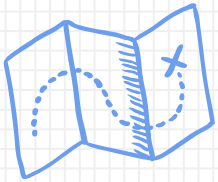
SCIENCE @ RMPS 2019

Vision

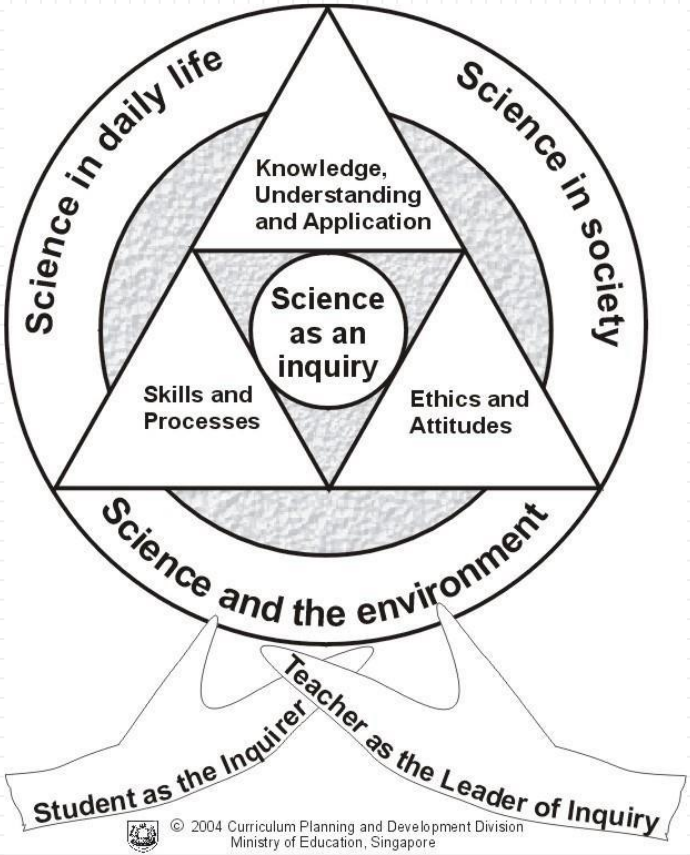
An inquirer with a passion for Science.



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



Inquiry-based Learning

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**

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.**

(Mr Sng Chern Wei, Director, CPDD1
From The Straits Times Forum, May 09, 2015)

- 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.

(Mr Sng Chern Wei, Director, CPDD1
From The Straits Times Forum, May 09, 2015)

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.
- Reinforce use of **Concept – Apply – Link (CAL)** answering technique.

Primary Science Syllabus Overview

Themes	Lower Block (P3 & P4)
Diversity	• Diversity of living and non-living things • Diversity of materials
Cycles	• Cycles of plants and animals (Life cycles) • Cycles in matter and water (Matter)
Systems	• Plant system (Plant parts and functions) • Human system (Digestive system)
Interactions	• Interaction of forces (Magnets)
Energy	• Energy forms and uses (Light) • Energy forms and uses (Heat)

Assignments

- Activity Book*
- Worksheets (filed in the Science file)
- Practice papers before SA1 / SA2

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

Assessment

- Paper format

Multiple Choice	Open-Ended
28 questions	12-13 questions
56 marks	44 marks

- Practical Test 10 marks, 5% of SA2

Assessment

SA1 Topics	SA2 Topics
• All P3 topics • Magnets • Matter • Light & Shadow	• All P3 topics • All SA1 topics • Heat & Temperature

Parents as Facilitators

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

Speaking

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

Why do your legs feel cold when you put them in the water in the swimming pool?

- The water is cold.
- Your body is warm.
- I'm not wearing any clothes.

Speaking

- **Concept**: Heat travels from a hotter to a colder place.
- Your body temperature ($37^{O}C$) is higher than the temperature of the water in the swimming pool.
- Your body loses heat to the water in the swimming pool (and the water gains heat). Thus, you feel cold.

Doing

Growing

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

Keeping small animals

- Mealworms
- Fish
- Crayfish
- Snails
- Bear in mind – responsibilities involved in pet ownership

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 …

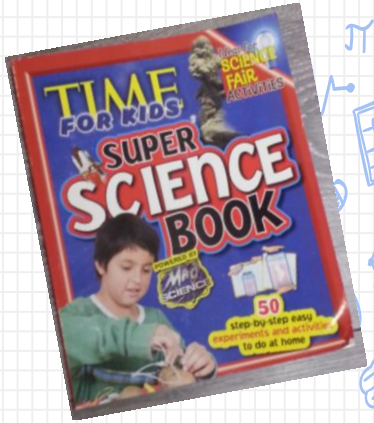
Observing, Comparing, Classifying, Using apparatus and equipment, Communicating, Predicting, Formulating Hypothesis

Visiting

- Singapore Zoo / Night Safari / River Safari
- Jurong Bird Park
- S.E.A. Aquarium, Sentosa
- Marina Barrage
- Artscience 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



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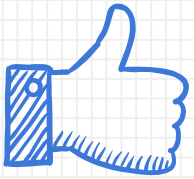

Thank you.