



小學科學與初中科學 ——

分析與銜接



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AGENDA

Overview of New Primary Science Curriculum

Primary Science as the Foundation of Junior Secondary Science

Improving Lesson Time Utilisation

Practical Skills and Laboratory Techniques

OVERVIEW OF NEW PRIMARY SCIENCE CURRICULUM



Implementation Schedule

- Implementation scheduled to start from **2025-2026 school year in Primary 1 and 4.**
- Progressively extended to other levels.
- The first cohort of students studying the new primary science curriculum (**P1-3 General Studies, P4-6 Science**) will enter S1 in **Sep 2028.**
- The first cohort of students studying the new primary science curriculum **in whole** will enter S1 in **Sep 2031.**



Suggested Lesson Time

年級	範疇				彈性課時 [~10%]	總課節 [100%]
	(一) 生命與環境 [~30%]	(二) 物質、能量和變化 [~30%]	(三) 地球與太空 [~15%]	(四) 科學、科技、工程 與社會 [~15%]		
小一至小二 每年節數	18 節	18 節	10 節	10 節	8 節	64 節
小三至小六 每年節數	28 節	28 節	14 節	14 節	12 節	96 節

Roughly equivalent to:

- Two 35-min lessons per week in P1 and P2
- Three 35-min lessons per week from P3 to P6
- Flexible hours are used for project learning, competitions, seminars, visits, etc.



Four Learning Strands

1. Life and Environment (生命與環境)
2. Matter, Energy and Change (物質、能量和變化)
3. Earth and Space (地球與太空)
4. Science, Technology, Engineering and Society (科學、科技、工程與社會)

- **Science (Primary 1 – 6) Curriculum Framework** has been uploaded to EDB website.
Only Chinese version is available at this moment.



15 Themes

- The new curriculum has **less emphasis on memorisation**.
- The **long paragraphs** appearing at the end of each General Studies (or Science in 1990s) will likely become history.
- Elements of **STEAM, I&T (Innovation and Technology)** and **scientific inquiry** will have heavier presence than before.

範疇	主題
生命與環境	<ul style="list-style-type: none">• 人體健康• 生物的特性• 生命的延續• 生物與自然環境的相互關係• 生態系統• 顯微鏡下的世界
物質、能量和變化	<ul style="list-style-type: none">• 物質的特性和變化• 能量的不同形式和傳遞• 力和運動
地球與太空	<ul style="list-style-type: none">• 地球的特徵和資源• 氣候與季節• 宇宙中的太陽系
科學、科技、工程與社會	<ul style="list-style-type: none">• 科學過程和科學精神• 航天與創新科技• 工程與設計



PRIMARY SCIENCE
AS THE FOUNDATION OF
JUNIOR SECONDARY SCIENCE



Depth and Breadth of Curriculum

- The curriculum content aims to build a **solid foundation** for further learning in **secondary school**
- The curriculum adopts a **spiral-like approach**, where the topics are often **revisited with appropriate deepening** of content.
- The content will be **more standardised** and **well-defined**.
- The content will be **less difficult** than Integrated Science so it cannot replace any IS topic completely. However, it could allow **better time utilisation** in IS.

Spiral-like Approach ?

- Basic knowledge is first taught, with more advanced content introduced in later years.
- Students **MAYBE** less likely to forget what they have learnt.
- Secondary school IS teachers could review these topics with students more easily in the future.

主題	學習課題	年級	學生應能
A. 物質的特性和變化	<ul style="list-style-type: none"> • 物質的不同狀態 • 物質的特性 	小一	1MA1 描述水和空氣的特性（沒有顏色、氣味和味道，而且沒有固定形狀）
			1MA2 描述日常生活物品的特性（例如：輕重、軟硬、有否彈性、是否透光）
		小二	2MA1 知道磁鐵可以用來吸引一些金屬物件
			2MA2 知道磁鐵同時存在著兩個不同的磁極
			2MA3 知道「同極相斥，異極相吸」的現象
			2MA4 知道指南針中的小磁針可以用來指示南北
		小三	2MA5 列舉日常生活中應用磁鐵的一些例子
3MA1 知道物質可以分為固體、液體和氣體，並描述其特性（有否固定體積、有否固定形狀）			
			3MA2 比較不同物料的一些物理特性（例如：重量、於室溫下的狀態、可否被磁鐵吸引、可否浮於水面）

Spiral-like Approach ?

C. 力和運動	<ul style="list-style-type: none"> 力和與運動相關的現象 簡單機械 	小一	1MC1	說出物體與自己的相對位置(例如：前後左右、遠近)	小五	5MC1	知道力能改變物體運動的狀態(力能使靜止的物體移動或移動中的物體停下；力能使物體移動的速度加快或減慢；力能使物體移動的方向改變)
			1MC2	知道物體運動後位置會改變		5MC2	認識力總是以作用力和反作用力對的形式出現
			1MC3	列舉一些日常生活中常見的物體運動情境(例如：盪鞦韆、坐巴士、踢足球)		5MC3	認識比較物體運動速度*的方法(兩個物體在相同時間內移動的距離，或兩個物體移動相同距離所需的時間)
			1MC4	描述物體運動的快慢			
		小二	2MC1	知道力能使物體運動	小六	6MC1	認識三類槓桿(支點位於力點和重點之間、重點位於支點和力點之間、力點位於支點和重點之間)的應用
			2MC2	列舉一些日常生活中使用推力和拉力的例子		6MC2	知道省力槓桿和費力槓桿的分別
			2MC3	知道地心吸力是地球對其他物體施加的吸引力		6MC3	認識滑輪(定滑輪、動滑輪、滑輪組)和齒輪等簡單機械的原理
		小三	3MC1	認識滾子、斜面和滑輪(定滑輪)等簡單機械的功用(例如：減少所需的力、改變施力的方向)	6MC4	列舉日常生活中應用槓桿、滑輪和齒輪的例子(例如：筷子、纜車、單車)	
			3MC2	列舉日常生活中應用滾子、斜面和滑輪的例子(例如：車輪、斜台、升降機)			
		小四	4MC1	知道摩擦力是物體之間互相摩擦時產生的阻力			
			4MC2	知道摩擦力的方向與運動的方向相反			

IMPROVING LESSON TIME UTILISATION



Deepening Knowledge, not Re-teaching

- Junior secondary students are expected to have **basic knowledge from primary Science** in many topics
- Clearly outlined learning content could **reduce learner diversity** due to differences in school-based General Studies
- Lesson time could be freed up to focus on **knowledge deepening** and **STEAM education**

Deepening Knowledge, not Re-teaching

3.2 Grouping of living things	<ul style="list-style-type: none">◆ Recognize the need of grouping living things◆ Understand that scientists put living things into different groups according to their key features◆ Identify the key feature for distinguishing between invertebrates and vertebrates◆ Identify the key features for distinguishing between fish, amphibians, reptiles, birds and mammals◆ Identify the key features for distinguishing between non-vascular plants and vascular plants, seedless plants and seed plants, non-flowering plants and flowering plants◆ Relate the key features of different groups of living things to their functions and adaptations to different habitats	<p>Primary 3</p> <ul style="list-style-type: none">● 知道動物分為脊椎動物和無脊椎動物● 描述一些動物類別（昆蟲類、爬行類、魚類、兩棲類、鳥類、哺乳類）的主要特徵● 把動物按不同的特徵分類● 以哺乳類動物為例子，知道一些動物的主要結構（包括：骨骼、肺、心臟、胃、肌肉）及其功能● 知道植物分為有花植物和無花植物● 知道花的主要部分（包括：花冠、花萼、雄蕊、雌蕊）及其功能 <p>Primary 4</p> <ul style="list-style-type: none">● 列舉一些植物適應環境的特徵的例子● 列舉一些動物適應環境的特徵的例子● 認識一些動物在棲息環境中生存的行為（例如：遷徙、冬眠）
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Deepening Knowledge, not Re-teaching

8.1 Simple circuit	<ul style="list-style-type: none">◆ Understand that a cell and a closed circuit are required for lighting up a bulb◆ Recognize that cell is the energy source in a circuit◆ Identify electrical conductors and insulators◆ Understand switch as a device to open or close a circuit◆ Recognize the circuit symbols (cell, battery, light bulb, switch, ammeter, voltmeter, resistor and rheostat)◆ Draw and interpret simple circuit diagrams	<p>Primary 4</p> <ul style="list-style-type: none">● 認識簡單的閉合電路● 解釋簡單的電器（例如：電燈）需要完整的電路● 以電池組、開關、電線、燈泡等電路元件接駁電路，探究形成閉合電路的必要條件 <p>Primary 5</p> <ul style="list-style-type: none">● 分辨導電體和絕緣體（金屬是導電體；大部分非金屬是絕緣體）● 解釋家居電器的不同部分會分別由導電和絕緣物料製造的原因
11.2 Effects of forces and ways to describe forces	<ul style="list-style-type: none">◆ Describe the effect of force on changing the speed and direction of motion of an object◆ State that newton (N) is a unit of force◆ Use a spring balance to measure forces	<p>Primary 2</p> <ul style="list-style-type: none">● 知道力能使物體運動● 列舉一些日常生活中使用推力和拉力的例子 <p>Primary 5</p> <ul style="list-style-type: none">● 知道力能改變物體運動的狀態（力能使靜止的物體移動或移動中的物體停下；力能使物體移動的速度加快或減慢；力能使物體移動的方向改變）

Deepening Knowledge, not Re-teaching

14.2 Reflection of light	<ul style="list-style-type: none">◆ State the laws of reflection◆ Describe the nature of images formed by plane mirror◆ Give examples of daily applications of reflection of light	<p>Primary 4</p> <ul style="list-style-type: none">• 認識光的反射現象 <p>Primary 6</p> <ul style="list-style-type: none">• 認識光的傳播方式• 認識平面鏡形成的像的特徵（包括：平面鏡形成的像與實物大小相同、左右倒置）• 列舉不同類型的鏡子（包括：平面鏡、凸面鏡、凹面鏡）在日常生活的應用
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- Convex and concave mirrors are not even covered in S3 Science !

Topics Less Commonly Taught in General Studies

13.3 Mixtures and compounds	<ul style="list-style-type: none">◆ Recognise that mixtures are formed when two or more substances mix with each other without the formation of a new substance◆ Be aware that compounds are formed by elements joining together chemically◆ Recognise that chemical change is a process in which new substances are formed in reactions◆ Be aware that physical change does not involve a change in chemical composition◆ <i>Write balanced chemical equations for the reactions between elements to form compounds (sodium chloride, hydrogen chloride, water and carbon dioxide)</i>◆ Distinguish between elements, compounds and mixtures	Primary 3, 4 <ul style="list-style-type: none">• 描述混合物的一些例子（例如：沙石、糖水、沙和鐵粉、空氣）• 認識把混合物進行分離的一些方法（篩、磁吸引、過濾、蒸發）• 辨識一些不會生成新物質的可見變化（例如：溶解、蒸發、擠壓或延展物件）• 辨識一些會生成新物質的可見變化（例如：鐵生鏽、燃燒、食物腐爛）
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Topics Less Commonly Taught in General Studies

4.1 Cells	<ul style="list-style-type: none">◆ Recognize cells as the basic unit of living things◆ Distinguish between plant cells and animal cells◆ Use a microscope to examine prepared slides of plant and animal tissues◆ Identify the basic structures of cells, including cell wall (in plant cells), cell membrane, cytoplasm, nucleus, vacuole, chloroplasts (in plant cells)◆ State the functions of the basic structures of cells	Primary 6 <ul style="list-style-type: none">● 知道細胞是生物的基本單位● 使用顯微鏡觀察動植物的細胞● 辨識動植物細胞的不同部分，並比較動植物細胞的異同（植物細胞有細胞壁，動物細胞則沒有；大部分植物細胞有葉綠體，大部分動物細胞則沒有）
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More lesson time could be allocated for:

- Operating microscopes
- Microscope slide preparation (preparing specimens, staining, etc.)
- Observing a larger variety of specimens

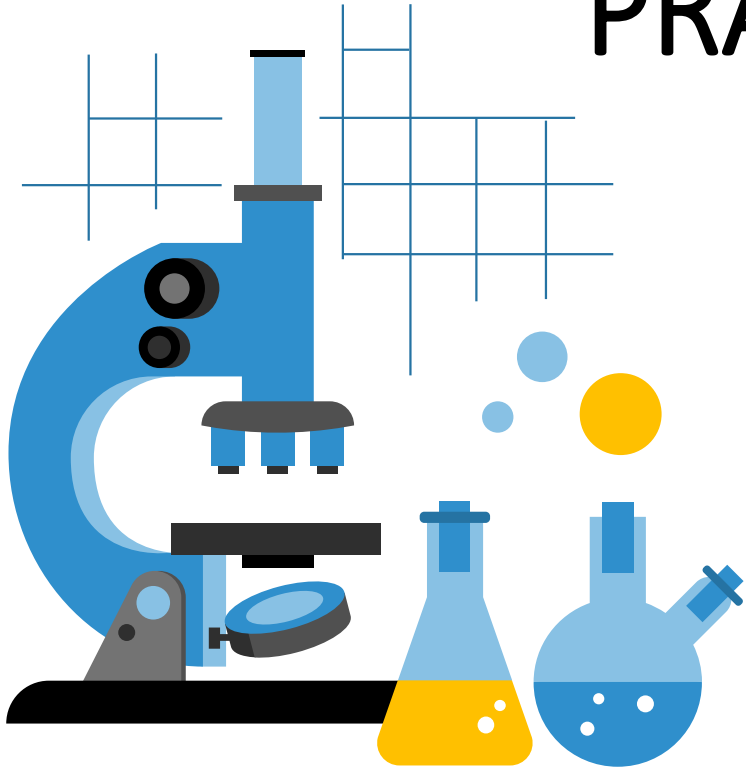
Topics Less Commonly Taught in General Studies

8.2 Current	<ul style="list-style-type: none">◆ Use an ammeter to measure current◆ State that ampere (A) is a unit of current◆ Recognize electric current as a flow of charges◆ Recognize the heating effect and magnetic effect of current	Primary 6 <ul style="list-style-type: none">• 認識電的熱效應和磁效應• 列舉日常生活中應用電的熱效應（例如：電暖爐、風筒、多士爐）和磁效應（例如：電磁鐵起重機、電磁鎖）的例子
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More lesson time could be allocated for:

- Constructing electromagnets in laboratory
- Investigating factors affecting strength of electromagnets

PRACTICAL SKILLS AND LAB TECHNIQUES



School Facilities and Staff

- School buildings with “**Year 2000 Design**” (千禧校舍) would have **higher flexibility** in providing sufficient special rooms with lab equipment.
- School buildings of older design **may not have sufficient rooms for frequent experiments.**
- Unlike secondary schools, there is **no laboratory technician** in primary school staff establishment.
- Experiments are expected to be **less frequent** than Integrated Science.



Learning and Teaching Activities

- The suggested learning and teaching activities in Curriculum Framework do **not involve sophisticated lab apparatus**.
- It is likely that a significant proportion of practical sessions in Primary Science would be **in the form of demonstrations**.
- It is likely that Integrated Science teachers would still **need to teach all basic laboratory techniques**.



THE END

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