A report prepared by Learning First for the NSW Department of Education

Teaching Critical Thinking: exploring implications for Stages 4 and 5 Science and History teaching

Case Studies: Singapore and Hong Kong

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LEARNING FIRST

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1 Case Study: Singapore

Key resources:

- Singapore Syllabus
- OECD presentation (2013) on Singapore's shifts to more critical thinking focus
- Singapore competencies

Singapore is consistently one of the highest performing systems in the world, according to international assessments like the OECD's PISA. It is a small system, with about 430,000 students in 356 schools – it is less than half the size of the NSW system.[1]

But despite its small size, the system caters to a diversity of students. 25 per cent of students are first- or second-generation immigrants (similar to Australia with 28 per cent).[2]

Instruction in Singapore is primarily in English, and about 40 per cent of families primarily speak English at home (compared to about 80 per cent of Australian families). Singapore schools have a bilingual policy where each student is taught primarily in English, with additional education in one of three mother tongue languages: Mandarin, Malay, or Tamil.

Although Singapore is high-performing, it is often criticised for an inequitable education system – in Singapore, there is a large gap between the wealthiest students and the poorest. This is largely caused by the country's approach to assigning students at early ages into university- or technical-track schools. At the end of Year 5, all students sit an exam that determines their secondary track. Although this creates inequality, Singapore's poorest students still tend to perform better than other countries' median students because even the non-university track is very high quality.

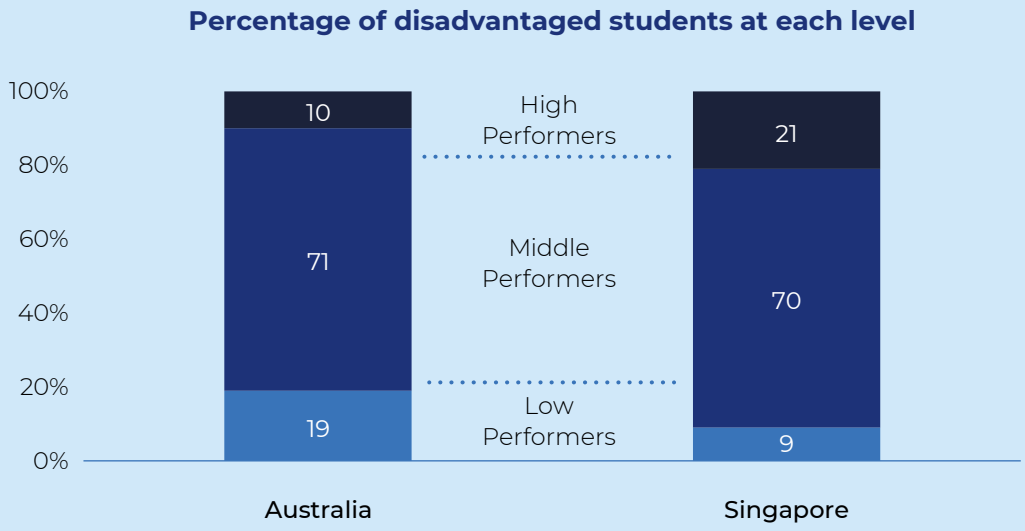
Some stereotypes about Singapore's system exist in Western countries: beliefs that teaching is didactic, rigid, and focused on memorisation. The truth is that Singapore is constantly changing and reforming teaching practice, and since 2012 has focused on student-centric, constructivist approaches within a framework for 21st century skills. In Singapore's Framework for 21st Century Competencies and Student Outcomes, critical thinking is defined as 'Critical and Inventive Thinking' (see Figure 2).

1 Ministry of Education Singapore, 'Education Statistics Digest', 2019.

2 OECD, Programme for International Student Assessment (PISA) [data set], oecd.org/pisa/data, 2018.

Figure 1: Achievement levels of disadvantaged students, PISA Science 2018

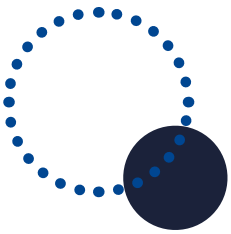
Source: OECD, Programme for International Student Assessment (PISA) [data set], oecd.org/pisa/data, 2018.

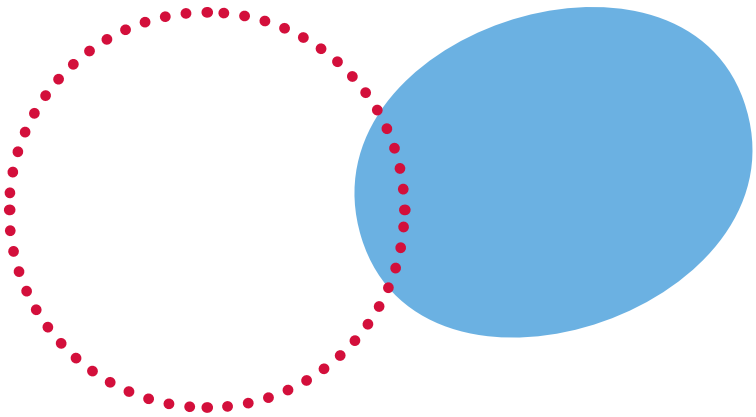


History of Singapore's Education Phases

- Industrialisation – Survival Driven (1959–1978)
- Skills/Capital Intensive – Efficiency Driven (1979–1996)
- Knowledge Based – Ability-Based, Aspiration Driven (1997–2011)
- Innovation Driven – Student-Centric, Values-Driven (2012–now)

Source: Academy of Singapore Teachers, 2017





1.1 Teach Less, Learn More

Singapore's Teach Less Learn More philosophy was established in 2004 and aimed to improve pedagogy to develop 21st century learners. It represents a large shift, which is occurring over time, to the system which focuses more on choice and flexibility for schools, teachers, and students. There is more emphasis on the individual student and less on centralising most aspects of education. Because of this, there is increased responsibility, and autonomy, for teachers and schools in terms of curriculum, pedagogical and teaching approaches.[3]

Teach Less, Learn More – Ministry of Education's description

We will encourage our students to learn more actively and independently. We want to nurture a curiosity that goes beyond the formal curriculum, and a love for learning that stays with the student through life.

Syllabuses will be trimmed without diluting students' preparedness for higher education. This will free up time for our students to focus on core knowledge and skills, and to provide greater space for flexibility in carrying out school-based activities in the curriculum.

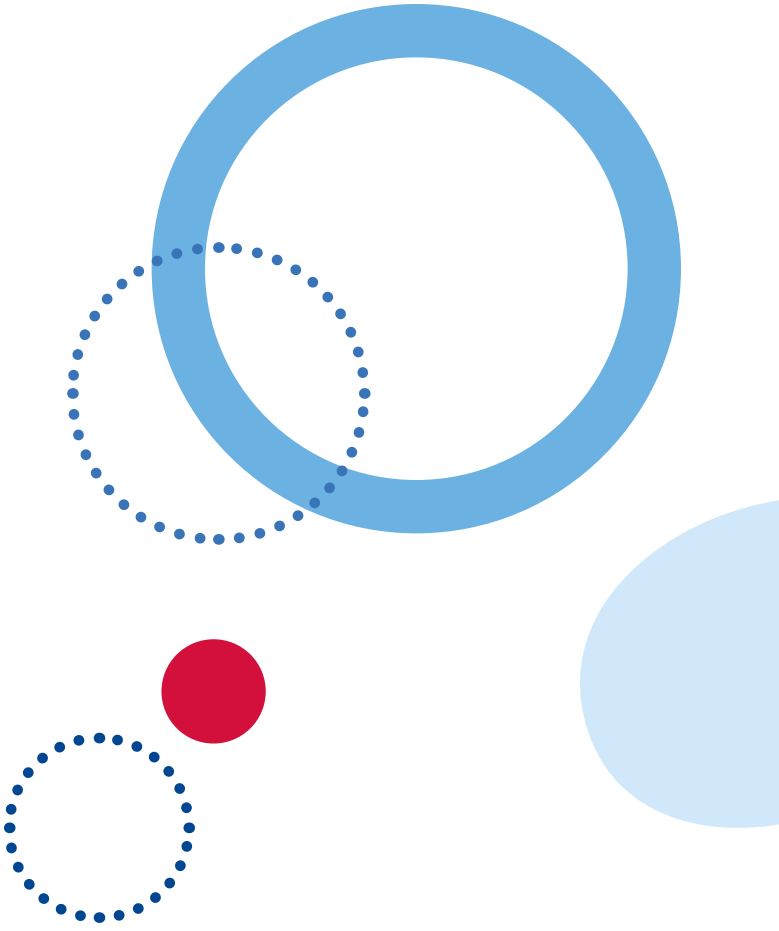
Schools are providing more opportunities for the character development of their students and for students to develop skills in innovation. Teaching will be focused on developing understanding, critical thinking and the ability to ask questions and seek answers and solutions.

Examinations and assessment methods will be reviewed, to reduce reliance on rote learning and encourage independent learning and experimentation.

1.2 Critical Thinking in Singapore

Singapore uses a 21st Century Competencies framework which incorporates 'Critical and inventive thinking'.[4] This framework cuts across curriculum areas and is included within each subject syllabus. Each syllabus refers to this framework but also has its own discipline-specific framework which contains elements of critical thinking even if these frameworks do not use the exact same language as the 21st Century Competencies Framework.

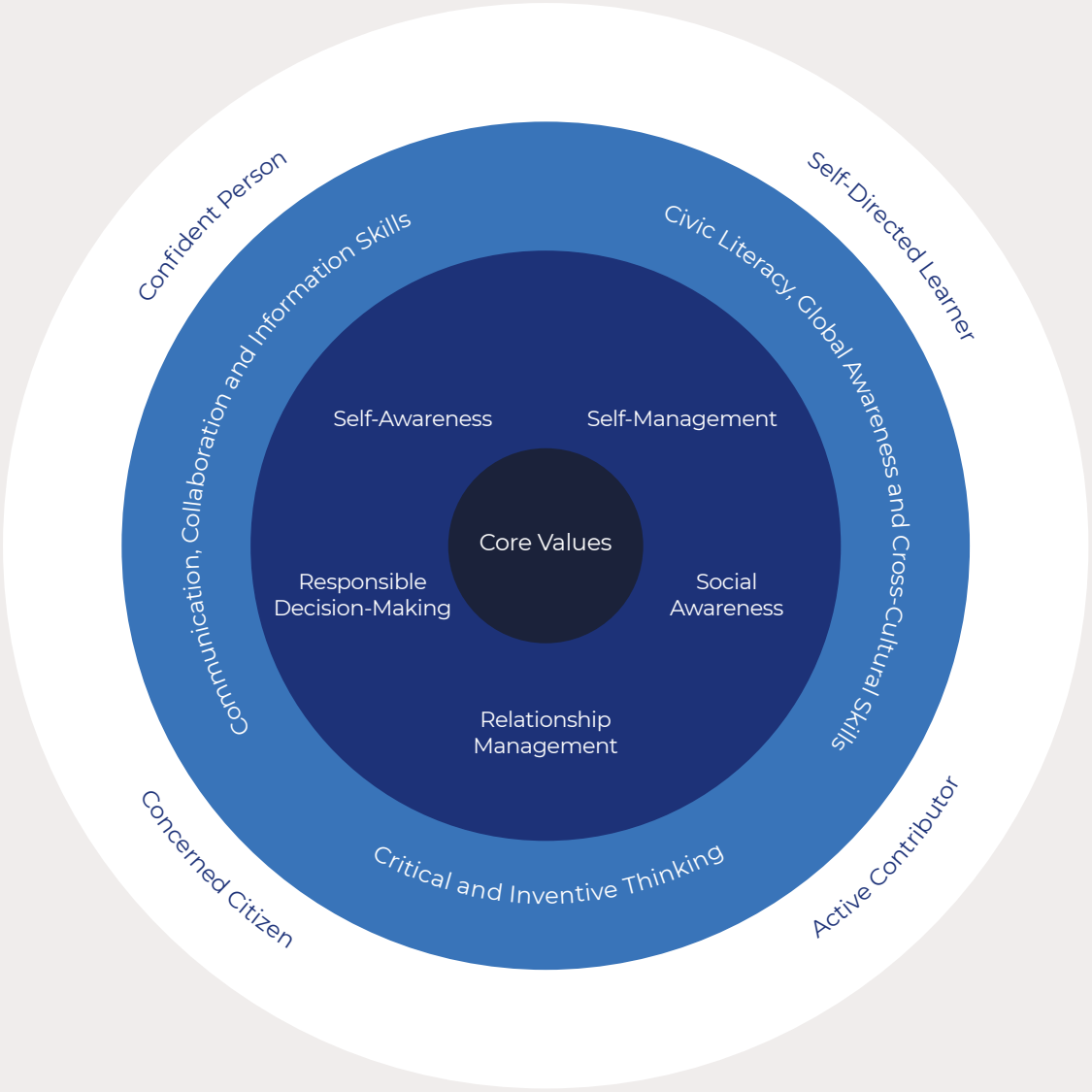
In this case study, we show in detail how Singapore approaches teaching in science and history for Years 7 and 8 (lower secondary) and pull out key themes on how critical thinking is taught.



3 K Tan, '**Is teach less, learn more a qualitative or quantitative idea?**', *Proceedings of the Redesigning pedagogy: culture, knowledge and understanding conference*, Singapore, May 2007.

4 Singapore Ministry of Education, '**21st Century Competencies**', Singapore Ministry of Education website, 2021, accessed 25 May 2022.

Figure 2: Singapore 21st Century Competencies Framework



‘Critical and Inventive Thinking’ in Singapore encompasses the following:

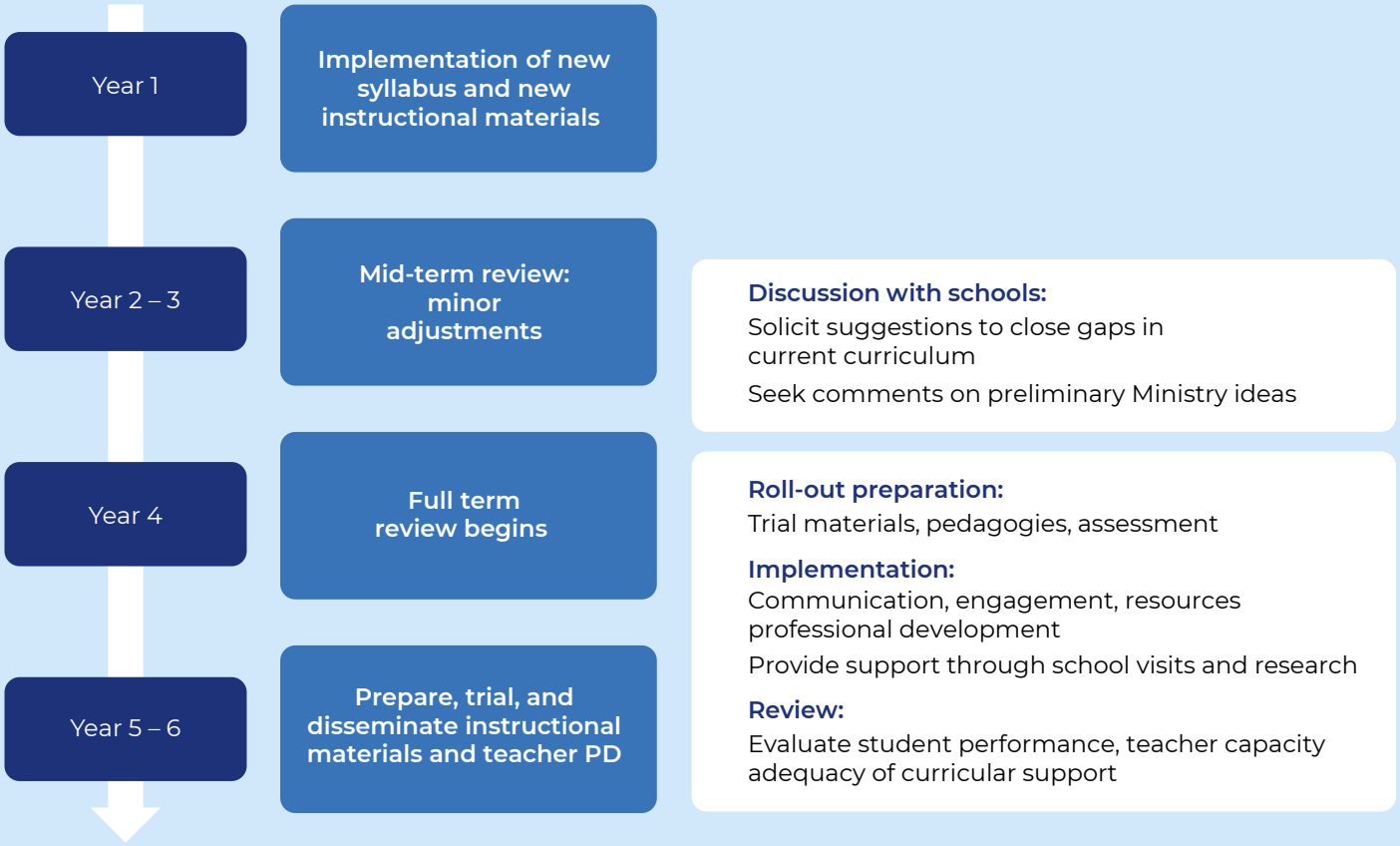
Critical thinking	Exercising sound reasoning in understanding – use varied types of reasoning as appropriate to the situation. Making judgements and decisions – analyse and evaluate evidence, points of view and beliefs; interpret information and draw conclusions; as well as reflect critically on experiences. Understanding the interconnections among systems – analyse how parts of a whole interact with each other to produce overall outcomes of a complex system.
Curiosity	The desire to know or explore novel elements in the environment by being tolerant of ambiguity and moving toward or asking questions of elements.
Risk Taking	The willingness to make mistakes and tackle challenging problems even without obvious solutions and when success is uncertain.
Acting on creative ideas	To make some specific and tangible difference in the domain in which the innovation occurs.
Managing complexities	Modify one’s thinking, attitude, or behaviour to manage complexities and to handle multiple goals, tasks, and inputs.

1.3 How Singapore designs curriculum

Singapore has a national curriculum created by the Ministry of Education that is represented as a collection of syllabuses for each subject area and year level. The curriculum is similar to NSW in that it contains high-level learning objectives for students but is not prescriptive about exactly how to teach to reach these objectives. A larger difference between Singapore and NSW is in the instructional materials that are aligned to the curriculum – Singapore creates or curates many of these centrally. For example, the Ministry puts out an annual list of approved textbooks for each syllabus. Schools and teachers mostly choose a textbook from this list (although they are not technically required to). The Ministry works closely with Master Teachers and the Academy of Singapore Teachers to design detailed instructional materials and professional development each time a syllabus is reviewed and renewed.

The syllabuses are reviewed in six-year cycles which are staggered – for example, the maths syllabus is reviewed on a different schedule than the science syllabus, and a different schedule than the English syllabus, etc. This ensures there is a deep focus on one area at a time. The first year is the initial year of implementation of the new syllabus, followed by minor adjustments in Years 2 and 3 (called the Mid-Term Review stage). Then in Year 4 of syllabus implementation, the full review commences. This review involves speaking to schools and teachers about possibilities to improve the syllabus. After changes to the syllabuses are determined, Years 5 and 6 are spent preparing for the new syllabus roll-out. This stage involves intensive work with schools and teachers to prototype and trial instructional materials and professional development supports to help implement the new syllabus. Members of the curriculum team at the Ministry visit schools regularly to observe the use of trial materials to make sure there is adequate support for teaching and assessment (see Figure 3).

Figure 3: Singapore's six-year curriculum review process



1.3.1 Approved textbook list

Each year, Singapore's Ministry of Education reviews textbooks to include on an approved textbook list. Although there are no official requirements for schools' choice of textbooks, in practice almost all schools use books from this list. Previously, the Curriculum Development Institute of Singapore (established in 1980) created all instructional materials, including textbooks, centrally. The Institute established a staged process for designing materials, trialling them, reviewing them, and implementing them with support and professional development – this eventually became the model for the six-year curriculum review cycle. The Institute was closed in 1996 as the Ministry decided to shift to create curriculum frameworks and syllabus centrally but allow commercial publishers to design textbooks aligned to the syllabus.

The Ministry believes that textbooks have a positive influence on teaching and learning and are the best form of support for teachers.

Table 1: Singapore textbook authorisation process

Stage	Detail
1	Invitation to publish
2	Briefing to publishers
3	Feedback on conceptual framework
4	Review panel
5	Provisional approval or rejection
6	Final approval
7	Listing of textbooks
Whole process takes about 12 months for each level submission	

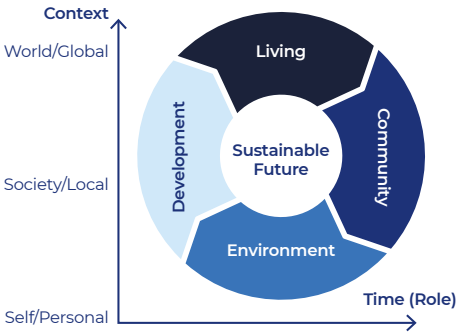
1.3.2 School-based curriculum development

Singapore education leaders often describe their system as 'centralised decentralisation'. This means that all schools are aligned on priorities and strategy, but each school designs the teaching and learning programs differently depending on their own goals and their students.

In line with the Teach Less Learn More policy, schools have been given more autonomy to develop innovations to the school-based curriculum. This is done, however, while keeping the same high standards across the system. One way that the system has tried to encourage productive innovation is to send curriculum managers from the Ministry to schools to help schools design innovative approaches. All curriculum managers now go to schools for at least three years before going back to the Ministry.

For example, Nanyang Girls School in 2017 designed a pilot program to encourage interdisciplinary learning in students. This initiative was led and supported by a curriculum manager. Instead of having a typical approach to teaching within-discipline each term, the school piloted a six-week period of interdisciplinary studies where students would design a project with the knowledge they had learned from multiple subject areas. This innovation was not thought up in a brainstorming session, based on teachers' previous experience or found via Google. It was based on academic research produced by the curriculum manager and shared with teachers.[5] This meant that the design of the new approach was very specifically built on evidence.

The curriculum manager led a teacher community of practice to design this pilot, and she visualised her goals as twofold: both student learning and teacher learning.

New Learning Plan Pilot	
Term 1 and beginning of Term 2 (15 weeks)	Disciplinary studies
End of Term 2 and beginning of Term 3 (6 weeks)	Interdisciplinary studies: focus on sustainability. Final week is assessment, which is a presentation. 
End of Term 3 and Term 4	Disciplinary studies

5 Research cited included: HL Erickson (ed.), *Concept-Based Curriculum and Instruction for the Thinking Classroom*, Corwin, Thousand Oaks CA, 2006; JS Renzulli & SM Reis, *The Schoolwide Enrichment Model: A How-To Guide for Educational Excellence Second Edition*, Creative Learning Press Inc, Mansfield CT, 1997; R Ritchhart, M Church, & K Morrison, *Making Thinking Visible: How to Promote Engagement, Understanding, and Independence for All Learners*, Jossey-Bass, San Francisco, 2011.

Figure 4: Model of how the different disciplines supported learning for the interdisciplinary project

From Integration to Synergistic

Disciplinary Studies (DS)				Interdisciplinary Studies (IDS)			Disciplinary Studies (DS)	
Evidence		Change		Communication	Model		System	
Sustainability		Patterns		Interdependence	Identity		Context	
Languages	Sciences	Mathematics	History	Geography	Interdisciplinary Studies	IH	Aesthetics	PE
Plot tension conflict voice expression	Power energy speed motion life	Identity rate magnitude equation graph	Perspective chronology significance diversity empathy	Energy motion scale development environment	Sec One – Sustainable Living Sec Two – Sustainable Community Sec Three – Sustainable Environment Sec Four – Sustainable Development	Relations order/ patterns system change place	Pattern harmony melody rhythm tempo	Power energy speed motion rhythm

1.3.3 Singapore Teaching Practice

> The Singapore Teaching Practice (STP) is a model that makes explicit how effective teaching and learning is achieved in Singapore schools. Anchored on the notion that teaching is a profession, the STP draws on Singapore educators' beliefs about how students learn and teachers teach.
>
> – The Academy of Singapore Teachers

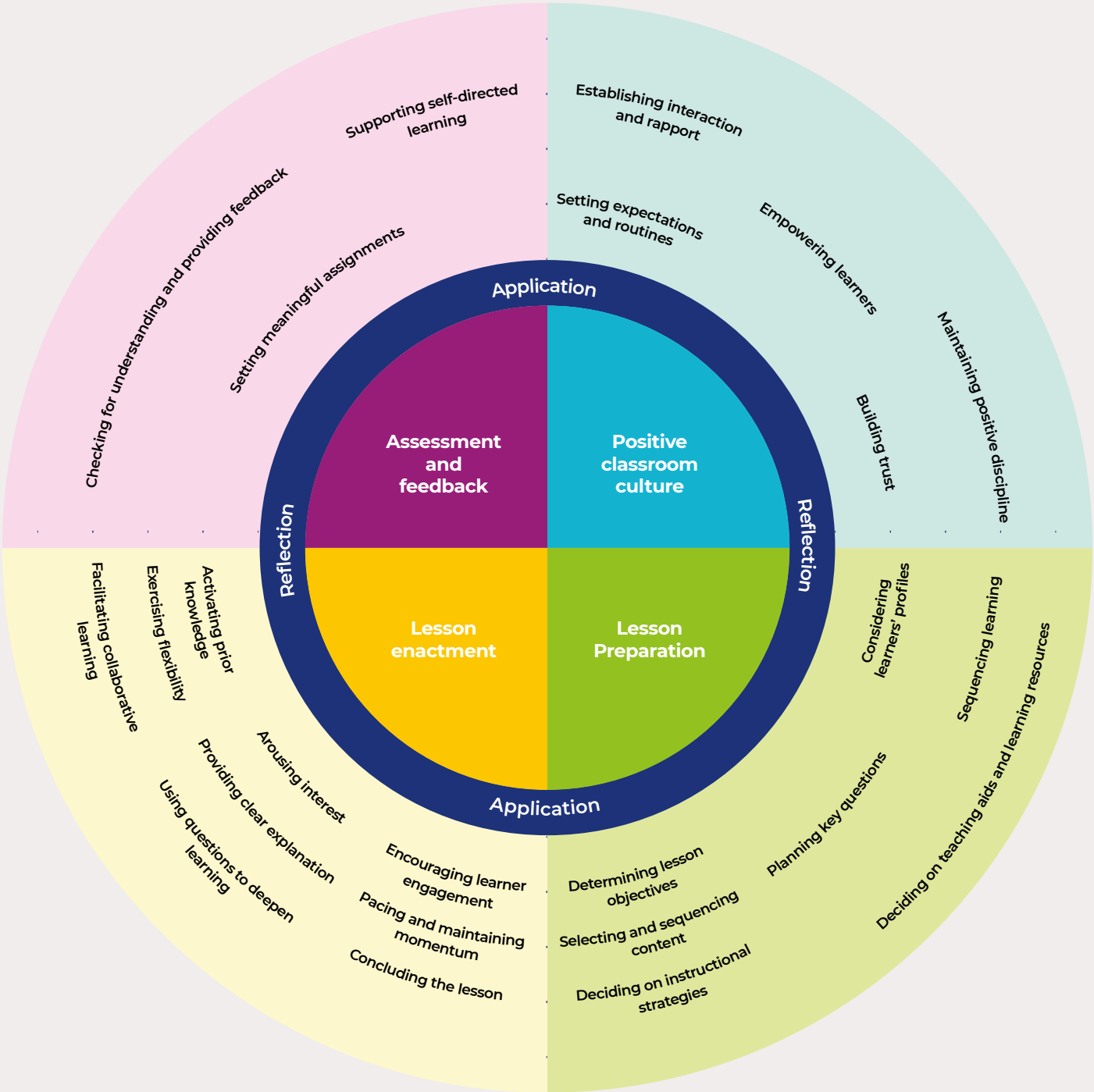
In 2017, Singapore launched an online platform to support teachers with resources and videos about key teaching practices. The platform is organised around four core teaching practices: assessment and feedback, positive classroom culture, lesson preparation, and lesson enactment. Underneath each of these four practices are key areas with associated examples, resources and videos of teacher practice. Some are explicitly related to the teaching of critical thinking.

For example, one practice modelled is called the 'KWL – What I Know, Want to Know and Have Learned'. This is a framework teachers use to help activate students' prior knowledge, allow teachers to do some efficient formative assessment (i.e. understanding which students have extensive prior knowledge of the topic and which have little), and get students to design their own questions about the topic early on in the lesson.[6]

This online platform, therefore, acts as another instructional resource for teachers in addition to textbooks and the curriculum.

6 See the example lesson here: Ministry of Education Singapore, 'STP: Teaching Action KWL', *Ministry of Education Singapore*, YouTube, 9 November 2017.

Figure 5: Four core teaching practices



1.4 Science

Singapore has the following relevant syllabuses in Science:

- Years 7–10 Normal/Technical track
- Years 7–8 Express/Normal/Academic track

All science syllabuses are built from the Science Curriculum Framework (see Figure 6) which is derived from the Policy Framework for the Teaching and Learning of Science.

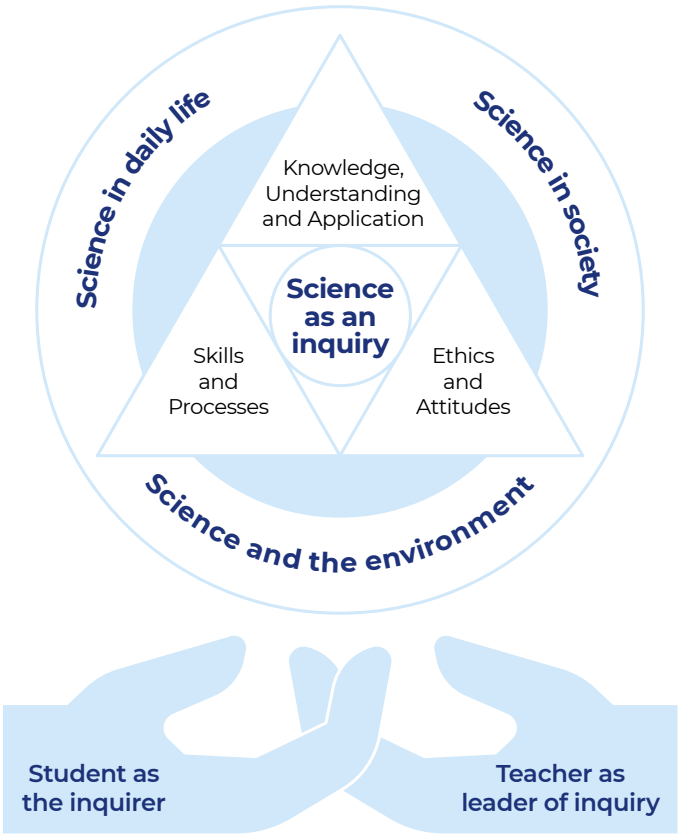
1.4.1 Critical thinking overview

The foundation of the Science Curriculum Framework is the 'spirit of scientific inquiry', which incorporates not just the skills (including critical thinking skills) necessary for inquiry, but also the knowledge, ethics and attitudes required. These three elements are treated as equal in the framework, all necessary for supporting the scientific inquiry.

Three domains of the Science Curriculum Framework:

- Knowledge, understanding, and application
- Skills and processes
- Ethics and attitudes

Figure 6: Singapore's Science Curriculum Framework



Many of the 'skills and processes' in the science syllabus are closely related to what NSW considers critical thinking skills. The verbs in many of the following bullet points would match what NSW syllabuses designate as critical thinking.

Table 2: Details of Singapore's Science Curriculum Framework

Knowledge, Understanding and Application of	Skills and Processes Most similar to NSW critical thinking skills	Ethics and Attitudes
• Scientific phenomena, facts, concepts and principles • Scientific vocabulary, terminology and conventions (including symbols, quantities and units) • Scientific instruments and apparatus including techniques of operation and aspects of safety • Scientific quantities and their determinations	**Skills:** • Posing questions • Formulating hypothesis • Defining the problem • Generating possibilities • Predicting • Observing • Using apparatus and equipment • Comparing • Classifying • Inferring • Analysing • Elaborating • Verifying • Communicating **Processes:** • Creative problem solving • Planning investigation • Decision-making	• Curiosity • Creativity • Objectivity • Integrity • Open-mindedness • Perseverance • Responsibility

Technical Track – Years 7-10

The Technical Track Science syllabus breaks up the 'skills and processes' from Singapore's Science Curriculum Framework (outlined above in Table 2: Details of Singapore's Science Curriculum Framework) into three categories:

Table 3: Skills and processes

Each skill and process is succinctly defined.

Skills and Processes	Engaging with an event, phenomenon or problem through:	Collecting and presenting evidence through:	Making meaning of information and evidence through:
Skills	• Posing questions • Formulating hypothesis • Defining the problem • Generating possibilities • Predicting	• Observing • Using apparatus and equipment	• Comparing • Classifying • Inferring • Analysing • Elaborating • Verifying
	Communicating		
Processes	Creative problem-solving, planning investigation and decision-making		
Essential Features of Inquiry	Question	Evidence	Explain Connect
	Communication		

Table 4: Definitions – Skills and processes

Skills	
Engaging with an event, phenomenon or problem through:	
Posing questions	This is the skill involving the clarification of issues and meaning through inquiry. Good questions focus attention on important information and are designed to generate new information.
Formulating hypothesis	This is the skill of making a general explanation for a related set of observations or events. It is an extension of inferring.
Defining the problem	This is the skill where one makes conscious effort to clarify situations that are puzzling in some way. The extent, scope and nature of the problem are identified and clarified.
Generating possibilities	This is the skill of exploring all the alternatives, possibilities and choices beyond the obvious or preferred one.
Predicting	This is the skill of assessing the likelihood of an outcome based on prior knowledge of how things usually turn out.
Collecting and presenting evidence through:	
Observing	This is the skill of using our senses to gather qualitative as well as quantitative information about a particular object, event or phenomenon. This also includes the use of instruments to extend the range of our senses.
Using apparatus and equipment	This is the skill of knowing the functions and limitations of various equipment and apparatus and being able to select and handle them appropriately for various tasks.
Making meaning of information and evidence through:	
Comparing	This is the skill of identifying the similarities and differences between or among objects or entities.
Classifying	This is the skill of grouping objects or events according to common attributes or properties.
Inferring	This is the skill of interpreting and explaining observations, data or information gathered.
Analysing	This is the skill of clarifying information by examining parts and relationships contained in the information.
Elaborating	This is the skill of providing details, examples and other relevant information so as to make one's ideas more comprehensible to others.
Verifying	This is the skill of confirming or proving the truth of an idea, using specific standards or criteria of evaluation.
Communicating	
Communicating	This is the skill of transmitting and receiving information presented in various forms – verbal, tabular, graphical or pictorial.
Processes	
Processes are complex operations which call upon the use of several skills.	
Creative problem solving	This is the process of thinking through a problem and choosing an innovative solution that meets the requirements. This thinking process is used whenever one faces obstacles and wishes to overcome them so as to arrive at a practical and workable solution.
Planning Investigation	This process involves formulating questions or hypotheses for investigating and devising ways to find answers. It also involves deciding on the type of equipment required, and measurements to be made, as well as identifying the variables involved and manipulating the variables so that the effect of only one variable can be observed in any one experiment.
Decision-making	Decision-making is the process of establishing and applying criteria to select from among seemingly equal alternatives. The process of establishing criteria involves consideration of the consequences and values and the ability to defend the reasons for the decision. It must be pointed out that there is also no one definite sequence of priority among the skills and processes listed above. For example, observation may lead to hypothesising but at other times a hypothesis can lead to observation. All the skills and processes listed above are seen as part of the total process of scientific inquiry. In science teaching and learning, effort should initially be directed at teaching explicitly each of the skills through the use of appropriate activities. Later, effort should be directed to helping students integrate some or all of the skills in scientific inquiry.

The above represents the syllabus framework, and the rest of the syllabus details the specific learning objectives of different modules and topics. There are three modules for lower secondary and three for upper secondary, each with 3–5 topics. Each topic is detailed in the syllabus, with a Topic Description and Learning Outcomes. There are three categories of Learning Outcomes which follow the Science Curriculum Framework: Knowledge with understanding and applications, skills and processes, and ethics and attitudes. In Senior Secondary, Knowledge and Skills/Processes are combined into one column. This means that teachers may not be able to separate what is a knowledge objective versus a skill objective – and even when these are in separate columns, there may be some overlap.

Some Skills and Processes are linked to critical thinking (even though this link is not explicit). Others are more tangible skills, like "use voltmeter / ammeter for electrical measurements". Like knowledge, these types of skills may be important foundations for students to learn prior to – or in the process of – developing critical thinking skills.

Some examples of critical thinking skills include:

- Investigating electricity: investigate and classify a variety of materials as insulators or conductors
- Discovering energy: compare the differences between renewable sources of energy (solar, wind, biomass, hydro) and non-renewable sources of energy (coal, oil and natural gas), and their limitations
- Exploring forces: infer the effects of forces such as: (1) change in the state of rest or motion of a body (2) change in size and /or shape of a body

Table 5: Curriculum structure

Knowledge, skills and attitudes that all students should acquire	80% of curriculum time
Compulsory inquiry-based activities to ensure students acquire scientific inquiry skills	
White space	20% of curriculum time

The total time devoted to science class time is 5-6 periods per week (35-40 minute periods). This means Singapore students spend slightly more time learning science than students in NSW. Singapore students will spend about 115 hours per year in science whereas NSW students will spend about 100 hours per year.[7]

Scientific inquiry

In addition to the details of each Module/Topic and their respective learning objectives, the syllabus also contains a succinct description of inquiry. Inquiry-based activities are required (as per the syllabus), but there is not one single view of what inquiry should look like. Instead, the syllabus shows that the three Essential Features of Inquiry (Question, Evidence, Explain/Connect) each can be taught more with a student-directed inquiry or teacher-guided inquiry, depending on the specific learning objective. For example, teachers may guide inquiry where they give data to students to analyse, but when students are more competent in the subject area, students themselves can determine what evidence to collect for analysis. The syllabus is clear that "Students will best benefit from experiences that vary between these two inquiry approaches."

Inquiry is highly related to the teaching of critical thinking skills because students can use a foundation of knowledge to consider key scientific questions more autonomously over time. The way Singapore has outlined how to teach inquiry shows that students can start by being explicitly taught skills (like analysing different sources of energy) but then be given more and more responsibility to develop their own inquiry questions and structure their investigations and analysis with less and less guidance from the teacher.

Contextualised learning and scientific literacy

Lastly, the Singapore science syllabus emphasises making learning real and meaningful. This means connecting learning objectives to specific prior knowledge or experiences in students' lives. This may relate to the teaching of critical thinking because it may encourage students to see connections between scientific theory and real-world events/phenomena. If teachers present many examples of a science concept in real life, this may help students with being able to apply the concept to novel situations when they leave the classroom.

7 These numbers are approximate and will differ between schools and year levels.

Table 1: Overview of syllabus content

Lower Secondary			
Module	Gadgets Work Wonders (I)	Matter Around Us	Wonders of My Body (I)
Topics	• Exploring Forces • Discovering Energy • Investigating Heat • Investigating Electricity	• Properties of Matter • Water, Solutions and Suspensions • Water pollution • Air pollution	• Cells: Basic Units of Life • Getting Energy and Nutrients from Food • Human Reproduction • Taking Good Care of My Body
	1 Key Inquiry Activity	1 Key Inquiry Activity	1 Key Inquiry Activity
Upper Secondary			
Module	Gadgets Work Wonders (II)	Food Matters	Wonders of My Body (II)
Topics	• Energy and its Uses • Energy transfer through Waves • Effects of Forces • Electricity • Sources of Electricity	• Sources of Food • Food Chemistry • Food Health and Safety	• Digestion • Breathing • Fitness and Cardiac Health • Staying Healthy
	2 Key Inquiry Activities	2 Key Inquiry Activities	2 Key Inquiry Activities

1.5 History

There is one relevant syllabus for history teaching in Singapore: the History Lower Secondary Syllabus which covers Years 7 and 8. The syllabus begins with describing the value of learning history and the philosophy of history education. There are seven Qualities of a History Learner which frame the educational aims of the syllabus. These qualities stay the same from the start of secondary school until pre-university.

1.5.1 Knowledge, skills and values

The syllabus also describes the overarching Learning Outcomes which are categorised into three groups: 1) Knowledge and Understanding, 2) Skills and 3) Values and Attitudes. Many of the skills overlap with what NSW might consider critical thinking. Additionally, a few of the values may also be related to critical thinking, for example, the value of "modify and adapt thinking according to multiple sources of information, perspectives and different circumstances, underpinned by sound moral values."

Figure 7: Qualities of a History Learner

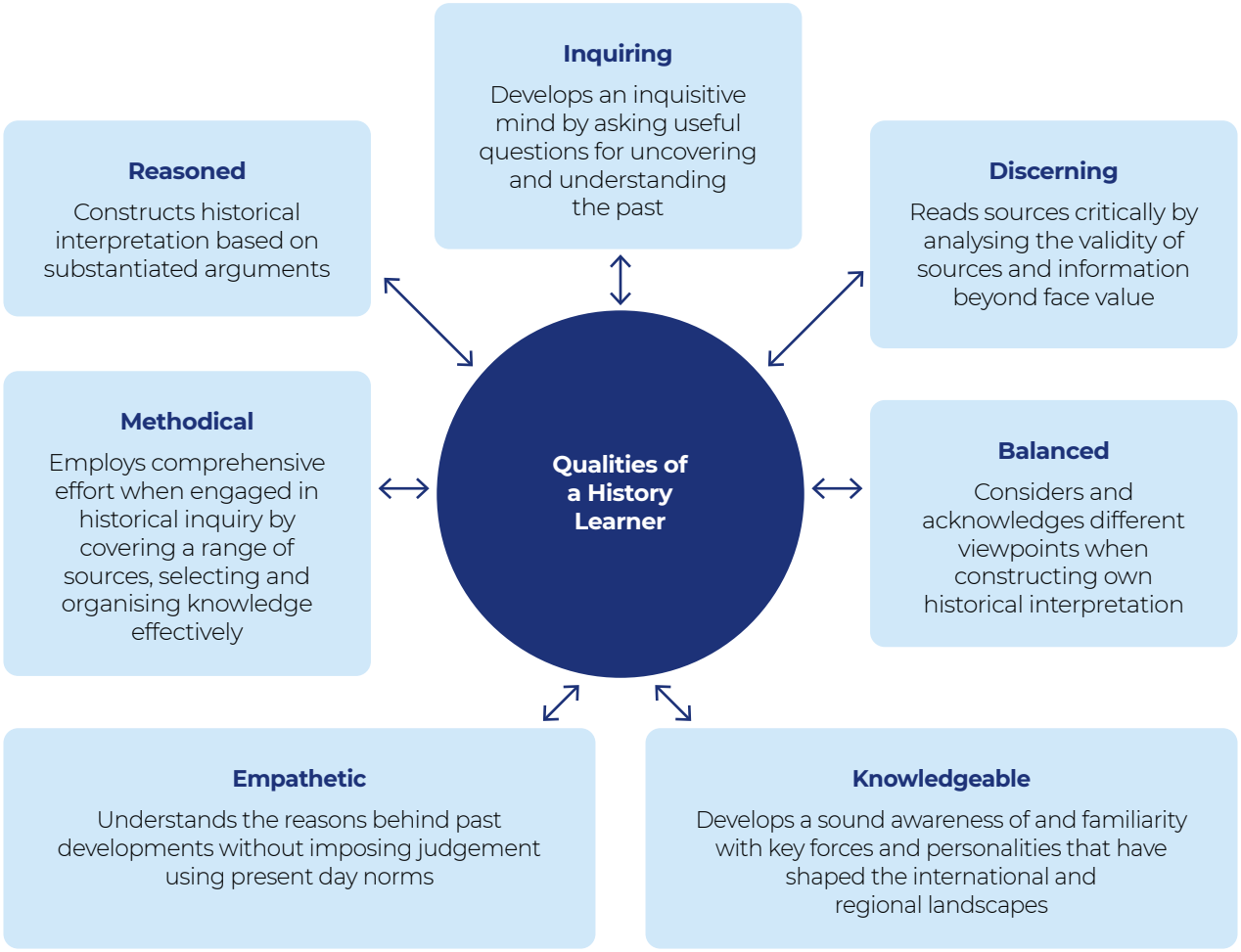


Table 6: Knowledge and understanding learning outcomes

Knowledge and Understanding	
1	History as a construct – history is constructed from evidence and there are different interpretations of historical events
2	The key characteristics of the periods studied – these include the social, economic, cultural and political contexts of the societies studied and the experiences of the peoples who lived in those societies at those points in time
3	The connections between individuals, societies, events and developments studied and those in the present day
4	Key individuals, groups, forces, events and ideas that shaped the development of the political, social and cultural contexts of the societies studied
5	The process of change by showing change and/or development within and across the periods of study

Table 7: Key skills which are history learning outcomes

Skills	
1	Asking questions about the events, issues, forces or developments
2	Comparing different aspects of the periods, events and issues studied to establish change and continuity
3	Examining the causes and consequences of historical events and situations
4	Establishing the historical significance of an event on society
5	Interpreting and acquiring information and evidence derived from various sources of information from a variety of media, to support an inquiry
6	Identifying points of view in history
7	Organising and communicating historical knowledge and understanding in a coherent way

Table 8: Values and attitudes as learning outcomes

Values and Attitudes	
1	Show sensitivity to how people's views and perspectives shape their interpretation of events, issues or developments in any specific time and space
2	Are aware of how cultural, intellectual and emotional contexts shape the thinking, value systems, decisions and actions of different peoples and groups in different times and places
3	Show openness to and respect for diverse, and sometimes opposing, viewpoints
4	Tolerate ambiguity and are able to pose relevant questions to conduct further investigation independently
5	Modify and adapt their thinking according to multiple sources of information, perspectives and different circumstances, underpinned by sound moral values
6	Recognise, question and refine the value system which provides a moral compass in governing their actions as citizens
7	Empathise with people from different social, cultural, economic and political backgrounds
8	Identify and embrace connections between themselves and the larger community (past and present) and realise that their actions impact others thus promoting commitment to improving the world

1.5.2 Developing historical understanding through inquiry

The History syllabus focuses on a central pedagogy: historical inquiry. The idea behind the framework for inquiry is that it gets students to 'do history'. The framework is a cycle that begins with guided questioning, followed by locating and analysing historical sources. The historical evidence is then used to answer the guiding questions. This historical inquiry framework is based on the work of the Historical Inquiry Project at Virginia Tech University in the US.

The syllabus is organised into units, and each unit uses an inquiry question to provide a focal point for students to investigate, extract, order, collate, and analyse information in response to issues explored in the syllabus.

Each unit in the syllabus includes a Historical Investigation, which is a form of historical inquiry. Students will work in groups to investigate a historical issue with the goal of developing historical knowledge and skills as well as 21st Century Competencies. The syllabus is clear that since lower secondary students are new to the study of history, they will follow a guided inquiry approach where the teacher provides more support.

1.5.3 Detail in each unit

The syllabus is organised into four units. Each unit is structured around an inquiry question and includes a suggested question for a Historical Investigation. Each of the main inquiry questions organising the units has sub-questions that organise the different knowledge, skills and topics.

Figure 8: Cycle of Historical Inquiry

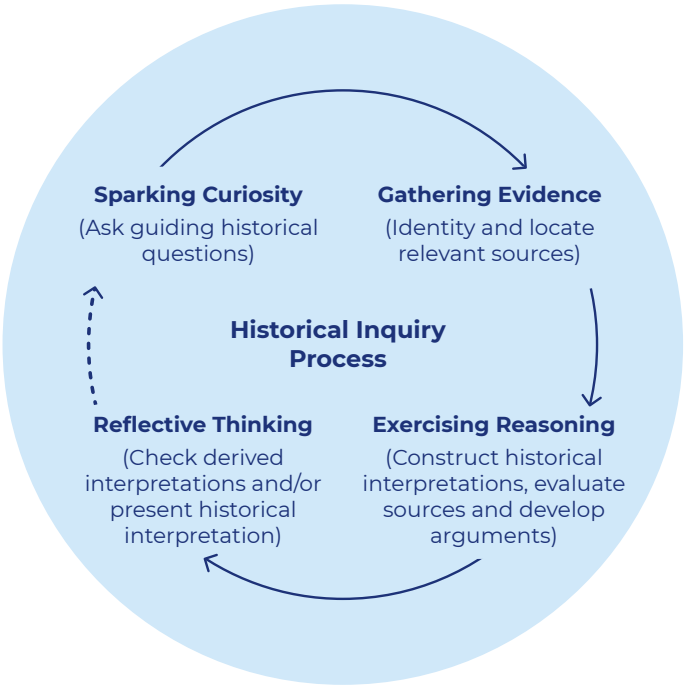


Table 9: Overview of content and historical investigations in lower secondary history syllabuses

Unit	Inquiry Question	Historical Investigation
Unit 1: Tracing Singapore's Origins	**How old is Singapore?**	**What was Singapore like before 1819?**
Details	**How is knowledge of Singapore's early past constructed?** • Role of History and historians in uncovering the past • How is knowledge of the past constructed? **What can historical evidence tell us about Singapore's connections with the world up to the 19th century?** • Overview of the earliest contact and connections with other countries in the world (from the 1st to 16th century) • Singapore's connections with the world from the 14th to 19th centuries • Singapore's relations with the world from the 15th to 18th centuries Singapore's founding as a British Trading Settlement (early 19th century)	
Unit 2: Life in Colonial Singapore	**Was it the same for everyone?**	**Why were pastimes a part of people's lives in colonial Singapore before World War Two?**
Details	**Why did people come to colonial Singapore before World War Two?** • Who were the people that came to Singapore in the 19th and early 20th Centuries? • Mass migration in the 19th century – why did it happen? • Reasons for coming to Singapore **How was life different for the various people in colonial Singapore before World War Two?** • Living conditions • Employment • Leisure and entertainment • Community ties	
Unit 3: Towards Independence	**Was Singapore an 'accidental' nation?**	**Did the Japanese Occupation bring about changes in the lives of teenagers?**
Details	**Did the Japanese Occupation change the way people viewed Singapore?** • People's views towards Singapore in the first half of the 20th century • People's experiences during the Japanese Occupation and post-war British rule • Impact of the Japanese Occupation and post-war British rule on people's views towards Singapore **What were people's aspirations for Singapore after 1945?** • Overview of the political developments in Singapore (1945–1959) • Search for independence	
Unit 4: Singapore's First Decade (1965–1975)	**How did life change?**	**What should be remembered about Singapore in the 1960s and the 1970s?**
Details	**What did independence mean for Singapore?** • Singapore is out of Malaysia! **How far were people's lives transformed after independence?** • Embracing being Singaporean • Singapore's economic transformation: from trading port to diversified economy • Change in standard of living: from shophouses, squatters and kampongs to HDB flats	

Each unit is described in greater detail in the syllabus with Key Knowledge, Learning Outcomes (knowledge, skills, values, and attitudes), and Concepts (a list of ideas like 'Living Conditions' or 'Diversity').

1.5.4 Assessment

> Both Assessment for and of Learning aim to facilitate meaningful learning in History, where the learning process is developmentally appropriate and caters to students' varied needs and helps them acquire 21st Century Competencies.

The History syllabus gives advice on Assessment for Learning (Formative Assessment) and Assessment of Learning (Summative Assessment). There are three stated assessment objectives:

1. Deploy knowledge
2. Communicate historical knowledge and construct descriptions and explanations
3. Interpret and evaluate source materials.

There is also specific guidance for assessment objectives for the Historical Investigations.

Table 10: Assessment objectives

Objective	Detail
Objective 1: Deploying Knowledge	Students should be able to: • recall, select, organise and use their knowledge and understanding of history in context. • demonstrate knowledge of the historical inquiry process (formulating questions, gathering evidence, exercising reasoning and reflective thinking).
Objective 2: Communicating Historical Knowledge and Constructing Descriptions/ Explanations	Students should be able to demonstrate: • their understanding of the past by identifying, describing and explaining: – key concepts: causation, consequence, continuity, change and significance within a historical context – key features and characteristics of the periods studied and the relationship between them – their ability to evaluate causation and historical significance to arrive at a reasoned conclusion
Objective 3: Interpreting and Evaluating Source Materials	In using source materials, students should be able to understand, examine and evaluate: • a range of source materials as part of an historical inquiry • how aspects of the past have been interpreted and represented in different ways as part of an historical inquiry by: – comprehending and extracting relevant information – drawing inferences from given information – comparing and contrasting different views.
Historical Investigation	Using the knowledge and skills developed in Objectives 1, 2 and 3, students should be able to apply a combination of these specific historical skills and knowledge to inquire into and solve authentic historical issues. Students should be able to demonstrate: • the processes and strategies that are used to inquire and solve the authentic historical issue: – find information from multiple sources – examine evidences to interpret the points of view expressed in the sources – combine evidence and ideas from several sources to support their conclusion and solve the issue – communicate findings and ideas using an appropriate format.

Assessment modes

The syllabus ends with details of assessment modes that teachers may use in their classrooms. The syllabus encourages teachers to use multiple modes of assessment to ensure students are demonstrating a variety of assessment objectives. This detail is meant to support teachers with clear examples of how they might approach assessment, but it is also very concise – only 1.5 pages of information.

There are four modes of assessment: 1) chapter task, 2) source-based question, 3) structured question, and 4) historical investigation. Within each mode, there is a lot of variety in the examples given. Some assessment modes are more collaborative with active or authentic tasks, and other assessments are more traditional. But each mode has the ability to assess both facts and recall as well as higher order skills like analysis and application. In listing these modes, Singapore is showing teachers that there is not one mode that is 'best' but that all modes must be used to fully understand student learning.

Table 11: Assessment modes for history

Assessment Mode	Purpose	Examples
Chapter Task	Requires students to apply their understanding through an authentic activity that will assess their application of the knowledge and skills learnt.	• A short write-up for the school's blog on Singapore's connections with a selected country that Singapore had relations with between the 14th to 19th century • An information sheet about the different groups of people in Singapore for a group of exchange students • A webpage on changes in people's views towards Singapore before and after the Japanese Occupation • A photo-montage summarising Singapore's transformation from the 1950 to 1970s
Source-Based Question	Consists of separate sub-questions that require students to demonstrate the ways in which evidence in the sources can be analysed, evaluated or interpreted in response to an inquiry of a historical event or issue.	• Inference questions • Compare and contrast questions • Check for reliability questions
Structured Question	Consists of related sub-questions that assess a historical event or issue. Requires students to demonstrate their ability to recall and identify causal factors, select and give accounts of events or situations, select and apply knowledge, and provide explanations	• Questions on identifying factors • Questions on describing factors • Questions on constructing explanations
Historical Investigation	Requires students to participate collaboratively in an inquiry or investigate an authentic historical issue. This will involve, planning, gathering, examining sources, consolidating and communicating the findings.	• Individual contribution • Group contribution • Group end-product

2 Case Study: Hong Kong

Key resources:

- Hong Kong curriculum documents
- Hong Kong secondary science education
- Hong Kong Moral and Civic Education curriculum guide
- Learning to Learn report
- Hong Kong factsheet

Hong Kong is a high performing system internationally. In the 2015 PISA results, where science was the focus, Hong Kong was in the top ten high performing systems. The PISA results that year also measured an "index of enjoyment of learning science" – Hong Kong performed above average and above Australia on this index. Hong Kong has 1,164 schools and just over 700,000 students.[8] Despite existing in one city, it is quite a diverse education system in terms of student demographics. 38 per cent of students are first- or second-generation immigrants, compared to 28 per cent in Australia. 42 per cent of Hong Kong students are socioeconomically disadvantaged, compared to 27 per cent in Australia.[9]

One of the most interesting aspects of the Hong Kong education system is that it is very good at closing the gap between high and low SES students. On the 2015 PISA, for example, only 5 per cent of the variation in science performance was explained by students' socio-economic status. In contrast, in Australia, this was 12 per cent. On PISA, a student is classified as resilient if he or she is in the bottom quarter of SES and performs in the top quarter of students. Hong Kong had 62 per cent resilient students, compared to Australia at 33 per cent.

Hong Kong is a special administrative region of China and maintains an independent system of education from the Chinese education system. The Education Bureau (EDB) sets the framework for school curriculum development. The framework is comprehensive, comprising detailed guides for each subject area for both primary and secondary school, as well as seminars and workshops for teachers and administrators to prepare them to teach the curriculum. Schools are responsible for formulating the day-to-day lesson plans, keeping these guidelines and end goals in mind.[10]

8 Education Bureau of the Government of the Hong Kong Special Administrative Region, Figures and Statistics, 2018.

9 OECD, Programme for International Student Assessment (PISA).

10 NCEE, Hong Kong Overview, n.d.

Figure 9: Hong Kong governance structure

Key government responsibilities

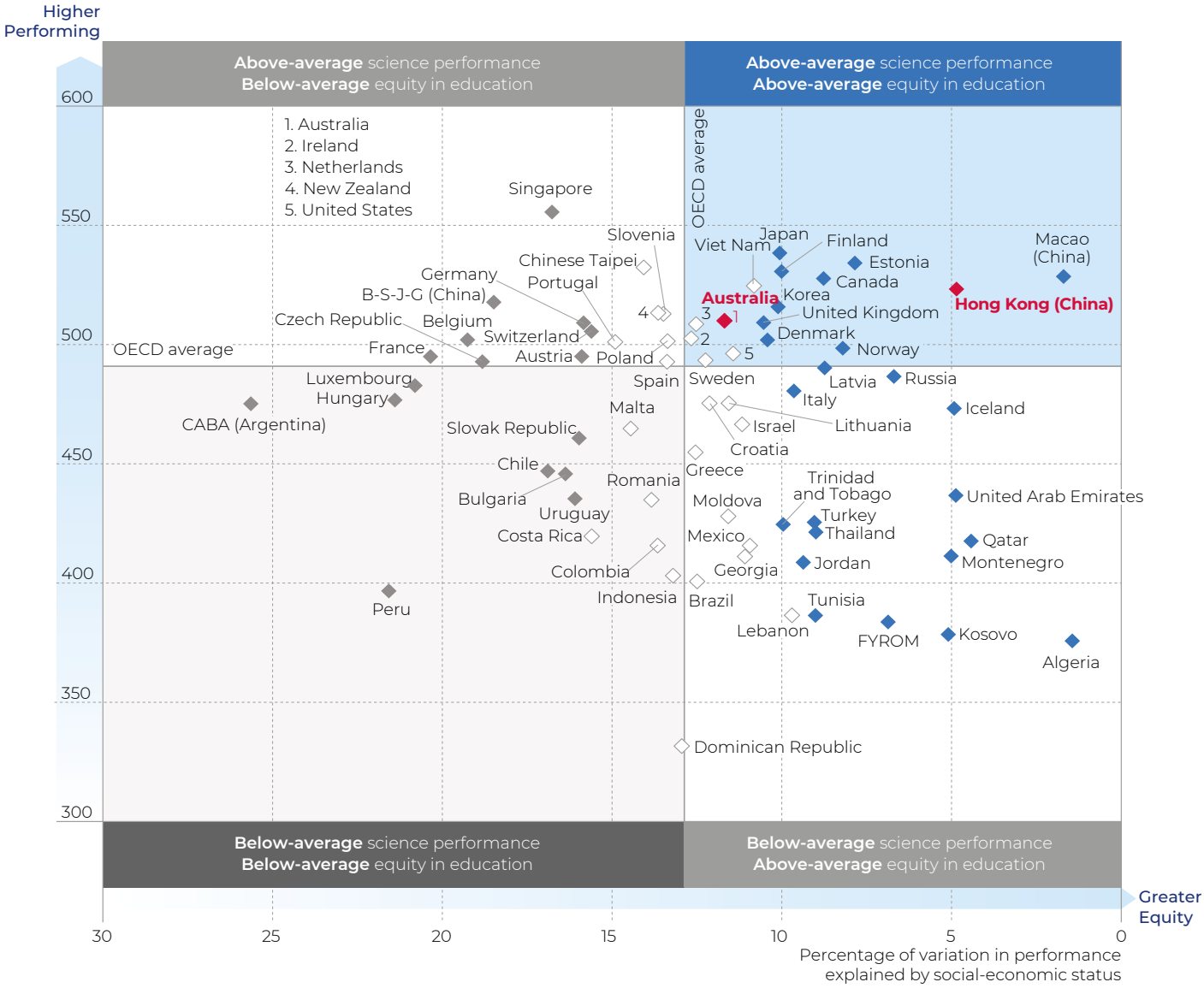
Formulating, overseeing and reviewing all education policies, programs and legislation

- Curriculum design
- Funding allocation
- Setting standards

Education Bureau Support services

- School administration
- Curriculum development
- Teaching and learning
- Student guidance
- Psychological services

Figure 10: PISA 2015 Science – System Performance and Equity



- Strength of the relationship between performance and socio-economic status is above the OECD average
- Strength of the relationship between performance and socio-economic status is not statistically different from the OECD average
- Strength of the relationship between performance and socio-economic status is below the OECD average

2.1 Learning to Learn – 2001

> A quality curriculum for the 21st Century should therefore set the directions for learning and teaching through a coherent and flexible framework which can be adapted to changes and the different needs of students and schools.
>
> – Learning to Learn Report

The Hong Kong Curriculum Development Council conducted a review of the curriculum at the beginning of the century and issued a 2001 report called Learning to Learn. Learning to Learn detailed a range of curriculum, assessment and pedagogy improvements designed to help students develop 21st century skills such as critical thinking, problem solving, communication and creativity. There were eight guiding principles for the development of a new curriculum, including using a learner-focused approach, flexibility for schools to design school-based curricula aligned to the central framework, and focus on offering all students essential learning experiences for the purposes of equity.[11]

Four key tasks were identified to promote effective learning and teaching:

1. Moral and civic education to help students establish their values and attitudes
2. Reading to learn broadly with appropriate strategies to learn more effectively
3. Project learning to develop generic skills and build knowledge (most related to the teaching of critical thinking)
4. Using information technology for interactive learning

Learning to Learn also identified three priority 'generic skills':

- Critical thinking
- Creativity
- Communication skills

A new national curriculum was developed by the Curriculum Development Institute and implemented by the Education Bureau in 2002. This new curriculum included guides for each KLA and additional guidance on learning, teaching and assessment, as well as measures and resources to support schools and teachers.

School based curriculum development

In *Learning to Learn*, there was a new emphasis on giving more flexibility to schools to adapt instruction to student needs. However, the report is clear that this does not mean that teachers will make their own teaching programs from scratch:

> The development of a school-based curriculum does ***not*** mean that all learning and teaching materials are developed by the schools and teachers themselves. The essence of a school-based curriculum is to work out a holistic and coherent curriculum and learning plan to suit the needs of students, according to the broad goals of the school curriculum. Schools may incorporate flexible use of time, space, different learning environments and resources available within and outside school. They may make use of textbooks, teaching packages and exemplars provided by ED and other sources as well as authentic learning materials (e.g. newspapers) in designing their school-based curricula.[12]

Effective textbook use

Learning to Learn encourages the selection of high-quality textbooks and other teaching resources. The report states that quality textbooks can help students develop the generic skills and capacity for life-long learning.

2.2 Curriculum Development Council

The Curriculum Development Council is an advisory body that gives recommendations to the Hong Kong Government on all matters relating to curriculum development for the school system. Its membership includes heads of schools, practising teachers, parents, employers, academics from tertiary institutions, professionals from related fields or related bodies, representatives from the Hong Kong Examinations and Assessment Authority and the Vocational Training Council, as well as officers from the Education Bureau.

The Curriculum Development Council prepares the curriculum guides for each domain. Schools are encouraged to consider sufficiently their contexts, strengths and needs of students in adopting the recommendations of this Curriculum Guide.

11 Curriculum Development Council, Learning to Learn – Summary, Education Bureau of the Government of the Hong Kong Special Administrative Region, 2001.

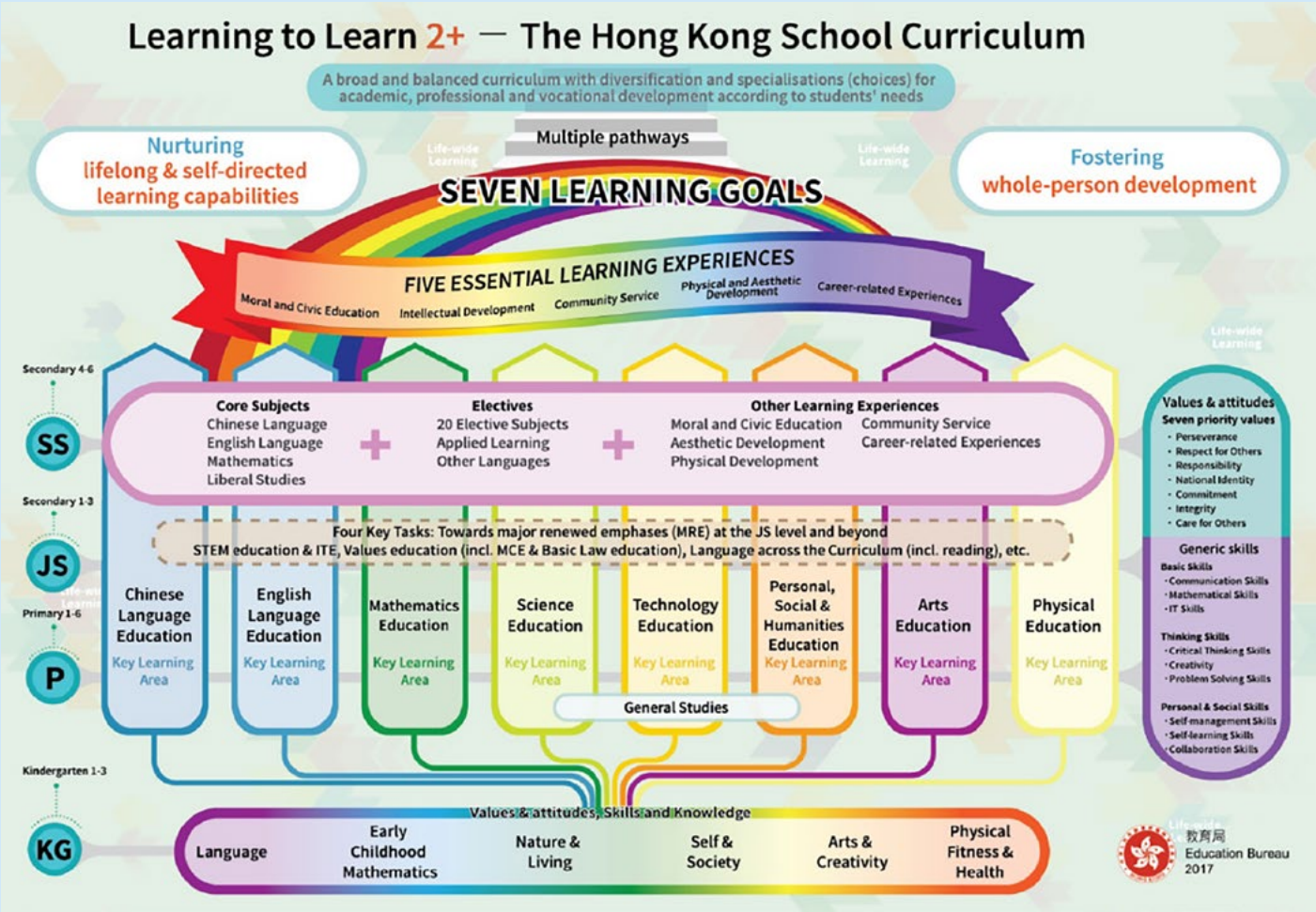
12 Curriculum Development Council, Learning to Learn – Summary.

2.2.1 Curriculum Framework

Alongside the key learning areas sit a range of skills, goals, values and learning experiences that form the Hong Kong Curriculum Framework Figure 11: Hong Kong school curriculum framework. A key feature of the curriculum is its focus on fostering whole-person development and lifelong learning capabilities. Critical thinking, creativity and problem solving are included in the generic skills the EDB expects students to develop throughout their schooling. One of the main objectives of the Hong Kong Curriculum is to "... provide a balanced and diverse school education that meets the different needs of our students, and helps them build up knowledge, values and skills for further studies and personal growth."[13] Emphasis is placed on the four key tasks (including information technology for interactive learning, reading, moral and civic education and project learning) to develop students' generic skills and self-directed learning capabilities.

Figure 11: Hong Kong school curriculum framework

Source: Hong Kong Education Bureau



13 Education Bureau of the Hong Kong Special Administrative Region, Overview on Secondary Education, 2018, accessed 27 April 2020.

2.2.2 Recommended textbook lists

The curriculum includes a recommended textbook list which is written in line with the curriculum documents issued by the Curriculum Development Council. Schools may choose textbooks that are not on the recommended list and they are also encouraged to use authentic materials as supplementary to textbooks.

Although Hong Kong believes textbooks are critical teaching resources, most of the curriculum guides explain that textbooks are not the only resource a teacher should use. For example, the History Curriculum Guide is clear that teachers need to use authentic historical sources in addition to textbooks.

In addition to a list of recommended textbooks, Hong Kong's Curriculum Development Institute offers Guiding Principles for Quality Textbooks. The Guiding Principles cover the following areas:

- Content
- Learning and teaching
- Structure and organisation
- Language
- Textbook layout (for printed textbooks only)
- Pedagogical use of e-features (for e-textbooks only)
- Technical and functional requirements (for e-textbooks only)

2.3 Science

The science curriculum adopts a thematic approach to provide broad and balanced learning experiences and extend students' science learning.

The curriculum is designed to develop:

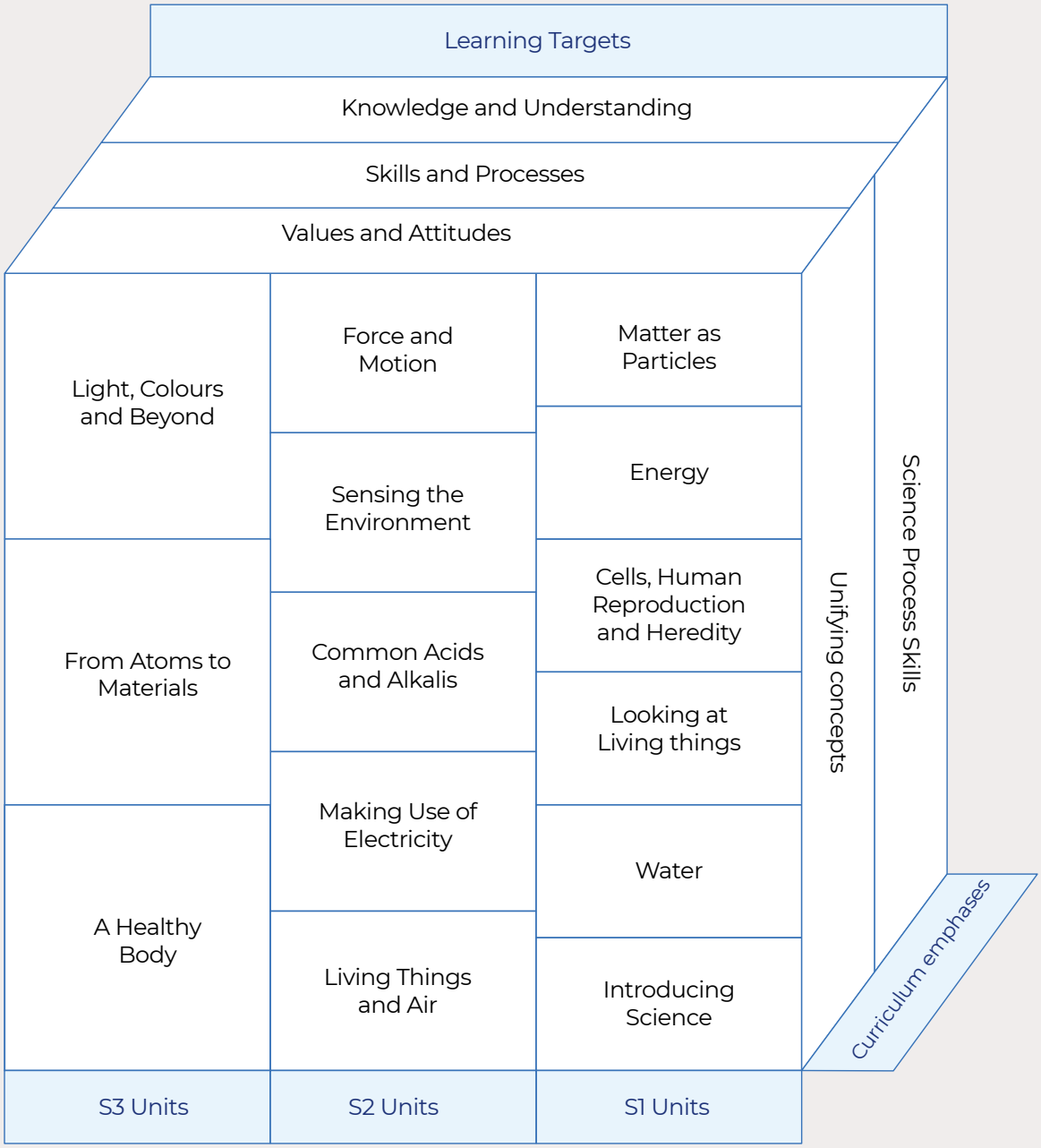
- scientific literacy
- science process skills
- awareness of the impact of science and interaction with mathematics, technology and engineering

The curriculum framework for lower secondary school, called Secondary 1 – 3, (similar to Stages 4 and 5 in NSW) comprises three interconnected components: Learning Targets, Curriculum Emphases, and the Units for the curriculum (see Figure 12: Curriculum framework for Science KLA in Hong Kong). In addition to building knowledge and understanding of science content, the curriculum also focuses on the social, ethical, economic, environmental and technological implications of science. The framework also aims to develop an "attitude of responsible citizenship" in students and a commitment to promote personal and community health.[14]

14 Curriculum Development Council, Supplement to the Science Education Key Learning Area Curriculum Guide, Education Bureau of the Government of the Hong Kong Special Administrative Region, 2017.

Figure 12: Curriculum framework for Science KLA in Hong Kong

Source: Curriculum Development Council, Supplement to the Science Education Key Learning Area Curriculum Guide, 2017



Units

The science content in lower secondary school is made up of four interconnected strands: Life and Living, The Material World, Energy and Change, and The Earth and Beyond. The content is organised in 14 units across three years. Each unit includes:

- **Overview**: outlines the context of each unit and highlights the science process skills and unifying concepts within each unit.
- **Students should learn**: provides the major content areas of each Unit and the knowledge and concepts that students should learn.
- **Students should be able to**: lists the learning outcomes that students should achieve. Teachers use the learning outcomes to set appropriate assessment tasks for monitoring the progress of learning and teaching.
- **Suggested learning and teaching activities**: a list of suggested activities, such as discussion, practical work, investigations, information search and projects through which students can meet the learning outcomes. They are for teachers' reference only and they are encouraged to select activities to cater for the interests and abilities of their students. In previous science curriculum guides, teaching strategies are organised on a continuum from teacher-centred methods (lecture, demonstration, tell a story) to student-centred methods (practical work, self-study) and in-between strategies (class discussion, role play).[15]
- **Core and extension**: the content of each unit is divided into core and extension to cater for students of different abilities and needs. The core content covers the main science ideas that all students should learn. The extension content outlines additional learning to broaden or deepen science knowledge. Teachers can choose topics from the extension content to suit the needs and abilities of their students.
- **Time allocation**: the estimated lesson time for each unit.

Figure 13: Excerpt from Water unit

Students should learn	Students should be able to	Suggested learning and teaching activities
2.2 Dissolving		
• Soluble and insoluble substances in water • Solvent, solute and solution • Rate of dissolving • Solubility	• Give some examples of soluble and insoluble substances in water • Recognise that a solution is formed when a solute is dissolved in a solvent • Describe the factors affecting the rate of dissolving in water • Recognise that the solubility of a substance in water changes with temperatures	• Classify household substances as soluble or insoluble substances in water • Perform fair tests to investigate the factors affecting the rate of dissolving • Perform fair tests to find out the solubility of a substance at different temperatures

Source: *Curriculum Development Council*, Supplement to the Science Education Key Learning Area Curriculum Guide, 2017

Extension parts are highlighted in red.

15 Curriculum Development Council, Syllabuses for Secondary Schools – Science (Secondary 1-3), Education Bureau of the Government of the Hong Kong Special Administrative Region, 1998.

Learning targets

The targets of learning comprise the knowledge and understanding, skills and processes, and values and attitudes students should develop in lower secondary science. Table 12 outlines the learning targets in science. The learning targets act as through lines in each unit studied in lower secondary.

Table 12: Learning targets

Knowledge and understanding	Skills and processes	Values and attitudes
• Acquire basic scientific knowledge and understand some phenomena, facts, concepts and basic principles in science • Recognise the connections and overarching coherence across different disciplines of science with unifying concepts • Learn the vocabulary, terminology and convention used in science • Apply scientific knowledge and skills to solve simple daily life problems	• Make observations, ask relevant questions, identify and define problems • Use apparatus and equipment properly for conducting practical work • Formulate hypothesis for investigation, control variables; plan and conduct investigations • Make accurate measurement; use diagrams and graphs to present experimental results; collect and analyse data for making conclusion • Use basic science language to communicate ideas • Be able to think scientifically, critically and creatively • Be able to integrate and apply knowledge and skills to solve problems collaboratively in real-life contexts • Participate actively in group discussion and work effectively with other members in group • Develop the ability to distinguish between fact, myth and belief, and make informed decisions.	• Develop curiosity and interest in science and appreciate the wonder of nature and the development of the technological world • Show respect to life and the environment • Develop positive values and attitudes towards adopting a healthy lifestyle • Recognise the usefulness and limitations of science and the evolutionary nature of scientific knowledge • Be aware of the relationship between science, technology, society and environment, and develop an attitude of responsible citizenship • Develop an awareness of safety issues in everyday life, understand the reasons behind, and take proper actions to avoid accidents and reduce risks • Recognise the effects of human activities on the environment and act sensibly for sustainable development of the environment.

The critical thinking skills students should develop in lower secondary school are described in the skills and processes section in the above table. These skills centre around the scientific inquiry process and include specific skills such as formulating hypotheses and analysing data, and broader skills such as applying knowledge to solve problems in real-life contexts.

Teachers are encouraged to design their lessons in order to develop various types and levels of thinking in students, including analysis, evaluation, critical thinking and creative thinking. The suggested learning and teaching activities included in each unit provide teachers with ideas about how to best foster these skills in students and to meet the learning targets above. For example, the Living Things and Air unit includes a number of suggested activities to develop students' **values and attitudes**, such as:

- Conduct a project to investigate the air quality of the district where your school is located for a particular period of time and give appropriate health advice to students in your school
- Design a poster or make a video clip to persuade smokers to quit smoking

- Search information about electronic cigarettes and their health effect, and discuss whether their sale should be regulated by the government

Importantly, the suggested activities listed above are not **instead of** practical activities but in **addition to**. In this unit, the suggested activities enable students to take their knowledge of respiration and connect it to real-world contexts and related issues such as community health and safety.

Curriculum emphases

There are two curriculum emphases in the science curriculum. The emphases enhance students' understanding of the connections and coherence across different science strands (referred to as unifying concepts) and of the process of scientific investigations.

The **unifying concepts** covered in the science curriculum include:

- Systems and organisation
- Evidence and models
- Change and constancy
- Form and function

The **science process skills** that students are required to learn are:

- Observing
- Classifying
- Designing investigations
- Conducting practicals
- Inferring
- Communicating

The science process skills, along with the skills and processes outlined above in the 'Learning Targets' section, link closely with the critical thinking skills in the NSW syllabuses. These skills are inherent in science investigations such as experiments and research projects. But what makes the Hong Kong curriculum a little different to the NSW Syllabuses is that it lists **specific** activities students can undertake to develop their practical skills and values and attitudes and connect their learning to real-world contexts. This enables teachers to select activities knowing that they meet the curriculum emphases and learning targets in each unit.

2.4 History

In Hong Kong, history teaching falls under the domain of personal, social and humanities education. There is one History Curriculum Guide for secondary 1–3, which is similar to Years 7, 8, and 9 in NSW.

The History Curriculum Guide emphasises historical inquiry to help develop students' knowledge by encouraging them to pose questions about the past, apply skills to find and analyse sources, and develop an informed argument or interpretation. The program in the guide provides suggested guiding questions for each teaching topic which demonstrate some possible ways of structuring the inquiry of the topic.

> In the past 20-30 years, history education has been undergoing tremendous changes in different countries and regions. Other than stressing the transmission of facts and hard data, as well as the authoritative views of teachers or textbooks to students, today's history education emphasises the construction of knowledge and the process of historical enquiry and investigation, through which students construct their own historical knowledge by understanding, analysing and interpreting primary sources, consider events from multiple perspectives, and understand the relationship between using historical evidence and providing historical explanations.[16]

This version of the curriculum guide was updated to increase students' interest in studying history. As part of this, the guide tries to form more connections for students between history learning and their real-life experiences.

The revised curriculum also offers a flexible and diversified framework that can facilitate schools to adapt to this curriculum according to their school contexts and students' diversity in abilities and interests.

2.4.1 Learning Objectives

The History Curriculum Guide includes three types of learning objectives: (1) Knowledge and understanding (2) Skills and (3) Attitudes and values.

16 Curriculum Development Council, History Curriculum Guide (Secondary 1-3), Education Bureau of the Hong Kong Special Administrative Region, 2019.

Table 13: Learning objectives

Knowledge and understanding	Skills	Attitudes and values
• Understand and comprehend from a variety of perspectives (political, economic, technological and scientific, social, religious, aesthetic, etc.), the main characteristics of world civilisations in different periods • Understand and comprehend the main characteristics of the development of Hong Kong and relate them to the national and world development • Comprehend basic historical concepts and terms • Understand the relationship between cause and consequence of historical events • Comprehend change and continuity in major historical issues and developments • Understand that the past may be interpreted in different ways	• Use historical terminology in an appropriate way • Present historical events accurately in chronological order • Describe characteristics of historical maps, models, diagrams, charts, pictures, tables and cartoons • Make deductions and inferences from historical sources • Identify different interpretations of major historical events and personalities • Distinguish the differences between historical facts and opinions • Comprehend the implication of sources, question and explore the accuracy and reliability, and then construct fair and impartial personal views • Make an imaginative reconstruction of past events • Select, organise and deploy sources, and express in a well-structured way	• Develop an interest in the past and an appreciation of human achievements and aspirations • Relate the study of history to contemporary life • Understand views, beliefs and values of different societies at different times so as to develop positive values and attitudes • Be willing to take up the responsibility of preserving antiquities and monuments, conserving cultural heritage and promoting history and culture

2.4.2 Curriculum structure

The history curriculum is designed in chronological order, offering a theme for each school year.

- **Theme for Secondary 1 (Year 6)**: **The ancient world** (From the pre-historic period to the 14th century): The birth and interactions of regional civilisations
- **Theme for Secondary 2 (Year 7)**: **The modern world** (From 15th to 19th centuries): The growth and expansion of the West
- **Theme for Secondary 3 (Year 8)**: **The contemporary world** (From the 20th century to the present): Moving towards a multi-polar and interdependent world

The history curriculum is composed of 12 topics about learning world history and the development of Hong Kong, i.e. four topics in each school year.

In order to provide a flexible framework for schools to make adaptations to the curriculum according to their school contexts and students' diversity in abilities and interests, there are foundation parts and extended parts in all topics. The foundation parts provide students with basic knowledge of the topics while the extended parts are designed for the more able or interested students to explore deeper on the topics.

Figure 14: Curriculum structure

S1 The ancient world (From pre-historic period to the 14th century): The birth and interactions of regional civilisations			
Topic 1: Human Needs: Past and Present	**Topic 2:** The development of European civilisation	**Topic 3:** The rise of Islamic civilisation and cultural interactions between Europe and Asia in medieval times	**Topic 4:** History, culture and heritage of early Hong Kong region.
S2 The modern world (From 15th to 19th centuries): The growth and expansion of the West			
Topic 5: The rise of modern Europe	**Topic 6:** European colonial expansion	**Topic 7:** The founding and development of the United States	**Topic 8:** Growth and development of Hong Kong up to the late 19th century
S3 The contemporary world (From the 20th century to the present): Moving towards a multi-polar and interdependent world			
Topic 9: International conflicts and crises in the 20th century (I) – The two World Wars	**Topic 10:** International conflicts and crises in the 20th century (II) – the Cold War and the post-Cold War period	**Topic 11:** International cooperation since the 20th century	**Topic 12:** The growth and transformation of Hong Kong in the 20th century

Figure 15: Foundation and extension

Composition of each topic

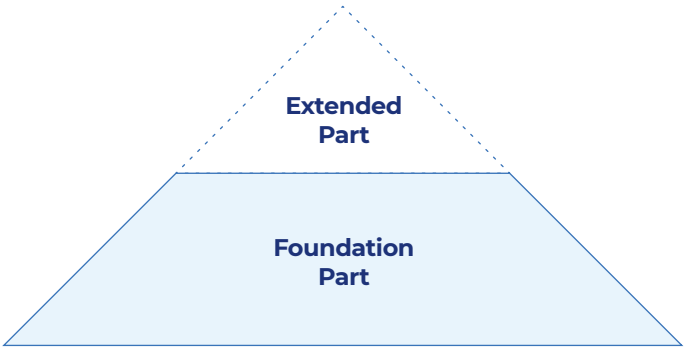
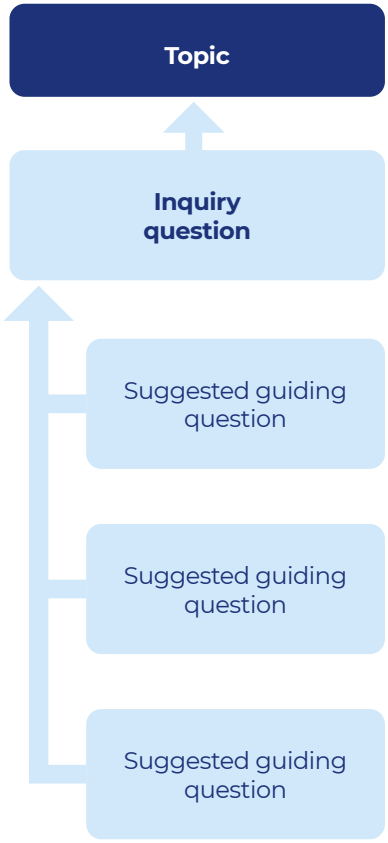


Figure 16: The inquiry approach to studying history



Historical inquiry

To facilitate teachers adopting an inquiry approach in class, there is one inquiry question and several suggested guiding questions in each topic. The inquiry question gives the direction for studying the given topic while the suggested guiding questions provide teachers with ideas to help students study history using the inquiry approach. Teachers are reminded that there could be alternative ways of structuring the inquiry of each particular topic, and they should always exercise their professional judgement in designing the flow of their lessons with reference to the interests, abilities and needs of their students.

Table 14: History content outline

Topic	Inquiry question	Suggested historical skills
Secondary 1 (Year 6)		
Topic 1: Human needs: past and present	What basic human needs led to the emergence of early civilisations? What are the main characteristics of early civilisations?	• Understand the division of historical periods (pre-historic times, historic times) • Distinguish the types of sources in studying history (primary sources, secondary sources, archaeological findings, non-written and written sources) • Describe the characteristics • Connect the past with the present, compare similarities and differences
Topic 2: The development of European civilisation	What legacy has the classical European civilisation left to us? What were the characteristics of medieval Europe?	• Understand the historical periodisation (ancient times, medieval times, modern times and contemporary times) • Connect the past with the present, compare similarities and differences • Analyse change and continuity • Induce and summarise the characteristics
Topic 3: The rise of Islamic civilisation & cultural interactions between Europe and Asia in medieval times	How related were the achievements of the Islamic civilisation and cultural interactions between Europe and Asia in medieval times?	• Trace historical background • Analyse causes, results and impacts • Understand major historical development and trends
Topic 4: History, culture and heritage of early Hong Kong region	How do we find the imprints related to the historical development of Hong Kong region?	• Understand the division of historical periods (ancient times, medieval times, modern times and contemporary times) • Distinguish types of sources for studying history (primary sources, secondary sources/ archaeological findings, non-written and written sources) • Conduct oral history • Analyse change and continuity • Connect history with daily lives
Secondary 2 (Year 7)		
Topic 5: The rise of modern Europe	How did new ideas and progress in science and technology foster significant development in the west?	• Analyse causes, results and impact • Analyse the turning point of history • Analyse the importance of historical figures (e.g. Leonardo da Vinci) or understand different interpretations of historical figures (e.g. Napoleon Bonaparte)
Topic 6: European colonial expansion	What impact did European colonial expansion have on the peoples in the Americas, Africa and Asia?	• Induce and infer • Analyse the causes, results and impacts • Understand different interpretations of historical issues
Topic 7: The founding & development of the United States (US)	How was the United States founded? What were the major internal and external developments of the country after its independence?	• Trace historical background and development • Analyse the turning point of history • Analyse causes and impacts
Topic 8: Growth and development of Hong Kong up to the late 19th century	What impact did the British colonial rule and different local organisations have on the development of Hong Kong?	• Trace the historical development • Analyse causes, results and impacts • Analyse the importance of historical figures or organisations

Topic	Inquiry question	Suggested historical skills
	Secondary 3 (Year 8)	
Topic 9: International conflicts & crises in the 20th century (I) – the two world wars	What did people learn from the two world wars? What were the major conflicts during the Cold War?	• Analyse change and continuity • Analyse the turning point of history • Induce the characteristics • Understand different interpretations of major historical issues • Analyse how historical events connects with daily lives
Topic 10: International conflicts & crises in the 20th century (II) – the Cold War & the post-Cold War period	What were the changes in the international situation after the end of the Cold War?	• Analyse change and continuity • Analyse the turning point of history • Induce the characteristics • Analyse the importance of historical figures or understand different interpretations towards historical figures
Topic 11: International cooperation since the 20th century	How did international cooperation in the 20th century work for peace?	• Induce the characteristics • Analyse the significance of different organisations
Topic 12: The growth & transformation of Hong Kong in the 20th century	What are the factors that enable modernisation in Hong Kong in the 20th century?	• Trace and classify • Analyse causes, results and impacts • Analyse the turning point of history • Trace the historical development

2.4.3 Curriculum planning guidelines

The curriculum guide devotes space after laying out the teaching content to how teachers might approach curriculum planning. A key point in this section is that teachers should help students master the fundamental historical concepts (such as time and chronology) and skills (such as distinguishing different types of historical sources) in the first months of junior secondary education. This is because these are considered essential for understanding other more advanced concepts and ideas in the later learning stage.

The guidelines also have advice for catering for learner diversity, which includes, "personal interests, cultural background, learning styles and abilities." One way is for teachers to choose which extension parts of the curriculum to use in teaching. For example, one extension in the US history topic is to learn about Chinese immigration for the US – teachers may consider their students' backgrounds when deciding whether this extension topic is relevant and would support learning. But the guide is clear that the foundation part of the curriculum (as opposed to the optional extension learning) is critical for all students to learn, regardless of background or ability. This is part of Hong Kong's strategy to ensure equity of learning opportunities for all students.

The curriculum guide includes example strategies for working with diverse learners, such as providing an example survey that teachers can give to students to get to know more about their background knowledge and interest in history. These also work as examples of formative assessment – to help the teacher track where students are at with their knowledge.

Figure 17: Sample student surveys and formative assessments

Questionnaire A

(To be completed by students)

Name: .....

Class: .....

Date: .....

Choose the appropriate description and circle the numbers next to them.

1. I like History.
2. I like stories about human beings.
3. I enjoy watching videos in class.
4. I enjoy searching information on the Internet.
5. I like role-play.
6. I like oral presentation.
7. I like projects.
8. I like written work.
9. I like extended learning (e.g. museum visits, further reading or creative assignments).
10. I like to complete learning tasks on my own.
11. I like to work in pairs.
12. I like to work in small groups.
13. I need clear instructions to complete an assignment.
14. I like to create my own steps on how to complete an assignment.
15. I like to learn by moving and doing.
16. I like to learn while sitting at my desk.
17. Others: .....

Adapted from Tomlinson, C. and Imbeau, M. (2010). *Leading and managing a differentiated classroom*. Alexandria, Va.: ASCD

Interest Questionnaire

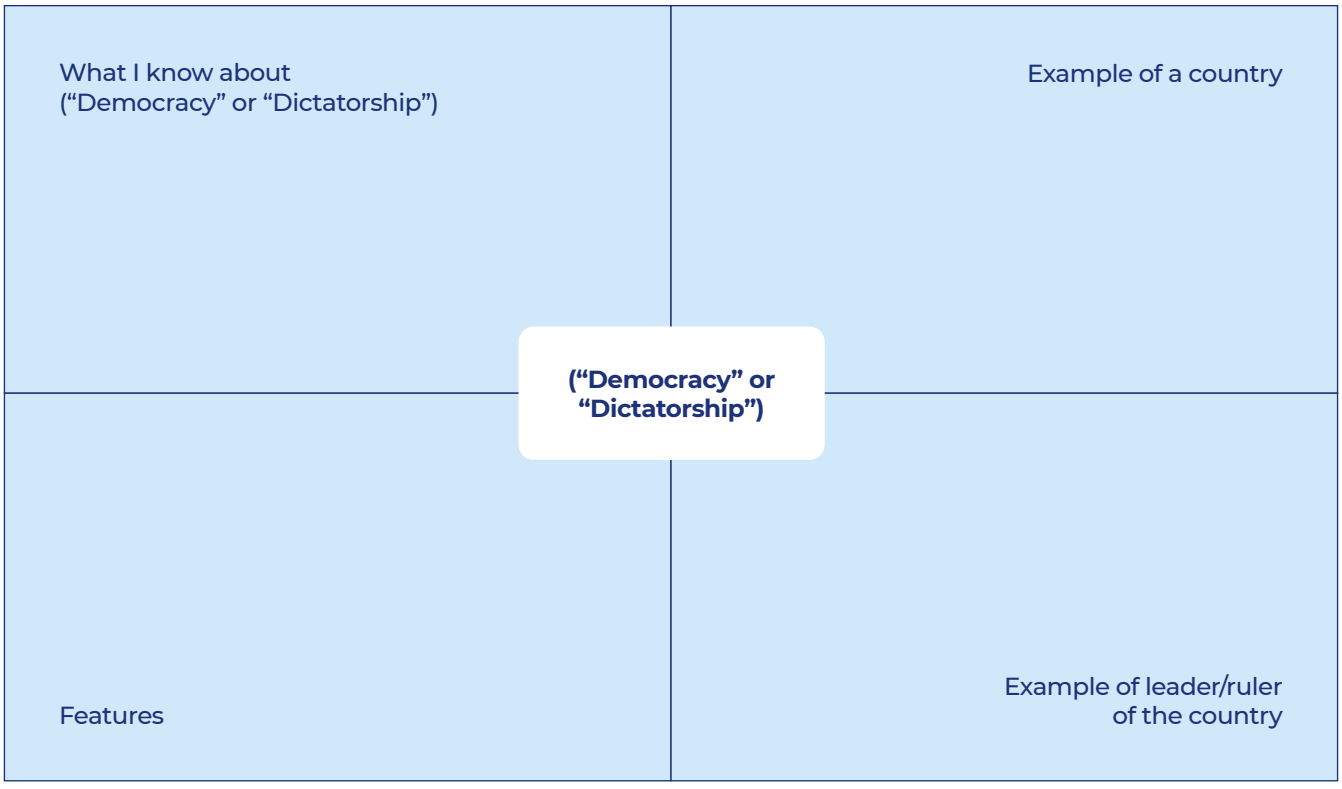
Class: .....

Date: .....

What do you want to know about ancient Roman civilisation? Choose TWO of the following questions that you are most interested in (Put a ✓ in the box).

Legend about Rome:	Why do people use the "she-wolf" as the symbol of Rome?	
Economic activities:	How did the ancient Romans earn a living?	
Social life:	How did the ancient Romans spend a day?	
Town Planning:	Why do people say 'All roads lead to Rome'?	
Religion:	What gods/goddesses did the Romans believe?	
Others:	Add your own question here.	

Frayer Model



S2 History

Knowledge Rating Chart—Causes of the French Revolution (1789)

Name: .....

Class: .....

Date: .....

Many factors contributed to the outbreak of the French Revolution (1789). The table below shows different factors that caused the French Revolution. If you are able to explain how a particular factor caused the French Revolution in a very detailed way, give yourself '5' marks for that question; If you have only heard of the factor, but cannot explain it, give yourself '1' mark for the question.

Questions:

Questions	Basic understanding ← → Deep understanding				
1. Corruption of the government	1	2	3	4	5
2. Effects of the Enlightenment ideas	1	2	3	4	5
3. The government's financial crisis	1	2	3	4	5
4. Legacy of Louis XIV and Louis XV	1	2	3	4	5
5. Mis-governance of Louis XVI	1	2	3	4	5
6. Natural hazards in the 1780s	1	2	3	4	5
7. Royal extravagance	1	2	3	4	5
8. Social-economic development of France after Louis XIV	1	2	3	4	5
9. The development of the US Revolution	1	2	3	4	5
10. The formation of the Estates-General	1	2	3	4	5

Check your scores here:

Score	Level description
46–50	You have a very good understanding on the topic. Well-done!
36–45	You have a satisfactory understanding of this topic. Good-job!
26–35	You have a fair understanding of this topic. Make sure that you understand all the problems before starting a new topic.
16–25	You only have a basic understanding of this topic. Do ask your classmates or teachers for help to improve the situation.
10–15	Your understanding of this topic is rather limited. Please ask your teachers for help.

Learning experiences beyond the classroom

The guidelines encourage teachers to consider experiential learning in authentic environments that enable students to achieve certain learning goals that are difficult to attain through classroom learning.

The guide acknowledges that it is already common practice to take students on field trips to museums or to bring in external experts. But teachers are encouraged to think carefully about how the choice of a learning experience is related to learning goals. Teachers are asked to consider the following before organising these activities:

- How can the objectives of the curriculum be fulfilled by organising these activities?
- How much lesson time would it take? Will it be organised during or outside normal lesson time?
- How can we integrate learning from outside the classroom with what is learnt in the classroom?

2.4.4 Student progression

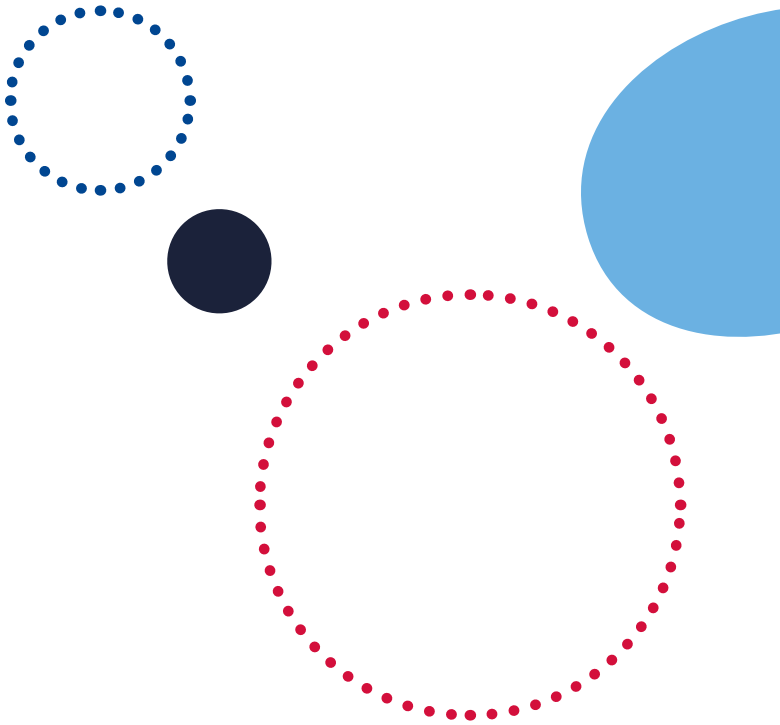
The curriculum guide points out that although the topics and inquiry questions are in chronological order, teachers should still consider information from formative assessment to monitor student progression.

> In the context of history learning and teaching, progression does not mean an increase in the amount of the information that students can recall. It should refer to students' ability to engage in historical enquiry and their master of the use of different historical concepts and skills.[17]

The guide also references the difference between substantive knowledge and disciplinary knowledge.[18] While substantive knowledge is the topic-by-topic information outlined in the guide, disciplinary knowledge includes basic historical concepts (such as chronology, cause and effect, change and continuity) and skills (such as the skills to distinguish the types of historical sources) in Secondary 1 and more advanced concepts (such as historical significance and historical interpretation) and skills (such as the skills to identify different interpretations of some historical events and figures, or the skill to evaluate different historical sources used in order to make valid conclusion) in Secondary 2 and 3.

2.4.5 Inquiry and self-directed teaching and learning

The curriculum guide is specific about guidance on various teaching practices, including inquiry learning. The guidance includes the role of teachers as well as the role of students in inquiry.



17 Curriculum Development Council, *History Curriculum Guide*.

18 S Levesque, *Thinking Historically: Educating Students for the Twenty-first Century*, University of Toronto Press, Toronto, 2008.

Table 15: Roles of students and teachers in historical inquiry

Teachers	Students
As learning facilitators, history teachers should be able to	**In the inquiry process, students are active learners instead of mere information receivers. They should**
• Provide guidelines to help students explore inquiry questions • Set up an engaging environment • Gather resources to facilitate both interaction and self-learning • Lead students to explore for more information • Prompt thinking and accept many possible answers • Give timely guidance and make a conclusion at the end of the inquiry learning • Nurture students to develop an objective, balanced and respectful attitude to historical facts in the inquiry process • Foster passion, curiosity and interest in learning history	• Apply their prior knowledge to respond to inquiry questions • Engage actively in learning • Raise questions and look for appropriate learning tools • Collaborate closely with others • Share learning experiences with peers • Reflect on learning experiences and evaluate their own learning progress

The curriculum guide also gives an example of what inquiry could look like.

Table 16: Example of learning history topics through an inquiry approach

Teaching 'Outbreak and impact of the First World War – Paris Peace Conference and the Treaty of Versailles' through an inquiry approach.

Before teaching the topic, the teacher adopted an inquiry approach to help students understand the content of the topic, encourage the students to engage in the inquiry process and find out their answers. These are two key components of inquiry learning.

Design of the lesson	
Topic:	Outbreak and Impact of the First World War – Paris Peace Conference and the Treaty of Versailles
Grade:	S3
Lesson Time:	55 minutes
Prior knowledge:	✓ Understand the causes of the First World War
Inquiry Procedures:	1. Revision: Causes of the First World War and the countries involved 2. Set: Based on the content of a short video and pictures, students answer short questions on the effects of the First World War. The teacher provides further elaboration. 3. Development: Paris Peace Conference (Role-play) • The teacher introduces the Paris Peace Conference. • Students work in groups of four, with the members of each group taking on the roles of France, Britain, the US and Germany respectively. • Students work on what they would demand at the Conference on behalf of the country they are representing, and decide whether they would adopt a harsh or conciliatory approach. • Members of each group come together to debate the terms of the Treaty. • Students present their discussion results, and the teacher writes the main points on the board. • The teacher illustrates the Treaty of Versailles and guides students to understand the demands from the perspectives of different countries and think about the effects of the Treaty on Germany. 4. Conclusion: The teacher summaries the effects of the Treaty on Germany.
Assessment:	Consolidate and assess learning effectiveness through a writing task on the question. "What were the effects of the Treaty of Versailles on Germany?"

2.4.6 Resource pack for revised curriculum

The Hong Kong Education Bureau published a resource pack in 2019 with exemplars of lesson plans and strategies for teaching, called New Inspirations in Learning and Teaching.

2.4.7 Assessing student learning with Bloom's Taxonomy

In its history curriculum guide, Hong Kong encourages the use of Bloom's Taxonomy for the assessment of student learning. This includes both summative and formative assessments, and the curriculum guide provides great detail on both for history learning. The guide also encourages a diversity of assessment tasks and assessment types to get a comprehensive view of learners.

The guide outlines two basic types of assessment questions (this includes multiple-choice or written assessments): factual recall and fact-based analysis. For example, 'completion' and 'matching' assess students' ability to 'identify' and 'recall' and are thus more related to the factual recall. Meanwhile, 'essay-type questions' reflect students' ability in forming stances and illustrating ideas, which are more related to fact-based analysis.

Figure 18: Common question types used in assessments, and the abilities that each question type is associated with

Question type	Factual recall	Fact based analysis	Abilities to be assessed (Based on Bloom's Taxonomy*)					
Completion			1	2	3	4	5	6
Multiple-choice			1	2	3	4	5	6
Matching			1	2	3	4	5	6
Time Order			1	2	3	4	5	6
Fact-opinion / True-False			1	2	3	4	5	6
Mapping			1	2	3	4	5	6
Short question			1	2	3	4	5	6
Data-based question			1	2	3	4	5	6
Essay			1	2	3	4	5	6

*According to Bloom's Taxonomy, Level 1: Remember, Level2: Understand, Level 3: Apply, Level 4: Analyse, Level 5: Evaluate, and Level 6: Create.

2.4.8 Learning and teaching resources

This History Curriculum Guide outlines the importance of selecting and making use of learning and teaching resources to enhance students' learning of history. The guide encourages history teachers to select, adapt and, where appropriate, develop the relevant resources to match the curriculum aims and objectives and cater for learner's diversity and the school context.

The guide states that the purpose of learning and teaching resources is to "provide a basis for students' learning experiences. They include not only textbooks, workbooks and learning and teaching resource packages produced by the Education Bureau or other organisations but also web-based learning materials, computer software, the Internet, the media, resources in the natural environment, libraries and even the prior knowledge and skills of individual students."

Table 17: Guiding principles for preparing and selecting teaching resources

Relevant materials should:
• Be in line with the curriculum aims and objectives and contain core learning elements of the curriculum • Arouse students' interest in learning, motivate them to engage actively in learning tasks and inspire them to higher-order thinking • Support students' access to knowledge through scaffolding to help them progress in their learning • Cater for learner diversity by providing varied learning activities at different levels of difficulty • Promote independent learning by complementing and extending the learning activities in class • Help students present information and ideas accurately and effectively • Facilitate students' discussion and further inquiry • Be affordable to schools and/or teachers in terms of financial costs as well as of the time and effort required to prepare or acquire them

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