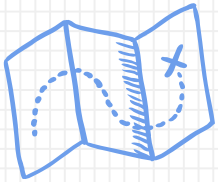
SCIENCE @ RMPS 2022

Vision

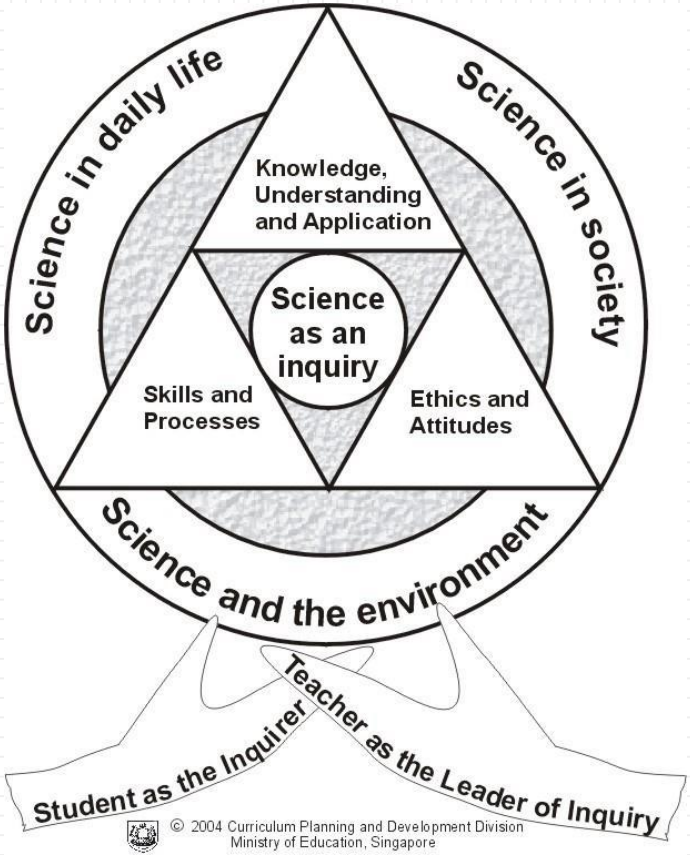
An inquirer with a passion for Science.



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
Mr Sng is now Deputy Director-General of Education (Curriculum)

- 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.

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Strategies

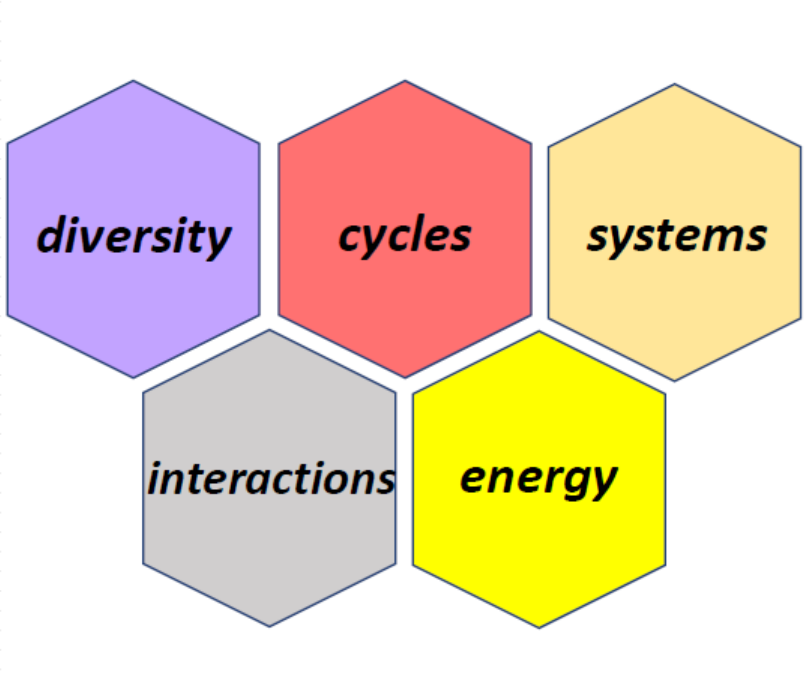
- **Read** the questions **carefully**. Look for clues (evidence) in the question.
- Identify the topic and related **concept** tested.
- Identify **aim and variables**.
- Observe and **study the data** given (graph/table/diagram)
- **Annotate and plan** key points before phrasing the final answer; check final answer

Strategies

- Model answering techniques
  Concept-Apply-Link
  Concept-Evidence-Reasoning

- Answers should show use of correct **scientific language** expressed in a **coherent and complete, yet concise** way.

Themes in Primary Science



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-P4 work for revision!*

Assessment

SA1	Practical Test	SA2
30%	5%	65%

- Paper format

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

Parents as Facilitators

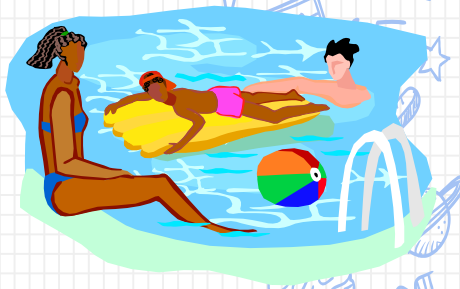
- ✓ Speaking
- ✓ Doing
- ✓ Visiting
- ✓ Reading

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
- Chilli seeds
- Peanuts
- Mould on food (bread)
- Mushroom kits

Keeping small animals

- Mealworms
- Fish
- Caterpillars

**Bear in mind – responsibilities involved in pet ownership

Doing – E.g. growing green beans

Science Concepts:

- Characteristics of living things:
  - Living things can grow
- Conditions needed for germination
  - Air, warmth, Water

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

Doing – Scientific investigations (E.g. growing green beans)

Science experiments:

Hypothesis: Seeds do not need sunlight to germinate.

- Variables to keep the same
- Fair test

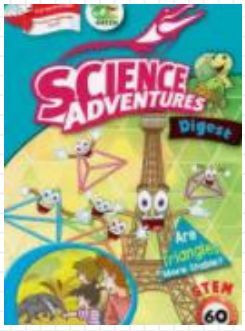
Observing, Comparing, Classifying, Using apparatus and equipment, Communicating, Predicting, Formulating Hypothesis

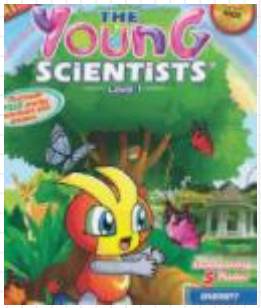
Visiting

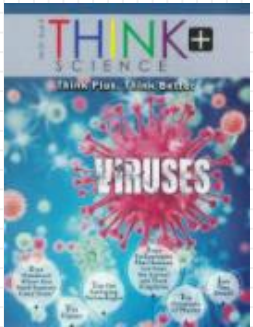
- Singapore Zoo / Night Safari / River Safari
- Jurong Bird Park
- S.E.A. Aquarium, Sentosa
- Marina Barrage
- Kranji Farms
- Parks (E.g. Hortpark)
- Gardens by the Bay / Botanics
- Sungei Buloh Wetland Reserve / Nature parks
- Singapore Science Centre
- **Everywhere and Anywhere!**

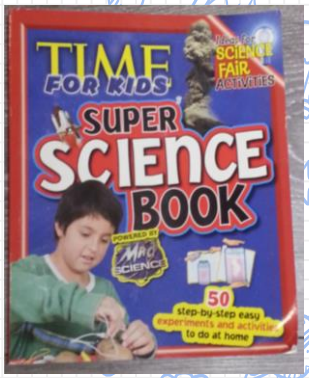
Reading

- Science Books
- Newspapers
- Magazines (National Geographic)
- THINK Science
- Science Adventures
- Young Scientists









Integration between various disciplines in real world contexts and **problem solving skills**.

Learning opportunities to develop **Growth Mindset** and reinforce values.

Future-ready students equipped with 21st Century Competencies such as critical and inventive thinking, communication, collaboration and information skills.

Our Contacts

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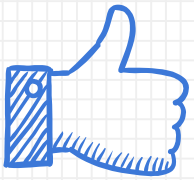

Thank you.