

GEOGRAPHY SYLLABUS

Pre-University

H2

Implementation starting with
2016 Pre-University One Cohort



Ministry of Education
SINGAPORE

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1. INTRODUCTION

1.1 AIMS OF H2 GEOGRAPHY

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)

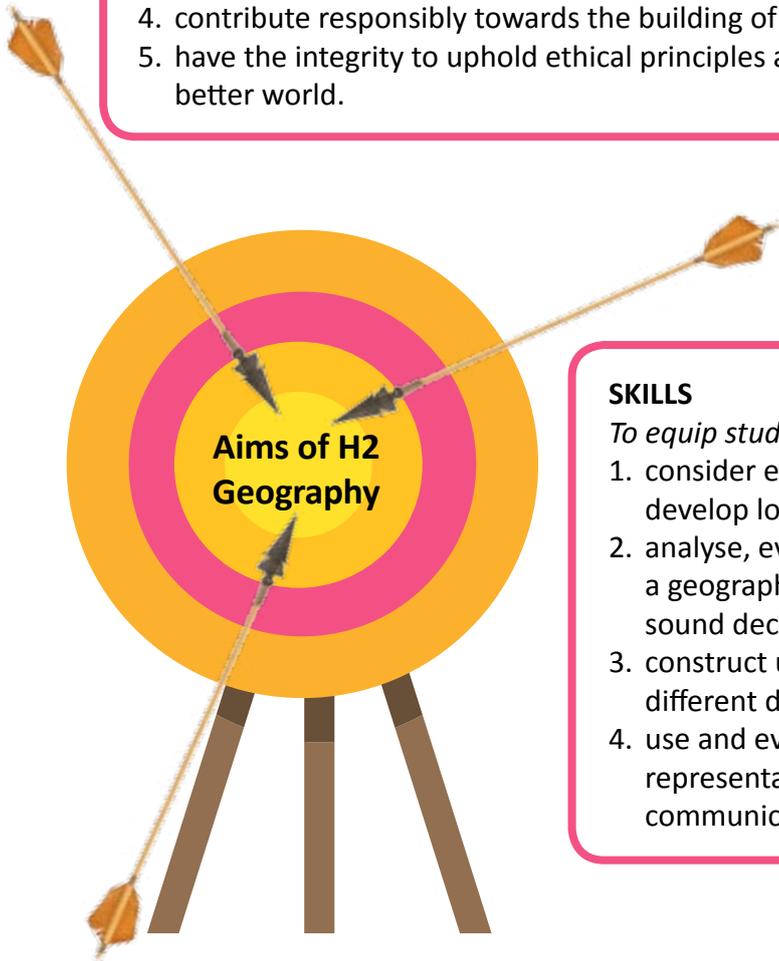
Geography is a popular subject among students in Singapore and other parts of the world. While the Association of American Geographers describes Geography as a science that deploys geospatial technologies, the Royal Geographical Society (with the Institute of British Geographers) puts greater emphasis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



VALUES

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

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.

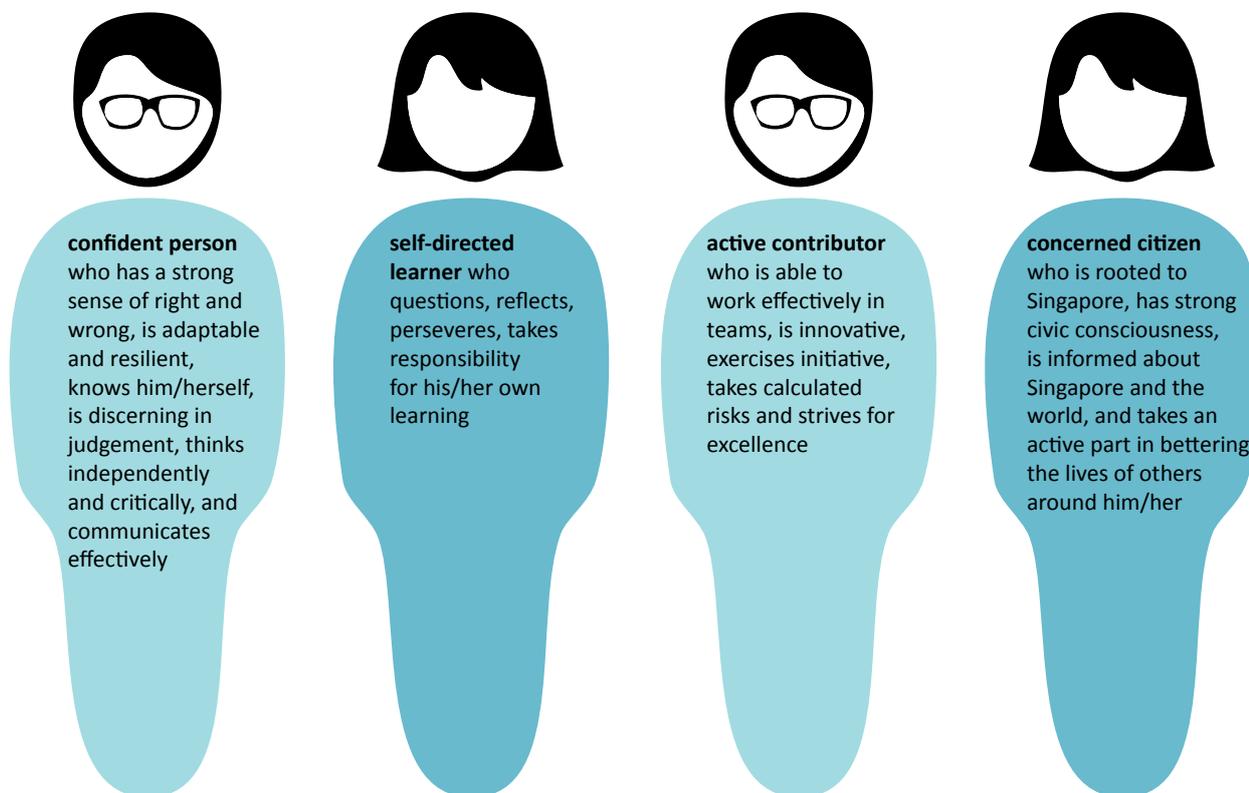
KNOWLEDGE

To help students develop an understanding of:

1. the uniqueness of different types of natural environments and places;
2. the interactions and interdependence among natural environments, societies and cultures at various scales;
3. the evolution of landscapes and development of issues over time;
4. the processes that shape natural environments, societies and cultures at various scales;
5. the connections, trends and patterns in different parts of Asia and the rest of the world;
6. a range of contemporary issues in different parts of Asia and the rest of the world through geographical perspectives;
7. different approaches to solve real-world problems and achieve sustainable development; and
8. the connections between different sub-fields of Geography.

1.2 DESIRED OUTCOMES OF EDUCATION AND 21ST CENTURY COMPETENCIES

The aims of H2 Geography express the aspiration to develop in students the following attributes upon the completion of their formal education.



Desired Outcomes of Education (DOE)

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 Outcomes¹

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 that which is relevant and useful. At the same time, they need to be discerning so that they can shield themselves from harm, 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 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 do the experiences of different groups of people in the city vary?*

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 processes interplay to influence climates in the tropics?*
- *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. The understanding of how processes at one scale can be amplified or diminished through the interaction with other processes from any other scale is important. Some questions geographers ask about scale that are relevant to this syllabus include:

- *How do planetary scale atmospheric processes influence regional wind patterns?*
- *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 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 of humans. Some questions geographers ask about space and time that are relevant to this syllabus include:

- *Which parts of the world experience the highest rainfall during which time of the year?*
- *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?*

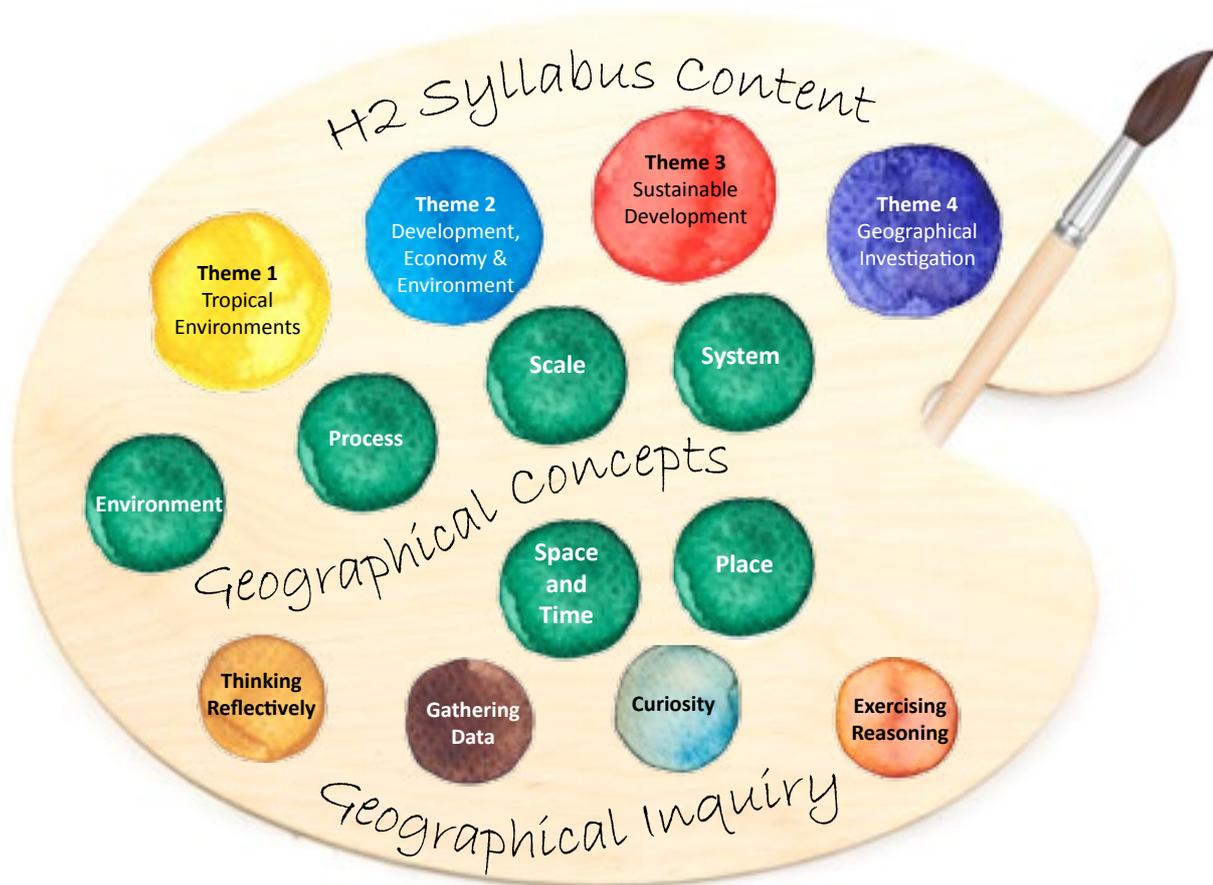
System

Geographers are sensitive to the interrelationships and the 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 are different physical processes interrelated?*
- *How does the interdependence between environmental conservation and economic growth implicate human development?*
- *What is the effect of global warming on agricultural production and vice versa?*

2. CONTENT

The H2 syllabus content is organised via four themes and designed to be learned within 208 curriculum hours. Guided by geographical concepts, students will learn the syllabus content through geographical inquiry.



Each theme consists of two integrated topics except for Theme 4, which outlines the skills that students are expected to learn in order to conduct research in areas relevant to what they have learned in Themes 1, 2 and 3.

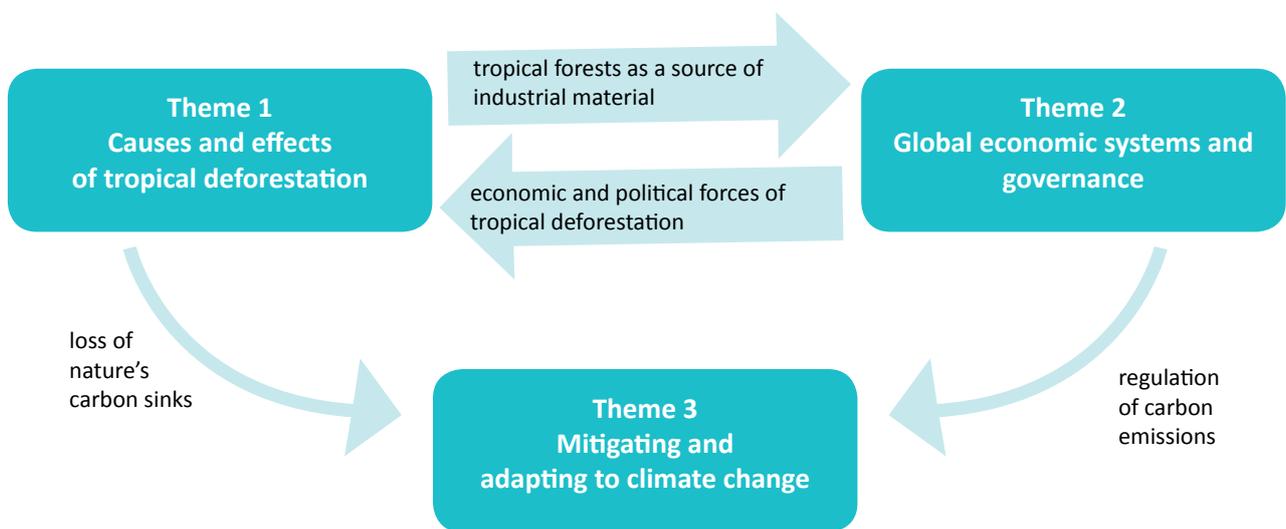
Theme 1 (Tropical Environments) helps students to understand the workings of atmospheric, geomorphic and hydrologic processes and associated landforms in the tropics through a systems approach. Students learn about feedback loops to analyse the impact of humans on the environment and how humans are in turn affected by environmental hazards.

Theme 2 (Development, Economy and Environment) introduces students to the underlying political and socio-economic structures that determine the kinds of natural resources that are transformed into different kinds of useful products. Through case studies, students gain insights into how political and economic decisions influence society and our environment.

Theme 3 (Sustainable Development) highlights the importance of exploring how people in different parts of the world are affected when natural environments are exploited. Students confront the contradictions between meeting present needs and achieving intergenerational equity, that is, to pass on the environment in a 'reasonable condition' to future generations.

Theme 4 (Geographical Investigation) provides students with opportunities to carry out fieldwork to deepen their understanding of what they have learned from Themes 1–3. They will learn how to craft research questions, plan their investigations, handle data, evaluate and communicate their findings to different audiences.

Connections can also be found across Themes 1–3. Students’ mastery of the prescribed knowledge in each theme will be strengthened as they learn the other themes. An example is shown below where students’ knowledge of the effects of deforestation (Theme 1) enriches their understanding of extractive industries (Theme 2). Similarly, their analysis of the causes of deforestation (Theme 1) is enriched through the study of the political economy (Theme 2). Finally, knowledge of carbon sequestration (Theme 1) and knowing how carbon emissions can be regulated (Theme 2) widens students’ discussion about the issues related to the effects of climate change (in Theme 3).



Connections between Themes 1, 2 and 3

2.1 THEME 1 – TROPICAL ENVIRONMENTS

The tropics cover a large part of the Earth's surface with a variety of landforms, including major mountain ranges and rivers, such as the Himalayas and the Amazon. They can be defined as a climatic region of radiation surplus delimited by boundaries fluctuating between 30 and 35 degrees latitude, north and south. Common to all areas in this region (at sea level) is high temperature. Significant variations in the pattern and amount of rainfall differentiate these areas into various tropical climate zones. The tropics are home to some of the wettest (e.g. the Lower Mekong Basin) and driest areas (e.g. the Atacama Desert) on Earth. The atmosphere and tropical oceans play an important role in redistributing heat energy while tropical forests, rivers and wetlands regulate the carbon cycle, acting as carbon sinks and sources of carbon emissions.



Both topics in this theme help students to understand that similar processes occur differently in different parts of the Earth. Within the tropics, processes operate at different rates and with varying intensities, producing a rich array of landscapes. Students will also understand that the boundaries separating tropical and temperate regions are not fixed. Likewise, the transition between the humid and arid areas in the tropics, in most instances, is not as sharp as climate classifications may suggest.

Topic 1.1 Physical Processes in the Tropics

This topic examines the dynamism of tropical environments through the study of different processes using a systems approach. Also covered are various physical processes and factors found in the tropics.

Topic 1.2 Landscapes and Issues in the Tropics

This topic surveys the process-form dynamics in open systems through the examination of characteristic landforms in both the humid and arid tropics. The exploration of tropical landscapes also includes the investigation of topical issues like flooding and deforestation.

2.2 THEME 2 – DEVELOPMENT, ECONOMY AND ENVIRONMENT

Human Geography focuses on the study of how humans modify the environment and in turn are affected by changes in the environment. It focuses on people in places and spaces to understand the complex, interconnected and divided world that we live in. Human geographers study the spatial organisation of human society at various scales, from the global to the personal. They recognise that place-based processes operate across and within different spatial scales, and appreciate the uniqueness of different places and the diversity of people. They also consider the different dimensions of human life, and how economic, political and environmental factors intersect and influence our behaviour and attitudes.



This theme helps students to understand how humans interact with the environment, in particular how we extract value from it in order to fulfil our material needs and achieve progress. Students will understand that the appraisal of natural resources and configuration of production systems vary across space and time. As a result, they will become more sensitive to cultural differences and the implications of their everyday decisions on the environment and the communities living in different parts of the world.

Topic 2.1 Development and the Global Economy

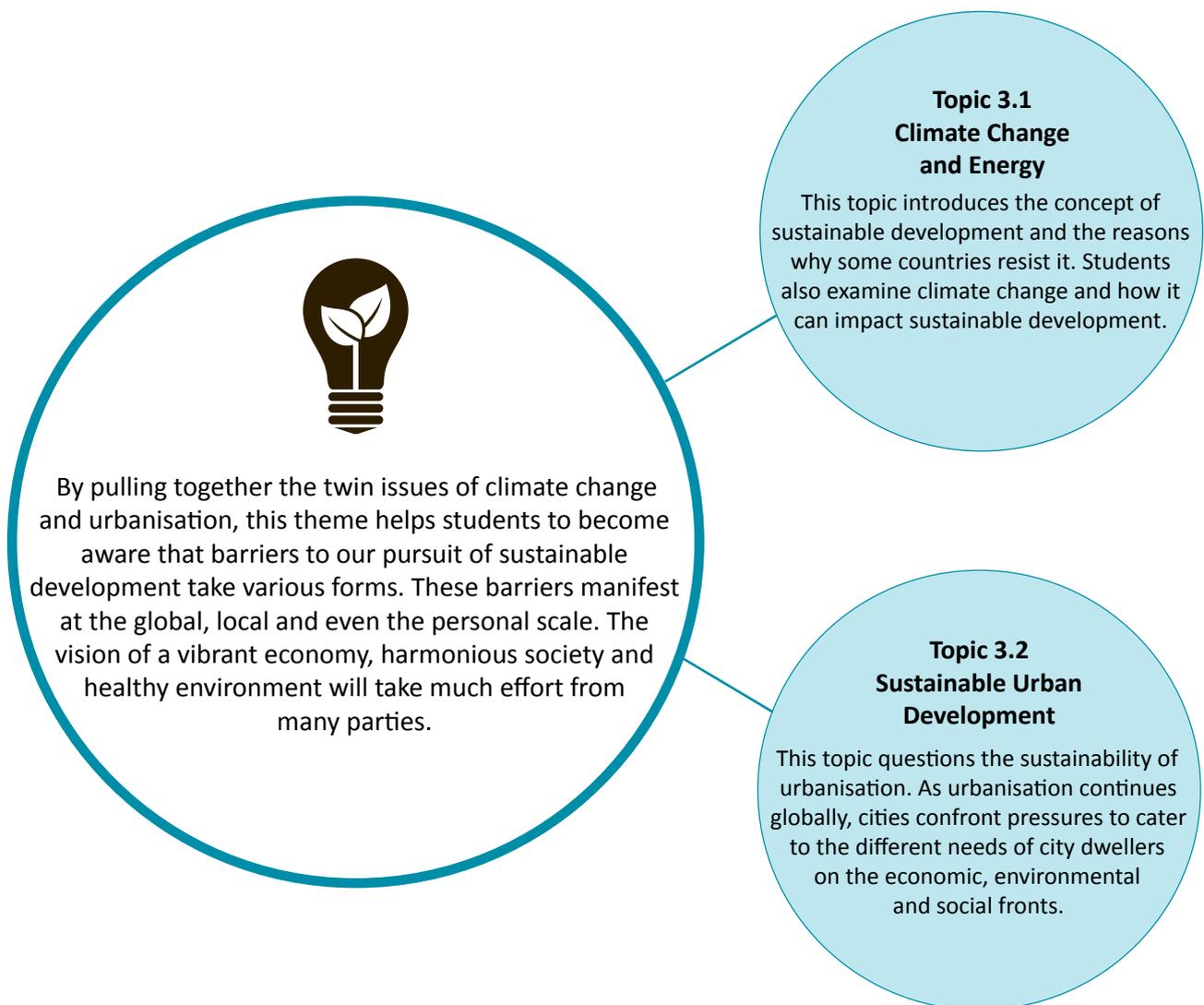
This topic examines the relationship between economic growth and human development. Students will learn about the structure of the economy and how the global economy is governed, with varying degrees of success.

Topic 2.2 Environment and Resources

This topic explores how humans obtain value from the environment through various activities undertaken by extractive industries. Students will also analyse countries endowed with an abundance of natural resources and the challenge of managing scarce water resources.

2.3 THEME 3 – SUSTAINABLE DEVELOPMENT

With the release of the report *Our Common Future* by the World Commission on Environment and Development (WCED) in 1987, 'sustainable development' has become almost universally accepted to mean 'development that meets our current needs but not at the expense of future generations'. The pursuit of sustainable development is now stated as a principal policy goal of major global institutions such as the United Nations as well as many governments around the world. This theme develops students' understanding of sustainable development at various scales and in different contexts. It demonstrates how geographical perspectives can contribute towards our pursuit of sustainable development.



2.4 THEME 4 – GEOGRAPHICAL INVESTIGATION

With guidance from their teachers, students will identify a suitable geographical question or hypothesis that fall under the following areas:

A | Living with Rivers

- Factors influencing flood risk and ways to mitigate it
- Impact of wind direction on rainfall
- Influence of land use on infiltration rates

B | People and the Economy

- Impact of industries on local communities
- Impact of industries on the environment
- Linkages and TNCs and local enterprises

C | Urban Living Today

- Liveability of urban neighbourhoods
- Needs analysis of the elderly living in an urban neighbourhood
- Impact of urban reimagining on urban dwellers

Students' investigation should reflect the following stages:



1

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

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

2

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 an investigation.

3

Students should be able to:

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

4

Students should be able to:

- organise and represent data using appropriate methods (see additional notes on data);
- analyse and interpret the data using appropriate qualitative and quantitative methods; and
- interpret the results in relation to the question/hypothesis posed.

5

Students should be able to:

- present a summary of their 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.

Additional Notes on Data

Students are required to be familiar with the following types of data. Making sense of data and representing ideas using different graphical/tabular methods is an integral part of learning.

Maps: contour maps, choropleth maps, isoline maps, dot maps, flow-line maps, proportional symbol maps and cartograms.

Graphs: pie charts, bars, histograms, scatter graphs, dispersion diagrams, triangular graphs and line graphs.

Photographs: landscape photographs, aerial photographs and satellite images.

Others: tables, diagrams, illustrations and cartoons.

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. It is likely that teachers will include an element or combine elements appropriately to facilitate students' inquiry into what they are learning. With guidance from their teachers, students would be constantly encouraged to ask geographical questions as they learn the prescribed set of knowledge and skills in the syllabus.



SPARKING CURIOSITY

The teacher creates a need to know. Students ask questions, speculate answers, hypothesise, imagine possibilities and generate ideas.



GATHERING DATA

The teacher helps students to use sources of geographical information as evidence. Students search, sort, select and classify geographical information.



EXERCISING REASONING

The teacher creates opportunities to make sense of information. Students interpret, compare and analyse, relating new knowledge to existing knowledge.



REFLECTIVE THINKING

Teacher and students reflect on and critique sources of information, skills used, criteria for judging and the value of how and what they have learnt.

Elements of Geographical Inquiry

4. ASSESSMENT

The assessment objectives for this syllabus are presented below. The first set of assessment objectives (AO1) relate to the Knowledge category in Bloom's Taxonomy. Students are expected to recall factual, conceptual and procedural knowledge.

The second set of assessment objectives (AO2) relate to the Comprehension, Application and Analysis categories in Bloom's Taxonomy. The majority of questions in the national examination will be designed to assess students' ability to process geographical knowledge in context and apply geographical skills purposefully.

The third set of assessment objectives (AO3) relate to the Evaluate and Create categories in Bloom's Taxonomy. A substantial number of questions in the national examination will be designed to assess students' ability to make judgements and offer recommendations. Students are also expected to put together knowledge obtained from different parts of the syllabus.

AO1 – Knowledge

Students should be able to demonstrate knowledge and understanding of:

- geographical terms, facts, concepts, issues, phenomena, trends; and
- geographical investigation skills and methods.

AO2 – Application and Analysis

Students should be able to:

- construct explanations to show how geographical knowledge is understood in particular contexts;
- apply geographical knowledge and understanding to interpret and analyse different types of geographical data; and
- apply relevant geographical knowledge, understanding, skills and methods to carry out investigations in unseen contexts.

AO3 – Evaluation

Students should be able to demonstrate critical thinking by:

- synthesizing knowledge from different sub-fields in geography;
- drawing conclusions and making judgements based on a reasoned consideration of evidence and/or different viewpoints;
- making recommendations and decisions that consider different elements of an issue and/or address interests of different stakeholders; and
- evaluating different types of geographical data, methods of data collection and analysis.

In the national examination, 60% of the marks are allocated to questions that fulfil AO1 and AO2. The other 40% of the marks are allocated to questions that fulfil AO1 and AO3. Students attempt two papers at separate sittings. The first paper consists of data-response questions and the second paper consists of structured essay questions.

