive workshop that familiarise them with changes to the subject matter knowledge and the corresponding pedagogical approaches for each new syllabus implementation. These workshops were aimed at training as many teachers as possible. However, the process takes time. Coupled with the turnover in the geography teaching workforce due to retirement or resignations, a new syllabus is often ready for implementation before all teachers are trained and before they have become comfortable or skilled at teaching the current syllabus. Indeed, teachers have expressed through anecdotal conversations, great discomfort about teaching the new 2013 syllabus. Indeed, one teacher has decided that she will simply follow the teachers' guide strictly, even in terms of the pedagogic moves suggested, fearing that she may not be teaching the right thing. Whether it is due to a resistance to change or whether it is due to a diffident attitude to teach the new syllabus, Michael Young's idea of "powerful knowledge" is evident here (Young, 2008). Perhaps, the teachers are not confident about what teaching and learning geography means. For if they are, then they should be resistant to changes in "flavour of the month" pedagogies or

interests of student and have confidence to select the relevant subject matter knowledge and recommend these for the curriculum.

In looking at the issue of powerful knowledge and quick turn-around time in curriculum revisions, there is perhaps a need to feature the classroom teacher as a stakeholder in the curriculum revision process more prominently. Currently, teachers are invited as members of each SDC. With each syllabus review process, an SDC is set up for level and for each subject under review. From my personal experience serving on a few SDCs, the SDC is chaired by a curriculum specialist from the MOE, the other members include a couple more curriculum specialists, geography teacher trainers, geography education researchers, academic geographers and geography teachers. It is interested to note that close to half the members on the SDCs I have served on are school teachers. There is indeed strength in numbers and the school teachers' voice usually gets included in each curriculum change. What I have noticed, however, is that each SDC will involve different school teachers. And as each individual brings with him/her their pet topics, it is not unthinkable that each successive round of syllabus change will be influenced somewhat by these preferences. I am not suggesting to reduce the teachers' voice nor am I suggesting to keep using the same teachers in the SDCs. In fact, the argument here is that the problems compounded by the short turn-around time between syllabus reviews. In a bid to be responsive to changes in society and the needs of our students, perhaps the frequency and the interval between reviews should be moderated to avoid the challenges to teaching the subject.

While school geography in Singapore has responded well to the changing perspectives from the significant power groups, of government and academia, there are two issues that need to be addressed in order for school geography to flourish in the decades ahead. First, the changes that have arisen from responding to changing educational processes, content in academic geography and social and cultural contexts might have resulted in structural changes that will stifle the development of the subject. Second, there is a missing piece in considering the significant power groups in this discourse – students as key stakeholders.

With an emphasis to empower students to become responsible citizens who can think and make decisions that will ensure the sustainability of our future, the subject of social studies was created in the 2000s. This responsive change to the needs of the state has inevitably resulted in the downsizing of geography as a subject for many students. As school geography has practically evolved into an integrated subject (within social studies) at the high school level in Singapore, it has clearly limited the number of students who can experience a full range of geographical topics in the independent subject. This in turn poses a challenge to student numbers that will study geography at the university. In addition, the refinement of topics to be covered in school geography has diminished the opportunities for students to appreciate the splendour of the world they live in. While each syllabus review process introduces new topics, existing topics had to be removed as there has been increasing focus on inculcating attitudes and developing skills in developing the DOEs. There is a finite limit to curriculum time and this has resulted in the dilution in the topics to be learnt in school geography. Although a student who has done 12 years of school geography should have encountered a good spread of topics, most students only study geography up to grade 10 in the elective topic. A good half of each cohort would have only read geography up to grade 8. Topics such as industrial geography, coasts and the geography of food would not be learned by almost half of each cohort of students. This raises the question on the integrity of the subject of geography in which students' imagination of the world is limited by the range of topics that they have learned. To put it candidly, students have access to an abridged version of geography. While one can argue

that the newer syllabi focus on skills such as geographical inquiry and the key geographical themes of space and human–environment relationship that will allow them to discover geography on their own after leaving school, the point that is made here is that while some topics are included in each successive iteration of syllabi revisions, there needs to be a consideration of the overall treatment of topics and themes that makes geography geography.

Another key stakeholder with significant power is the student. Like parents who know what is best for children, education policy-makers and teachers alike tend to prescribe changes to school geography that are considered relevant or interesting to students. The truth is that as each generation of children approach schooling age, they have grown up in different social and cultural influences of their time. To this end, what matters to students may not be in alignment with our imagined reality of what is relevant to their lives. In a recent conversation with an educator, he opined that perhaps it would be interesting to include aeolian landscapes in the grade 12 syllabus. To illustrate his reason, he suggested that students do not have imagination of what a desert landscape is like while watching the movie "Indiana Jones". This example only illustrates, for me at least, that his imagination was limited by the cultural and social influences of his time as a teenager. The last movie of the Indiana Jones series is at least two decades old! However, school geography curricula should not be designed to be popularist and pander to the whims of children. At the risk of sounding facetious, there is perhaps little or no value in studying the geography of Candy Crush™. In other words, there is a need to revisit the GeoCapabilities described earlier in this article in striking a balance between what children like and what they need to know, lest school geography becomes the "worst taught subject" (Marsden, 2005). Can school geography be both innovative and enjoyable? The United Kingdom's Geographical Association presents the idea of "Living Geography" which is "current and future oriented", "local but set in global contexts", "investigates change processes" and "evaluates change and questions sustainability" (Geographical Association, 2010). While the project is relatively new, and empirical evidence on its effectiveness has yet been published, there is ample consideration for a balance between the "enjoyment" of the subject as well as the relevance of the subject to a child of the twenty-first century.

**Conclusion**

School geography in Singapore has evolved to engage our students through the curriculum to respond to the unprecedented changes to our lived environment. While the author has argued that geography has remained essentially relevant to the needs of Singapore and the changing world, there are still some issues of concern. This article and the articles in this special issue are written around an analytical framework described by Marsden's work on geography and the curriculum (Marsden, 1989). To some extent, what a child would learn is limited, though not entirely, by how school geography curricula are designed. Indeed, the argument is that significant power groups exert a heavy influence on the curriculum, resulting in what can be described as responsive revisions which may be detrimental to the subject in some aspects, while remaining relevant to the changing education and social contexts, as well as situated within the changing paradigms in academic geography.

There has been a significant decrease in the number of students studying geography at local universities in Singapore, which will constrain the supply of future geography teachers. With shrinking numbers of geography teachers, motivating more students to learn geography becomes more challenging. This challenge is exacerbated by an ageing

population, thereby reducing the potential size of each successive cohort of students. Further, it is difficult to inspire students to study geography if they do not appreciate the relevance to their lives or find it enjoyable. In exploring how geography curricula are being planned, stakeholders such as teachers, curriculum planners, university academics, as well as teacher trainers are involved. Nevertheless, it is imperative that these stakeholders recognise what interests students and strikes a balance in considering what is relevant and what students prefer.

The intention of this article was not to uncover multiple tension points to negate the need to have school geography syllabi that are responsive to needs of the society, educational goals or changes to academic geography. Indeed, the discussion which was framed using Marsden's idea of the politicisation of school geography (Marsden, 1989), advanced the position for balancing the integrity of the subject as a whole with the changes that are shaping the world that our students live in. Instead of asking "Is school geography becoming too responsive?", geography educators should seek to explore how to address the threats to geography as a subject from multiple perspectives. While significant power groups have the loudest voices in curriculum revisions, the proceedings should consider the subject of geography in relation to its future. What good would a subject be if there are no takers, for instance? While geography educators recognise these threats (Rawling, 2004), the current state of school geography in Singapore is still an envy to countries where geography does not even exist as an independent subject (Chang, 2012). With a strong state presence in the curriculum development and review process, academic geographers and geography educators alike must continue the strong partnership facilitated by close conversations at curriculum revision committees, in contemplating the future of school geography in Singapore. There is perhaps even a need to solicit the views of civil society and children as stakeholders of the subject. In arguing that geography does matter to our future, we need to recognise that the subject represents "a body of science that has much to offer to humanity", and that the discipline is a product of thinking and reasoning about humans and the world they live in (Golledge, 2002). Therefore, school geography needs to be responsive, while retaining the need to "stop and smell the flowers" (Hagen, 2004) from time to time, so that we can avoid pitfalls that can doom the subject to gradual oblivion.

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