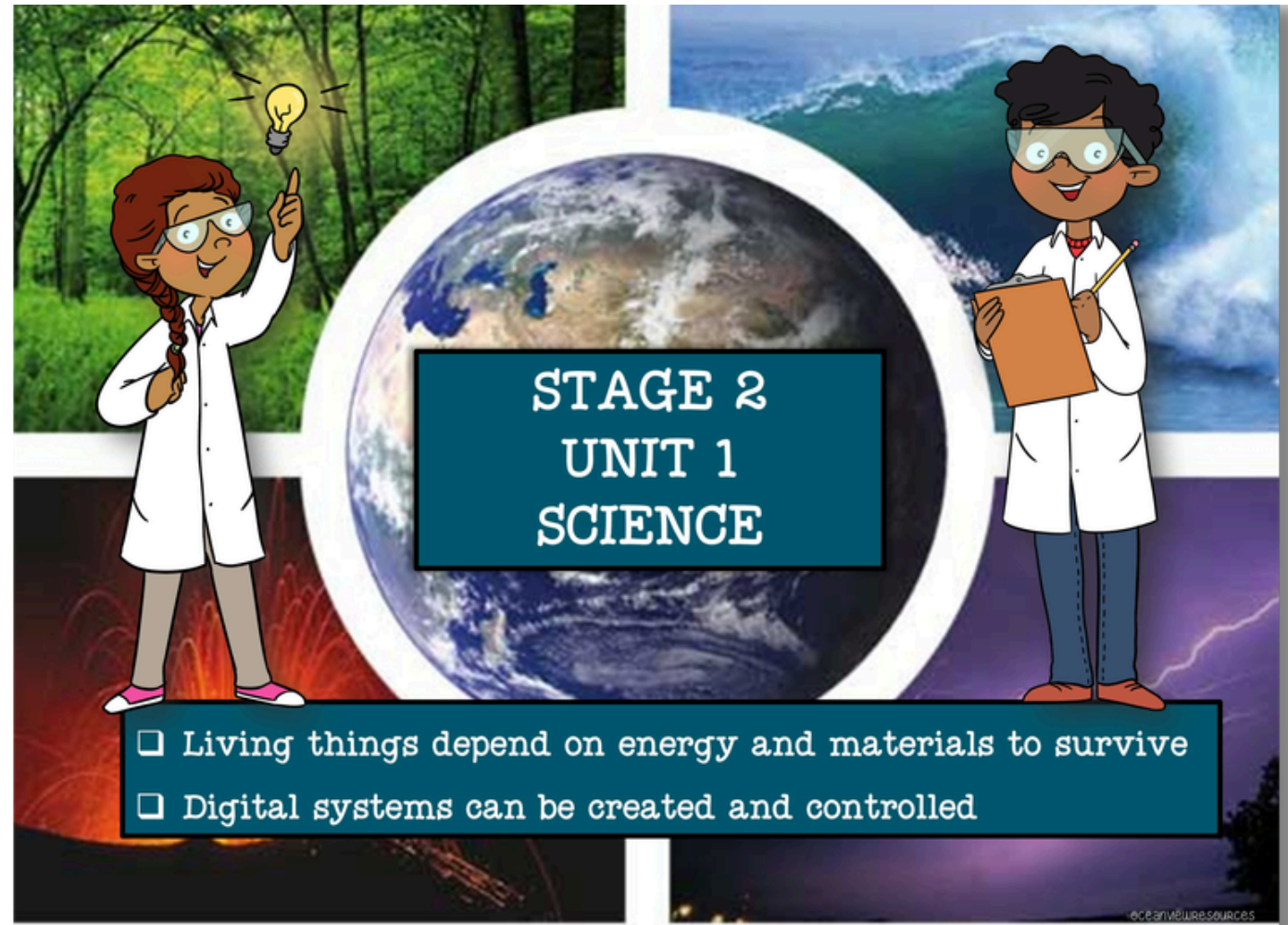


STAGE 2 UNIT 1 - LIVING THINGS

What is included?

- PowerPoint with over 540 slides
- Student workbook and assessment tasks
- PDF for easy printing
- Teaching notes under each slide



STAGE 2 UNIT 1 - LIVING THINGS

What is included?

- Quick links to units.
- Sections for each lesson included in the PowerPoint presentation.
- Self Assessment tasks.

Lesson 1.10.12 Steps: Earth's Systems

Atmosphere

Talk to a partner and discuss the definition of atmosphere.

Together, construct a definition of atmosphere and use the image on Resource 2 - Earth's systems to begin an anchor chart for this unit.



atmosphere

ATMOSPHERE

Raise your hand if this statement is correct:

The atmosphere is the layer of air or other gases around a planet.

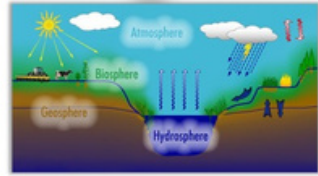
Lesson 1.10.12 Steps: Earth's Systems

The names of these systems include the word 'sphere'.

Why do you think these words include 'sphere' in their names?

Share your ideas with the class.

The term 'sphere' is used here to describe a group of related things that work together.



The word 'sphere' itself originates from the Greek word sphaîra, meaning 'ball' or 'sphere'. Greek thinkers, like Plato and later mathematicians, explored the geometric properties of spheres, and the concept was later adopted into astronomy and other fields.

Lesson 1.10.12 Steps: Earth's Systems



atmosphere



hydrosphere



lithosphere



biosphere

1. What do you notice about each of these images?
2. What is similar about these images?
3. How are these images different to each other?

Discuss your responses with a partner.

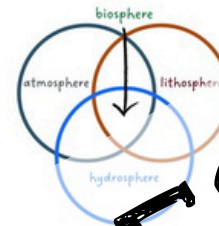
I will ask some of you to share your thinking.

STAGE 2 UNIT 1 - LIVING THINGS



atmosphere

ATMOSPHERE



ECOLOGY

- The study of how these 4 systems work together is called 'ecology'.

Add ecology and its definition to the anchor chart.

Each system is interconnected and works together to support life.

Lithosphere

- What can we do to find out more about what the 'litho' part of the word is telling us?
- What can we do to find out more about what the 'litho' part of the word is telling us?
- Find information about 'litho' from a dictionary or online etymology search engine.



lithosphere

Does this help us with our definition? Share your thinking with the class.

The lithosphere is the solid part of the Earth consisting of the crust and outer mantle.

Jointly construct a definition of lithosphere and add to the anchor chart.

Raise your hand if this statement is correct:

The lithosphere contains rocks, mountains, soil and sand.

How do each of these things depend on, and is an integral part of, the other spheres.

For example:



a frog lives in water (hydrosphere) and on land (lithosphere). It drinks water (hydrosphere), breathes air (atmosphere) and eats small animals and some soft plants (biosphere). The frog relies on each of the 4 spheres to survive.

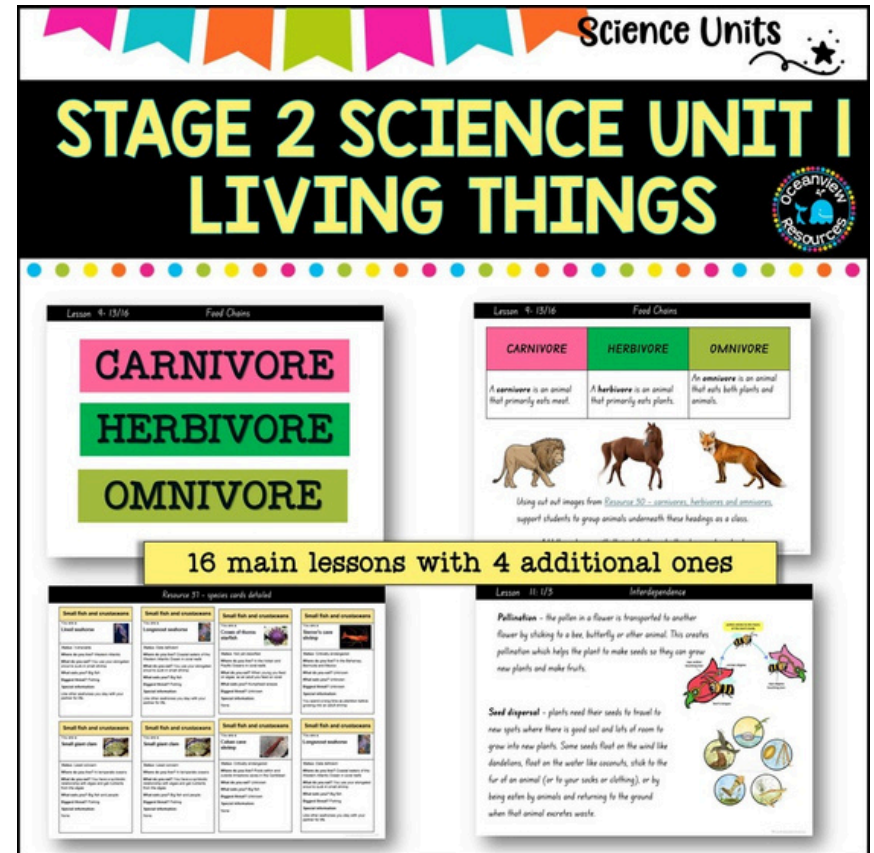
Add 'biosphere' to the anchor chart and jointly construct a definition.

How you can use it:

All lessons are planned to be 60 minutes long.

There are 16 weeks of units plus 4 additional extension units.

20 hours of teaching time



This unit aligns with the new NSW syllabus documents.
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STAGE 2 UNIT 1 - LIVING THINGS

Lesson 110/111 Testing Plant Growth

Turn and talk to discuss how you could change the substrate. Share your responses.

Testable questions examples:

1. How does the amount of substrate affect plant growth? (Full, half-, quarter-cup.)
2. How does the type of substrate affect plant growth? (Sand, cotton wool, tissue paper.)
3. How does having no substrate affect plant growth?



Lesson 110/111 Testing Plant Growth

This resource shows the factors that are changing, being measured and those that are kept the same.:

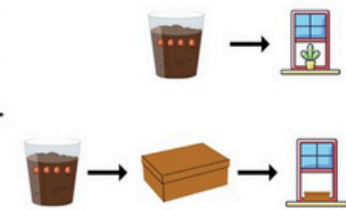
Light test

Change:
• amount of light

Measure:
• plant height

Same:
• seed type
• soil
• depth
• water

How does changing the amount of light affect the growth of the plant?



You will plan 2 different fair tests:

1. The first test will investigate the effect on plant growth of changing where the seeds grow in.
2. The second test will investigate the effect on plant growth of changing the amount of water.

'What will happen to plant growth if I change ...?'

Substrate is the surface or material in which a plant can grow.

A general word for the surface or material in which a plant can grow is '**substrate**'. Plants may grow in different types of substrate, such as sand, water or even rock.

'Substrate' means 'lower layer'.

Connect with other words with the prefix sub- such as subtitle, subzero, submarine, subway and substandard.

Add 'substrate' to the anchor chart and link to the lithosphere.

Lesson 110/111 Testing Plant Growth



View the video [Radish Plant Growing Time Lapse \(1:25\)](#).

The video used time-lapse over 29 days to show the growth.

1. What did you observe as the plant grew?
2. Did you notice the light source?
3. Did you notice the water level changing?
4. What do radish seeds need to grow?
5. Which of Earth's systems are represented in the video?

Remember that the main source of Earth's energy comes from the Sun's light.

STAGE 2 UNIT 1 - LIVING THINGS

Name:

Date:

Self Assessment

I can follow a fair test to make scientific observations	
I can identify the factors in a fair test that are changed, measured and kept the same	
I can use causal connectives (for example, because, so) to explain parts of a fair test	

cause and effect

causal connectives

because

A causal connective is a word or group of words used as a cohesive device when explaining how something works or why something happens.

Lesson 0-174

Fair Testing

Note: in this lesson, you model a fair test using aluminium foil boats prepared by you. If there is time, consider allowing students to make their own boats for testing.



How to make a tinfoil boat (1:56)

Display the 2 foil boats you prepared prior to the lesson. Explain that you made them from the same size piece of foil.

I would like to test whether the shape of the boat affects the number of items it can carry before it sinks.

Think-pair-share to predict which boat will hold the most items.

Lesson 0-175

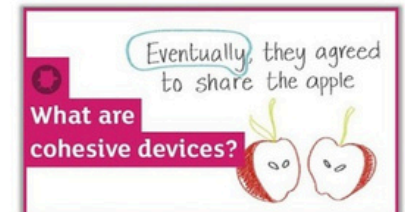
Fair Testing

Link the base word 'cause', the adjective 'causal' and the conjunction 'because'.



A causal connective is a word or groups of words used as a cohesive device when explaining how something works or why something happens.

A 'cohesive device' is a word or phrase that shows a connection between ideas.



Lesson 0-176

Fair Testing

In science, a fair test:

- ☐ means an investigation done in a way that makes the cause and effect clear
- ☐ does not mean a test like students might do at school for spelling or mathematics.

Scientists use investigations or tests to answer a question or test a prediction. **For example**, which ball bounces the highest or whether the amount of detergent affects the size of bubbles.

In Stage 2, you will use the word '**factor**' to describe each aspect of an investigation that could be changed. **For example**, for a ball bounce test, factors could include

- ☐ the types of ball,
- ☐ the height the ball is dropped from,
- ☐ the surface it is dropped onto or whether it is inside or outside.



STAGE 2 UNIT 1 - LIVING THINGS

What is included?

- Video links
- Created for use with the IWB.
- Suggested teaching prep for each lesson.
- Outcomes and indicators included for each lesson.

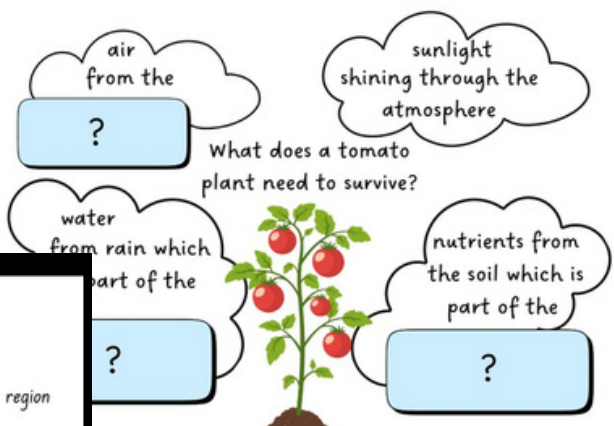
This ecosystem sits within the wider environment.
The environment refers to the entire surrounding area in which the organism lives.
For example, the ecosystem in and around the tree might be part of bushland or a region of grasslands or forests.
An environment is all external surroundings and conditions, made up of many different habitats and ecosystems.



living thing (possum)
habitat
ecosystem

Name: _____ Date: _____

Identify the 3 missing systems from the image.



air from the atmosphere
?
sunlight shining through the atmosphere
What does a tomato plant need to survive?
water from rain which is part of the water cycle
?
nutrients from the soil which is part of the soil system
?

The Sun provides light and heat, and without the Sun's light and heat, the Earth's systems would not work. There would be no life on Earth.

☐ What else do you know about the Sun?

Share your thinking.

Raise your hand if a statement is correct:

☐ Light and heat from the Sun is needed for living things to survive on Earth.

☐ Life could survive on the Earth if there were no heat or light from the Sun.



Teaching Notes

Syllabus Outcomes and Content

The table below outlines the syllabus outcomes and range of relevant syllabus content covered in this unit.

Outcomes and content	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Physical and living things depend on energy																
Living things depend on energy and materials to survive																
ST2-SCI-01, ST2-PQU-01, ST2-DAT-01																
• Identify the systems of Earth that make up environments: air - atmosphere, land - lithosphere, water - hydrosphere, living things - biosphere	x	x														
• Describe how the needs of living things are provided by the atmosphere, hydrosphere and lithosphere																
• Describe the relationship between habitat, ecosystem and environment				x												
• Observe and describe living and non-living things in a habitat					x											
• Pose questions to conduct fair tests to determine the effects of soil, water and light on plants						x	x	x							x	x
• Describe how Aboriginal and Torres Strait Islander Peoples' practices support habitats to survive													x	x		
• Describe the transfer of energy between plants and animals using food chains, Tier 2 and Tier 3 vocabulary									x	x						
• Describe ways in which plants and animals depend on each other for survival											x	x				

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