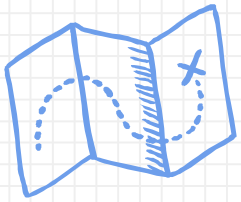
SCIENCE @ RMPS
2023

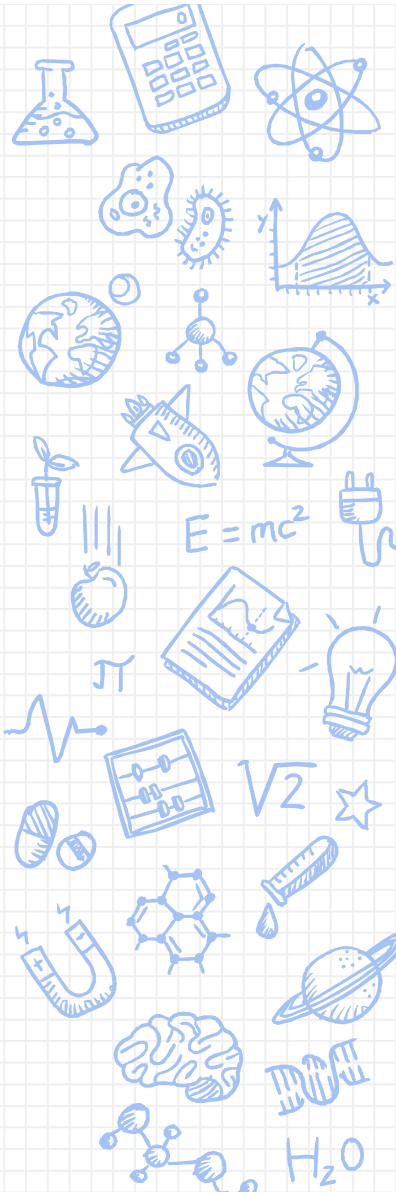
Vision

An inquirer with a passion for Science.

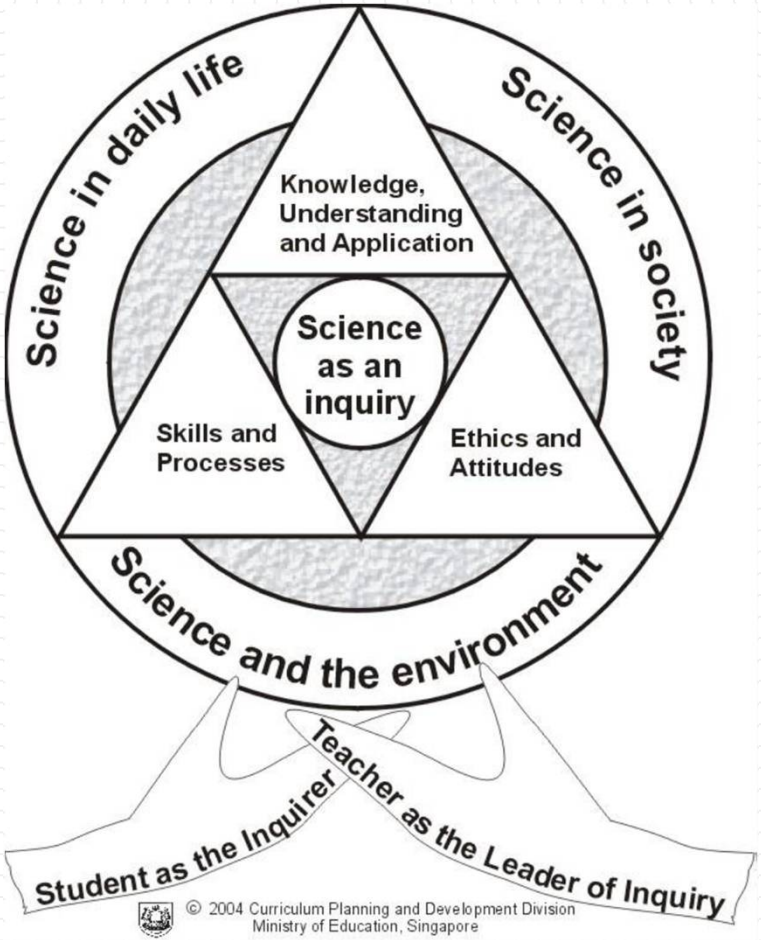


Mission

- To develop students with an inquiring mind.
- To equip pupils with science knowledge, skills, dispositions and attitudes.
- To make the learning of Science exciting, meaningful and relevant.

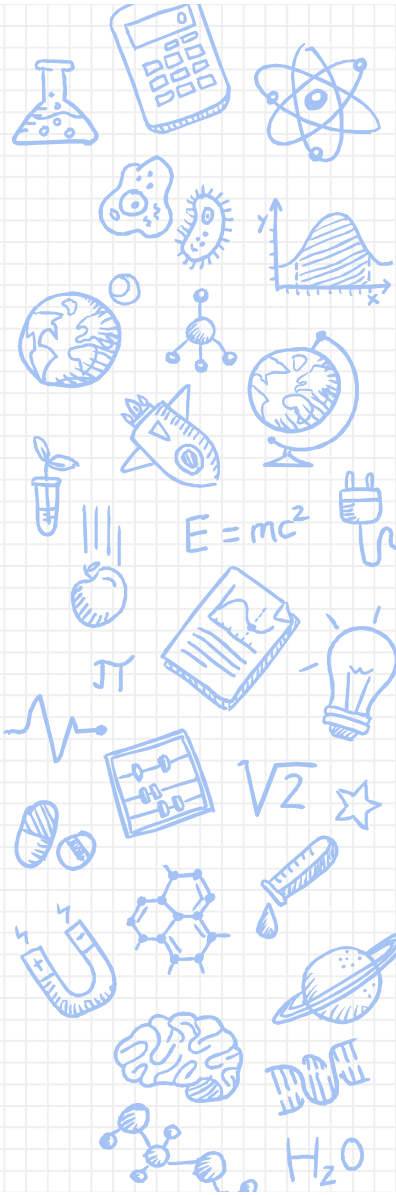


Science Curriculum Framework



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

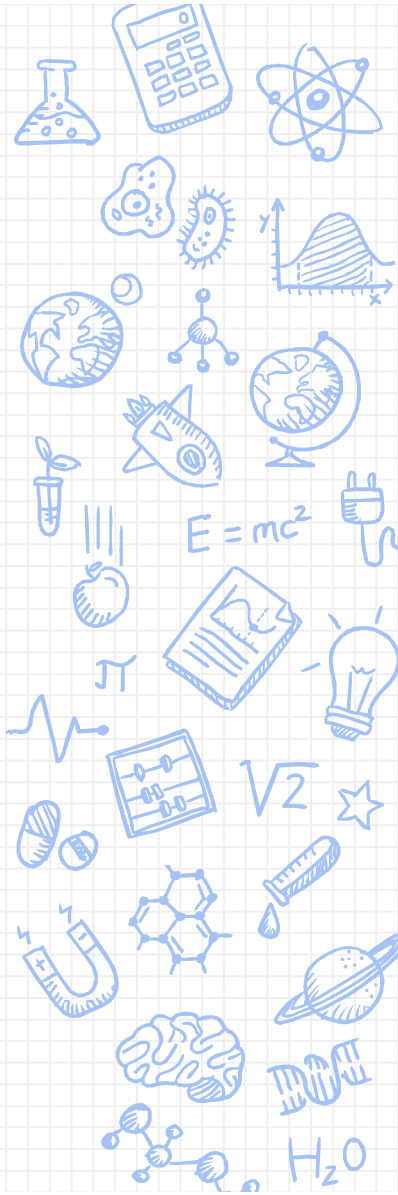
- Scientific phenomena, facts, concepts and principles
- Scientific vocabulary, terminology and conventions
- Scientific instruments and apparatus including techniques and aspects of safety
- Scientific and technological applications

Ethics & Attitudes

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

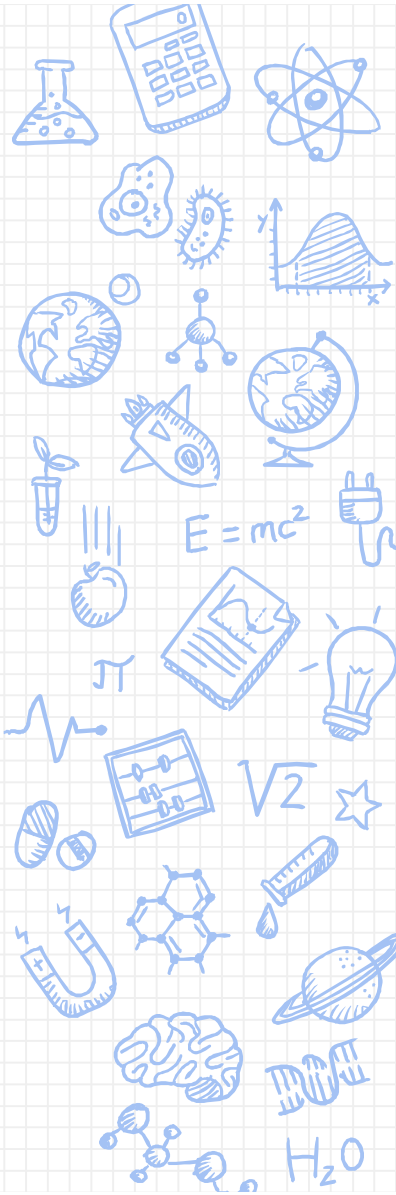
Skills & Processes

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**

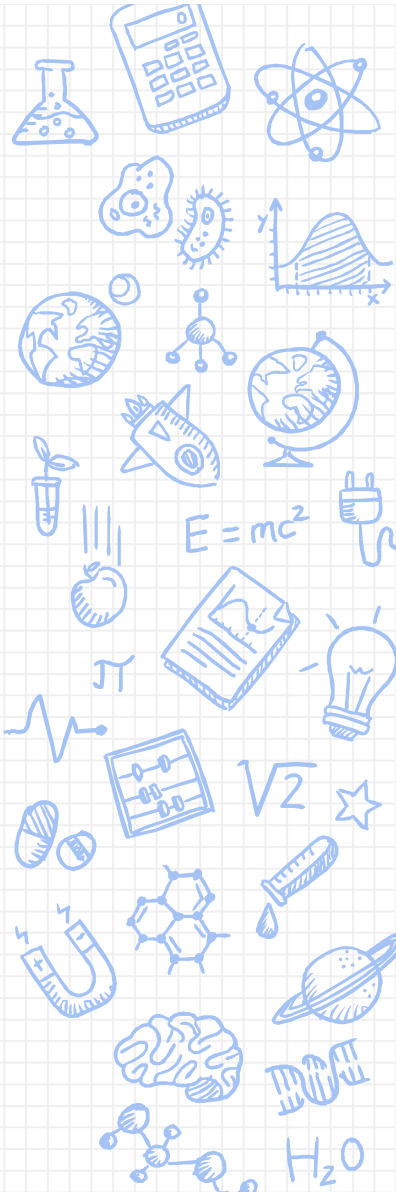


What is Conceptual Understanding?

- 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.

Mr Sng Chern Wei, Director, CPDD1
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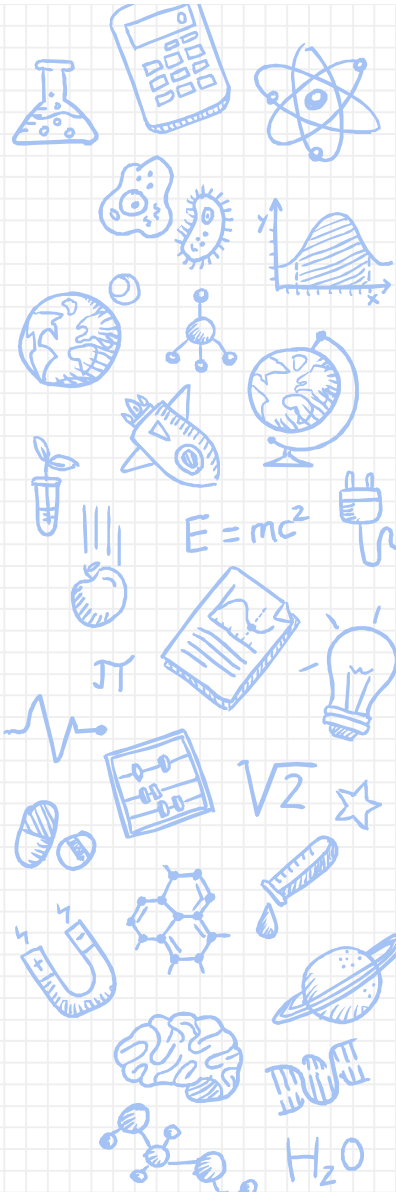
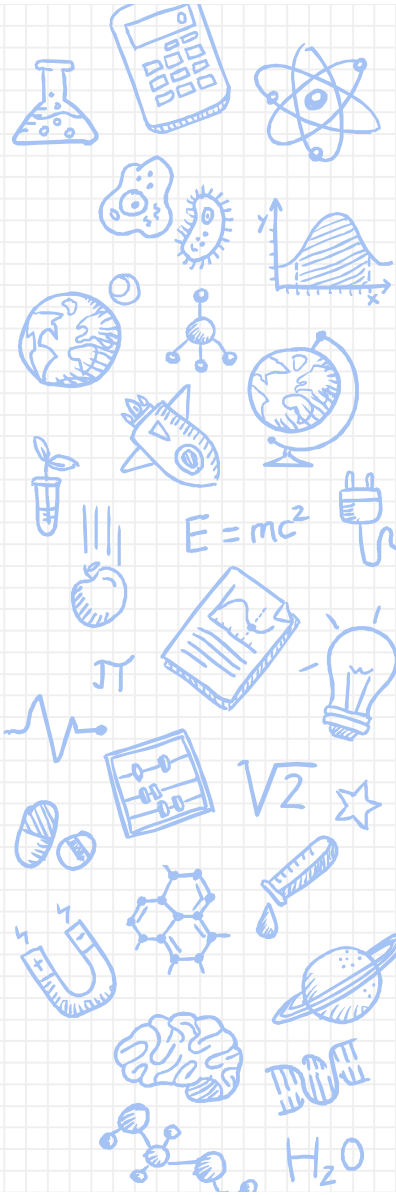
Some common mistakes

- Not reading carefully and understanding the question first
- Simply repeating the question/information given
- Writing too much or too little
- Not following instructions
- Giving incomplete answers
- Writing disorganized answers (just writing whatever comes to mind without planning)
- Not providing evidence from the data given
- No link back to question



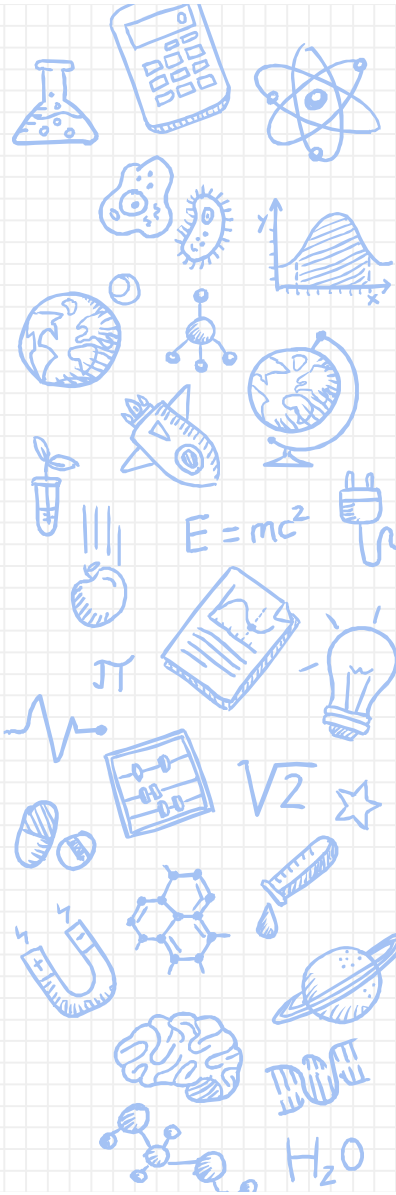
Strategies

- **Read the questions carefully**. Look for clues in the question.
- **Identify the concept** tested.
- **Identify** aim and variables.
- **Observe** and study the data given (graph/table/diagram)
- Provide **evidence** based on the data given and **link** back to the question context



Strategies

- **Annotate and plan** key points before phrasing the final answer
- **Model** answering techniques
  (**Concept-Apply-Link / Claim-Evidence-Reasoning**)
- Answers should show use of correct **scientific language** expressed in a **coherent and complete, yet concise** way.



Example

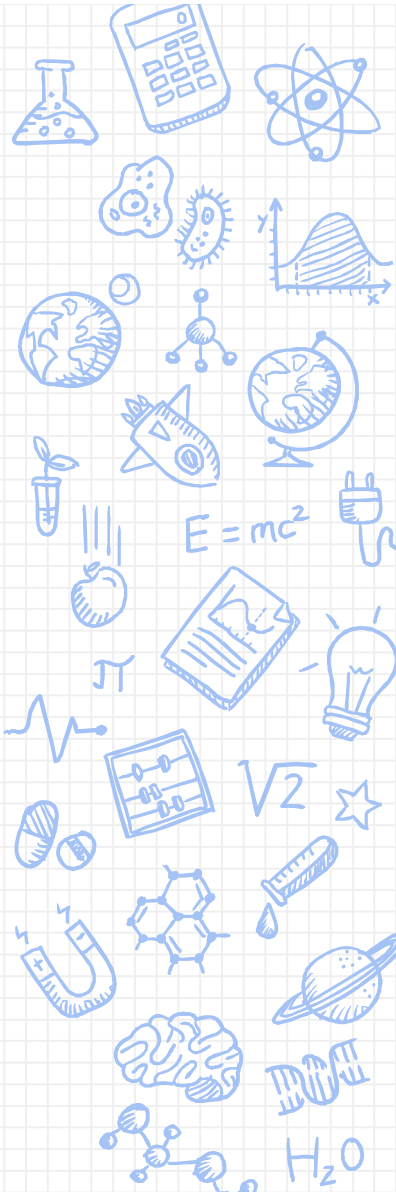
Language used in Science is very often different from our day-to-day language.

- See the smoke coming out.
- When water boils, you will see the white gas appearing.
- Look at the heat in the air.

Example

Concept: Condensation

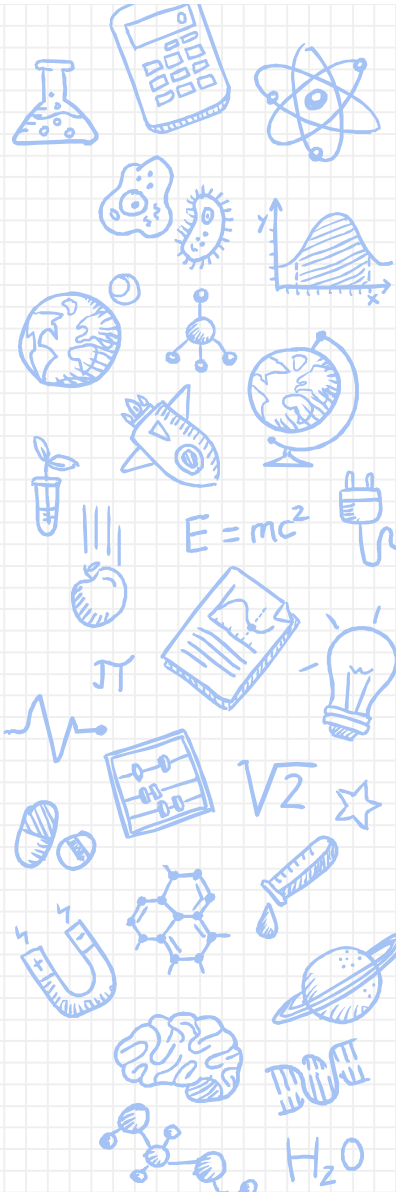
- **SOURCE:** Steam / hot water vapour
- from the kettle
- comes in contact with
- **the cooler surrounding air**
- **loses heat and**
- **condenses** into
- **water droplets (mist).**



Assessment

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

Timed-Practice	Preliminary Examination
• All P3, P4, P5 topics • P6 Topics: - Energy in Food - Energy Forms & Uses - Forces - Living Together (up to Food Chains & Webs)	• All P3-P6 topics



Primary Science Syllabus Overview

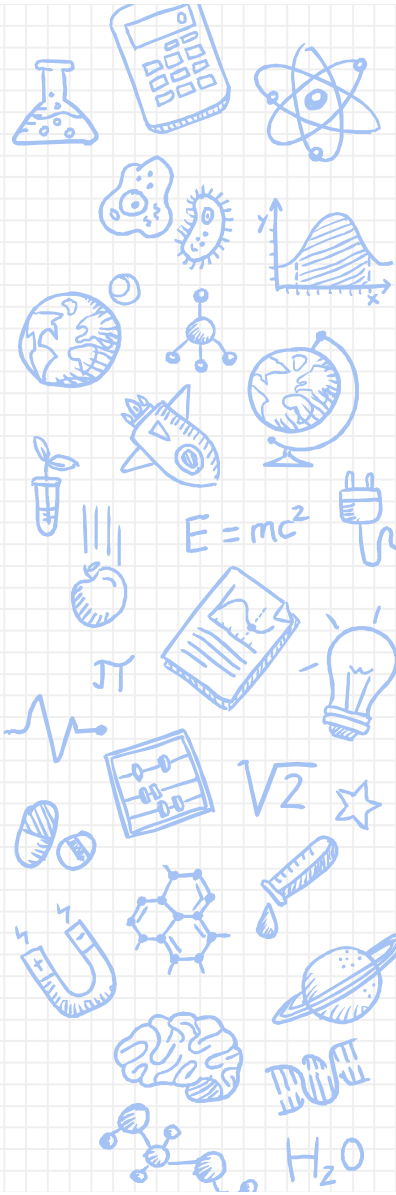
Themes	Lower Block (P3 & P4)
Diversity	• Diversity of living and non-living things • Diversity of materials
Cycles	• Cycles of plants and animals (Life cycles) • Cycles in matter and water (Matter)
Systems	• Plant system (Plant parts and functions) • Human system (Digestive system)
Interactions	• Interaction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

Primary Science Syllabus Overview

Themes	Upper Block (P5 & P6)
Cycles	• Cycles in plants and animals (Reproduction) • Cycles in matter and water
Systems	• Plant System • Human System • Cell System • Electrical System
Energy	• Energy in Food (Photosynthesis) • Energy Forms and Uses (Energy Conversion)
Interactions	• Interaction of Forces • Interaction within the Environment

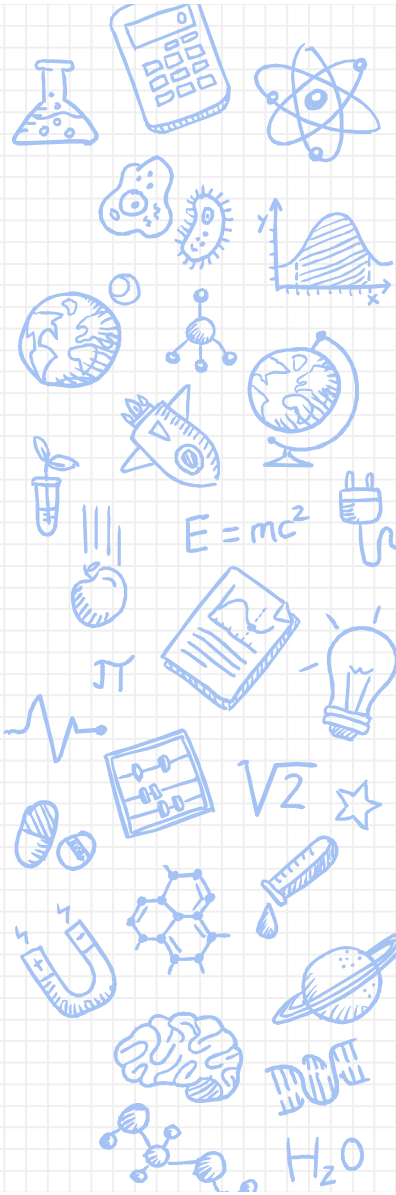
Assignments & Resources

- Booklets and worksheets (to be filed in the Science file)
- Hands-on practicals
- Revision material including Topical Questions for self-revision
- Past-year papers
- Student Learning Space (SLS) / Other online platforms



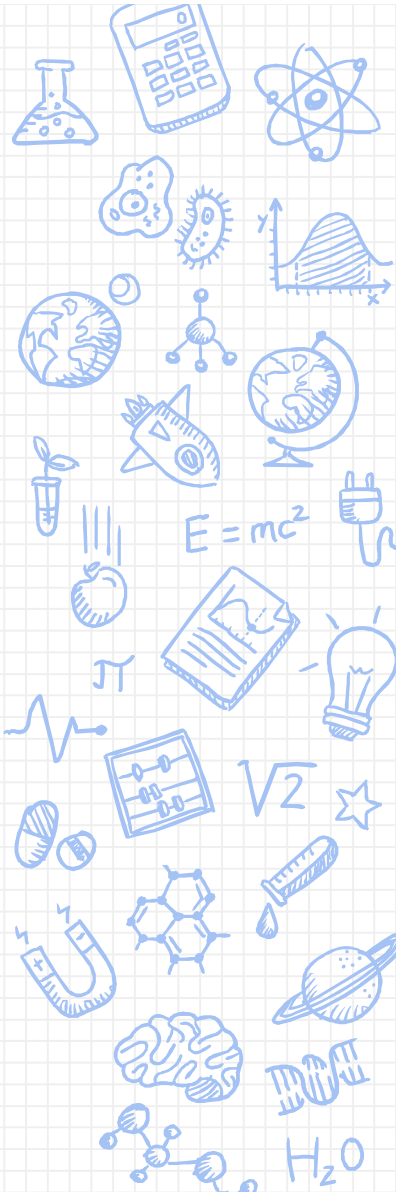
Parents as Facilitators

- ✓ Adopt good study habits
  E.g. Complete papers within time frame, practise effortful retrieval (factual recall & application)
- ✓ Encourage and promote Growth Mindset
- ✓ Speaking
- ✓ Doing
- ✓ Visiting
- ✓ Reading



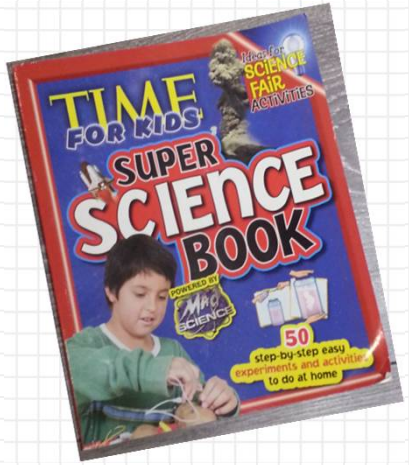
Visiting

- Singapore Zoo / Night Safari / River Safari
- S.E.A. Aquarium, Sentosa
- Marina Barrage
- Artscience Museum
- Kranji Farms
- Nparks, Gardens by the Bay
- Sungei Buloh Wetland Reserve
- Singapore Science Centre
- Intertidal Walks
- St John's Island, Pulau Ubin
- **Everywhere and Anywhere!**



Reading, Watching

- Science Books
- Newspapers
- Magazines
- TV, YouTube
- Social Media channels



Our Contacts

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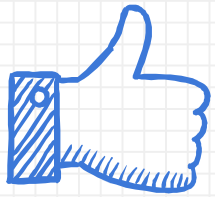

Thank you.