

# *The New Senior Secondary Geography Curriculum: Challenges and Prospects*

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## **Abstract**

The implementation of the New Senior Secondary system from 2009 onwards has brought along changes in content and new demands in all subjects. This paper examines the nature of the new curriculum for Geography and the challenges which teachers and students have to face. These challenges are discussed as possibilities for broadening students' horizons and improving the quality of learning outcomes. The conclusion is that both teachers and students should make appropriate changes to their teaching and learning processes as the Education Bureau and Examinations and Assessment Authority should fine-tune their decisions from time to time to improve the curriculum and assessment process.

## **Keywords**

education reform, NSS Geography, curriculum reform

## **摘要**

2009年開始推行的新高中學制已為所有科目的內容和要求帶來變化。本文審視地理科新課程的性質及教師和學生須要面對的挑戰。在作出討論時，這些挑戰被視為擴闊學習範圍及改善學習成果質素的機會。結論是教師和學生都應就著教授和學習過程作出適當改變。同時，教育局及考評局也應就著課程和評核過程持續作出改善。

## **關鍵詞**

教育改革，新高中地理，課程改革

The introduction of a new academic structure for senior secondary schooling and undergraduate studies in Hong Kong in 2009 and 2012 is an attempt to “provide all students with the opportunity to receive a higher standard of education, and ... a more suitable curriculum catering to their individual needs and abilities” (Li, 2005). Instead of the long established practice of all students taking a school-leaving Certificate of Education (CE) examination after two years of senior secondary education and the more able ones taking the matriculation examination after two years of further study at the Advanced Level, the new senior secondary (NSS) curriculum will cover three years of senior secondary studies that seek to expand the horizons of learning for school leavers and meet the needs of admission to first degree courses. Students have to study four core subjects and two to three electives (out of 20) during these three years before taking a Diploma in Secondary Education (DSE) examination at the end. For every one of the 24 subjects on offer, a curriculum that can meet the aims of this reform has to be designed. The curriculum for Geography requires the study of seven issues and problems in its compulsory part and two modules out of four in its optional part, as well as the conduct of a fieldwork enquiry project to be assessed internally by school teachers (CDI-HKEAA, 2007).

## **Nature of the NSS Geography Curriculum**

According to the curriculum and assessment guide for the NSS curriculum, Geography is a subject that “enables students to explore and understand the relationship between human beings and the Earth

through the study of space, place and environment” (CDC-HKEAA, 2007, p.1). Behind this claim is the underpinning that it is a discipline which fosters learning across a wide range of natural science and social science disciplines integrated coherently under a spatial and environmental paradigm (Viles and Rogers, 2003). With its aim at the study of natural processes, human activities and the interactions amongst them (Johnston, 2004), Geography can make a useful contribution to the understanding and solution of numerous rapidly changing spatial and environmental issues in global, national and local contexts like the shrinking of ice cover in the Arctic Ocean, rural-urban economic disparity in China and urban renewal in Hong Kong. It is an intellectually challenging and worthwhile subject on this count, and should be attractive to students for both academic and career preparation purposes as well as for their personal development.

Unlike its predecessors at the Certificate and Advanced levels, Geography for the NSS is an issues-based and problem-based curriculum covering both local and regional concerns. This feature is reflected in its design principles, such as an emphasis on real-life situations that are relevant to students’ present and future lives (c.f. CDC-HKEAA, 2007, p.7). It is also noticeable from the structure of curriculum content into three major themes and the use of thought-provoking language in framing the scopes and key concerns of the seven compulsory modules, such as the question “Global warming-Is it fact or fiction?” under “Confronting global challenges”. In comparison, its elective part places more emphasis on academic rigour (namely, Topics 1 and 2, “Dynamic Earth: The

Building of Hong Kong” and “Weather and Climate”) and career-related and regional concerns (i.e. Topics 3 and 4, “Transport Development, Planning and Management” and “Regional Study of Zhujiang Development”).

The first two topics in the elective part are in fact the “meat and bones” of the subject but have been watered down in the current CE curriculum in favour of issues which were deemed more immediate and pressing in the late 1990s (e.g. sustainable development and famine). Their inclusion in the NSS curriculum can help students develop a solid conceptual framework for understanding how Nature operates. Putting the horse in front of the cart again, they encourage students and teachers alike to pay more attention to the natural environment in general and to the basic concepts of geology, geomorphology, meteorology and climatology in particular (Bradbury, Boyle and Morse, 2002). Backed up with the setting of structured data/skills-based questions and short essay questions and the school-based assessment (SBA) of enquiry fieldwork (HKEAA, 200&), they can foster an understanding of Nature in depth and how it affects (although not determines) the settings for human activities and settlement. In the longer term and at a more advanced level, students can benefit more from scientific theories and concepts which are essential for explaining the way the Earth and its atmosphere work (Viles, 2003).

The other two electives are meanwhile more careers-related and concerned with the understanding of quickly growing transport activities and regions in Hong Kong and the Pearl River Delta, and the solution for urban and environmental problems which may

arise. In topic 3, students are offered the chance of studying the development of transport and logistics that are closely connected to their everyday life and career prospects. Topic 4 addresses the changes in agriculture, manufacturing and environmental quality of the delta in the face of rapid urbanisation and industrialisation. The regional concept, which has been relegated to second place since the quantitative and model-building revolution in geography in the late 1960s (c.f. Chorley and Haggett, 1965; Livingstone, 1993), is brought back to life here through an issues-based approach although how far it can be taught in a dynamic and interesting way remains to be seen in view of its past experience in encouraging the recall of facts at the expense of the development of concepts.

For the first time, school geography is giving due emphasis to technology and enquiry through the introduction of geographical information systems (GIS) concepts and independent fieldwork. These two additions are crucial for broadening and deepening students’ learning experience, raising the quality of learning, and developing the ability to conduct systematic investigations from start to finish. They can help students learn meaningfully by following the footsteps of what geographers are doing everyday and finding out spatial patterns for themselves (Rogers and Viles, 2003) instead of relying only on memorising and analysing existing knowledge. In spite of these perceived benefits, however, they are probably the most challenging curriculum areas for teachers given practical concerns such as their dynamic nature, the need to cope with innovative technology, and the ways of providing appropriate and non-overly guidance to students in limited teaching time. That the former will be optional

and the latter will not become compulsory until 2014 can be seen as measures of expediency as well as much needed alternatives to enable teachers accumulate sufficient experience and confidence in mastering the necessary changes in pedagogy and relationships with students. In a sense, they are attempts to avoid the failure of implementation that has been common with so many well-meaning but hardly successful attempts at educational reforms in Hong Kong and elsewhere (Morris, 1985, 1995; Fullan, 2007).

The organisation of curriculum content in NSS Geography, including both its issues-based and problem-based emphasis and the offer of elective topics, is broadly in line with international trends such as that in the curricula for the British General Certificate of Secondary Education and General Certificate of Education (Advanced Level) examinations (Edexcel, 2007). Generally speaking, NSS Geography has succeeded in maintaining both breadth and depth that are essential for meeting the career and learning needs of school leavers and the requirements of admission to degree courses. However, the removal of many academically oriented topics, notably those about models and theories, can cause worries about quality amongst teachers and university academics. Steps are needed to ensure that the standards of examination questions and students' performance in the subject can be comparable to those of the HKALE and acceptable to local and overseas universities alike, and that both the curriculum content and skills (generic and subject-specific) can be kept abreast of the times. Pitching the learning and assessment requirements at a level that is appropriate both to average-ability learners and students seeking

university admission can be another challenge because, amongst others, the curriculum is to be taken by students who have not gone through a sifting process (i.e. the HKCEE) and the examination is to cover subject content learnt across three years instead of two.

## **Challenges for teachers and possible solutions**

It is only natural for all teachers to give the highest priority to enhancing students' quality, depth and breadth of learning and thereby help them achieve satisfactory results in the examination. NSS Geography can be a cause of concern in this connection because of the practical difficulties mentioned above and the fact that it has to compete for a place in the time-table for which schools are only offering two to three elective subjects under the new curriculum structure. The specific challenges that teachers have to face and their possible solutions are analysed below in six areas (with chapter and page numbers referring to the curriculum and assessment guide published by CDI-HKEAA, 2007 unless stated otherwise).

### **(a) Curriculum framework (Chapter 2)**

One key principle in designing the curriculum is to help students develop an understanding of the subject as a coherent and integrating field of study (instead of a loose combination of three major themes and four electives, p. 9). This can be done by referring them to everyday examples wherever appropriate (e.g. relating the lifestyles of students and other Hong Kong people to the shrinking of tropical rainforests and rises in global temperatures). The highlighting of links among the various themes

and electives in the curriculum and the restructuring of teaching sequence can give students more chances to reflect on what they have learnt whether shortly before or long ago. Using GIS concepts and encouraging students to choose fieldwork enquiry topics in relation to a curriculum content of personal interest would also help in developing an integrated and coherent understanding of geographical concepts.

Another principle of the new curriculum (CDI and HKEAA, 2007, p.7) is that students are exposed to the critical analysis of controversial issues (Cotton, 2006). When addressing the impact of the South Asian tsunami (2004) for instance, students in groups may first be asked to explore those areas which they are not sure of, draw concept maps and plan for detailed study about them. They will then discuss among themselves and give presentations about the selected topics and on the improvements which local and overseas people, governments and relief agencies should take, using a variety of oral, visual and audio means where appropriate. At the review stage, the assessment of learning gains and performance should be made by students themselves, their peers and their teacher so that the development of creative, higher-order thinking can be further enhanced with views from a diversity of angles.

The new curriculum also calls for the integration of fieldwork and spatial data enquiry with the learning and teaching of topics in both the compulsory part and elective part (p.11). Teaching in this connection is best conducted in small groups with specific tasks for each member so that everyone can have more chances to learn through a collaborative approach. Students may benefit by negotiating meanings with fellow

members and expressing ideas in the terms and vocabulary of the subject (Jaques and Salmon, 2007), conducting investigations in a systematic and comprehensive way, and organising their SBA projects using appropriate enquiry approaches and techniques. For enhancing the efficiency of learning, attention should be given to integrating spatial data enquiry skills at both the training and project preparation stages, as well as throughout the everyday teaching process. Helping students prepare a map of earthquake zones for explanation purposes, collecting and interpreting relevant photographs about changes in land use in rural areas, and the production and analysis of movie clips about river flow are just three of the many possibilities in this regard.

### **(b) Curriculum planning (Chapter 3)**

Following the plans of the CDC-HKEAA (2007) in broad terms, teachers should take the initiative in school-based curriculum development that is grounded on catering for learner diversity, making assessments useful for improving learning outcomes, and enhancing collaboration with all the parties concerned. In the first place, they have to give more attention to bringing the weaker or less motivated students at least to the average level given that considerable to marked learner diversity in terms of ability, motivation and needs is inevitable especially when NSS students do not have to undergo a HKCEE selection process before taking the DSE examination. Possible ways to do so include giving the weaker ones more perceptive guidance, opportunities to speak out in answering questions, debates and presentations, and assistance in interpreting assignment demands in addition to the differentiation approaches

suggested in the curriculum and assessment guide (CDC-HKEAA, 2007, pp. 57-58).

To improve learning outcomes more systematically, assignments should be made more formative and feedback to oral and written responses should be given in ways that can highlight strengths and weakness clearly. Suggestions should be given in such ways that students are encouraged and guided in making their answers more relevant and concise on their own after discussions with group members. In follow-up lessons, the teacher may invite students to present their suggestions before commenting further so that everyone can add details and make amendments as appropriate.

For raising the chance of successful implementation, better coordination with colleagues and external sources of resources and the support of stakeholders are needed (pp. 48-52). These basic ingredients of effective curriculum management can be secured first by peer class observations and the discussion of lessons and marked assignments in geography and other subjects. With an understanding of the strengths and weaknesses from these exchanges of views as a result, panel members can develop skills in coping with classes and students with diverse needs, interests and abilities while panel heads can meaningfully organise visits and other activities for students as well. Besides seeking information from relevant organisations, teachers may enlist the support of experts (including friends, alumni members and parents if appropriate) say, for giving talks on topics of special interest and presenting alternative views for stimulating discussion. If manpower and time do permit, these experts may take on the role of mentors

to small groups of students so that insights can be shared in depth over an extended period.

### **(c) Learning and teaching (Chapter 4)**

Teaching should be conducted in such a way that students can benefit by functioning as members of effective learning communities (pp. 53-55). In addition to the given suggestions, teaching in the form of collaborative PBL (e.g. Pawson et al. 2006; Barrell, 2007) with learning issues proposed by students themselves is preferred for its effectiveness in promoting enquiry. Teachers may start their lessons by inviting one to two of them to raise queries about preparation work and homework or class assignments. These students can ask classmates for elaborations, clarifications and comments before the teacher gives out the final answers or directions for in-depth investigation. Alternatively, groups of them may discuss among themselves and produce written responses or oral presentations in a subsequent lesson. Members from each group may be asked to share their views before the teacher helps them to reflect on their work critically and draw reasoned conclusions about the issues under consideration.

The sharing of views between teacher and students and amongst students themselves is important to improving the quality of learning and the development of critical thinking (pp. 58-60). To enhance the quality of interaction, both teacher and students have to make preparations like the reading of books and newspapers and the viewing of visual information such as TV documentaries and webpages about controversial issues in the area of study. In the lesson, the teacher (or any student) may use such

information to provide a firm basis for discussion. Students can benefit more from the interaction process if specific encouragement is given to the airing of alternative views or interesting ideas and the expression of thought in the exact language of the subject.

Possibilities are endless as to the specific teaching and learning approaches and strategies that are suitable for the classes and students concerned. The choice of any one or more approaches (whether in the form of direct instruction, enquiry or co-construction) for a particular topic, class or group should be based on how far it can stimulate quality interaction, student participation, clarification of queries and further investigation into unknown issues. In general, those which can promote scaffolded learning (Klentschy and Thompson, 2008) and give support to students step-by-step until they reach the stage of take-off are preferred. For the development of deep learning and insights, students should be given chances to construct “their own meaning in acquiring knowledge rather than just memorising information offered by a teacher” (Gagnon and Collay, 2006, p. 3).

#### **(d) Assessment (Chapter 5)**

Unlike the case in many other educational systems such as Britain (Burtenshaw, 1996), the school-based assessment of enquiry fieldwork is a new feature in school geography in Hong Kong (pp. 83-88). As it is to be done once and for all and will have a significant impact on students’ overall grades, adequate practices should be given from time to time. Depending on the teaching schedule and the choice of electives, trial assessments should be conducted after

the conclusion of each major theme although fieldwork (especially those to be held overseas) cannot be easily organised in some cases, such as the study of earthquakes and volcanic activities in the compulsory part “Opportunities and risks - Is it rational to live in hazard-prone areas?”. To add a sense of realism, these exercises should follow the aims and format of the real one and be graded in similar ways as far as possible. However, they should be scaled down to a limited range of learning objectives and content coverage so that they can be manageable and students will not be overloaded. Because of the need to foster independent learning, the amount of guidance should be reduced after the first few times (Naish, Rawling and Hart, 1987).

SBA will not be compulsory for NSS Geography from 2014. Nevertheless, teachers should allocate a significant proportion of marks to it in internal half-yearly and yearly school reports from 2009-10 onwards if only for developing personal expertise, arousing motivation and promoting the mastery of independent enquiry skills as early as possible. Comprehensive feedback on individuals’ and class performance should be given each time so that students can identify the strengths and weaknesses of they themselves and their classmates each time and use these as reference points for improvement in the next. Rubrics given by the HKEAA and amended to fit individual classes at school can be used for this purpose.

Specifically, to facilitate preparation for the data/skills-based question and short essay question in Papers 1 and 2 (p. 85), teachers should expose students to information in a large variety of numerical, visual and textural forms throughout the course of everyday teaching and in all assignments, tests and

examinations. To foster the development of higher-order thinking skills (Kent and Foskett, 2002; Morgan and Lambert, 2005), attention should as well be given to the collection of relevant information in advance and raising questions for discussion during the lesson. Those questions which can stimulate the clarification of misconceptions or encourage the organisation of responses in systematic ways may be used as class or homework assignments as well. In this way, students can learn to ask meaningful questions and communicate ideas effectively besides answering them as set by the teacher.

For the development of an enquiry culture and the sake of standardisation, the HKEAA together with teachers should work out a set of possible SBA enquiry topics, suggestions on enquiry methods, exemplars of expected answers and marking criteria. To ensure fairness and representativeness, these teachers should be randomly drawn from the pool of serving DSE teachers who have expressed a wish to participate. Geographers and related experts (such as academics and slope engineers) universities or government departments may also be invited to participate as advisors and consultants for the assessment preparation process. Students can benefit from the use of these assessment tools because guidelines are given to both the process and outcome of learning. Teachers can similarly get clear messages of what they are expected to do and thus need not worry much about the extra workload which SBA would bring.

### **(e) Effective use of learning and teaching resources (Chapter 6)**

The range and supply of resources are unlimited

in addition to textbooks, technology- and web-based resources, maps and atlases, images and newspapers and community resources which are highlighted in the curriculum and assessment guide (pp. 92-101). Although tailoring and integration with curriculum content are often needed, information useful for teaching can be obtained from publishers, software houses, websites, the mass media, community organisations and territory-wide government departments, as well as expert individuals (like town planners and conservation officers). Digital map data and GIS programs that pertain to particular topics are available in some websites free of charge. School-based data sources such as records of residents' meetings and publications about changes in students' home or school districts are particularly useful for the investigation of local geographical issues (such as urban decay in Kwun Tong or Wanchai), and should also be used whenever possible.

A geography room endowed with posters and sufficient equipment and multi-media resources for everyone is important for cultivating an effective learning atmosphere. In everyday lessons and after school, teachers should ensure that students can use the equipment and resources inside in an interactive way. Teachers and students can collect further information from local exhibitions and government offices and by using their cameras and video recorders as well. Information collected by students themselves is especially useful because it is closely related to their everyday experiences and topics which interest them. Wherever possible, students should be encouraged to use school resources and equipment on their own after receiving suitable training and taking due precautions.



## **(f) Learning outside the classroom (Appendix 1)**

Students need practice for undertaking fieldwork individually and on a group basis. This can be a challenge for teachers because of safety and time concerns and the need to cater a vast diversity of student interest and possible study areas and sites. To familiarise students with the necessary enquiry skills and in consideration of practical constraints, fieldwork training should start with short sessions in the school neighbourhood within the normal time-table. This arrangement can ensure that everyone is given the chance to learn the required skills, will take fieldwork seriously and can complete tasks within limited time while the risk of students from many schools crowded at the same study sites on a Saturday or during a long school vacation is minimised. For the sake of promoting independent work and stimulating discussion, students should be allowed to form their own groups although a mix of sex and ability levels is preferred. Worksheets and others tasks to be completed should require inputs from individual as well as group work. Trained in the above ways, students can more capably develop themselves into effective investigators in their SBA projects and prepare reports about their own areas of study.

In the field, teachers should continue to be effective facilitators and encourage students to undertake investigations on their own. Effective facilitation here again means giving guidance only to the extent that spontaneous discussion and independent enquiry are sparked off (e.g. Morgan and Lambert, 2005). In accordance with this spirit, alternative approaches and solutions to problems should be used

with room and alternatives for decision-making and explanation by students on their own. Guidance and direction would only be given in carefully graded steps while resources are to be used by students for developing conceptual understanding and presentation in oral, visual and/or textual forms. The teacher should give questions and comments at an appropriately higher level of difficulty for the class so that everyone can learn to solve problems systematically. The PBL approach is useful for fieldwork because of its emphasis on helping students to focus on the less familiar features (say, of the natural environment in outlying islands) and develop a concrete understanding of their nature and inter-relationships (e.g. Chan and Sin, 2005; Kwan and So, 2008).

For the sake of reliability and effectiveness for stimulating learning, fieldwork exercises have to be assessed in full through their various stages including planning, design, conduct, data collection, processing and analysis, and reporting back. This should be done on a formative basis so that both teachers and students can identify strengths and weaknesses and improve their teaching practices and learning styles accordingly. Teachers can offer guidance more spontaneously and help students develop self-confidence at the same time. To streamline the assessment process and ensure consistency, a set of rubrics with marks aligned to specific levels of performance and consistent with the guidelines for internal assessment (pp. 76-82) should be used.

## **Prospects**

For the sake of continuous improvement, the proposals listed in the curriculum document have to

be assessed continuously and formatively after the start of implementation in terms of how they can meet the stated aims and objectives although a definite conclusion obviously cannot be drawn until the release of SBA and public examination results of the first batch of students three years later. Following the analytical structure suggested by Morris (1995) for instance, the proposals can be examined according to how far they are useful for achieving the conceptions of the curriculum. Specifically, this means the evaluation of the usefulness of the proposals about intentions, content, teaching and learning approaches and assessment methods for equipping students with a solid knowledge base, arousing their social consciousness, improving their career prospects, promoting personal growth and development, and improving the future of society. The ultimate aim is to determine how far the proposals can help students become well-motivated, efficient and self-directed learners (Kwan, 2003) and thereby achieve the aims and objectives of the curriculum.

How far the proposals for the new curriculum can stand the test of time and are implemented inside and outside the classroom with a high degree of fidelity and comprehensiveness is also crucial to their measure of worthiness. Provisional evidence about the degree of success in this connection can be collected by conducting questionnaire surveys and interviews with teachers and students, conducting classroom observations and studying students' assignments, trial SBA reports, and test and examination scripts. More subtle and illuminating evidence can be obtained by observing teachers and students during fieldtrips and examining students' written reports and logbooks.

Quantitative and qualitative information collected in these ways can be used for analysing how far teachers' pedagogical practices and students' performance (in terms of cognitive gains and the mastery of skills) and attitudes are similar to the aims and objectives of the curriculum. All these areas of evaluation are highly worthwhile and essential to efforts for improving learning outcomes. An independent panel of researchers and teachers including those concerned with the subject at any year level should be appointed by the curriculum and examinations authority for ensuring fairness and comprehensiveness in this evaluation process.

More work meanwhile should be done for helping teachers and students meet the stated aims and objectives. As the central agency for curriculum development in Hong Kong, the Education Bureau should take the lead in providing financial support and hardware facilities as well as introducing training programmes that emphasize the sharing of experience amongst teachers. The latter orientation is important for helping teachers change their pedagogical role subconsciously from that of knowledge providers to learning facilitators. The release by the Examinations and Assessment Authority of detailed information on examiners' expectations and the analysis of students' performance can help teachers plan and modify their practices for improving the quality of both SBA and conventional test and examination questions. Professional development programmes which emphasize the updating of teaching content and the mastery and integration of new pedagogy and learning technology should be organised by the curriculum and assessment agencies as well as relevant departments

in universities. Cooperation with professional bodies like the Hong Kong Geographical Association is important because the dominance of teachers in its membership and thereby their deeper and more up-to-date understanding of the real concerns, possibilities and constraints in schools and, most of all, students' abilities, motivation levels and actual needs.

With the advent of NSS, teachers and students are facing major changes in teaching and learning approaches in geography and all other subjects. Challenges are wide-ranging and difficult to anticipate especially in the light of quick changes in society and the economy and in the quality and concerns of students as well as limitations in resources, training and time for implementation (Blenkin, Edwards and Kelly, 1992). No definite long-term solutions can be offered for tackling them. However, in view of their nature, the watchword after all for helping teachers and students

meet the stated aims and objectives is for them to be eclectic and be prepared to change with the times. The former should also take the lead in design of learning and assessment activities that can cater for the characteristics of their students and the culture of their schools. On the basis of experience gained through the teaching process, they should reshape the curriculum to meet the needs of their students after identifying its weaknesses and inadequacies as it is implemented. In conclusion therefore, teachers should be active both in the classroom and curriculum process, while the CDC and HKEAA should monitor the situation on an on-going basis and conduct systematic and participatory reviews that take into consideration of students' performance and the diversity of views from teachers. This is probably the only way to ensure that the curriculum and the quality of learning can be improved continuously as conditions change. As the familiar axiom goes, change is normal, stagnancy is not.

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