Science @ Primary 3
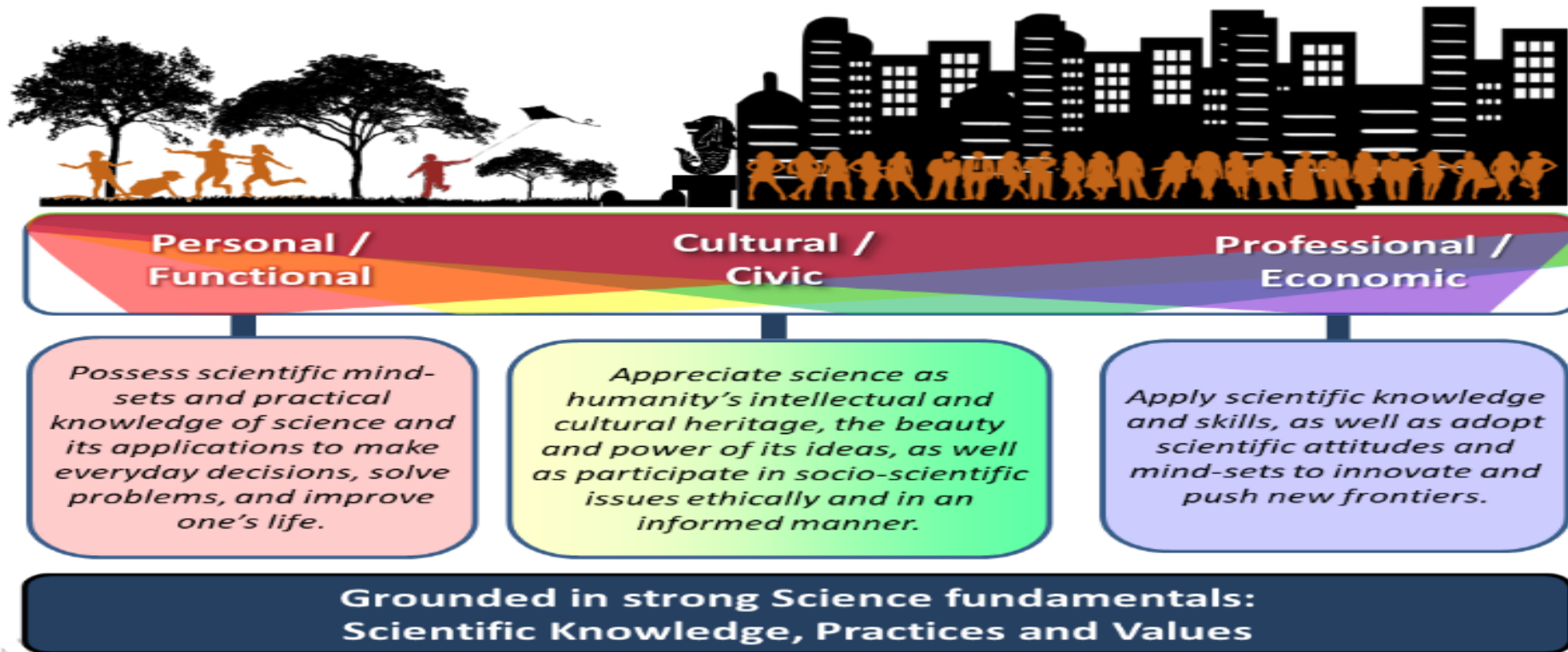
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Science for Life and Society

Science for Life and Society captures the essence of the goals of science education, which can be achieved through developing in students a strong fundamentals in scientific knowledge, practices and values.

The twin goals of science education are:

To enthuse and nurture all students to be scientifically literate

To provide strong Science fundamentals for students to innovate and pursue STEM for future learning and work

Personal / Functional

Possess scientific mind-sets and practical knowledge of science and its applications to make everyday decisions, solve problems, and improve one's life.

Cultural / Civic

Appreciate science as humanity's intellectual and cultural heritage, the beauty and power of its ideas, as well as participate in socio-scientific issues ethically and in an informed manner.

Professional / Economic

Apply scientific knowledge and skills, as well as adopt scientific attitudes and mind-sets to innovate and push new frontiers.

Grounded in strong Science fundamentals: Scientific Knowledge, Practices and Values

The goals of science education can be unpacked into three dimensions: *personal/functional, cultural/civic* and *professional/economic.*

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The *Science Curriculum Framework* below encapsulates the thrust of Science education in Singapore to provide students with a strong fundamentals in Science for life, learning, citizenry and work.
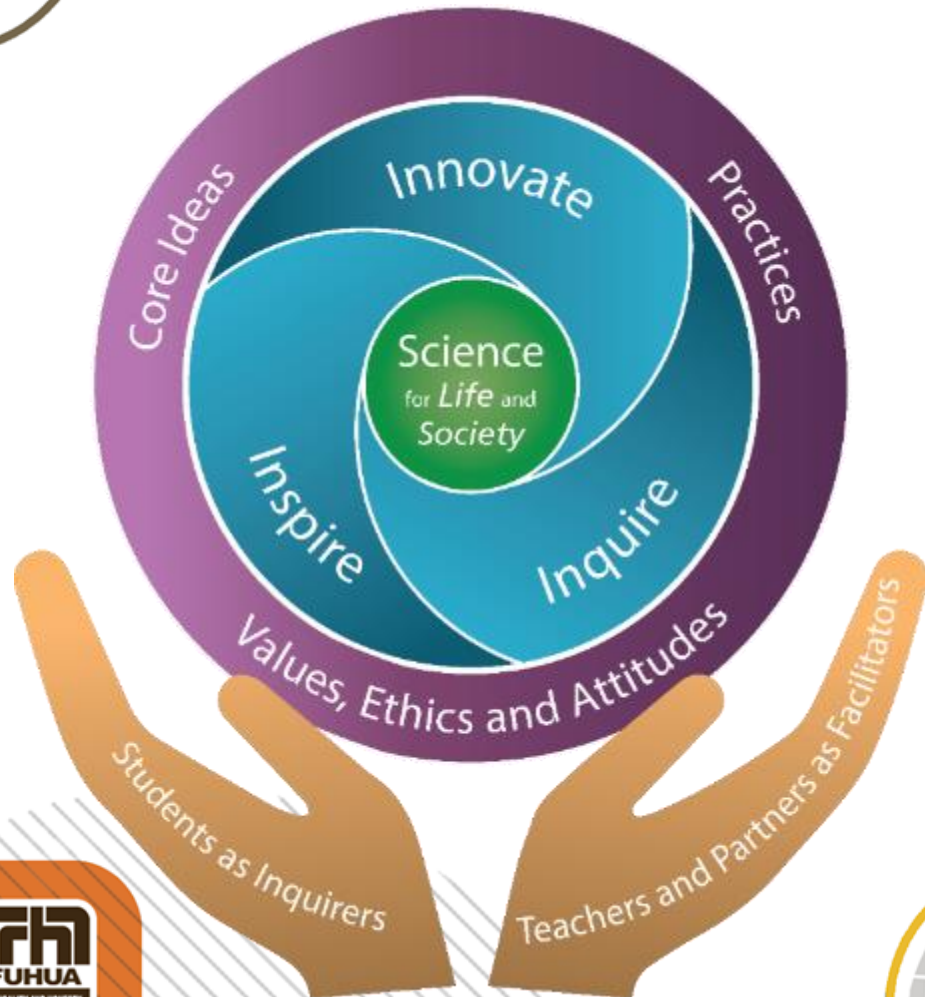
Goals
Science for Life and Society

Vision - 3Ins
Inspire
Inquire
Innovate

Three Domains
Core Ideas
Practices
Values, Ethics and Attitudes

Stakeholders
Students as Inquirers
Teachers & Partners as Facilitators

Provide students with experiences/ opportunities to:

· build on their interest and stimulate their curiosity about themselves and their environment
· acquire basic scientific concepts to help them understand themselves and the world around them
· develop skills, dispositions and attitudes for scientific inquiry
· apply scientific concepts and skills in making responsible decisions
· appreciate how science influences people and the environment

Syllabus Organisation

Levels	P3	P4	P5	P6
Themes	Diversity . Cycles . Systems . Interactions . Energy			
Topics	• Diversity of living and non-living things (General characteristics and classification) • Diversity of materials • Cycles in plants and animals (Life cycles) • Interaction of forces (Magnets)	• Cycles in matter and water (Matter) • Human system (Digestive system) • Plant system (Plant parts and functions) • Energy forms and uses (Light) • Energy forms and uses (Heat)	• Cycles in matter and water (Water) • Cycles in plants and animals (Reproduction) • Plant system (Respiratory and circulatory systems) • Human system (Respiratory and circulatory systems) • Electrical system	• Energy forms and uses (Photosynthesis) • Energy conversion • Interaction of forces (Frictional force, gravitational force, elastic spring force) • Interactions within the environment

Practices of Science

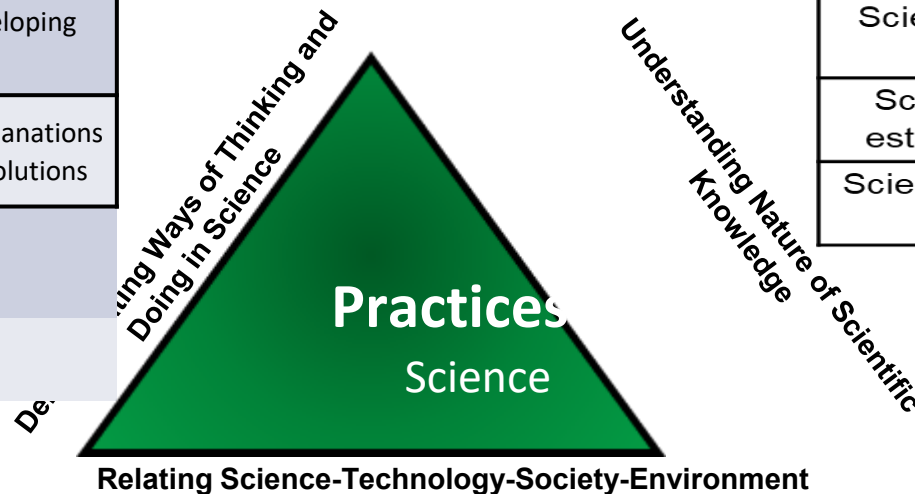Set of established procedures and processes associated with scientific inquiry

How scientific knowledge is generated and established

Demonstrating WOTD

Investigating	Evaluating and Reasoning	Developing Explanations and Solutions
Posing questions and defining problems	Communicating, evaluating and defending ideas with evidence	Using and developing models
Designing investigations	Making informed decisions and taking responsible actions	Constructing explanations and designing solutions
Conducting experiments and testing solutions		
Analysing and interpreting data		

Understanding NOS

Science is an evidence-based, model-building enterprise to understand the real world.
Science assumes natural causes, order and consistency in natural systems.
Scientific knowledge is generated through established procedures and critical debate.
Scientific knowledge is reliable, durable, open to change in light of new evidence.

Demonstrating Ways of Thinking and Doing in Science

Understanding Nature of Scientific Knowledge

Practices
Science

Relating Science-Technology-Society-Environment

Relating STSE

There are risks and benefits associated with the applications of Science in society.
Applications of Science often have ethical, social, economic and environmental implications.
Application of new scientific discoveries often drive technological advancement while advances in technology enable scientists to make new or deeper inquiry.

Application of Science in society

er, Leader and Innovator

Ways of Thinking and Doing (WOTD) supports students in learning science as inquirers and involves various skills and processes.

Demonstrating WOTD		
Investigating	**Evaluating and Reasoning**	**Developing Explanations and Solutions**
Posing questions and defining problems	Communicating, evaluating and defending ideas with evidence	Using and developing models
Designing investigations	Making informed decisions and taking responsible actions	Constructing explanations and designing solutions
Conducting experiments and testing solutions		
Analysing and interpreting data		

Syllabus Content (Practices)

There are 8 statements in WOTD which are unpacked into the explicit skills and processes which students will learn progressively at the end of P4 and P6.

Ways of thinking and doing		By the end of P4, students should be able to:	By the end of P6, students should be able to:
Posing questions and defining problems	This involves asking questions to make sense of the world (themselves and the environment) around them.	· Ask questions out of curiosity or to deepen understanding. · Ask questions which can be investigated.	
Designing investigations	This involves formulating questions or hypotheses and designing fair tests to find out answers to the questions or to verify the hypotheses.	· Recognise a fair test (changed/unchanged variables).	· Design a fair test (changed/unchanged variables).
Conducting investigations and testing solutions	This involves conducting investigations to gather data through making observations using our senses or instruments. This also involves knowing the functions and limitations of various apparatus, developing the ability to select and handle them appropriately for various tasks.	· Use senses, apparatus and equipment to gather data. · Investigate to find out answers to questions (guided investigations). · Record and/or compare observations/data with suggested scaffolding.	· Use senses and select appropriate apparatus and equipment to gather data. · Investigate to find out answers to questions (guided and open investigations). · Record and/or compare observations/data using a variety of forms e.g., notes, drawings and charts.
Analysing and interpreting data	This involves identifying and explaining the parts of objects, information (presented in different forms), as well as the patterns and relationships between these parts.	· Simple analysis of data and information in representations (e.g., tables, bar and line graphs, charts and diagrams) to infer patterns and relationships or explain findings.	· Analysis of data and information in representations (e.g., tables, bar and line graphs, charts and diagrams) to infer patterns and relationships or explain findings.

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Syllabus Content (Practices)

Ways of thinking and doing		By the end of P4, students should be able to:	By the end of P6, students should be able to:
Communicating, evaluating and defending ideas with evidence	This involves receiving and presenting information and ideas in various forms. This also involves assessing the reasonableness, accuracy and quality of information and ideas.		• Communicate (e.g., written, verbal, pictorial, tabular or graphical) clear explanation and reasoning. • Seek clarification to deepen understanding.
Making informed decisions and taking responsible actions	This involves establishing and applying criteria to select from among seemingly equal alternatives. The process of establishing criteria involves consideration of the consequences and values.		• State or select options based on appropriate criteria with reasons.
Using and developing models	This involves using multiple representations to describe, explain and predict phenomena.		· Use multiple representations (e.g., pictures, charts, diagrams, tables, graphs) to explain concepts, describe and predict phenomena.
Constructing explanations and designing solutions	This involves generating ideas and justifying them to remedy or alter a problem situation.		· Construct possible explanations and generate ideas.

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Integrated suite of resources includes textbooks, activity books, hands-on kits, SLS and teaching and learning guide (TLG).

Supports teachers in facilitating students' learning experiences

Alignment of various resources

| Textbook | Activity Book | Hands-on Kits (SPARKLE) | SLS |

Teaching & Learning Guide

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School-based Assessment

Provides complete picture of students' performance and progress

Informs effectiveness of teaching and learning process

Primary 3 weighting and Assessment mode for school-based assessment

Term 1	Term 2	Term 3	Term 4	
Weighted Assessment 1 (%)	Weighted Assessment 2 (%)	Weighted Assessment 3 (%)	End of Year Assessment (%)	Overall (%)
15	15	15	55	100
Class Activity Students design a simple classification table on things around them based on similarities and differences.	**Pen-and-Paper Test** ▪ Booklet A - Multiple Choice Questions (20 marks) ▪ Booklet B - Open-ended Questions (10 marks)	**Practical Test** Hands-on tasks that require students to make observations and express them appropriately, compare and classify objects using suitable characteristics, follow procedure and record results from an experiment.	**Pen-and-Paper Test** ▪ Booklet A - Multiple Choice Questions (28 marks) ▪ Booklet B - Open-ended Questions (22 marks)	

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OVERVIEW

- Caters for the needs of **intellectually gifted students**

- Identified for the GEP through a **2-stage exercise in Primary 3**

- Selected students will be invited to **join the programme in Primary 4**

- GEP curriculum is an enriched curriculum designed to meet the needs of GEP students

- Same content areas as those in the mainstream, but is extended in breadth and depth

Information

- You will be informed of the **date for the GEP screening exercise via Parent Gateway**.

- You will have to eventually **indicate whether you consent** to your child's participation in the exercise.

- Test preparation activities are not encouraged as these could inflate the scores, which may then not reflect your child's actual potential.

Information

- Stage 1: Screening (August 17, Thursday)

  Your opted in child will take the following papers:

  - English Language
  - Mathematics

- Stage 2: Selection (17- October, 18 Tuesday and Thursday)

  Your selected child will take the following papers:

  - English Language
  - Mathematics
  - General Ability

Co-curricular Activities (CCA)

Purpose of CCA

- Learn core values, social and emotional competencies and the emerging 21st Century Competencies

- Develop CCA specific knowledge, skills, values and attitudes

- Provide common space to build friendships and social integration among students of diverse backgrounds

- Provide active and meaningful experience which caters to broad spectrum of interests and talents

- Develop a sense of identity and belonging to the school

Primary 4 to 6 – Students get to nurture and develop their interests

Primary 3 – Students get to "sample" the different CCAs

Experience	Engagement	Excellence
Students explore their interests and talents in the various CCAs on offer in our school.	Having identified their interests, students nurture these interests and participate in organized CCA sessions and training.	Students take the next step towards developing their talents and strengths at a higher level and participate in performances and competitions.

Excellence

Engagement

Experience

Experience	Engagement	Excellence
Students explore their interests and talents in the various CCAs on offer in our school.	Having identified their interests, students nurture these interests and participate in organized CCA sessions and training.	Students take the next step towards developing their talents and strengths at a higher level and participate in performances and competitions.

CCA Subcategories	
Excellence CCA	**Engagement CCA**
Stretch Potential of students *For selected students with potential*, there will be more commitment (e.g. time - extra trainings/sessions, effort – more rigorous sessions) **Higher profile exposure with higher expectations** - Interschool/Regional Competitions - National School games (NSG)/Singapore Youth Festival (SFY) **More competitive recruitment process** for some CCA (fewer CCA slots)	**Expose Students** Lower profile competitions e.g. Friendly matches with other schools/NSG for exposure, school performances, submissions to competitions

CCA Selection Process

CCA Selection Process

- P3 students will get to experience **ALL** CCAs for Term 1 and Term 2 to help them be aware of their strengths and preferences

- CCA selection will be done at the **end of Term 2 (late May)**. Students will get to have 5 choices and will be allocated to one their 5 selected CCA choices

- Details on CCA selection will be sent via PG to parents at the end of Term 2

- **Changing of CCA in Primary 4 is not encouraged**

CCA Selection Process

- Talent scouted students (e.g. Brass Band, Soccer, Choir, Budding Artist) who have joined the CCA in P2 must still go through the experience CCA and selection process

- If the students want to carry on with the P2 CCA, they must select that P2 CCA as their first choice in the P3 CCA selection form. They have the choice of changing CCA during the P3 selection process by not choosing that CCA as their first choice

Primary 4
Subject-based Banding (SBB)

Pre-Engagement Session Reading

BACKGROUND

- Implemented in **2008**

- Premise for **ability-driven education**

- Students can take a **mix of standard and foundation subjects** through Subject-based Banding (SBB) at P5 and P6.

- Allow your child to:
  - **Stretch their potential** in subjects they are strong in.
  - **Build up their understanding in subjects** they need more help with.
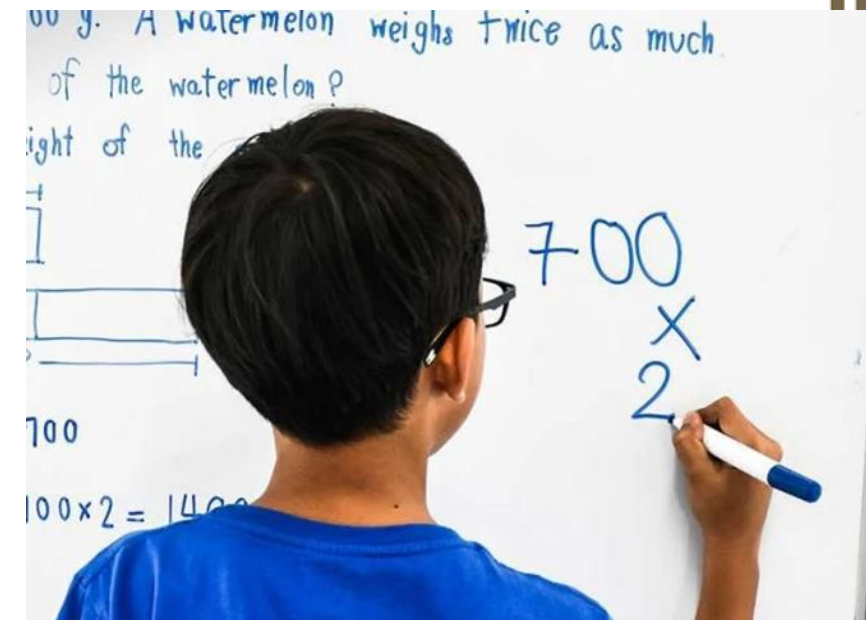
Subject Combinations

P5 SUBJECT COMBINATIONS

P4 results	Your child may be recommended to take
Passes all 4 subjects and performs very well in Mother Tongue Language	4 standard subjects & Higher Mother Tongue Language
Passes all 4 subjects	4 standard subjects
Passes 3 subjects	4 standard subjects
Passes 2 subjects or less	4 standard subjects or
	3 standard subjects + 1 foundation subject
	2 standard subjects + 2 foundation subjects
	1 standard subject + 3 foundation subjects
	4 foundation subjects

P5 SUBJECT COMBINATIONS

Option	Code	Subject combination
1	4S1H	EL / MA / MT / SCI / **HMT**
2	4S	EL / MA / MT / SCI
3	3S1F	EL / MA / MT / SCI with **FMA / FSC / FMT**
4	3S	EL / MA / SCI *(Exempted from MT)*
5	2S2F	EL / SC / MA / MT + **FMA / FMT / FSC**
6	4F	**FEL / FMA / FMT / FSC**
7	3F	**FEL / FMA / FSC** *(Exempted from MT)*

Criteria in offering subject combinations

- Schools will **recommend the combination of standard and foundation subjects** based on the following:

  - Student's **motivation and performance** in each subject
  - Student's **ability to cope** with a particular subject combination

At THE END OF P5

STUDENTS TAKE A SUBJECT COMBINATION DETERMINED BY THE SCHOOL

| ALL OTHER STUDENTS	STUDENTS WHO EXCEL	STUDENTS NOT COPING WITH DEMANDS AT P5
CONTINUE WITH THE SAME SUBJECT COMBINATION	ADJUSTMENTS TO SUBJECTS OR CONTINUE WITH THE SAME SUBJECT COMBINATION	SWITCH SOME SUBJECTS TO FOUNDATION LEVEL

PRIMARY SCHOOL LEAVING EXAMINATION (PSLE) AT THE END OF P6
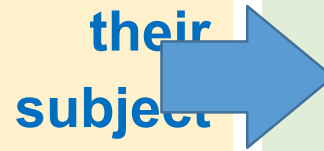
SBB JOURNEY

At Primary 4

- Sits for the **school exams**.

- School **recommends a subject combination** based on P4 results.

- Fill up an **option form.**
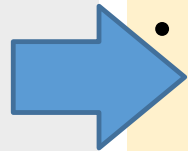
At Primary 5

- Takes **their preferred subject combination**.

- School **assesses your child's ability** to cope with the subjects.

- **Adjustments to the subject levels** are made if needed.

At Primary 6

- Takes **the subject combination recommended** by the school and sits for PSLE.

- Progression **to secondary level** depends on PSLE results.

- If your child **excels in certain subjects**, they can pursue higher level options.

Subjects at the Foundation Level

SUBJECTS AT FOUNDATION LEVEL

- Offering subjects at the foundation level is **not** **a** **disadvantage to your child**.

- Offering subject at Foundation level **enables students to focus on building up strong fundamentals** in these subjects and **better prepares them for progression** to secondary school.

Higher Mother Tongue Language

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Creating Opportunities • Leading Learning • Building Communities

TAKING HIGHER MOTHER TONGUE

AFTER P4

P5 HMT Classes

HMT Textbooks

Additional 1-hour lesson (outside curriculum hours)

Sit for MT & HMT Papers

P5 MT Classes MT
Textbooks MT
Papers

- Excel in all standard subjects.
- Pass HMT

No

YES

P6 HMT Classes HMT
Textbooks MT & HMT
Papers

P6 MT Classes MT
Textbooks MT
Papers

Using HCL for Admission into SAP Schools

Students who take HCL will receive a posting advantage when applying to SAP schools

Students will be considered for admission to SAP schools in the follow order:

1st		7	NO HCL
2nd		8	DISTINCTION
3rd		8	MERIT
4th		8	PASS
5th		8	NO HCL
6th		9	DISTINCTION

Students with better PSLE scores will be posted first, even if they did not take HCL

Amongst students with the same PSLE score, those with better HCL grades will be posted first.

List of SAP Schools

Anglican High School

Catholic High School

CHIJ Saint Nicholas Girls' School

Chung Cheng High School (Main)

Dunman High School

Hwa Chong Institution

Maris Stella High School

Nan Chiau High School

Nan Hua High School

Nanyang Girls' High School

River Valley High School

Eligibility for Higher mother Tongue (HMTL) in secondary schools

(i) PSLE Score of 8 or better

OR

(ii) PSLE Score of 9 to 14 inclusive; and attain

- **AL1 / AL2 in MTL or**
- **Distinction / Merit in HMTL**

- The **eligibility criteria** for taking HMTL is intended to ensure that students can cope with the additional load of HMTL

- For **students who do not meet the above criteria**, secondary schools will continue to have the flexibility to offer HMTL to students.

Parent's Role

Encourage your child to recognize that every student is unique and has their own strengths and weaknesses.

Guide your child to **find the right balance** between school work as well as their co-curricular activities, so that they **can discover** **their** **strengths and talents** and excel in them.

If you have further questions, please click on this link
https://ahaslides.com/FHPS34
or scan
the QR code below and key in your question.

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