Geography Syllabus

Pre-University

H3

Implementation starting with
2016 Pre-University One Cohort

Ministry of Education
SINGAPORE

CONTENTS

1. INTRODUCTION

1.1 AIMS OF H3 GEOGRAPHY EDUCATION

Geography is the science of place and space. Geographers ask where things are located on the surface of the earth... Geography is unique in linking the social sciences and natural sciences... Geographers use many tools and techniques... [including] Geographic Information Systems (GIS), Remote Sensing, Global Positioning Systems (GPS)... and others.

Association of American Geographers

Geography is the study of Earth's landscapes, peoples, places and environments... bridging the social sciences with the natural sciences... and [putting the] understanding of social and physical processes within the context of places and regions... [Geography] helps us all to be more socially and environmentally sensitive, informed and responsible citizens...

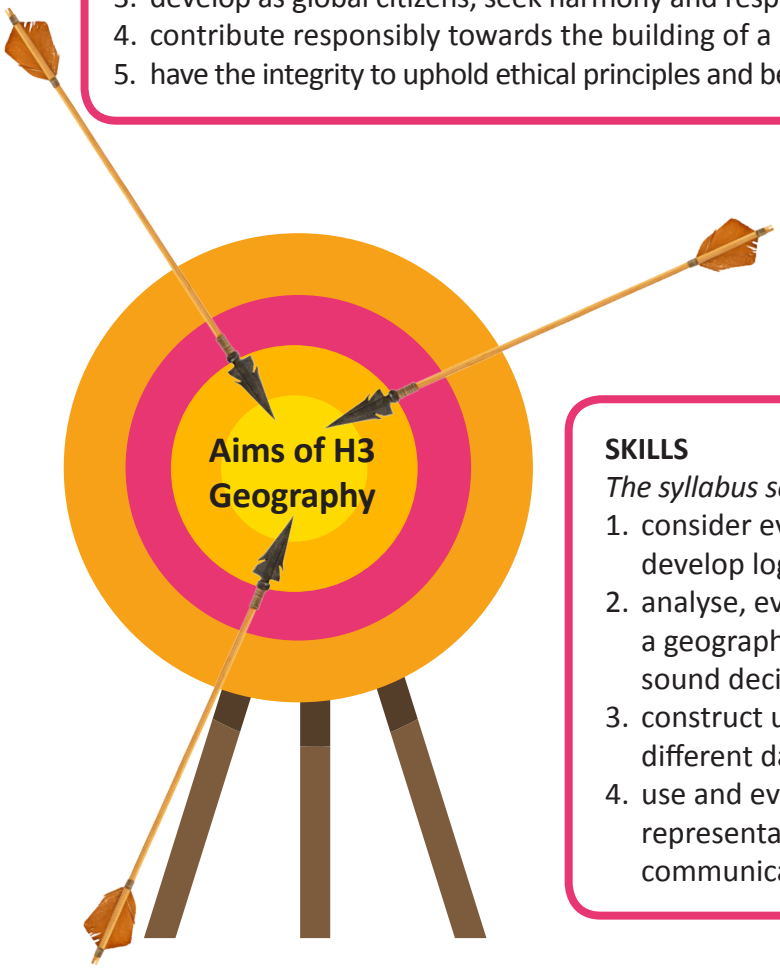
Royal Geographical Society (with the Institute of British Geographers)

Geography is a popular subject among students in Singapore and other parts of the world. While the Association of American Geographers describes Geography as a science that deploys geospatial technologies, the Royal Geographical Society (with the Institute of British Geographers) puts greater emphasis on Geography's endeavour to understand our world in its entirety. This syllabus combines both perspectives of the discipline.

VALUES

The syllabus seeks to encourage students to:

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



SKILLS

The syllabus seeks to equip students with the ability to:

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

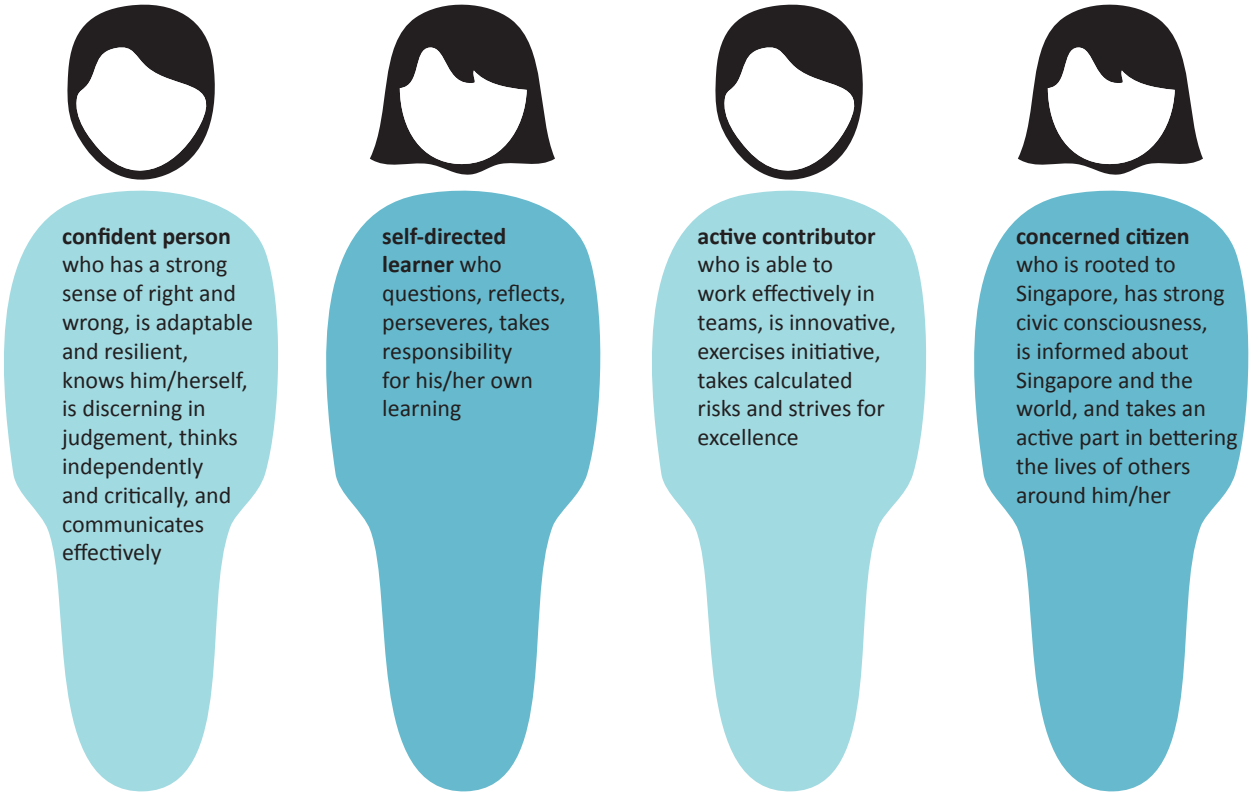
KNOWLEDGE

The syllabus requires students to develop an understanding of:

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

1.2 DESIRED OUTCOMES OF EDUCATION AND 21ST CENTURY COMPETENCIES

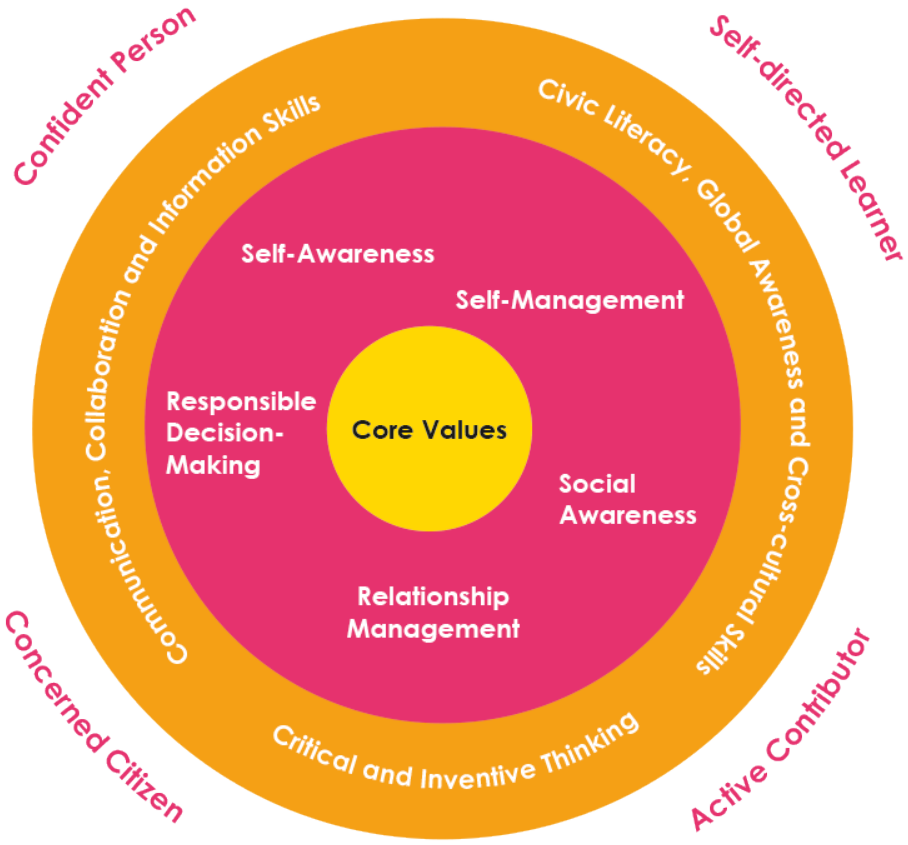
The aims of H3 Geography express the aspiration to develop in students the following attributes upon the completion of their formal education.



Desired Outcomes of Education

Geography supports the development of important competencies necessary for students to thrive in the 21st century. In addition, students will learn a range of life skills and develop key social and emotional competencies that will enable them to achieve personal mastery and relate to others. Most importantly, all learning must be anchored in core values (i.e., **Respect, Responsibility, Integrity, Care, Resilience** and **Harmony**). These values define a person's character and shape his/her beliefs, attitudes and actions.

Social and Emotional Competencies (i.e., **Self-Awareness, Self-Management,** etc.) are skills necessary for students to recognise and manage their emotions, develop care and concern for others, make responsible decisions, establish positive relationships and handle challenging situations effectively. Emerging 21st Century Competencies (21CC) necessary for the globalised world we live in are **Civic Literacy, Global Awareness and Cross-Cultural Skills; Critical and Inventive Thinking; and Communication, Collaboration and Information Skills.** These competencies will enable our students to tap into rich opportunities in the new digital age, while keeping a strong Singapore heartbeat.



Framework for 21st Century Competencies and Student Outcomes[1]

The domains of the emerging 21CC are defined below.

Civic Literacy, Global Awareness and Cross-cultural Skills
Our society is becoming increasingly cosmopolitan and more Singaporeans live and work abroad. Our young will therefore need a broader worldview, and the ability to work with people from diverse cultural backgrounds, with different ideas and perspectives. At the same time, they should be informed about national issues, take pride in being Singaporean and contribute actively to the community.

Critical and Inventive Thinking
To be future-ready, our young need to be able to think critically, assess options and make sound decisions. They should have a desire to learn, explore and be prepared to think out of the box. They should not be afraid to make mistakes and face challenges that may at first appear daunting.

Communication, Collaboration and Information Skills
With the Internet Revolution, information is often literally just a click away. It is important that our young know what questions to ask, how to sieve information and extract what is relevant and useful. At the same time, they need to be discerning so that they can protect themselves, while adopting ethical practices in cyberspace. The workplace of the 21st Century requires our young to be able to work together in a respectful manner to share responsibilities and make decisions with one another to meet group goals. Importantly, they should also be able to communicate their ideas clearly and effectively.

[1] More information on MOE's 21st Century Competencies can be obtained from http://www.moe.gov.sg/education/21cc/.

1.3 THINKING GEOGRAPHICALLY

Students' ability to ask geographical questions is as important as the acquisition of geographical knowledge. This ability will enable them to gain unique insights into real-world issues and phenomena, to extract value from the information that they come across and be aware of what additional information they will require in order to deepen their understanding. This syllabus identifies six geographical concepts (listed in alphabetical order), that underline the motivations behind the different questions geographers ask.

Environment

Geographers are interested in the relationship between humans and the natural environment. The natural environment may be seen as being designed for human purposes, thus legitimising human domination over the non-human world. The natural environment may also be understood as the major influence on human activities, which imposes limits on human growth and development. The relationship between humans and the natural environment is recognised to be dynamic and complex, with changes in the former involving changes in the latter and vice versa. Some questions geographers ask about the environment that are relevant to this syllabus include:

- *How do environmental change and hazards affect our quality of life?*
- *How do socio-economic and political changes alter our perception of the environment?*
- *How do technological advancements alter our view of the environment and our ability to manage it?*

Place

Geographers investigate real places. Places acquire meaning as a result of an individual's or a group's experiences that include sensory perception and memories. Places can also represent particular identities and express specific ideas in different ways, for example via signage, maps, official documents and popular media. Places evolve constantly and can be contested by different social forces. Places are shaped both by what is intrinsic to them and by external forces. Some questions geographers ask about places that are relevant to this syllabus include:

- *In what ways do sensory perceptions and memories affect a community's vulnerability or resilience to natural hazards?*
- *How do socio-economic and political forces produce different kinds of places in the space economy?*
- *How different are the experiences of various groups of people in the city?*

Process

Geographers examine the flow or actions that produce or transform a system or structure. Processes can occur sequentially over time or across space. Processes are also understood as mechanisms by which particular outcomes are achieved. Processes are controlled by variables, and the knowledge of these variables enables some degree of prediction of future values. However, the exact prediction of physical and human phenomena is impossible because of our incomplete understanding or inaccurate measurements. Some questions geographers ask about processes that are relevant to this syllabus include:

- *How do different physical and human activities interact to influence development?*
- *What is the impact on people and the environment as industrialisation spreads to more locations in developing parts of the world?*
- *How significantly would the switch to alternative energy sources contribute to our efforts to mitigate climate change?*

Scale

Geographers take care to match the resolution of data collected to the scale of the research question(s) they have in mind. Issues and phenomena manifest at different scales, ranging from the personal to the global. Processes also operate at different scales, with some operating at multiple scales at the same time. Understanding of how processes at one scale can be amplified or diminished through interacting with other processes of another scale is important. Some questions geographers ask about scale that are relevant to this syllabus include:

- *How do multi-lateral agreements affect local economies?*
- *How do the different levels of government influence one another to achieve their development agendas?*
- *How are sustainability and liveability understood differently by individuals, communities, companies and governments?*

Space and Time

Geographers are particularly concerned about the spatial and temporal aspects of what they study. Much attention is placed on the organising 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 of humans. Some questions geographers ask about space and time that are relevant to this syllabus include:

- *How have different conceptions of sustainable development over time affected environmental practices?*
- *How does wealth spread from one location to another over time?*
- *In what ways do countries in different parts of the world experience the effects of climate change differently?*

System

Geographers are sensitive to the interrelationships and interdependence of different elements in the world. Systems are hierarchical; the whole system at one level forms a component of a higher order set and the elements of one system are in effect smaller-scale systems. Positive feedback results in a net change in the system while negative feedback results in no change. The concept of systems allows us to study a portion of reality while being aware that what is being studied is part of a larger whole. Some questions geographers ask about systems that are relevant to this syllabus include:

- *How does climate change affect the interplay of environmental and economic practices?*
- *How does the interdependence of environmental conservation and economic growth influence human development?*
- *What is the effect of global warming on agricultural production and vice versa?*

2. CONTENT

2.1 OVERVIEW

There are two components in H3 Geography – the **Taught** and **Independent Research Components**. The Taught Component explores research frameworks on sustainable development. It is conducted by teacher supervisors over 16 hours. For the Independent Research Component, students build on what they have learned in the Taught Component and undertake a research related to an aspect of sustainable development.

At the end of the course, students submit a research essay of no longer than 3,500 words.

Taught Component (16 Hours)

- Examining sustainable development using different frameworks
- Mapping sustainable development
- Scales of action and interaction in sustainable development

Independent Research (88 Hours)

- Identify a Problem or Issue
- Craft Research Question or Hypothesis
- Develop a Plan for the Investigation
- Collect Data
- Present and Analyse Data
- Evaluate and Communicate Findings

2.2 TAUGHT COMPONENT – 16 HOURS

Examining sustainable development using different frameworks

a) Ecocentrism versus anthropocentrism
b) Environmental justice
c) Political ecology
d) Cultural heritage

Mapping sustainable development

a) Thematic maps
b) Processing and symbolising map features
c) Map projections

Scales of action and interaction in sustainable development

a) Nested hierarchies of bounded spaces
b) Operating at different levels of the spatial hierarchy
c) Constraints imposed on nations by international agreements
d) Impact of local communities at the national/global stage

2.3 INDEPENDENT RESEARCH – 88 HOURS

1 **Identify a Problem or Issue**

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

- related to an aspect of sustainable development.

2 **Craft Research Question or Hypothesis**

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

- at a suitable scale;
- capable of research; and
- are clearly defined.

3 **Develop a Plan for the Investigation**

Students 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; and
- minimise potential risks in undertaking investigation.

4 **Collect Data**

Students should be able to:

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

5 **Present and Analyse Data**

Students should be able to:

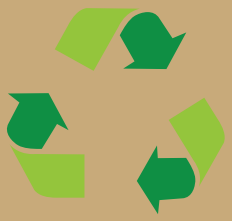
- organise and represent data using appropriate methods;
- analyse and interpret the data using appropriate qualitative and quantitative methods; and
- interpret the results in relation to the question/hypothesis posed.

6 **Evaluate and Communicate Findings**

Students should be able to:

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

2.4 POSSIBLE RESEARCH QUESTIONS



What form(s) of environmental conservation is/are feasible for a neighbourhood (or precinct) in Singapore?

Why do people take part in environmental efforts in Singapore?

To what extent are social (or environmental) outcomes in Singapore influenced by its free trade agreement with the United States?

To what extent do maps influence people's perception of global poverty?

Possible Research Questions

How does the Mangrove Forest Recovery Project at the Kuala Selangor Nature Park affect local communities?

What do energy labels and rating systems really achieve?

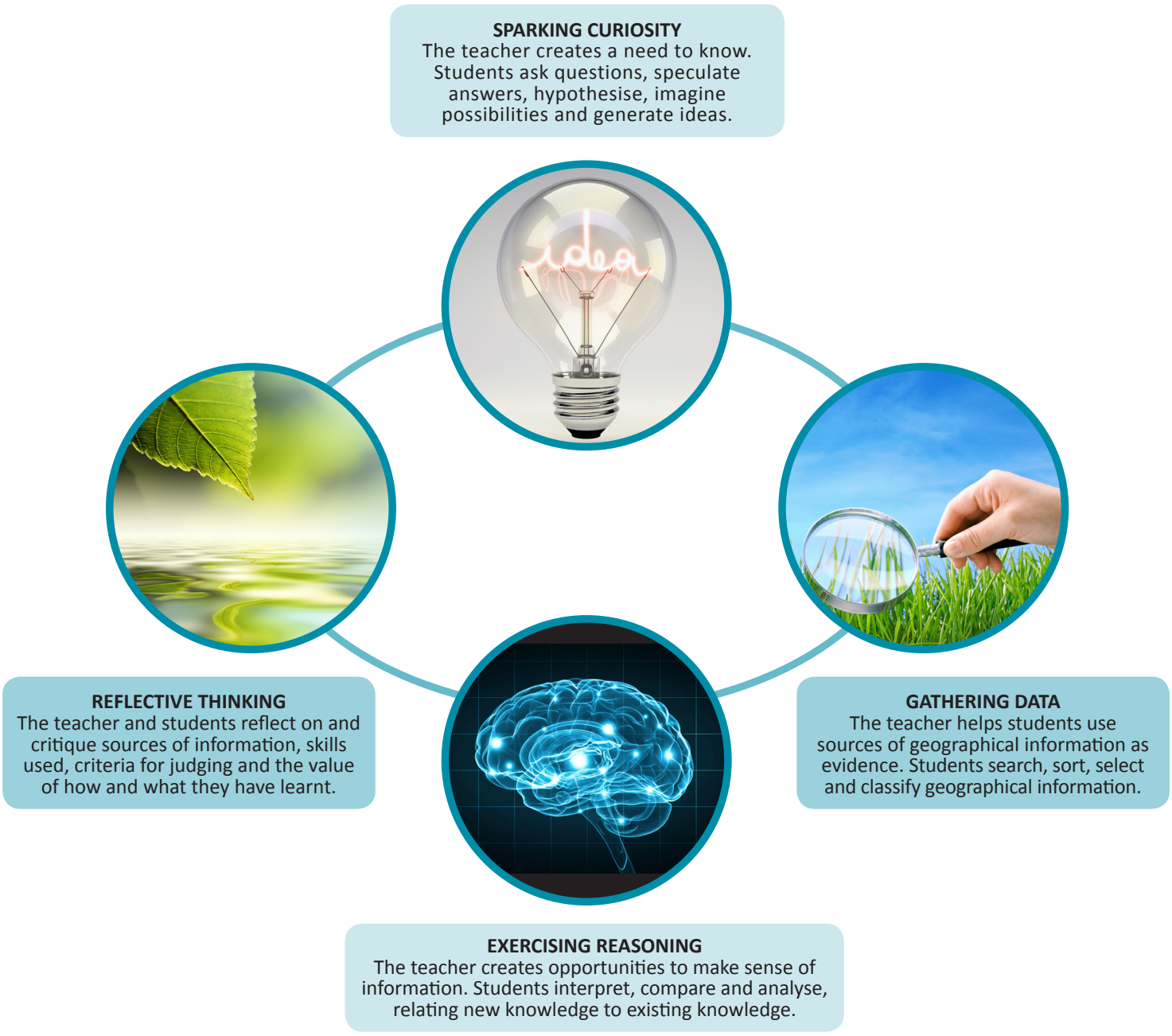
What is the potential of maps in raising awareness of social development in different parts of Southeast Asia?

What forms of cultural heritage in Queenstown should be protected?

Should the use of clean diesel be promoted in Singapore to lower carbon emissions from motor vehicles?

3. PEDAGOGY – GEOGRAPHICAL INQUIRY

Learning through inquiry is commonplace in Geography classrooms where the purposeful use of real-world data is prevalent. The continued emphasis on map and other data-interpretation skills as well as fieldwork in this syllabus encourages the use of inquiry among students. Four elements of geographical inquiry are presented below. Teachers will likely include an element or combine elements appropriately to facilitate students' inquiry into what they are learning. With guidance from their teachers, students will be constantly encouraged to ask geographical questions as they learn the prescribed set of knowledge and skills in the syllabus.



Elements of Geographical Inquiry

4. ASSESSMENT

Students will submit a Research Essay with no more than 3,500 words based on a topic related to sustainable development which had been approved in advance by Cambridge International Examinations. 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 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.

The research essay will be evaluated based on the assessment objectives shown below.

Students 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; and
AO5	evaluate chosen research strategy.