

GEOGRAPHY

SYLLABUS

Pre-University

H3

Implementation starting with
2023 Pre-University One Cohort



Ministry of Education
SINGAPORE

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1. INTRODUCTION

1.1 Geography Curriculum Concept

The Geography Curriculum Concept holistically explores sustainability challenges through different topics on human-environment relationships. The subject introduces students to interdisciplinary thinking and contributes to sustainable development. It also emphasises the role of inquiry-based learning in fieldwork. Learning continuity is strengthened with syllabus content selection being guided by contemporary sustainability challenges.

The Geography Curriculum Concept, as illustrated in Figure 1, highlights the following:

- **Selection of sustainability-themed content for all levels of study.**
The overarching theme of sustainable development in the Geography syllabuses aim to deepen students' understanding of the impact of human activity on environmental sustainability and vice versa. Defined as "that (development) which meets the needs of the present without compromising the ability of future generations to meet their own needs", sustainable development has become a part of everyday lexicon since its articulation in the report of the World Commission on Environment and Development, *Our Common Future* (1987).¹ Countries have committed towards building sustainable and resilient futures, through the United Nations 2030 Agenda for Sustainable Development.² The study of Geography provides opportunities for students to understand sustainability-related challenges around the world including Singapore in an integrated way, while inspiring them to take action to achieve a more sustainable world. A holistic and continued coverage of ideas and knowledge through the context of sustainable development is planned in the curriculum.
- **Disciplinary approach to strengthening learning progression and continuity from Lower Secondary to Pre-University.**
The Geography Curriculum Concept makes clear that learning progression refers to "students acquiring more sophisticated understanding of disciplinary concepts and are able to undertake more rigorous fieldwork methods over time". Thus, the same set of disciplinary concepts -- Space, Place, Environment and Scale is adopted for all levels of study. This allows students to deepen their use of disciplinary lenses in analysing phenomena and issues as they go on to learn Geography at a higher level of study. Learning continuity is also strengthened with syllabus content selection across all levels of study being guided by contemporary sustainability challenges.
- **Unique features of Geography's pedagogy and assessment, integrating education research with geographical practices.**
Students learn a variety of knowledge and methods in Geography. This variety of quantitative and qualitative methods help students undertake more rigorous

¹ Bruntland, G. J. (1987). *Report of the World Commission on environment and development: Our Common Future*. UN.

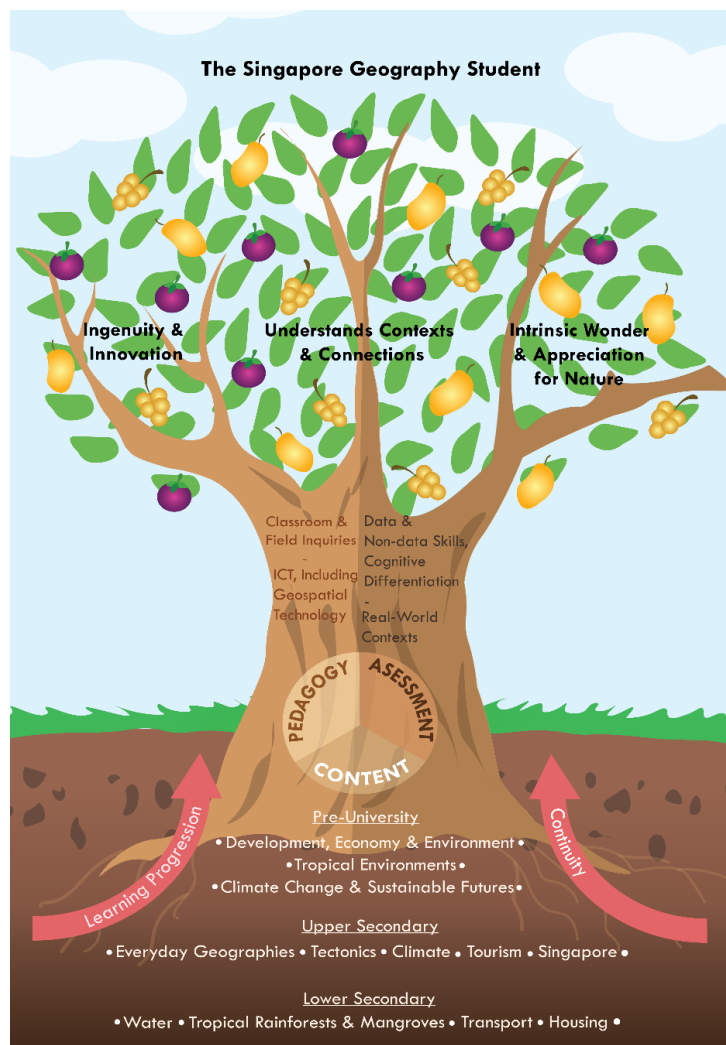
² United Nations. (n.d.). Sustainable Development Goals. Retrieved from: <https://www.un.org/sustainabledevelopment/>.

fieldwork methods over time, in analysing geographical phenomena and issues. Testing students' understanding using real-world contexts has been a mainstay of Geography. This approach simulates a variety of field conditions for questions testing students' fieldwork competencies.

- **Attributes of The Singapore Geography Student.**

The Singapore Geography Student contributes to Singapore's and the world's sustainable development by exercising **ingenuity** and **innovation** in generating solutions for a sustainable future. They will be able to consider **connections** between people, places, events and environments, combining this knowledge with their understanding of the spatial arrangement of phenomena, and deliberate on human's reciprocal relationship with nature. Additionally, students will understand how our local **context** interacts with the driving forces behind globalisation, and be able to strike a balance between being open to innovations and ideas, and recognising our unique local context and culture. Through Geography education, they will develop an **intrinsic wonder and appreciation for nature**.

Figure 1: Curriculum Concept for Geography



1.2 Aims of H3 Geography

The aims below represent the body of geographical knowledge, skills and values that students will acquire through H3 Geography.

Knowledge

The syllabus requires students to develop an understanding of:

- different frameworks in understanding sustainable development
- the subjective nature of maps and using maps as a tool to persuade and analyse
- the uniqueness of different types of natural environments and places
- the interactions and interdependence between natural environments, urban and rural areas, societies and cultures at various scales
- the processes that shape natural environments, societies and cultures at various scales
- the connections, trends and patterns in different parts of the world
- different approaches to solve real-world problems and achieve sustainable development.

Skills

The syllabus seeks to equip students with the ability to:

- consider evidence and different viewpoints to develop logical arguments and explanations
- analyse, evaluate and reflect on information from a geographical perspective to make informed and sound decisions
- construct understanding through inquiry using different data collection and analysis methods
- use and evaluate maps and other data representation to integrate information and communicate to a specific audience.

Values

The syllabus seeks to encourage students to:

- be inspired by the splendour of natural environments and human ingenuity
- care for delicate ecosystems and understand the importance of environmentally sustainable lifestyles
- develop as global citizens, seek harmony and respect others in a culturally diverse world
- contribute responsibly towards the building of a robust and inclusive society
- have the integrity to uphold ethical principles and be resilient in their pursuit for a better world.

1.3 Desired Outcomes of Education and 21st Century Competencies

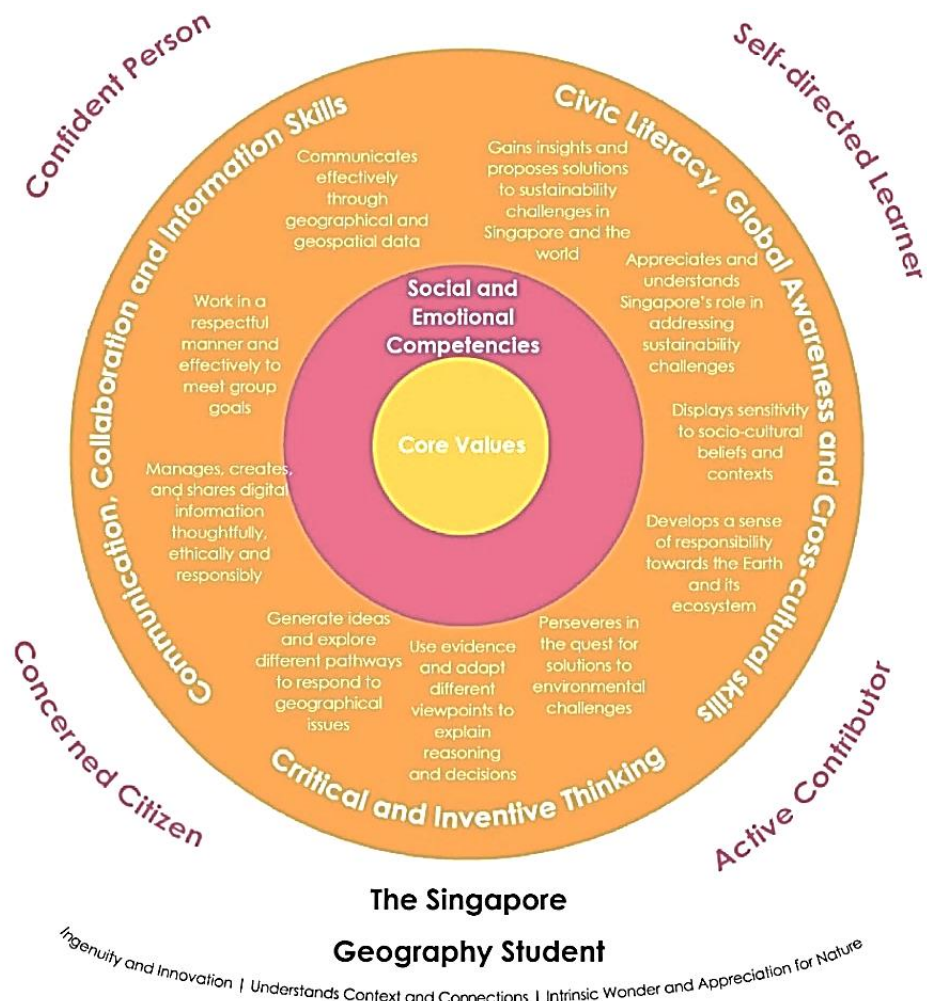
The Desired Outcomes of Education (DOE) are attributes that educators aspire for our learners upon the completion of their formal education. These outcomes establish a common purpose for Geography educators, drive our school-based programmes, and serve as a compass to guide curriculum and instruction.

The Singapore Geography student embodies the DOE, and exercises ingenuity and innovation in contributing to Singapore's and the world's sustainable development. He/she understands contexts and connections, and possesses an intrinsic wonder and concern for nature. In sum, he/she is:

- **confident person** who has a strong sense of right and wrong, is adaptable and resilient, knows himself/herself, is discerning in judgement, thinks independently and critically, and communicates effectively;
- **self-directed learner** who questions, reflects, perseveres and takes responsibility for his/her own learning;
- **active contributor** who is able to work effectively in teams, is innovative, exercises initiative, takes calculated risks and strives for excellence; and
- **concerned citizen** who is rooted to Singapore, has a strong sense of civic responsibility, is informed about Singapore and the world, and takes an active part in bettering the lives of others around him/her.

The H3 Geography syllabus is aligned to the Framework for 21st Century Competencies (21CC) and Student Outcomes (Figure 2), and it enables students to develop competencies necessary for them to thrive in a globalised and fast-changing world. Learning Geography supports the acquisition of the 21CC through inquiries, developing well-constructed explanations and responses to phenomena or issues. Geography also introduces investigative and communication tools including maps, fieldwork and Geographic Information Systems (GIS), which offer unique opportunities to make sense of the modern world.

Figure 2: 21st Century Competencies and Student Outcomes



1.4 Learning Continuity and Progression

The Learning Progression and Continuity in Geography (Table 1) is developed and featured in the Geography Curriculum Concept (Figure 1); with students acquiring more sophisticated understanding of geographical concepts and undertaking more rigorous fieldwork methods from Secondary to Pre-University.

Planning for progression in the Geography curriculum (Table 1) is featured as follows:

- **Breadth of geographical knowledge:** Breadth refers to the gradual extension of students' geographical knowledge, which is a cumulative process as they move through each level of study. Previously acquired knowledge is reinforced when students perceive it to be relevant to new learning, and long-term recall is usually facilitated by periodic revisiting.
- **Depth of geographical understanding:** Progression in students' geographical understanding is closely associated with the development of their ability to describe and explain geographical ideas and being able to apply them to new situations. Hence this is evidenced by students' ability to comprehend and undertake cognitively more demanding tasks, including interpretation, analysis, synthesis and evaluation of information.
- **Use of geographical skills:** Geographical skills are varied and can be categorised as specific techniques associated with fieldwork, skills associated with cognitive tasks, and skills associated with inquiry strategies.
- **Attitudes and values:** While explicitly articulated in the Geography Curriculum Concept (Figure 1), its specific progressions are implicitly embedded in all syllabuses through the sustainability-themed topics and concepts such as contestation over land use, responses to hazards, sustainable development and stewardship. The curriculum has planned increasing opportunity for students to examine social, economic, environmental and political issues at each higher level of study.

Planning for continuity in the Geography curriculum (Table 1) is seen in these aspects across all levels of study:

- **Overarching theme of sustainable development:** Sustainability-themed content is first introduced in the 2021 Lower Secondary Geography through sustainable resource use and management and will be explored further in the 2023 Upper Secondary and Pre-University Geography Syllabuses under sustainability challenges through different topics on human-environment relationships.
- **Disciplinary concepts of Space, Place, Environment and Scale:** The same set of disciplinary concepts are adopted across all levels of study. This allows students to deepen their use of disciplinary lenses in analysing phenomena and issues as they learn Geography at a higher level of study.
- **Teaching with inquiry as a signature pedagogy:** Teaching with inquiry is emphasised across all levels of study through the Geography Inquiry Process. Geographical inquiry encourages questioning, investigation and critical thinking about issues affecting the environment and people's lives, now and in the future.

- **Fieldwork as the cornerstone of Geography education:** Across all levels of study, students are given the opportunity to understand geographical phenomena and issues through investigative fieldwork. At each higher level of study, they are exposed to more rigorous quantitative and qualitative fieldwork methods.

Table 1: Learning Continuity and Progression in Geography from 2021 Lower Sec Geography to 2023 Pre-U Geography

	Lower Secondary Geography	Upper Secondary Geography	Pre-University Geography
Progression in Disciplinary Concepts			
Place	<ul style="list-style-type: none"> Places as locations with distinctive characteristics; <i>Singapore occupying a particular point on the Earth's surface.</i> Places as locales with physical and human characteristics; <i>deforestation of tropical rainforests in Brazil.</i> 	<ul style="list-style-type: none"> Places as locales with physical and human characteristics that change with time; <i>the development of tourist destination over time.</i> Places as socially constructed with personal meaning; <i>people develop a sense of place through personal, community and national identity rooted in places.</i> 	<ul style="list-style-type: none"> Places as socially constructed with place-based identities; <i>sustainable urban development and liveability, urban reimagining.</i> Places as socially constructed are interacting continuously; <i>places are sites of contestation as local and global processes socially construct and reconstruct places (all the time).</i>
Space	<ul style="list-style-type: none"> Basic spatial concepts; <i>location, distance, direction, scale, and movement.</i> Spatial patterns and processes; <i>distribution of tropical equatorial climate and global process of the hydrological cycle.</i> 	<ul style="list-style-type: none"> Spatial concepts; <i>region, volume and interdependence to show the connections in physical and human phenomena.</i> Spatial patterns, processes and associations of physical and human phenomena; <i>climate risks variation and its influence on physical and human systems in surrounding regions.</i> 	<ul style="list-style-type: none"> Complex spatial concepts; <i>connectivity, networks and hierarchies to show the spatial organisation of the global economy and trans-national corporations.</i> Spatial and temporal relations; <i>fluvial processes change over time and shape patterns in the distribution of human and physical phenomena.</i>
Environment	<ul style="list-style-type: none"> Physical and human environments; <i>natural landscape versus built-up urban areas.</i> Simple interrelationships in the environment; <i>humans through building homes can change the physical environment (into an urbanised city).</i> 	<ul style="list-style-type: none"> Nature-human interrelationships in the environment; <i>tourism activity depends on the natural environment, and also impacts the environment as a result.</i> Environment as ecosystems; <i>natural and human systems are connected within and across systems.</i> 	<ul style="list-style-type: none"> Environment as dynamic and complex; <i>changes in one part may affect others.</i> Synoptic links between development, economy & environment; <i>environmental integrity in dimensions of sustainable urban development.</i>
Scale	<ul style="list-style-type: none"> Scale concepts by fundamental levels of organisation; <i>local (eg. Bishan Park), national (eg. Singapore), regional (eg. Southeast Asia), global (eg. world).</i> Scale of imagery; <i>satellite and aerial to ground photographs.</i> 	<ul style="list-style-type: none"> Scale concept by duration; <i>temporal scale of daily occurrences of land and sea breezes vs. seasonal monsoon winds.</i> Scale concept by size of the space; <i>spatial scale & spatial hierarchies of residential units, neighbourhoods and town centres in Singapore.</i> 	<ul style="list-style-type: none"> Scale concept by length; <i>synoptic scale of wind circulations.</i> Scale concept by duration; <i>geological time scale in warming and cooling of the earth.</i> Scale as socially constructed; <i>politics of scale in human geography where issues manifest at different and multiple scales are also interconnected.</i>
Progression in Fieldwork Methods			
Geography Inquiry Process	<ul style="list-style-type: none"> Geography inquiry process; <i>focus on entire inquiry process to aid understanding of prescribed geographical phenomenon.</i> 	<ul style="list-style-type: none"> Geography inquiry process; <i>focus on the depth and different parts of the entire process to understand a selected geographical phenomenon.</i> 	<ul style="list-style-type: none"> Geography inquiry process; <i>as a framework to plan and design a student-directed research on a selected geographical phenomenon.</i>
Sampling Methods	<ul style="list-style-type: none"> Exposure to sampling methods; <i>convenience, (simple) random and systematic random sampling.</i> 	<ul style="list-style-type: none"> Basic non-probable and probable sampling methods; <i>convenience and quota sampling, and (simple) random and stratified random sampling.</i> 	<ul style="list-style-type: none"> Range of non-probable and probable sampling methods; <i>selection guided by research questions/ hypotheses and topic under investigation.</i>
Data Collection Methods	<ul style="list-style-type: none"> Exposure to generic methods; <i>use of interviews and field sketches.</i> 	<ul style="list-style-type: none"> Basic qualitative and quantitative methods; <i>mental maps and semi-structured interviews, and closed-ended questionnaire survey</i> 	<ul style="list-style-type: none"> Range of qualitative and quantitative methods; <i>selection guided by research questions/ hypotheses and topic under investigation.</i>

1.5 Design of the Syllabus

The H3 Geography syllabus is designed to provide students with the opportunity to deepen their understanding of geography. There are two components – the Taught Component and the Independent Research Component. In the Taught Component, students revisit relevant H2 Geography content, deepening their understanding of selected knowledge and skills that will help them in the Independent Research Component. In the Independent Research Component, students conduct fieldwork to investigate their chosen topic. Students' topic should be related to an aspect of sustainable development.

2. CONTENT

2.1 Geographical Concepts

Similar to the H2 and H1 syllabuses, the H3 syllabus is framed by four geographical concepts that reflect how geographers study the world. These concepts are also featured in the Ordinary level syllabuses. At the Pre-University level, students are expected to gain a more sophisticated understanding of these concepts and apply them to:

- inquire and describe the world in which we live;
- analyse issues, phenomena and human-nature relationships; and
- discuss global efforts to achieve sustainable development.

Table 2: The Four Geographical Concepts and Their Application at Pre-University Level

Geographical Concept	Application	Further Guidance
Space	Apply the concept of Space to analyse how physical and human phenomena are organised across the earth's surface across space and over time	<ul style="list-style-type: none">• Geographers are particularly concerned about the spatial and temporal aspects of what we study.• Much attention is placed on the organisation of physical and human phenomena across space and their evolution over time. Location and distance are often understood in relative rather than absolute terms in this context.• An examination of spatial and temporal relations and patterns can yield significant insights and enrich our understanding of the environment and humans.
Place	Apply the concept of Place to analyse different locations locally and globally	<ul style="list-style-type: none">• Places could refer to a specific point or bounded territory on a map. Moreover, places are constantly evolving, fluid and contested by social processes.• Places are socially constructed as different people and groups associate subjective meanings to their experience of place.• Places are constructed and reconstructed as the result of processes that are simultaneously global and local.

Geographical Concept	Application	Further Guidance
Environment	Apply the concept of Environment as a system to analyse interrelationships between physical and human phenomena	<ul style="list-style-type: none"> • Our environment comprises both human and natural systems. Human-nature interactions are dynamic and complex, with changes in one part affecting other parts. • Systems are hierarchical, with the whole system at one level being a component of a higher-order set, while the elements of one system are in effect smaller-scale systems. • Positive feedback results in a net change in the system while negative feedback does the opposite.
Scale	Apply the concept of Scale to analyse physical and human phenomena at different levels of interactions	<ul style="list-style-type: none"> • In physical geography, scale is often referred to as the resolution of a fieldwork or study. In human geography, common scales of analysis include local, national and global. • Issues and phenomena manifest at different scales from the personal to the global. • Processes also operate at different scales, with some operating on multiple scales at the same time. Processes at one scale can be amplified or diminished through interaction with other processes from any other scale.

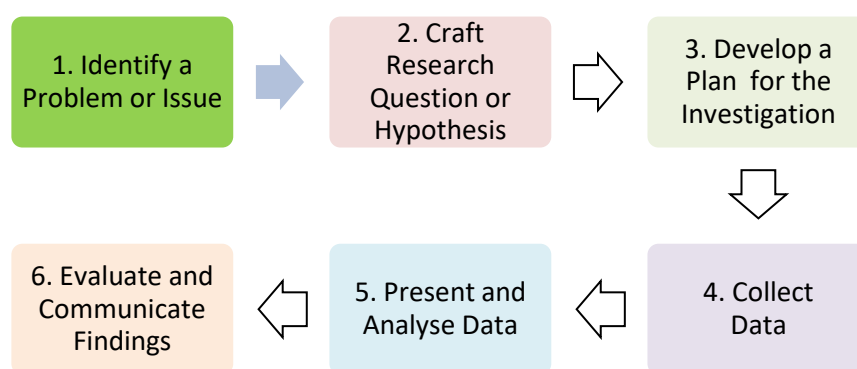
2.2 Content for H3 Geography

A Taught Component: Sustainable Development and Sustainability (16hrs)

To support candidates in identifying theories and concepts that could be used to develop a framework for their Research Proposal, it is recommended that they receive 16 hours of classroom instruction. This would deepen students' understanding of the H2 syllabus content that is relevant to sustainable development, enabling them to design their independent research.

B Independent Research Component (88 hrs)

With guidance from their teacher, candidates will identify a suitable problem or issue and carry out independent research. Their investigation should reflect the following stages:



1. *Identify a Problem or Issue*

Candidates should be able to identify a research topic that is:

- related to an aspect of sustainable development.

2. *Craft Research Question or Hypothesis*

Candidates should be able to craft geographical questions/hypotheses that are:

- at a suitable scale
- capable of research
- clearly defined.

3. *Develop a Plan for the Investigation*

Candidates should be able to:

- establish the data needed to examine the question/hypothesis posed
- identify appropriate methods for collecting primary and secondary data (including sampling when required)
- consider research ethics and understand limitations imposed by resources
- minimise potential risks in undertaking investigation.

4. Collect Data

Candidates should be able to:

- make use of data as appropriate to the question/hypothesis posed
- consider issues of accuracy and reliability in relation to the data being collected.

5. Present and Analyse Data

Candidates should be able to:

- organise and represent data using appropriate methods
- analyse and interpret the data using appropriate qualitative and quantitative method
- interpret the results in relation to the question/hypothesis posed.

6. Evaluate and Communicate Findings

Candidates should be able to:

- present a summary of the findings, relating back specifically to the question / hypothesis posed
- present an evaluation of the investigation, including the methods used, data collected and possible limitations and improvements that could be made.

Examples of Research Questions

The research topics listed below are intended as a guide. The list is not intended to be comprehensive. Rather, it serves as a guide to assist candidates in formulating their investigation.

- What form(s) of environmental conservation is/are feasible for a neighbourhood (or precinct) in Singapore?
- To what extent are social (or environmental) outcomes in Singapore influenced by its free trade agreement with the United States?
- In what ways does the Mangrove Forest Recovery Project at the Kuala Selangor Nature Park affect local communities?
- Why do people take part in environmental efforts in Singapore?
- What do energy labels and rating systems really achieve?
- What is the potential of maps in raising awareness about social development in different parts of Southeast Asia?
- To what extent do maps influence people's perception of global poverty?
- Should the use of clean diesel be promoted in Singapore to lower carbon emissions from motor vehicles?
- What forms of cultural heritage in Queenstown should be protected?

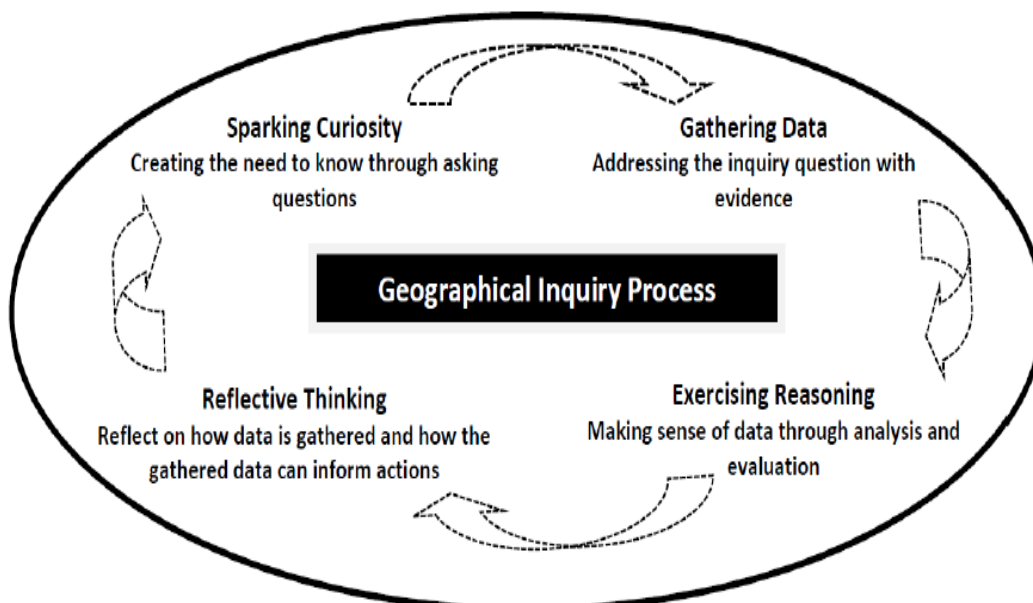
3. PEDAGOGY – GEOGRAPHICAL INQUIRY

3.1 Learning Through Geographical Inquiry

This syllabus recommends the Geographical Inquiry Process (Figure 3) for both classroom instruction and the independent research. Learning through inquiry³ stimulates students' interest in Geography and empowers them to take responsibility for learning. The process comprises four stages of inquiry: sparking curiosity, gathering data, exercising reasoning and reflective thinking. This inquiry-based approach seeks to shift students from a reliance on memorising information, to investing efforts in picking up knowledge construction skills such as the ability to comprehend a variety of sources and extract relevant information from these sources.

During the *sparking curiosity* stage, stimulus materials are used to challenge students' assumptions and habitual responses to situations. Students are then invited to pose questions about phenomena introduced by their teachers or suggested by other students. This is followed by the *gathering data* stage where students identify relevant sources of information and collect primary data. Following which they embark on the *exercising reasoning* stage and organise the information that they have gathered. They analyse and interpret the information before drawing conclusions to arrive at probable answers to their questions. During the final stage of *reflective thinking*, students recollect their learning and revisit how they arrived at their answers. They then generate ideas to improve their data gathering and reasoning processes.

Figure 3: Geographical Inquiry Process



³ Roberts, M. (2013). *Geography Through Enquiry*. Sheffield: Geographical Association.

3.2 Fieldwork

Fieldwork is a key component of learning through inquiry. The H3 Geography syllabus provides students with opportunities to conduct fieldwork through independent research. Independent research provides students with the opportunity to identify a suitable geographical question or hypothesis; develop a plan for the investigation; collect data; analyse and present their data; and evaluate their investigation.

Teachers can also incorporate bite-sized fieldwork opportunities in the taught component.

Bite-sized fieldwork aims to:

- be convenient, quick and resource-efficient;
- spark curiosity or consolidate information at key moments within a scheme of work;
- utilise students as resources rather than rely on specialised equipment; and
- foster inclusivity, given that students have diverse learning profiles.

3.3 Use of Geospatial Technology in Geographical Inquiry

The advancement of computer hardware and software has made geospatial data and technologies more accessible to teachers and students. Geospatial technologies, for example remote sensing, geographic information systems, Internet mapping and global positioning systems, are used to collect and process data about specific locations on the earth. Geospatial data and technologies can be readily incorporated into web-based learning activities to enhance students' learning. For example, students can explore a variety of digital content such as images, statistics and graphs using interactive web maps available from the Singapore Student Learning Space (SLS). The use of 360° virtual reality technology can also provide students with an immersive experience of field sites prior to and/or after primary data collection. When appropriately applied, teaching with geospatial technology contributes towards the development of 21CC among students.

4. ASSESSMENT

The assessment objectives (AOs) for the H3 Geography syllabus are presented in Figure 4.

Figure 4: Assessment Objectives for H3 Geography

Candidates will be expected to:	
AO1	demonstrate geographical understanding through selection and synthesis of knowledge
AO2	apply geographical concepts in examining the chosen research topic related to sustainable development
AO3	collect, analyse and evaluate primary and/or secondary data
AO4	coherently present well-substantiated arguments based on a reasoned consideration of evidence and/or different viewpoints
AO5	evaluate chosen research strategy

Examination Format for H3 Geography

H3 Geography is assessed in the form of a Research Essay.

Candidates will submit a Research Essay of no more than 3500 words based on a topic related to sustainable development, which had been approved in advance by Cambridge International. The purpose of a geographical investigation assessed in the form of a research essay is to amplify, reinforce and extend the principal concepts and skills relevant to the study of sustainable development. It challenges candidates to conduct an in-depth study of a topic related to sustainable development which adds to their knowledge, understanding and awareness.

Research should commence in November of the first academic year and the Research Essay should be ready for submission to Cambridge by September of the second academic year.