

Alignment with the Australian Curriculum: Science

This *Friends or foes?* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 4. 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.

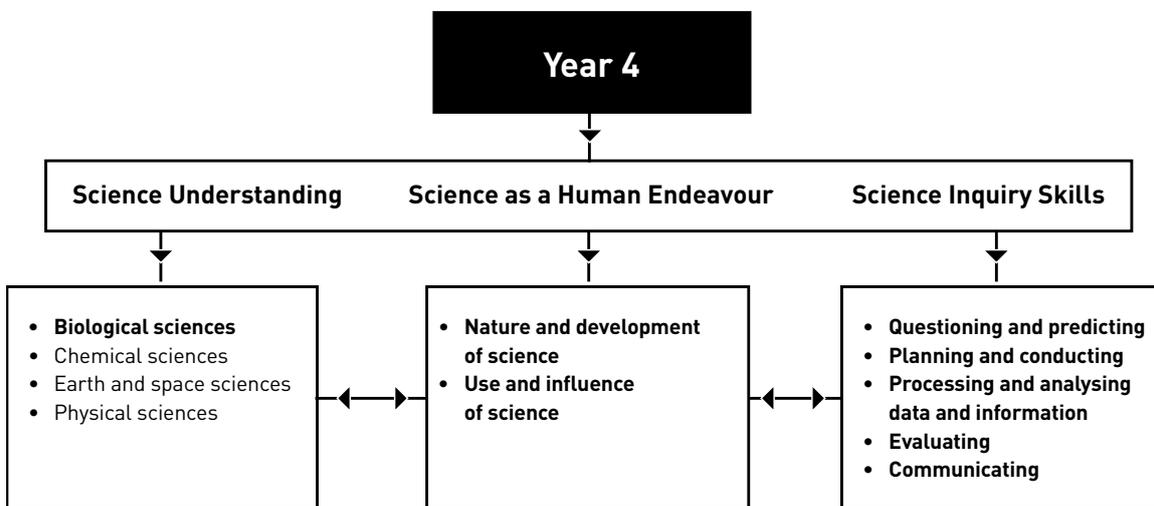
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 4 content descriptions	Lessons
Science Understanding	Biological sciences	ACSSU072	Living things have life cycles	1–6
		ACSSU073	Living things, including plants and animals, depend on each other and the environment to survive	1–6
Science as a Human Endeavour	Nature and development of science	ACSHE061	Science involves making predictions and describing patterns and relationships	2–6
	Use and influence of science	ACSHE062	Science knowledge helps people to understand the effect of their actions	4
Science Inquiry Skills	Questioning and predicting	AC SIS064	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	3, 6
	Planning and conducting	AC SIS065	Suggest ways to plan and conduct investigations to find answers to questions	3, 6
		AC SIS066	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	2, 3, 6
	Processing and analysing data and information	AC SIS068	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	3, 6
		AC SIS216	Compare results with predictions, suggesting possible reasons for findings	2, 3, 6
	Evaluating	AC SIS069	Reflect on the investigation, including whether a test was fair or not	3, 6
	Communicating	AC SIS071	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	1–6

 All the material in the first four columns of this table is sourced from the Australian Curriculum.

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.



 All the terms in this diagram are sourced from the Australian Curriculum.

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 *Friends or foes?* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Friends or foes?</i>
Patterns, order and organisation	Students describe the life cycle of flowering plants and insects. They investigate the patterns and mutualistic relationships that exist between plants, bees and ants through the processes of pollination and seed dispersal.
Form and function	Students observe and investigate the parts of flowers and bees that play important roles in pollination as part of the plant life cycle.
Stability and change	Students observe the predictable stages of growth of living things as they change through their life cycle.
Scale and measurement	Students investigate the time scale involved in the growing and changing of living things.
Matter and energy	Students explore the different materials and methods involved in seed dispersal.
Systems	Students identify and describe the relationships that exist between the components of ecosystems, including the interdependency of plants and animals, and their environments'.

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>Friends or foes?</i>
<p>Recognising questions that can be investigated scientifically and investigating them</p>	<p>Students explore the life cycles and interactions between flowering plants, bees and ants. They investigate the process of pollination and seed dispersal, and how the plants and insects benefit mutually. Students conduct a fair test on the food preferences of ants, and observe how they disperse food.</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 judgments on whether the students are achieving below, at or above the Australian Curriculum: Science Year 4 achievement standard.

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 further information see: www.australiancurriculum.edu.au

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

Friends or foes?—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	<i>Friends or foes?</i> 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>Friends or foes?</i> the literacy focuses are:</p> <ul style="list-style-type: none"> • science journals • science chat-boards • word walls • cross sections • labelled diagrams • procedural texts • tables • factual texts • storyboards.
 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"> • draw a scale for a cross section diagram • collect and represent data in tables • use time measurements in an investigation of ant behaviour.
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 observations in investigations • integrate digital images into science journal entries • use interactive resource technology to view pollination and seed dispersal 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"> • use evidence to support and discuss claims • make predictions • summarise information from 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 where relevant • Important contributions made to science by people from a range of cultures are highlighted where relevant.

 All the material in the first two columns of this table is sourced from the Australian Curriculum.

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.primaryconnections.org.au

Friends or foes? focuses on the Western science way of making evidence-based claims on the life cycles and interactions between living things. Aboriginal and Torres Strait Islander Peoples might have other explanations for why living things interact.

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 *Friends or foes?* unit provides opportunities for students to develop an understanding of how the growth of some living things can be impacted by environmental conditions, including changes due to human impact. 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 descriptions	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	2–6
	Text structure and organisation	ACELA1490	Understand how texts vary in complexity and technicality depending on the approach to the topic, the purpose and the intended audience	2–6
	Expressing and developing ideas	ACELA1498	Incorporate new vocabulary from a range of sources into students' own texts including vocabulary encountered in research	2–6
English– Literacy	Interacting with others	ACELY1689	Plan, rehearse and deliver presentations incorporating learned content and taking into account the particular purposes and audiences	2–5
	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
	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 structures and language features	6
Mathematics– Measurement and Geometry	Using units of measurement	ACMMG084	Use scaled instruments to measure and compare lengths, masses, capacities and temperatures	2, 3
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. Include tables, column graphs and picture graphs where one picture can represent many data values	2, 3, 6

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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.primaryconnections.org.au).