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**Science (2<sup>nd</sup> Edition)**  
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We've worked with ministries, policymakers, educators, and parents in over 85 countries, designing education solutions in 14 languages for Pre-K to 12. MCE is the only Asia-based publisher that is an endorsement partner of Cambridge Assessment International Education.

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MCE Cambridge Primary Science (2<sup>nd</sup> Edition) is designed to support educators and learners in fulfilling the Cambridge Primary Science curriculum framework (0097). The series is curated to hone young scientists who seek to make a difference with their knowledge and skills, and help learners build understanding of scientific concepts.

#### Series architecture

- Student's Book (Stages 1-6)
- Activity Book (Stages 1-6)
- Teacher's Guide (Stages 1-6)
- eBook (Stages 1-6)\*
- Additional Digital Resources\*

*\*These resources will not go through the Cambridge International endorsement process.*

# Cambridge Primary Science

## 2<sup>nd</sup> Edition

### Brochure



**Beyond Basics, Reset Education**

# Marshall Cavendish Education Cambridge Primary Science (2<sup>nd</sup> Edition)

Marshall Cavendish Education (MCE) Cambridge Primary Science (2<sup>nd</sup> Edition) series fulfils the new Cambridge Primary Science curriculum framework (0097). The series is designed to help young learners build a sound understanding of scientific concepts and to become young scientists who make a difference to the world with their knowledge and skills.

Within this series, you will find Singapore’s tried-and-tested methodologies embodied in high-quality resources that support the Cambridge Primary Science curriculum framework. This programme includes a range of supporting resources, customisable for both online and face-to-face learning, in order to consistently deliver outstanding learning and teaching experiences.

The 2<sup>nd</sup> Edition has retained the active learning approach, easy-to-understand language, and rich visuals. It builds on the previous edition by incorporating the new Thinking and Working Scientifically strand which aims to nurture students into active learners who understand the role science plays in the world around them.

## Product Architecture

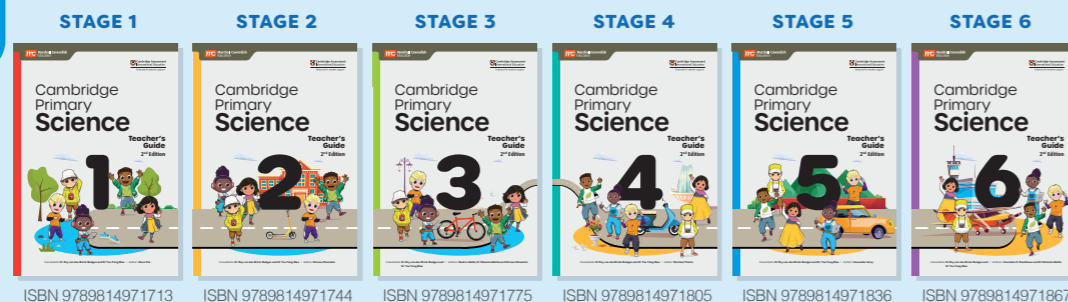
### STUDENT'S BOOK



### ACTIVITY BOOK



### TEACHER'S GUIDE



## Additional Digital Resources\*

- **Student's Book**
  - Annotatable Enhanced eBooks (Tagged with interactive digital resources)
- **Activity Book**
  - Annotatable eBooks
- **Digital Teacher's Guide**
  - Scheme of Work (Editable)
  - Lesson Plans (Editable)
  - Teaching Ideas and Strategies (Editable)
  - Suggested Answers for Student's Book and Activity Book
- **Homework Worksheets (Editable)**
- **Lesson PowerPoint Slides (Editable)**
- **Depository of Licensed Videos**

\*These resources will not go through the Cambridge International endorsement process.

## Why choose MCE Cambridge Primary Science (2<sup>nd</sup> Edition)?




- Offers the best of both worlds to equip students for successful and meaningful living in the 21<sup>st</sup> century
- Provides effective support and strategies for English as a Second Language (ESL) learners and educators
- Promotes relatability through real-life and Asian-centric contexts
- Delivers a fun and engaging hybrid learning experience

# Offers the Best of Both Worlds to Equip Students for Successful and Meaningful Living in the 21<sup>st</sup> Century

This series combines Cambridge International's global standard with Singapore's tried-and-tested methodologies. It has retained the active learning approach and incorporated the new Thinking and Working Scientifically strand. This will help to develop learners' scientific skills, allowing them to master 21<sup>st</sup> century skills such as critical and creative thinking skills.

Well-crafted questions embedded within the content and investigations support scientific inquiry. This will nurture active learners who think and work like scientists. This series also provides opportunities for self-directed learning and reflective thinking.

**CHAPTER 11** **Movement of Earth**



Look at the picture. You have learnt that Earth spins on its axis. Did you know that Earth also moves in other ways? Seasons such as spring, summer, autumn and winter are caused by the movement of Earth. How does that happen?

Choose two seasons and write one word to describe each.

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**Chapter Opener**

*Inquiry questions*, which require direct answers, opinions, or explanations, are used to *trigger discussions* pertaining to the topic and *encourage deeper thinking* related to the concepts.

**In this section, I will...**

A list of learning outcomes helps learners to be *aware of their learning pathway and success criteria* for each section.

**Thinking Cap**

Question prompts encourage learners to *reflect and think about what they already know*, allowing educators to *evaluate their prior knowledge*. Learners can exercise higher-order thinking and *model reflective behaviour, like a Cambridge learner*.

**Let's Explore!**

Hands-on activities, which can include group or peer discussion, are easily conducted in class, allowing learners to *explore concepts* before learning the facts and *build 21<sup>st</sup> century skills*, such as communication and collaboration.

**A Flowers**

**In this section, I will**

- learn that not all plants produce flowers
- identify parts of a flower
- describe the functions of some parts of a flower
- sort living things by observation
- complete a key based on differences that can be observed
- learn that a model shows the important features of an object

**Thinking cap**

What is inside a flower?




**Let's Explore!**

**Do all plants have flowers?**

In groups, take a walk around the school garden or a nearby garden.

- Ask yourselves the following questions:
  - What do you look out for to tell if something is a plant?
  - What are some of the common parts that all plants have?
  - Do all plants have flowers?
- Find out the names of the plants in the garden from your teacher. Complete the key to sort the plants into two groups.



```

            graph TD
            A[ ] -- yes --> B[ ]
            A -- no --> C[ ]
            
```

**Let's Learn**

**What Are Gaseous Substances?**

In Stage 3, you have learnt that substances can exist as solids, liquids and gases. Substances that are gases are said to be in the **gaseous** state.

When you squeeze a sponge under water, you will observe bubbles. The bubbles are made of air. The air around us is a mixture of gases such as nitrogen, oxygen, and small traces of carbon dioxide, water vapour and hydrogen. These substances exist as gases at **room temperature**, which is the temperature of our surroundings.



Why is the room temperature different in different parts of the world?

The air you blow into a balloon is a mixture of gases.

Can you name other substances that are gases at room temperature?

**Word Boost**

**Let's Learn**

Apart from explanation of the key points, *inquiry questions* are embedded within the main text to *promote thinking and discussion*.

**Problem-based Learning**

These activities will encourage learners to *think critically and creatively* for possible solutions to *real-life problems* that affect them, their community, or society.

**Problem-based Learning**

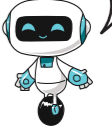
**Help pollinate the plants!**



Many of the plants grown for food depend on pollination. Honeybees play an important role in pollinating the flowers, but their population is reducing. We need to find other ways to pollinate flowers so we can produce enough food.

- Work in groups. Design a machine that can be used for pollination. It could be hand-powered or wind-powered, or use another way to transfer pollen.
- List down a scientific question that your group wishes to investigate in order for you to understand the pollination process better. Select the appropriate scientific enquiry to use to find the answer.
- Which type of scientific enquiry has your group chosen to use? Why?
- Present your idea or model to the class.

Can you think of any other ways we can help pollinate the flowers?




## Science at Work

The Italian astronomer Galileo discovered four of Jupiter's moons in 1610.



Io, Europa, Ganymede and Callisto were the first four moons found by Galileo. More than 70 moons of Jupiter have been discovered over the years, and over 50 of them have been named. There may also be more moons that have not been discovered yet.

Carry out research to find out how our understanding and knowledge of Jupiter's moons have changed over time. Create a timeline to show what you have found.

## Science at Work

Provides information to relate the topic to science careers or everyday life. **Research questions** are included for **further exploration to extend learning**.

## Tech Talk!

Features modern technology that can be used to solve issues related to the topic and includes a **critical thinking question** for learners to **ponder and conduct research**.

## Check Your Learning

**Formative assessment** questions at the end of a section help to **check learners' understanding**.

## I Can

A list of statements which summarise what learners should know at the end of a section. Learners can **check on their progress** through this **reflective exercise**.

## Tech Talk!



Many scientists look at adaptations of animals to come up with new inventions. There is a type of glue that works underwater. This glue is modelled after how mussels have adapted to living underwater. The glue is made to work well in water so that it can be used to fix cracks in aquariums and swimming pool floors.

Find out what other useful products have been modelled after adaptations that plants and animals have.

## Check Your Learning

Describe two adaptations of plants and animals in hot and cold environments.

Tick (✓) to show what you can do.

- I can describe how plants and animals are adapted to different environments.
- I can use science to support my points of view in discussions.

Activity Book  
Activity 3A, p. 21

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## Practice Worksheet

End-of-chapter questions that are available in various formats, such as fill-in-the-blanks and tick the right answer(s), can help **consolidate learning** and **assess learners' overall understanding of concepts**.

### Practice Worksheet

1. Tick (✓) the correct box beside each sentence.

	True	False
Leaves are the reproductive parts of flowering plants.	<input type="checkbox"/>	<input type="checkbox"/>
The anther contains pollen grains.	<input type="checkbox"/>	<input type="checkbox"/>
The transfer of pollen grains from the anther to the stigma is known as fertilisation.	<input type="checkbox"/>	<input type="checkbox"/>
The ovary develops into a fruit after fertilisation.	<input type="checkbox"/>	<input type="checkbox"/>
Seeds are dispersed only by animals.	<input type="checkbox"/>	<input type="checkbox"/>
Seeds need light to germinate.	<input type="checkbox"/>	<input type="checkbox"/>

2. Draw lines to match the parts of flowers to their functions.

part	function
anther	attract insects for pollination
ovary	the part where pollen lands
petals	contains pollen grains
stigma	contains ovules that may develop into seeds

3. This plant has brightly coloured flowers that are useful for a process.



Which process is it?

Tick (✓) the correct answer.

- germination
- pollination
- seed dispersal

4. Reza and Vinit placed some bean seeds in identical pots of soil and gave them an equal amount of water. Reza kept his pot in the refrigerator. Vinit kept his pot at the window sill. The pictures below show what they observed a few days later.



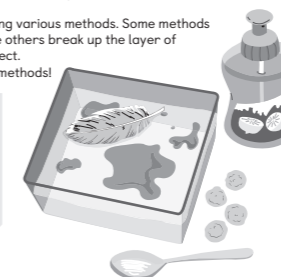
Give one reason why the seeds in Reza's pot did not germinate.

## Activity 10B Clean Up the Oil Spill

**Skills:** Use a model to illustrate and explain a scientific idea, reach a scientific conclusion from my results

Oil spills are cleaned up using various methods. Some methods help to remove the oil, while others break up the layer of oil to reduce its harmful effect. Let's try out some of these methods!

**Materials:**  
Container  
Water  
Spoon  
Vegetable oil  
Feather  
Cotton balls  
Dishwashing liquid



### Method

- Fill half of a container with water. Add a tablespoon of oil into the container. Record what you observed.
- Put a feather into the oily water. Then remove the feather and observe what the oil has done to it.
  - Record what you observed.
  - Based on your observations, how do oil spills affect birds?

## Activity Worksheet

A variety of engaging activities such as hands-on exercises and research allow learners to **apply their knowledge in practical scenarios** and **encourage them to think and work scientifically**. They are designed to help learners **develop scientific skills**, as well as **21st century skills** such as critical thinking, creativity, and communication.

## Let's Review

1. Aminah is preparing to run a marathon. Which of these would provide her with the most energy for the race? Circle the correct answer.



2. Some people do not have a balanced diet. This can cause problems with their health.

Draw a line to match the diet to the problem it can cause.

diet	problem
too much fat	not much energy
too much sugar	heart disease
not enough protein	tooth decay
not enough carbohydrate	poor growth

3. Erin wants to eat cupcakes after every meal. Give two reasons why this could be unhealthy for Erin.

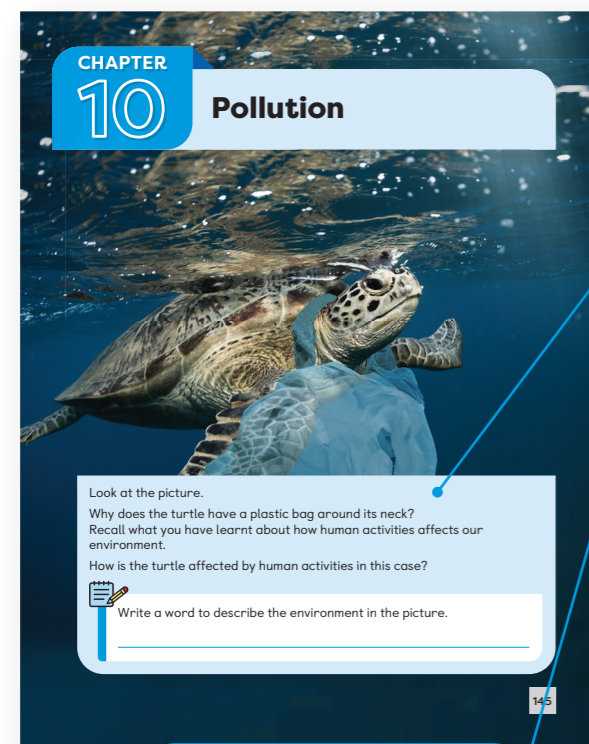
## Let's Review

Wrap up each chapter with a variety of questions including **application-based and structured questions**, which **reinforce learning** and **facilitate assessment for learning**.

# Provides Effective Support and Strategies for ESL Learners and Educators

ESL learners and educators are well-supported in their learning and teaching through this series. With the right language pitch and language support features such as Science Words and Word Boost, ESL learners can easily understand the content and grasp concepts quickly. Through this series, they can expand their vocabulary and are guided to apply them in their answers. Vibrant visuals are used to simplify complex concepts by helping learners visualise them, promoting a better understanding.

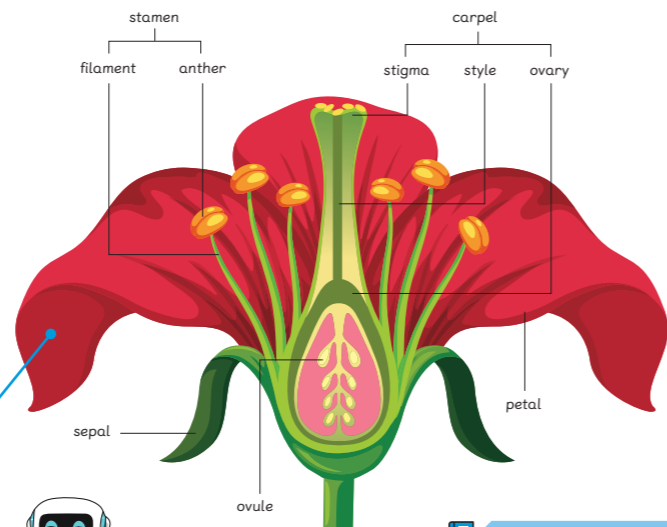
ESL educators will receive support from the effective strategies and suggested ideas through the lesson plans. The overall content design and scaffolding in the series ensure that they can deliver outstanding teaching and learning.



**Chapter Opener**  
A simple and fun language-based writing exercise, such as writing words or a sentence, can be used to capture interest while introducing the chapter.

**What Are the Parts of a Flower?**  
Flowers are the parts of a plant that help it reproduce. They are the reproductive parts of the plant.  
The petals of a flower surround its male and female parts. The stamen of the flower includes the male parts. The carpel includes the female parts. Each part of the flower has a different function.

The labelled diagram below is a model of a flower. As some flowers look different from others, a model helps us understand the common features of flowers.



**Word Boost**  
surround function

**Word Boost**  
Non-scientific words are provided with definitions in the Teacher's Guide to support ESL learners in expanding their vocabulary and understanding the content.

**Let's Learn**  
Simple, concise sentences are used to explain concepts in an inviting tone and ensure easy understanding of the content. Scientific keywords are presented in bold for emphasis and support learners in scientific literacy.

**Vibrant and Rich Visuals**  
Vibrant and rich visual representations are used in explanations as they simplify complex concepts and help learners visualise them.

**Science Words**

**A**  
**anther**  
the male part of a flower that contains pollen grains

**C**  
**carpel**  
the part of a flower that contains the female parts

**F**  
**fertilisation**  
the process in which the pollen and the egg join

**flowering plants**  
plants that bear flowers

**flowers**  
parts of a flowering plant that help it reproduce

**G**  
**germination**  
the development of a plant from a seed

**L**  
**life cycle**  
the stages of growth and development in the life of a living thing

**N**  
**non-flowering plants**  
plants that do not bear flowers

**O**  
**ovary**  
the female part of a flower that contains ovules

**P**  
**petals**  
parts of a flower that usually have bright colours

**pollination**  
the transfer of pollen from the anther of a flower to the stigma of the same or a different flower

**S**  
**seeds**  
small, hard parts of a plant from which new plants grow

**seed dispersal**  
the scattering of seeds away from the parent plant

**stamen**  
the part of a flower that contains the male parts

**stigma**  
the female part of a flower where pollen is received

**T**  
**temperature**  
a measure of how hot or cold something is

**Science Words**  
The meanings of the scientific keywords are provided to build scientific literacy.



**Activity 5C Changing Solvents**

**Skill:** Reach a scientific conclusion from my results

In Activity 5B, you found out that sugar can dissolve in water. In this activity, you will find out if sugar can dissolve in other solvents.

**Materials:**  
Honey  
Two beakers  
10 g of sugar  
Two teaspoons  
Cooking oil

**Method**

- Pour 100 ml of honey into one of the beakers.
- Put 10 g of sugar into the beaker of honey. Using the teaspoon, stir 20 times.
- Repeat steps 1 and 2, this time using cooking oil as the solvent.
- Observe if there is any sugar remaining after each mixture is stirred 20 times.

Using your observations, complete the sentence below to make conclusion for this investigation.  
Sugar can dissolve in \_\_\_\_\_.

**Activity Worksheet**  
ESL-friendly worksheets include questions to help learners practise writing answers.

**Let's Map It!**

Fill in the blanks. Use the following words.

decibels gases high light liquids loud low quickly quiet slowly solids sound meter speed strength strong vibrate

**Sounds**

- Sounds are made when objects \_\_\_\_\_ and \_\_\_\_\_.
- Sounds can travel through \_\_\_\_\_ and \_\_\_\_\_.

**Pitch**

- Pitch depends on the \_\_\_\_\_ of vibrations.
- \_\_\_\_\_ pitched sounds are made when an object vibrates \_\_\_\_\_.
- \_\_\_\_\_ pitched sounds are made when an object vibrates \_\_\_\_\_.

**Volume**

- Volume depends on the \_\_\_\_\_ of vibrations.
- \_\_\_\_\_ sounds are made by \_\_\_\_\_ vibrations.
- \_\_\_\_\_ sounds are made by \_\_\_\_\_ vibrations.
- It can be measured using a \_\_\_\_\_.
- The unit measure is \_\_\_\_\_ (dB).

**Let's Map It!**  
Concept maps with keywords for learners to fill in serve as a tool to revise key concepts and consolidate learning.

**Word Whizz**

Help Eddy solve the puzzle! Use the clues to complete the crossword puzzle.

**Across**

- A layer of gas that surrounds the Earth
- The continuous movement of water from the Earth's surface to the sky and back to the Earth's surface (two words)

**Down**

- Water that falls from clouds onto the Earth, especially as rain or snow
- Water that has no dissolved substances in it (two words)
- A gas that is found in the largest amount in the atmosphere
- A gas found in the atmosphere that is necessary for survival

**Word Whizz**  
Fun language-based exercises, such as crossword puzzles, help reinforce keywords and hone scientific literacy.

## CHAPTER 2 THE DIGESTIVE SYSTEM

### \*Chapter Learning Objectives

- 5Bp.01** Know that animals, including humans, need an adequate, balanced diet in order to be healthy.
- 5Bp.04** Describe the human digestive system, including the functions of the organs involved (limited to mouth, oesophagus, stomach, small intestine, large intestine and anus), and know that many vertebrates have a similar digestive system.
- 5TWSm.01** Know that a model presents an object, process or idea in a way that shows some of the important features.
- 5TWSm.02** Use models, including diagrams, to represent and describe scientific phenomena and ideas.
- 5TWSm.03** Sort, group and classify objects, materials and living things through testing, observation and using secondary information.
- 5TWSm.07** Use a range of secondary information sources to research and select relevant evidence to answer questions.
- 5TWSm.08** Collect and record observations and/or measurements in tables and diagrams appropriate to the type of scientific enquiry.
- 5TWSa.05** Present and interpret results using tables, bar charts, dot plots and line graphs.
- 5SIC.03** Use science to support points when discussing issues, situations or actions.

### Expected student prior knowledge

- Before starting this chapter, students are expected to:
- know how to identify and describe the functions of some important organs in humans (stomach and intestine).
  - know how to describe food chains, that animals can eat plants and other animals.

\*The information in this section is taken from the Cambridge Primary Science curriculum framework (0097) from 2020. You should always refer to the appropriate curriculum framework document for the year of your students' examination to confirm the details and for more information. Visit [www.cambridgeinternational.org/primary](http://www.cambridgeinternational.org/primary) to find out more.

## Learning Objectives

Curriculum framework codes are indicated to let educators know which learning objectives from the Cambridge curriculum framework will be covered in the chapter.

## Expected Student Prior Knowledge

A list of what learners should know to understand the chapter well.

## Science Words to Highlight

Educators are encouraged to highlight the scientific words to learners as this *builds scientific literacy*.

## Common Misconceptions

Promotes *assessment for learning* and serves as an easy reference for educators to *highlight and correct commonly misunderstood concepts*.

## Lesson Plan

ESL and non-specialist educators can *easily understand the content* as the lesson plans are *written using simple language*. The step-by-step lesson plans allow educators to *deliver engaging lessons effectively and conveniently*. They provide guidance to conduct activities and contain suggested questions and answers to support lesson delivery.

Section B	Reproduction in Flowering Plants	Number of Periods: 3
<p><b>*Section Learning Objectives</b></p> <p><b>5Bp.02</b> Know the stages in the life cycle of a flowering plant.</p> <p><b>5Bp.03</b> Describe how flowering plants reproduce by pollination, fruit and seed production, and seed dispersal.</p> <p><b>5TWSm.01</b> Know that a model presents an object, process or idea in a way that shows some of the important features.</p> <p><b>5TWSm.02</b> Use models, including diagrams, to represent and describe scientific phenomena and ideas.</p> <p><b>5TWSm.03</b> Sort, group and classify objects, materials and living things through testing, observation and using secondary information.</p>		
<p><b>Science Words to Highlight</b></p> <ul style="list-style-type: none"> <li>fertilisation, life cycle, pollination, seed dispersal</li> </ul>		
<p><b>Common Misconceptions</b></p> <p><b>Misconception 1:</b> Plants produce seeds on their own (pollination or fertilisation is not needed).  <b>Correct concept:</b> Pollination and fertilisation need to take place before seed formation can happen.  <b>How to address:</b>  <b>Ask: Have you heard of pollination and fertilisation? What is pollination and what is fertilisation?</b>                      Explain to students that pollination is the transfer of the pollen from the male part to the female part of a flower, while fertilisation happens when the pollen and egg join. Some students may think that pollination and fertilisation refer to the same process. Point out that these are different processes, and both are necessary before seeds are formed.</p> <p><b>Misconception 2:</b> All seeds from the same plant have the same size and shape.  <b>Correct concept:</b> Seeds from the same plant may come in a variety of sizes and shapes.  <b>How to address:</b>  <b>Ask: Have you paid attention to the seeds from the apple that you eat? Do they all have the same size and shape?</b>                      Explain to students that many factors come into play during fertilisation, which can affect the size or even shape of every single seed produced. Point out that this is why we can sometimes notice that seeds may be of various sizes and shapes, even if the seeds come from the same fruit.</p>		

Lesson Plan	
<p>The lesson plan below will be available online for teachers to edit and customise according to their requirements.</p>	
<p><b>Lesson 3 (80 min)</b></p>	
<p>Lesson Trigger and Pre-evaluation (10 min)</p>	<ul style="list-style-type: none"> <li>Refer to 'Thinking Cap' on page 8 of the Student's Book. Display pictures of a real tree and a real seed on the board. Get students to observe the pictures on the board.</li> <li>Ask students to discuss how a large tree could grow from a tiny seed. (Expected answer: Students may refer to one or more stages in the process of germination. For example, roots will help absorb water and nutrients to help the seed grow into a small plant. Over time, the small plant grows into a tree as the stem of the plant grows and thickens.)</li> </ul>
<p>Activity (15 min)</p>	<ul style="list-style-type: none"> <li>Refer to 'Let's Explore!' on page 8 of the Student's Book.</li> <li>Get students to use the stickers at the back of the Student's Book, to show how a plant grows. (Expected answer: Picture of a seed → picture of a seedling → picture of a young plant → picture of an adult plant)</li> <li><b>Ask: How do you think plants change as they grow?</b> (Expected answer: As the seed grows into a seedling, the roots and stem(s) also develop and grow. The plant produces leaves that make food for the plant. Over time, the plant grows into an adult plant. Some adult plants produce flowers that can help them reproduce.)</li> <li>To support students in their sharing of ideas, you could write some of the science words you want them to use on the board, for example, 'seed', 'seedling', 'young plant' and 'tree'.</li> </ul>

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## Alternative Lesson Ideas for Trigger, Activities for Main Lesson and Wrap-up

Additional lesson ideas serve as an easy and convenient reference to *support educators in learners' engagement*. Suggested lesson trigger ideas *involve various teaching strategies* such as visual stimulus, which can be used to *further engage learners*.

## Working with Parents

Suggested home-based activities serve as reference for educators to involve parents in *supporting learning from home*. This *promotes self-directed learning* and a *school-home partnership*.

## Differentiation

Activity ideas *provide support* and *challenge learners* during lessons, allowing educators to *assess learners' understanding*.

## Suggested Answers

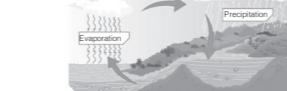
Suggested answers for Student's Book and Activity Book *support educators in assessment for learning*.

<p><b>Alternative Lesson Trigger Ideas</b></p> <ul style="list-style-type: none"> <li>Engage students by asking them to imagine they are an Inuit who has found a seed in the snow. Invite students to discuss if the seed will grow if it was planted in the snow. Then, ask students to imagine they are living in the hottest desert in the world. <b>Ask: Will the seed grow in this desert?</b></li> </ul>
<p><b>Alternative Activity Ideas for Main Lesson</b></p> <ul style="list-style-type: none"> <li>Get students to observe two pictures. Picture A shows a pot with healthy leaves by a window sill on a sunny day. Picture B shows a pot with only soil and a seed placed in the refrigerator. Invite students to discuss their observations and explain why the seed in picture B did not germinate. Emphasise that a suitable temperature is required for plants to germinate. (Expected answer: The seed in picture B did not germinate because it is placed in a cold place. Seeds require warmth for germination.)</li> </ul>
<p><b>Alternative Lesson Wrap-up Ideas</b></p> <ul style="list-style-type: none"> <li>List the stages involved in germination on the board, in an incorrect order. Ask students to rearrange the stages of germination in the correct order.</li> </ul>
<p><b>Extended Learning Ideas</b></p> <ul style="list-style-type: none"> <li>Students can find out about other methods of growing plants, such as hydroponics and vertical crops. <b>Ask: How do these types of plants obtain suitable conditions they need to grow?</b> Get students to compare these methods to that of traditional farming and discuss how the methods differ. (Expected answer: Answers may vary. For example, soil is not used in hydroponics, yet the plants are being effectively grown in water. The nutrients required for plant growth are found in the water solution used.)</li> </ul>
<p><b>Working with Parents</b></p> <ul style="list-style-type: none"> <li>Parents can work with their child to germinate a seed in their own home. Parents can guide their child to discuss what materials are needed and the conditions that are necessary for germination, which includes assessing the best location to place the seed preparation in their home.</li> </ul>
<p><b>Differentiation</b></p> <p><b>Activities that provide challenge:</b> Inform students that seeds have an outer coating. Ask students to think about what characteristics seed coatings should have to cope with different conditions. (Expected answer: Answers may vary. A seed needs a hard coating to protect the seed when it is being transported from location to location, such as by an animal. A seed needs to be thick or hard enough to prevent other organisms from entering.)</p> <p><b>Activities that provide support:</b> Provide a worksheet with sentences on the stages of germination in the correct order. Leave blanks in place of key words. Show students a list of the key words arranged in no particular order. Encourage students to fill in the blanks with the correct key word. Alternatively, students can be asked to describe the stages in sentences rather than just filling in the key words.</p>

### Suggested Answers

**Student's Book**  
 Practice Worksheet, pp. 143-144

- False, True, True, True, False
- nitrogen



### Activity Book

Word Whizz, p. 80

- Atmosphere
- Precipitation
- Pure Water
- Nitrogen
- Oxygen
- Water Cycle

### Let's Map It!, p. 81

The water cycle is the continuous movement of water from the Earth's surface. As more water droplets come together, clouds are formed. As the water vapour cools, condensation to form tiny water droplets. Precipitation happens when water falls from the sky in the form of rain, snow. Water from the ground and water bodies evaporates to become water vapour. Nitrogen surrounds the Earth.

### Let's Review, pp. 82-83

- John and Omar
- condensation, evaporation, precipitation
- The water gained heat and evaporated to become water vapour. Upon each place, the water vapour condensed to form tiny water droplets. If together, they fall back into the beaker, just like the rain that falls onto!
  - Get burner

## Thinking Frames

These *promote thinking* and *consolidate learning*, and can be used as indicated in the lesson plans.

Thinking Frame 2 – KWHL

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Topic: _____			
K	W	H	L
What I know	What I want to know	How am I going to find out?	What did I learn?



## Promotes Relatability through Real-life and Asian-centric Contexts

This series presents opportunities to learn science in context so learners will be able to understand the relevance of science in their daily lives. The practical applications allow learners to transfer knowledge and skills to everyday scenarios, which can boost their understanding and make learning science meaningful.

As the series includes multicultural references and photographs, it caters to the international audience – especially the Asian learners. The visuals and examples are rich with Asian flavour, providing a relatable context for learners to grasp concepts quickly. This series also presents content that reflects traditional Asian values, such as showing respect and consideration for others.

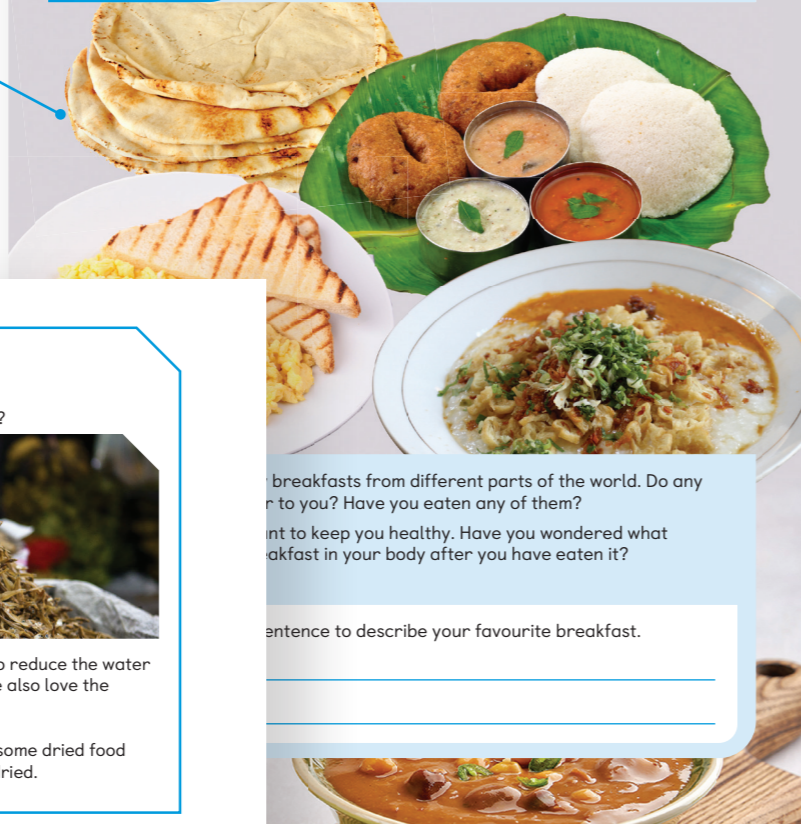
### Real-life Asian-centric examples

Examples are drawn from real life through visuals that are *rich with Asian flavour* which can *provide context and promote relatability*.

CHAPTER

2

## The Digestive System



breakfasts from different parts of the world. Do any of them look familiar to you? Have you eaten any of them? How do you think they help you to keep you healthy. Have you wondered what happens to the nutrients in your breakfast in your body after you have eaten it?

Write a sentence to describe your favourite breakfast.

### Science at Work

Have you ever had dried fish such as *ikan bilis*? Do you know that evaporation is used to dry the fish?



Evaporation is commonly used in the food industry to reduce the water content in food and make it last longer. Many people also love the flavour of the dried food.

Visit your local grocer or supermarket and identify some dried food items. Carry out research to find out how they are dried.

### What Happens During Condensation?

Look back at the picture on page 55. What causes the mirror in the bathroom to become foggy after you take a hot shower?

The hotter water vapour in the bathroom comes in contact with the cooler surface of the mirror. When that happens, the water vapour loses heat and changes into water droplets. This process of a gas changing into a liquid is called **condensation**.



### Word Boost

foggy  
contact  
droplets

66

### Tech Talk!

Showcases *real-life applications* by featuring modern technology, which learners may have encountered before, to *demonstrate the relevance of science in daily life*.

### Can Magnetic Force Act Over a Distance?

You discovered in the 'Let's Explore!' activity on page I23 that a magnet can attract an iron nail without touching it. Magnetic force can act over a distance between magnets, and between magnets and magnetic materials.



Magnetic force can act over a distance to attract the iron nails.

### Tech Talk!



Maglev (magnetic levitation) trains can travel more than 400 kilometres per hour. The strong magnets between the train and the tracks repel each other, causing the train to 'float' above the tracks. Other magnets allow the trains to move at great speeds. Why is the distance between the 'floating' train and the tracks important? What could happen if it is too short or too long?

125

## B

## Evaporation and Condensation

In this section, I will

- describe the processes of evaporation and condensation
- use a model to explain a process
- plan a fair test and identify the three types of variables
- choose equipment and use it properly during an investigation
- describe risks in practical work and ways to minimise them
- use knowledge and understanding to make predictions
- decide when to repeat observations to get reliable results
- do practical work safely
- take measurements accurately
- create tables and diagrams to present the results of my observations when appropriate
- recognise the features of different scientific enquiries
- describe the use of science locally

### Thinking cap

I wonder why my glasses become foggy sometimes...



### Let's Explore!

In-class activities are based on real-life contexts so learners can *discover the relatability of the scenarios*, which will *enhance their understanding* as they learn facts.

### Let's Explore!

Where did the water droplets come from?

You will need:

- Small mirror

1. Hold the mirror in front of your mouth.
2. Open your mouth and breathe out in front of the mirror.
3. What do you observe? Give a possible reason for your observation.
4. Leave the mirror aside for a few minutes.
5. What do you observe now? Why?



60

## Problem-based Learning

**How can we prevent wastage of water?**  
Farmers need water to grow their plants. Many farmers depend on rainfall to water their fields. When there is not enough rainfall, many farms use artificial watering of fields. This is known as irrigation.

Many fields use an irrigation system as shown in this picture. However, some irrigation systems can lead to wastage of water as the plants may not need so much water. You have been tasked to find ways to solve this problem.

1. Work in groups. Start with asking a scientific question about irrigation that can be investigated. Select an appropriate scientific enquiry that you can use to find the answer to your question.
2. Design a method to irrigate fields without wasting water.
3. Design a poster to present your ideas. Keep these questions in mind when designing the poster:
  - (a) How will this system work?
  - (b) Can it be easily set up and used?
4. Share your poster with the class.

When working in a group, take part actively. Encourage your group mates to share their ideas.



## Problem-based Learning

Activities involving real-life problems which require learners to *apply their knowledge and skills* to *propose possible solutions*.

Look for some food items in your refrigerator. Using the food packaging as a source of information, find out which food group each of the food items belongs to. Sort the food items into the various food groups on a separate piece of paper.

The plate below shows how you can have a balanced diet.



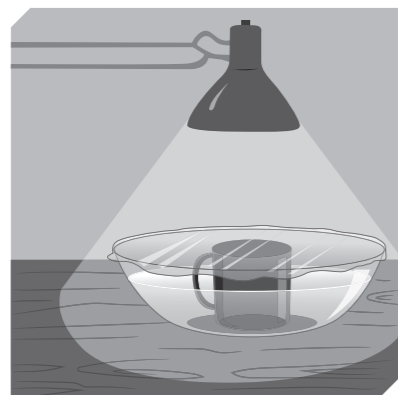
Different people may follow different diets for various reasons. For example, some people do not take any animal products such as milk, eggs or meat. We should be respectful of one another's food choices.

## Social and Emotional Learning

With an emphasis on the learners' Social and Emotional Learning, mascots will appear to encourage learners to *practise social and emotional etiquette* as they learn how to work with others and manage their emotions.

## Activity 9B Make a Water Cycle

**Skills:** Learn that a model shows the important features of a process and an idea, use a model and a diagram to illustrate and explain a scientific event and idea, use science to support my points of view in discussions



- Materials:**
- Mug
  - Large plastic bowl
  - Water
  - Marker
  - Cling wrap
  - String
  - Lamp

### Method

1. Place the empty mug in the middle of the large plastic bowl.
2. Fill the bowl with water to the half-way mark. Use a marker to mark the water level in the bowl. Ensure that there is no water in the mug.

## Activity Worksheet

Engaging hands-on activities provide opportunities to *demonstrate concepts* pertaining to the topic and allow learners to *transfer their knowledge to real-life contexts*.



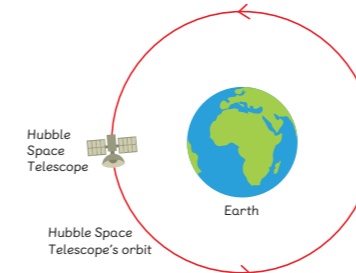
This series offers an exciting and engaging hybrid learning experience with its convenient and easy-to-use bank of digital resources. The eBooks allow annotations to be saved to capture submitted answers, in addition to the Student's Book that is tagged with interactive digital resources to enhance learning.

Spark excitement and fun learning in science lessons by engaging learners with vibrant visuals, videos, quizzes, and sticker activities. With both print and digital learning resources available to support online and face-to-face learning, this series delivers outstanding learning experiences.

While the Moon is a natural satellite of Earth, there are thousands of human-made satellites that humans launch into space. These satellites observe and study Earth and space and send information to scientists on the Earth.



The Hubble Space Telescope is a large telescope orbiting Earth since 1990. It has taken more than a million pictures of objects in space for scientists to study the universe.



The Hubble Space Telescope is a human-made satellite.

### Option

#### Watch!

Scan this page to watch a video about the Hubble Space Telescope.

### Word Boost

launch  
million

## Watch!

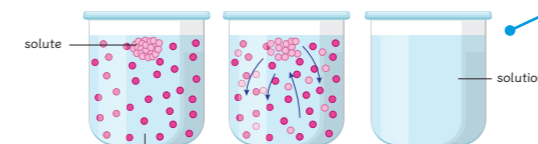
Learning comes alive with the relevant *videos\** and *quizzes\**, which *excite and engage learners*. These can be projected in class by educators or launched using smart devices by scanning the page using the MCE Cambridge app.

\*These digital resources will not go through the Cambridge International endorsement process.

### How Can the Particle Model Be Used to Describe Solutions?

We can use the particle model to describe solutions. When a solute is dissolved in a solvent, the solute breaks apart and mixes evenly with the solvent.

Choose a sticker from the back of the book and paste it to show the solution in the last beaker below.



The solute particles are broken apart and mixed evenly with the solvent particles to form a solution.

### How Can the Solvent and Solute Be Separated From a Solution?

In Stage 3, we have learnt how a mixture of solids or a mixture of a solid and a liquid can be physically separated by sieving and filtration.

Dissolving is a *reversible process*. This means that a solute can also be separated from a solvent. However, this cannot be done by sieving or filtration. This is because the solute particles will be able to pass through the filter paper since they are so small.

### Stickers

Stickers for Chapter 1, Section B, page 10

Stickers for Chapter 2, Section A, page 26

Stickers for Chapter 3, Section A, page 35

Stickers for Chapter 4, Section A, page 59

Stickers for Chapter 5, Section B, page 62

Stickers for Chapter 5, Section B, page 62

Stickers for Chapter 5, Section B, page 62

Stickers for Chapter 5, Section B, page 62

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Stickers for Chapter 5, Section B, page 62

Stickers for Chapter 5, Section B, page 62

## Sticker Activities

Sticker activities *elevate the learning experience* through *interesting hands-on engagement* and *promote assessment for learning*.





**Vibrant Visuals**

Vibrant and rich colours are used throughout the Student's Book to deliver a *joyful look and feel*.

**Dynamic and Engaging Mascots**

The mascots will appear frequently *to interact with the learners* and *present concepts in an engaging manner*.

**Let's Learn**

**What Adaptations Do Flowering Plants Have for Pollination?**

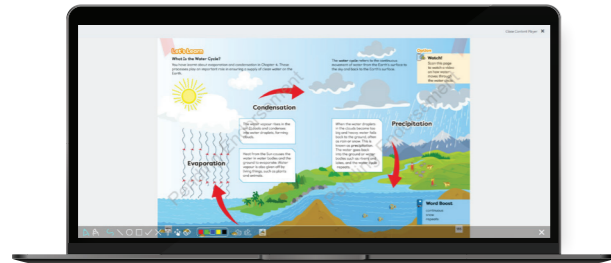
In Chapter 1, you have learnt that insects and birds play an important role in pollinating flowers. Flowering plants have adaptations for attracting pollinators. **Pollinators** are animals that help transfer pollen from the anther of a flower to the stigma of the same or another flower.

The petals of some flowers are brightly coloured to attract insects and birds.

Some pollinators are attracted to the scent or nectar in the flowers. Some flowers may give off a bad smell to attract flies or beetles.

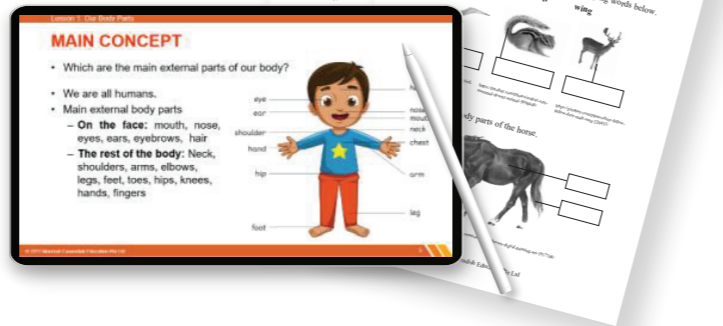
As the pollinators travel from one flower to another, the pollen grains stick onto their bodies. The pollen grains may land on another flower.

**Word Boost**  
transfer



**Annotatable eBooks\***

*Answers annotated* in the eBooks can be *saved and accessed by educators*. The Student's eBooks contain *digital resources* tagged to the Watch feature which learners can access in their own time or through in-class activities. The flexibility in usage of digital resources enables *hybrid teaching and learning*.



**Additional Digital Resources\***

Digital teacher's resources, such as lesson PowerPoint slides and homework worksheets, will help educators *save time on lesson planning* and *effectively deliver exciting and fun science lessons*. They are editable, allowing educators to *customise and plan their lessons for the various learning needs*.

\*These digital resources will not go through the Cambridge International endorsement process.

**STAGE 1**

CHAPTER 1	Our Body
CHAPTER 2	Alive and Never Been Alive
CHAPTER 3	Plants
CHAPTER 4	Materials
CHAPTER 5	Movement of Objects
CHAPTER 6	Sounds
CHAPTER 7	Electricity
CHAPTER 8	Magnets
CHAPTER 9	Earth and the Sun

**STAGE 2**

CHAPTER 1	Animals
CHAPTER 2	Being Healthy
CHAPTER 3	Habitats
CHAPTER 4	Materials
CHAPTER 5	Forces
CHAPTER 6	Light and Darkness
CHAPTER 7	More about Electricity
CHAPTER 8	Rocks
CHAPTER 9	Changes to Our Environment
CHAPTER 10	The Sun

**STAGE 3**

CHAPTER 1	Things Around Us
CHAPTER 2	Animals
CHAPTER 3	Food Chains
CHAPTER 4	Parts of Plants and Humans
CHAPTER 5	Matter and Mixtures
CHAPTER 6	Friction and Gravity
CHAPTER 7	Light and Shadows
CHAPTER 8	Properties of Magnets
CHAPTER 9	Rocks and Fossils
CHAPTER 10	Earth, the Sun and the Moon



**STAGE 4**

CHAPTER 1	Bones and Muscles
CHAPTER 2	Diseases
CHAPTER 3	Energy from Food
CHAPTER 4	Different Habitats
CHAPTER 5	Materials, Substances and Particles
CHAPTER 6	Energy
CHAPTER 7	Properties of Light
CHAPTER 8	Electric Circuits
CHAPTER 9	The Solar System
CHAPTER 10	Structure of the Earth

**STAGE 5**

CHAPTER 1	Flowering Plants
CHAPTER 2	The Digestive System
CHAPTER 3	Adaptations
CHAPTER 4	States of Matter
CHAPTER 5	Interactions of Matter
CHAPTER 6	More about Forces
CHAPTER 7	Sounds
CHAPTER 8	Magnets and Forces
CHAPTER 9	The Atmosphere and the Water Cycle
CHAPTER 10	Pollution
CHAPTER 11	Movement of Earth

**STAGE 6**

CHAPTER 1	The Respiratory and Circulatory Systems
CHAPTER 2	The Human Reproductive System
CHAPTER 3	Human Diseases
CHAPTER 4	Food Chains and Food Webs
CHAPTER 5	Properties of Matter
CHAPTER 6	Physical and Chemical Changes
CHAPTER 7	Effects of Forces
CHAPTER 8	Movement of Light
CHAPTER 9	More About Electrical Circuits
CHAPTER 10	More About Rocks
CHAPTER 11	Soil
CHAPTER 12	More About the Solar System



**Grade 7 – 9 | Age 13 – 15**

**Science Ahead** is a comprehensive science programme for Stages 7, 8 and 9. The series uses the constructivist-inquiry approach to offer a learner-centred solution, helping learners acquire scientific concepts and skills. The curriculum content is structured using a spiral progression, allowing learners to revisit concepts and skills at different stages with increasing depth, thus ensuring a strong foundation.

The series makes use of vibrant photographs, clear infographics, inquiry questions, activities, and case studies to deliver an engaging and enjoyable science learning experience.

To find out more, scan here!



**Grade 10-11 | Age 15-17**

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Developed based on robust research, these series bring Science learning to life by focusing on real-life examples to which learners can relate. They are designed to excite and engage learners by piquing their curiosity in scientific concepts and promoting a deep understanding of topics. This is done by giving learners plenty of opportunities to practise learned skills, reflect on concepts, and share, discuss or journal what they have learnt.

*The titles in this series are endorsed by Cambridge Assessment International Education to support the syllabus for examination from 2023.*



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