

SCIENCE @ RMPS

2020



A collection of 30 hand-drawn icons representing various scientific fields:

- Biology:** A beaker with bubbles, a cell, a microorganism, a globe, a lightbulb, a brain, and a planet with a ring.
- Chemistry:** A molecular structure, a DNA helix, and the chemical formula H_2O .
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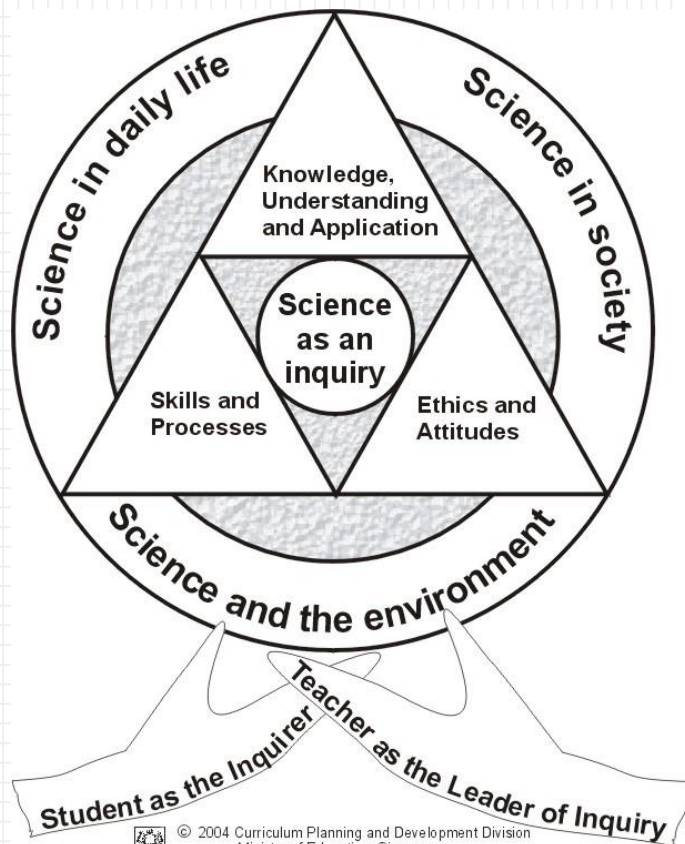
A hand-drawn diagram of a folded piece of paper, likely representing a paper airplane. The paper is folded into three sections. A dashed line indicates a path or fold line, starting from the left edge, curving upwards, then downwards, and finally upwards again towards the right edge. An 'x' mark is drawn on the rightmost section, possibly indicating a point of interest or a fold line. The drawing is done in blue ink on a light blue grid background.

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Science Curriculum Framework



Inquiry-based learning starts by posing questions, problems or scenarios rather than simply presenting established facts or portraying a smooth path to knowledge. The process is facilitated by the teacher.

Content

- Scientific phenomena, facts, concepts and principles
- Scientific vocabulary, terminology and conventions
- Scientific instruments and apparatus including techniques and aspects of safety
- Scientific and technological applications

Ethics & Attitudes

Curiosity, Creativity, Integrity, Objectivity, Open-mindedness, Perseverance, Responsibility

Skills & Processes

Observing, Comparing, Classifying, Using Apparatus & Equipment, Communicating, Inferring, Formulating hypothesis, Predicting, Analysing, Generating possibilities, Evaluating

Good content knowledge is not enough...

Content Knowledge
+
Skills and Processes
(Scientific Method and
Experimental Design)
+

Application and articulation of
concepts into **authentic situations**



- While there are certain scientific terms and concepts taught, pupils can demonstrate their understanding by using their own words.
- The focus of learning science is **not** on giving “standard answers” or keywords, but on **developing students’ ability to inquire, understand and explain scientific phenomena.**

- The learning of science **does require a certain level of clarity though**, in the way concepts are explained, given the **context of the question**.
- Otherwise, **we may end up endorsing misconceptions** in students or rewarding them for ambiguous responses.

Strategies

- **Read the questions carefully.**
- Identify key phrases and words in the question stem before attempting to answer.
- **Identify the concept** tested.
- **Model** answering techniques.
- Make thinking visible – **Claim, Support, Question**



Primary Science Syllabus Overview

| Themes | Lower Block (P3 & P4) |
|--------------|--|
| Diversity | <ul style="list-style-type: none">• Diversity of living and non-living things• Diversity of materials |
| Cycles | <ul style="list-style-type: none">• Cycles of plants and animals (Life cycles)• Cycles in matter and water (Matter) |
| Systems | <ul style="list-style-type: none">• Plant system (Plant parts and functions)• Human system (Digestive system) |
| Interactions | <ul style="list-style-type: none">• Interaction of forces (Magnets) |
| Energy | <ul style="list-style-type: none">• Energy forms and uses (Light)• Energy forms and uses (Heat) |

Primary Science Syllabus Overview

| Themes | Upper Block (P5 & P6) |
|--------------|---|
| Cycles | <ul style="list-style-type: none">• Cycles in plants and animals (Reproduction)• Cycles in matter and water |
| Systems | <ul style="list-style-type: none">• Plant System• Human System• Cell System• Electrical System |
| Interactions | <ul style="list-style-type: none">• Interaction of forces• Interaction within the Environment |
| Energy | <ul style="list-style-type: none">• Energy forms and uses (Photosynthesis)• Energy Conversion |

A vertical collage of hand-drawn blue ink icons on a white background. The icons represent various scientific disciplines: physics (calculator, atom, E=mc^2, pi symbol, lightbulb), biology (microscope, cell, DNA helix, brain), chemistry (flask, molecule, H2O), earth science (globe, apple), mathematics (graph, abacus, V2), medicine (pill, test tube), and general science (magnet, rocket).

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- Performance Task (5% of SA2)

| | |
|------------------------|-------------------|
| <u>Multiple Choice</u> | <u>Open-Ended</u> |
| 28 questions | 12-13 questions |
| 56 marks | 44 marks |

| <u>SA1 Topics</u> | <u>SA2 Topics</u> |
|---|--|
| <ul style="list-style-type: none"> • All P3 & P4 topics • Water and Changes of State • Water Cycle • Reproduction in Plants • Reproduction in Humans | <ul style="list-style-type: none"> • All P3 & P4 topics • All SA1 topics • Electrical Systems and Using Electricity • Unit of Life • Plant Transport System • Air and the Respiratory System • Circulatory System |

Parents as Facilitators

- ✓ Speaking
- ✓ **Doing**
- ✓ **Visiting**
- ✓ **Reading**



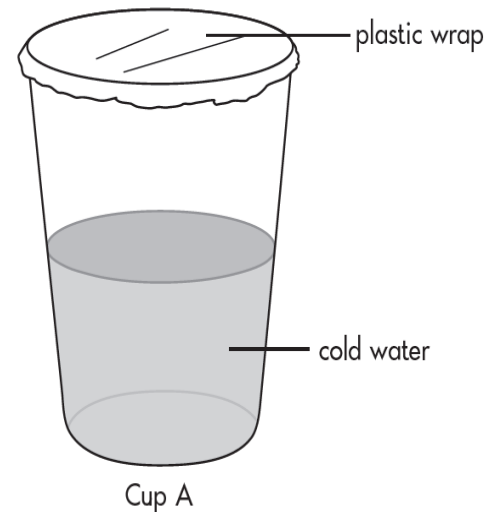
Speaking



Language used in Science is very often different from our day-to-day language.

Why does the cup feel wet?

- The water came from the fridge.
- The coldness of the cold water can be felt.
- The cold water came out of the cup.



Speaking

- **Concept:** Condensation
- Water vapour in the surrounding air came in contact with the cooler outer surface of the cup.
- The water vapour **lost heat and condensed** into **water droplets**.



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- Chili seeds
- Peanuts
- Bread mould
- Mould on oranges

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- Snails
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Doing – E.g. growing green beans

Science Concepts:

- Living things need food, air and water.
- What are the conditions needed for germination?
- How can I prevent my green bean from germinating?
- When does the developing seed need sunlight?



Doing – E.g. growing green beans

- Plants need sunlight to make their own food.
- Plants can reproduce from seeds.
- How to conduct a fair test?
- And more ...

Observing, Comparing, Classifying, Using apparatus and equipment, Communicating, Predicting, Formulating Hypothesis

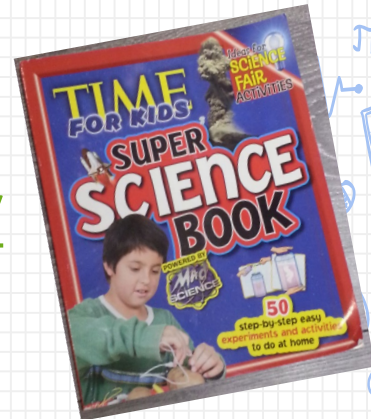


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- Singapore Zoo / Night Safari / River Safari
- Jurong Bird Park
- S.E.A. Aquarium, Sentosa
- Marina Barrage
- ArtsScience Museum
- Kranji Farms
- Parks (E.g. Hortpark)
- Gardens by the Bay
- Sungei Buloh Wetland Reserve
- Singapore Science Centre
- **Everywhere and Anywhere!**

Reading

- Science Books
- Newspapers
- Magazines
- Youtube channel:
- <https://www.youtube.com/user/1veritasium>
- MythBusters:
<http://dsc.discovery.com/tv-shows/mythbusters>



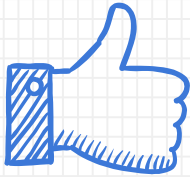
Our Contacts

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Thank you.