

Alignment with the Australian Curriculum: Science

This *Plants in action* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for year 4 Year. This unit is designed to be taught in conjunction with other year 4 units to cover the full range of the Australian Curriculum: Science content for year 4.

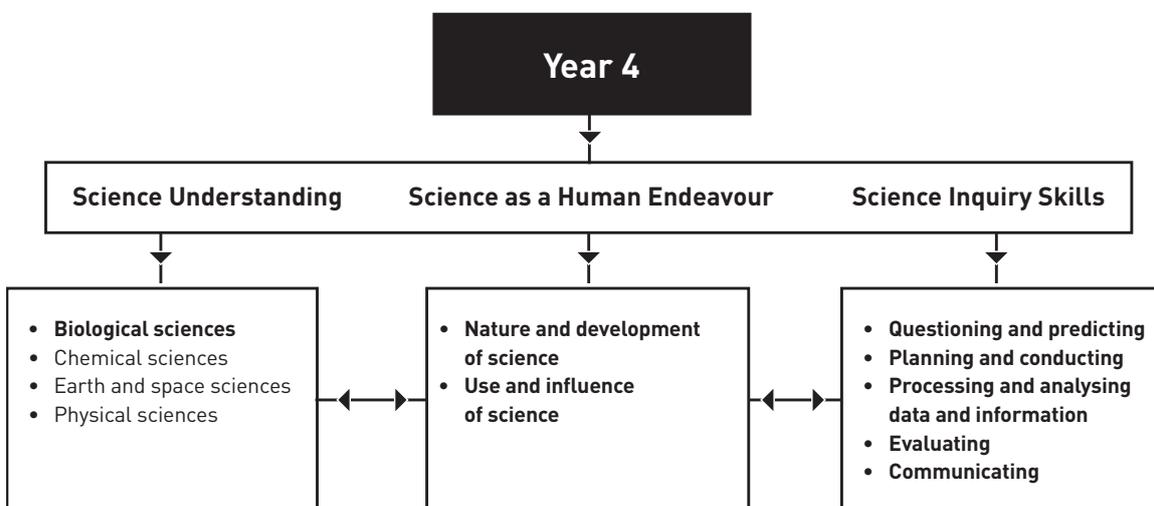
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 4 content descriptions	Lessons
Science Understanding (SU)	Biological sciences	ACSSU072	Living things have life cycles	1–8
Science as a Human Endeavour (SHE)	Nature and development of science	ACSHE061	Science involves making predictions and describing patterns and relationships	2–8
	Use and influence of science	ACSHE062	Science knowledge helps people to understand the effect of their actions	2, 7
Science Inquiry Skills (SIS)	Questioning and predicting	ACSIS064	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	6, 7
	Planning and conducting	ACSIS065	Suggest ways to plan and conduct investigations to find answers to questions	7
		ACSIS066	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	2, 3, 4, 6, 7
	Processing and analysing data and information	ACSIS068	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	2–8
		ACSIS216	Compare results with predictions, suggesting possible reasons for findings	6, 7
	Evaluating	ACSIS069	Reflect on the investigation; including whether a test was fair or not	7
	Communicating	ACSIS071	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	1–8

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Interrelationship of the science strands

The interrelationship between the three strands—Science Understanding, Science as a Human Endeavour and Science Inquiry Skills—and their sub-strands is shown below. Sub-strands covered in this unit are in bold.



Relationship to overarching ideas

In the Australian Curriculum: Science, six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels.

In *Plants in action* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Plants in action</i>
Patterns, order and organisation	Students observe and describe the life cycle of flowering plants. They discuss and identify patterns and relationships within their observations of plant parts, plant stages and processes and factors affecting growth
Form and function	Students observe and investigate the parts of flowering plants and examine their function in the processes of growth, development and reproduction in the plant
Stability and change	Students develop a greater awareness that plants have basic needs such as light, and water and that changes in these factors will affect growth
Scale and measurement	Students measure plant growth and record the growth on a graph. They compare the measurements of the growth of plants under different conditions
Matter and energy	Students describe how light has an essential role in plant growth
Systems	Students study the parts of plants, the stages in the life cycle and the process that occur with growth. They explore how plant growth and development involves interactions between systems and components of systems

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Curriculum focus

The Australian Curriculum: Science is described by year level, but provides advice across four year groupings on the nature of learners. Each year grouping has a relevant curriculum focus.

Curriculum focus Years 3–6	Incorporation in <i>Plants in action</i>
<p>Recognising questions that can be investigated scientifically and investigating them.</p>	<p>Students explore the life cycle of flowering plants. They observe similarities among plants and investigate relationships between the stages (seed, seedling, adult plant, flower and fruit) and the processes of germination and pollination. Students identify and investigate conditions necessary for plant growth and, with support, write questions for investigation and plan and conduct an investigation that incorporates the notion of fair testing. They observe and measure to collect data to answer their questions.</p>

Achievement standards

The achievement standards of the Australian Curriculum: Science indicate the quality of learning that students typically demonstrate by a particular point in their schooling, for example, at the end of a year level. These standards will be reviewed regularly by ACARA and are available from the ACARA website.

By the end of this unit, teachers will be able to make evidence-based judgements on whether the students are achieving below, at or above the Australian Curriculum: Science Year 4 achievement standard. Rubrics to help teachers make these judgements will be available on the website (www.science.org.au/primaryconnections).

General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the 21st century have been identified in the Australian Curriculum as General capabilities. There are seven general capabilities and they are embedded throughout the units. For unit-specific information see the next page. For further information see: www.australiancurriculum.edu.au

For examples of our unit-specific general capabilities information see the next page.

Plants in action—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	Plants in action examples
Literacy	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>Primary Connections learning activities explicitly introduce literacy focuses and provide students with the opportunity to use them as they think about, reason and represent their understanding of science.</p>	<p>In <i>Plants in action</i> the literacy focuses are:</p> <ul style="list-style-type: none"> • science journals • labelled diagrams • TWLH charts • word walls • tables • procedural texts • factual texts • cross sections • timelines.
 Numeracy	<p>Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.</p>	<p>Students:</p> <ul style="list-style-type: none"> • measure plant growth • draw a scale for cross section diagram • collect and represent data in tables • collect data and represent data in simple graphs • create a timeline of seed germination.
Information and communication technology (ICT) competence	<p>ICT competence is particularly evident in science inquiry skills. Students use digital technologies to investigate, create, communicate, and share ideas and results.</p>	<p>Students are given optional opportunities to:</p> <ul style="list-style-type: none"> • use digital cameras to record seed development • Integrate digital images into word processing • use interactive resource technology to view pollination animation.
 Critical and creative thinking	<p>Students develop critical and creative thinking as they speculate and solve problems through investigations, make evidence-based decisions, and analyse and evaluate information sources to draw conclusions. They develop creative questions and suggest novel solutions.</p>	<p>Students:</p> <ul style="list-style-type: none"> • participate in beliefs groupings • use reasoning to develop and respond to questions • make predictions • ask questions on a TWLH chart and answer them based on investigations • reflect on learning.
Ethical behaviour	<p>Students develop ethical behaviour as they explore principles and guidelines in gathering evidence and consider the implications of their investigations on others and the environment.</p>	<p>Students:</p> <ul style="list-style-type: none"> • ask questions of others, respecting each other's point of view.
 Personal and social competence	<p>Students develop personal and social competence as they learn to work effectively in teams, develop collaborative methods of inquiry, work safely, and use their scientific knowledge to make informed choices.</p>	<p>Students:</p> <ul style="list-style-type: none"> • participate in discussions • work collaboratively in teams • listen to and follow instructions to safely complete investigations.
 Intercultural understanding	<p>Intercultural understanding is particularly evident in Science as a Human Endeavour. Students learn about the influence of people from a variety of cultures on the development of scientific understanding.</p>	<ul style="list-style-type: none"> • 'Cultural perspectives' opportunities are highlighted. • Important contributions made to science by people from a range of cultures are highlighted.

Cross-curriculum priorities

There are three cross-curriculum priorities identified by the Australian Curriculum:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability.

For further information see: www.australiancurriculum.edu.au



Aboriginal and Torres Strait Islander histories and cultures

The PrimaryConnections Indigenous perspectives framework supports teachers' implementation of Aboriginal and Torres Strait Islander histories and cultures in science. The framework can be accessed at: www.science.org.au/primaryconnections

Plants in action focuses on the Western science way of making evidence-based claims about the life cycles of plants.

Indigenous people have lived in Australia for more than 40 000 years—making use of plants for food, medicine, shelter and utensils. Centuries of living from the land has provided Indigenous people with deep and ongoing knowledge of Australian plants, their life cycles and their many uses throughout the stages of the life cycle.

PrimaryConnections recommends working with Aboriginal and Torres Strait Islander community members to access local and relevant cultural perspectives. Protocols for engaging with Aboriginal and Torres Strait Islander community members are provided in state and territory education guidelines. Links to these are provided on the PrimaryConnections website.

Sustainability

The *Plants in action* unit provides opportunities for students to develop an understanding of how the growth of flowering plants can be affected by environmental conditions. This can assist them to develop knowledge, skills and values for making decisions about individual and community actions that contribute to sustainable patterns of use of the Earth's natural resources.

Alignment with the Australian Curriculum: English and Mathematics

Strand	Sub-strand	Code	Year 4 content description	Lessons
English– Language	Language for interaction	ACELA1488	Understand that social interactions influence the way people engage with ideas and respond to others for example when exploring and clarifying the ideas of others, summarising their own views and reporting them to a larger group	1–8
	Text structure and organisation	ACELA1490	Understand how texts vary in complexity and technically depending on the approach to the topic, the purpose and the intended audience	3, 4, 5, 6, 8
	Expressing and developing ideas	ACELA1498	Incorporate new vocabulary from a range of sources into students' own texts including vocabulary encountered in research	1–7
English– Literacy	Interacting with others	ACELY1687	Interpret ideas and information in spoken texts and listen for key points in order to carry out tasks and use information to share and extend ideas and information	1–8
		ACELY1688	Use interaction skills such as acknowledging another's point of view and linking students' responses to the topic, using familiar and new vocabulary and a range of vocal effects such as tone, pace, pitch and volume to speak clearly and coherently	1–7
		ACELY1689	Plan, rehearse and deliver presentations incorporating learned content and taking into account the particular purposes and audiences	6
	Interpreting, analysing, evaluating	ACELY1692	Use comprehension strategies to build literal and inferred meaning to expand content knowledge, integrating and linking ideas and analysing and evaluating texts	3, 4, 5, 6
	Creating texts	ACELY1694	Plan, draft and publish imaginative, informative and persuasive texts containing key information and supporting details for a widening range of audiences, demonstrating increasing control over text structure and language features	6
		ACELY1697	Use a range of software including word processing programs to construct, edit and publish written text and select, edit and place visual, print and audio elements	6
Mathematics– Measurement and Geometry	Using units of measurement	ACMMG084	Use scaled instruments to measure and compare lengths, masses, capacities and temperature	3, 4, 6, 7
Mathematics– Statistics and probability	Data representation and interpretation	ACMSP096	Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Includes tables, column graphs and picture graphs where one picture can represent many data values	7

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Other links are highlighted at the end of lessons where possible. These links will be revised and updated on the website (www.science.org.au/primaryconnections).