

# SCIENCE @ RMPS

## 2019



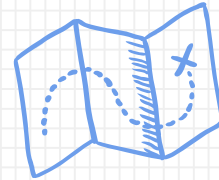
# Vision

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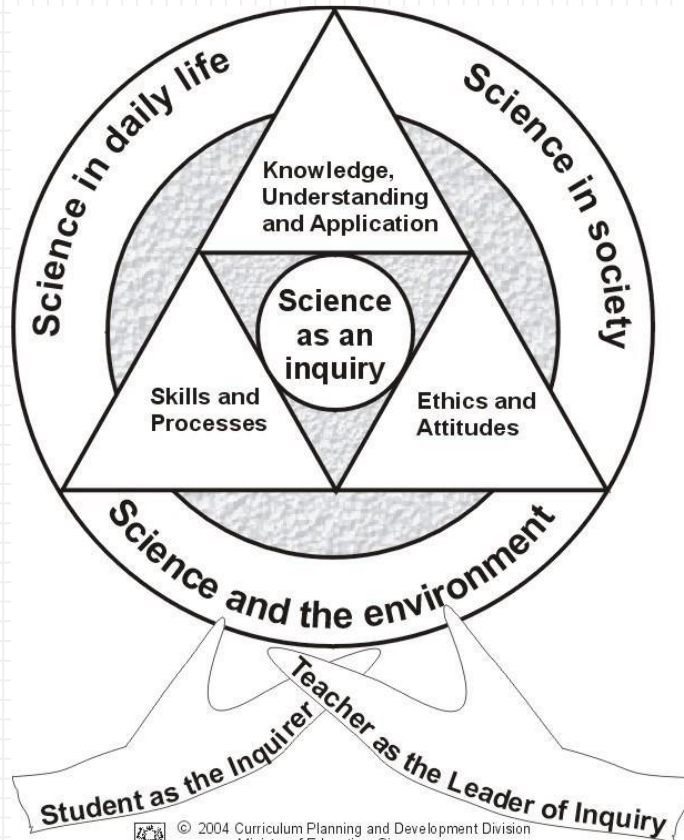
**An inquirer with a passion for Science.**

## Mission

- To develop students with an inquiring mind.
- To equip students with scientific knowledge and skills.
- To make the learning of Science fun, meaningful and relevant.



# Science Curriculum Framework



[illegible]

**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

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

# What is Conceptual Understanding?

- Conceptual understanding requires students to **organise facts and ideas** into a meaningful concept and making connections in science.
- Moving beyond rote memorisation of facts. Therefore, students can **apply their understanding of concepts to multiple contexts.**

(Kang, N. G., & Howren, C., 2004)



- 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

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- **Read the questions carefully.**
- Identify key phrases and words in the question stem before attempting to answer.
- **Identify the concept** tested.
- **Model** answering techniques.
- Reinforce use of **Concept – Apply – Link (CAL)** answering technique.

# Primary Science Syllabus Overview

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

# Primary Science Syllabus Overview

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

- \*Please keep the P3-P6 work for revision!*



# Assessment

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- Paper format

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

- Practical Test 10 marks, 5% of SA2

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

## A collection of 30 hand-drawn icons representing various scientific fields. The icons include: a beaker with bubbles, a calculator, an atom, a cell, a microorganism, a graph with a bell curve, a globe, a molecular structure, a lightbulb, a test tube with a plant, a rocket, a clock, a plug, an apple, a book, a pi symbol, a heart rate line, a lightbulb, a star, a pill, a microscope, a U-shaped magnet, a brain, a planet with a ring, a DNA helix, and a water molecule (H2O).

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



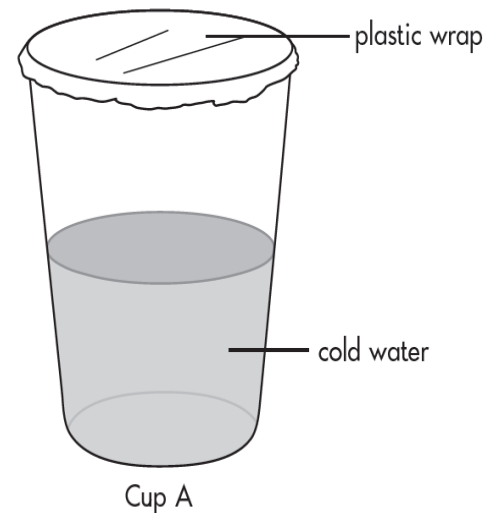
# Speaking



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

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- **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**.



[illegible]

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

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- Fish
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[illegible]

- 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

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

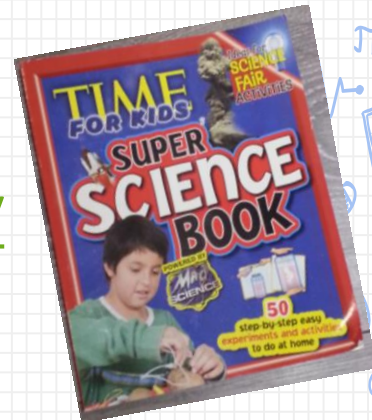
**Observing, Comparing, Classifying, Using apparatus and equipment, Communicating, Predicting, Formulating Hypothesis**



- 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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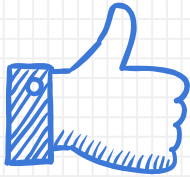
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**Thank you.**