Curriculum Briefing
Primary 4 Science
12 Jan 2023

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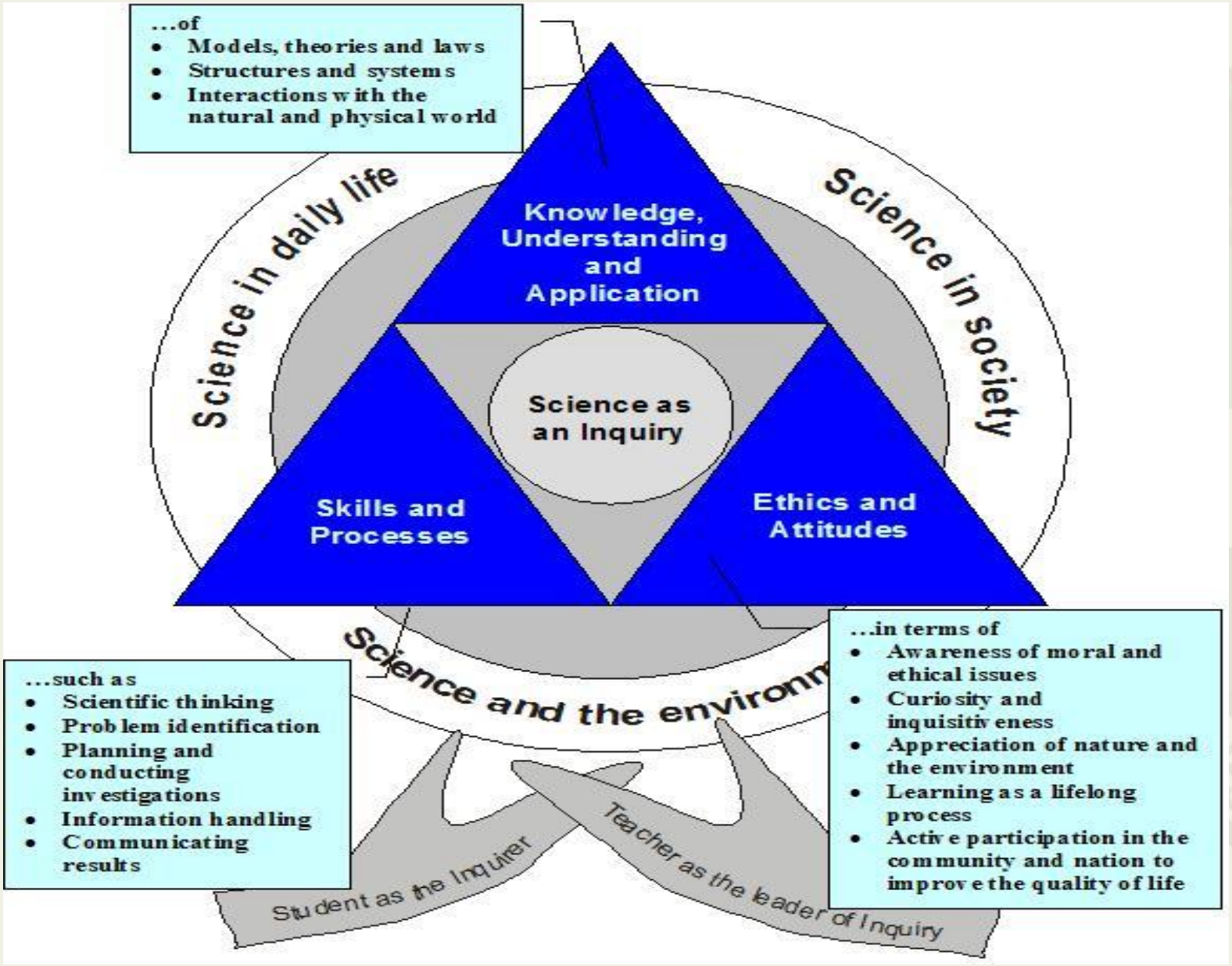
Subject Head Science

Primary Science Framework



21st Century Competencies Framework

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Primary Science Syllabus

It aims to :

- provide students with experiences which build on their interest in and stimulate their curiosity about their environment

- provide students with basic scientific terms and concepts to help them understand themselves and the world around them

- provide students with opportunities to develop skills, habits of mind and attitudes necessary for scientific inquiry

- prepare students towards using scientific knowledge and methods in making personal decisions

- help students appreciate how science influences people and the environment

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P4 Science

Science as an Inquiry

1. **Question** - Learner engages in scientific questions

2. **Evidence** - Learner collects data in response to questions

3. **Explanation** - Learner formulates explanations from evidence

4. **Connection** - Learner connects explanations to scientific knowledge

5. **Communication** - Learner communicates and justifies explanations

P4 Science

What is central to science inquiry?

Helping students use evidence to create explanations for natural phenomena.

P4 Science

SCIENTIFIC ARGUMENTATION

How do you know that?
(Data in graphical, tabular or pictorial form)

CLAIM + EVIDENCE + REASONING = EXPLANATION

What do you know?
(The answer to the question)

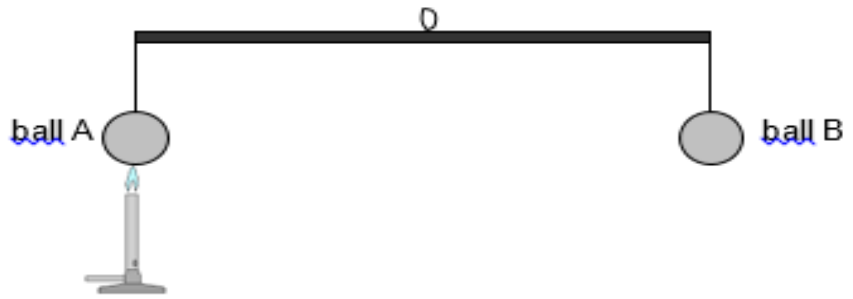
Why does your evidence support your claim?

(Connects evidence to claim which involves the use of a scientific concept to describe why the evidence support the claim)

P4 Science (feature in topical worksheet)

Sam hung two identical metal balls, A and B, on a rod such that the rod was balanced.

Then he heated ball A as shown in the diagram below.



Sam predicted that ball A would move downwards after being heated.

Do you agree with him? Explain your answer clearly. [2]

Thought Box: List out ideas that you have. Cross out those that are improbable. Sequence your ideas (where applicable)

1) For the ball to move upward, what change must occur to the ball?
2) What change occurs when metal ball interacts with heat?
3) What is the definition of volume?
4) What is the definition of mass?

*While crafting your answer, remember to use the **CER** approach.*

Checklist:

- ❑ **C**LAIM: Do you agree?
- ❑ **R**EASONING: Explanation(s) using scientific concepts that supports your claim

The thought box after each part question is meant for the pupils to make their thinking visible by organising and sequence random thoughts that the pupils pen down before they craft their responses as well as guiding the pupils to use CER to frame sound scientific explanations.

Overview of the Primary Science Syllabus

Themes	Lower Block (P3 & 4)	Upper Block (P5 & 6)
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)	• Cycles in plants and animals (Reproduction) • Cycles in matter and water (Water)
Systems	• Plant system (Plant parts and functions) • Human system (Digestive system)	• Plant transport system • Human system (Respiratory and circulatory systems) • Cell system • Electrical system
Interactions	• Interaction of forces (magnets)	• Interaction of forces (Frictional, gravitational forces, force in springs) • Interaction within the environment ((food chain /web, Adaptation, Man's impact & environment)
Energy	• Energy forms and uses (light and heat)	• Energy forms and uses (photosynthesis) • Energy conversion

P4 Science

Attitude Coverage
1) Curiosity
2) Creativity
3) Integrity
4) Objectivity
5) Open-mindedness
6) Perseverance
7) Responsibility

P4 Science

Skills and Processes at P5 level
Skills • Observing • Comparing • Classifying • Using apparatus and equipment • Communicating • Inferring • Predicting • Analysing • Generating possibilities • Formulating hypothesis

Skills and Processes
Processes • Creative Problem Solving • Decision Making • Investigation **At the level appropriate to P4*

P4 Science

Components of Lessons

1) Theory - Concept teaching
2) Hands-on : Practical Sessions in the science laboratory
3) Topical notes
4) Topical Supplementary Worksheets :
5) Worksheet 1 : Misconception
   Worksheet 2 : MCQ
6) Worksheet 3 : Open-ended
7) Learning Log: Topical reflections (concept map:last reflection) by pupil for each unit
8) Learning Log: Pupil's self-evaluation of their own learning(checklist)

P4 Science

Written Assignments

1) Science Activity book (Cycles, System, Energy)
2) Topical unit Supplementary Worksheets
3) Topical Reflections (on Learning Log)

NOTE : Topical Worksheets will be returned for parents' checking and signature upon completion of each topic.

Worksheets are to be filed in the Science File

P4 Science

Enrichment

Learning Journey @ Science Centre Singapore (Term 3): Light

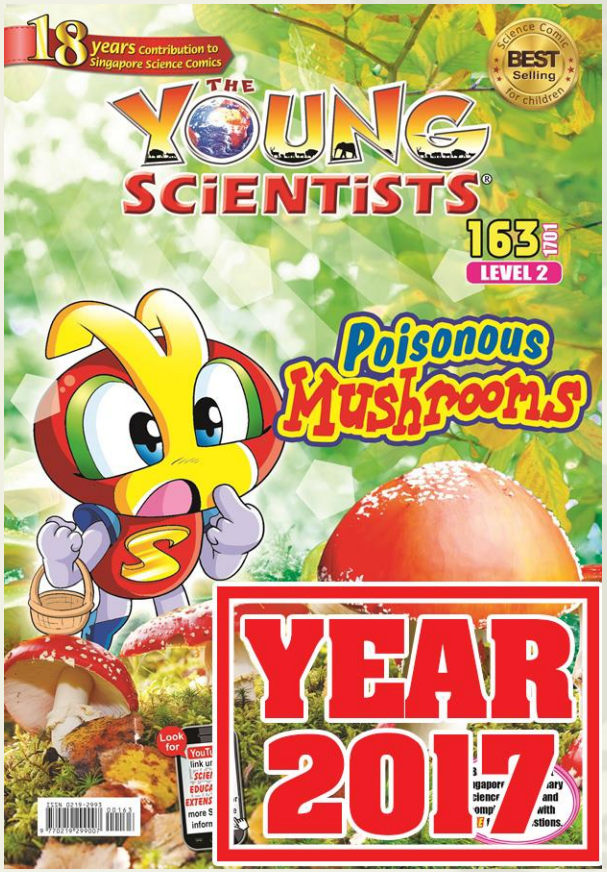
P4 Science

Enrichment

Science Supplementary Reading Material (Optional):

The Young Scientists (Level 2)

Online Subscription via:



https://youngscientistsreader.com.sg/product-category/subscriptions/

P4 Science

Sony Creative Science Award (SCSA)

Objective:

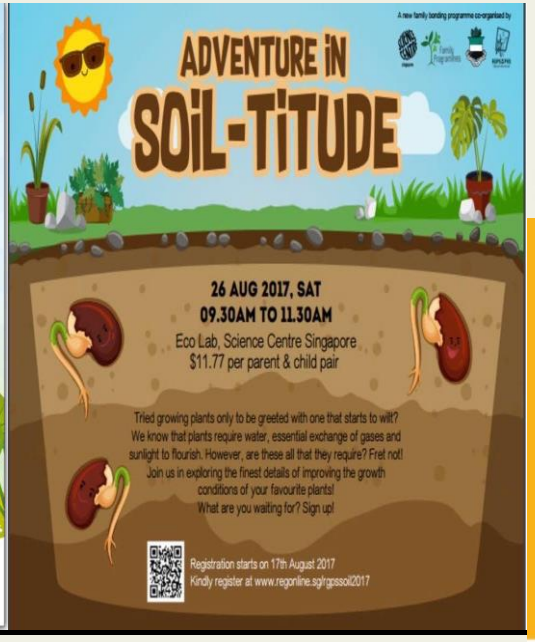
- **To encourage P4 pupils to embark on their creative toy making journey**
- **To impart selected elements of Design Thinking Skills to pupils.**
- **To allow pupils to build Science knowledge and apply scientific concept and skills learnt.**

P4 Science

RGPS Family Science Programme

- **RGPS Family Science Club**

https://www.facebook.com/**rgpsfamilyscienceclub/**



ASSESSMENT MODES

- **FORMATIVE ASSESSMENT**
  (includes open resource assessment for identified topics)
- **SUMMATIVE ASSESSMENT**

ASSESSMENT MODES : FORMATIVE ASSESSMENT

Purpose:

- ❖Provides pupils continual feedback during the instructional and learning process to help pupils actively manage and adjust their own learning.
- ❖Non-graded.
- ❖Helps the pupils to answer these questions:
  - *"Where am I going?"*
  - *"Where am I now?*
  - *"How can I close the gap?"*

Through:

- ✓Teacher/ Self and peer assessment on identified performance tasks using rubric indicators
- ✓Teacher's feedback on identified qualities of pupil's learning on topical unit content page
- ✓ Pupils' self evaluation of own learning for each topic
- ✓Pupils' reflection of own learning for each topic

From the Science Teacher:

ASSIGNMENT	Needs improvement	Sometimes	Most of the time
▪ **Completed** assignments and **submitted on time.**			
▪ **Took initiative** to **clarify doubts by asking questions** in class.			
▪ Able to provide scientific explanation by making an **accurate and complete claim** which is **supported with appropriate and sufficient evidence; provides accurate and complete reasoning** that **links evidence to claim** which includes **appropriate and sufficient scientific concepts/principles**.			
▪ Made concerted effort to **do timely corrections.**			
▪ **Updated** the content page			
▪ **Organised** the **complete** set of unit worksheets for filing.			

Feedback on the pupil's performance.

Provide opportunity for the pupil to take charge of her own learning.

***For Self-Evaluation (By pupil)* - Put a (✓) in the box.**
How well have I understood the science ideas/concepts?

1- Science ideas I understood the least **4 - Science ideas I understood the most**

	Science Ideas/ concepts	1	2	3	4
1	I am able to **identify** our main source of heat.				
2	I am able to **state** the unit of measurement of temperature.				
3	I am able to **differentiate** between heat and temperature.				
4	I am able to **show an understanding** that heat flows from a hotter region to a colder region until both reach the same temperature.				
5	I am able to **relate** the change in temperature of an object to the gain of heat from hotter region or loss of heat to cooler region by the object.				
6	I am able to **relate** the change in state of a solid, a liquid and a gas to heat gain and heat loss.				
7	I am able to **relate** expansion and contraction to heat gain and heat loss.				
8	I am able to **relate** the change in volume of matter to expansion and contraction.				
9	I am able to **recognize** that some materials allow heat from hotter region to pass through them to colder region faster than the others.				
10	I am able to **identify** good and poor conductors of heat.				
11	I am able to **recognize** the objects of **different mass** will **contain different amount** of heat when exposed to the same amount of heat over same period of time.				
12	I am able to **recognize** that the different amount of **contact surface area** of object with heat source or **exposed surface area of object** to heat source will gain different amount of heat/ will gain heat at different rate				
13	I am able to **apply** 'CER' technique to craft my scientific explanation.				
14	I am able to **determine** the aim, hypothesis, IV, DV and CVs of an investigative protocol				

TIME FOR REFLECTION!

*When you reflect, **spend time** and **think deep** to make sense of*
What you have learnt,
Why you learnt,
How you learnt,
How you apply the knowledge and skills learnt in real life.

My reflection on learning: *Before the start of unit lesson*
-What do I already know about this topic?
-What do I want to find out?
-What are the questions that I have for this unit?

Assigned as homework before the introduction of the unit

My reflection on learning: After the unit lesson
- What are the scientific concept(s) that I have learnt in this topic?
- How can the scientific concepts that I have learnt in this topic be applied in daily life? Explain in detail.
- What is/are the previous wrong science concepts(s) that I had which have been corrected?

Assigned as homework upon the completion of the unit : concept mapping

Parent's Signature: _____ **Date:** _____

Rubrics related to the activity

Raffles Girls' Primary School
Science
Rubics : Designing a Scientific Experiment

Name : _____ Class: _____

Topic : _____ Date : _____

Assessment*
*(*put a tick if criteria is observed)*

	Performance Criteria	Self	Peer	Teacher
1	There is a testable question for the experiment			
2	Research (literature review) was done to learn more about the question.			
3	The design of the experiment tests the hypothesis.			
4.	A list of all necessary materials and apparatus was included.			
5	A detailed step-by-step procedure is included.			
6.	The procedures were written clearly enough so that another person could repeat the experiments			
7.	The procedures shows that repeated trials were done			
8.	Data were collected and recorded for each trial			
9.	An appropriate graph was created to display the data			
10	Conclusion were drawn using the data and refer back to the hypothesis			
11.	A 3 or more sentence was written explaining and describing what was discovered or learned			

Assessment Modes :Summative

Type	Weighted Assessment 1 (Term 2)	Weighted Assessment 2 Science Practical Test (Term 3)	End of Year Exam (EYE)
Format	Open-ended: 5 questions	3 questions on 1) Life Science 2) Physical Science	Section A (MCQ): 25 questions Section B (OE) : 13 questions
Duration	50 min	30 min	1 h 30 min
Overall Weightage	15%	15%	70%

Science Teachers :

4AB - Ms Tan Li Peng
4C - Mrs Claire Tay
4D - Mdm Janice Yeo
4E - Ms Tan Li Peng
4F - Mdm Teng Mui Noi
4G - Mdm Janice Yeo
4HI - Mdm Aishah Aris
4EI - Mrs Claire Tay

Thank You