

Alignment with the Australian Curriculum: Science

This *Beneath our feet* 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.

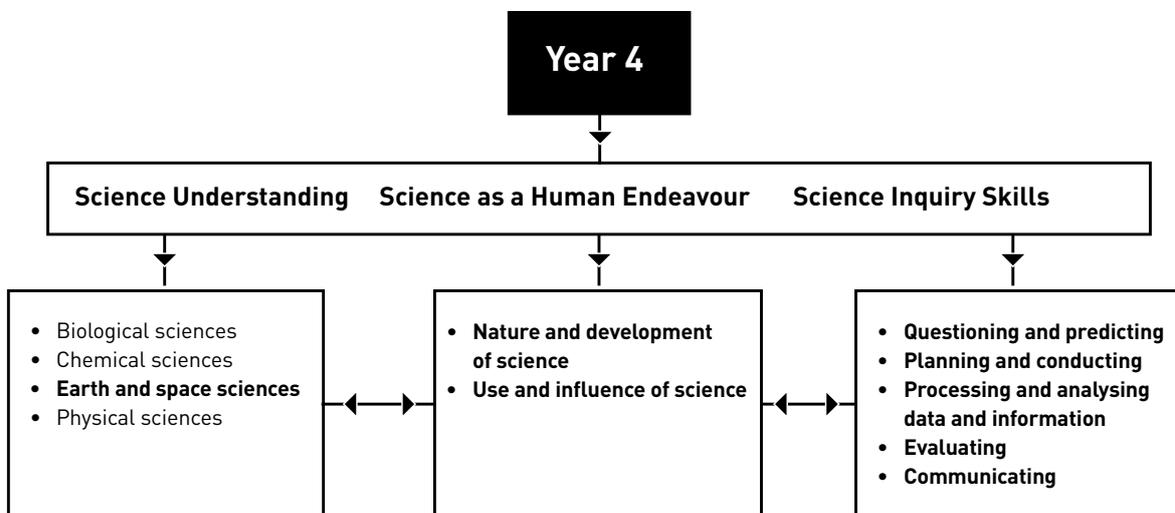
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 4 content descriptions	Lessons
Science Understanding (SU)	Earth and space sciences	ACSSU075	Earth's surface changes over time as a result of natural processes and human activity	1–8
Science as a Human Endeavour (SHE)	Nature and development of science	ACSHE061	Science involves making predictions and describing patterns and relationships	1, 2, 3, 4, 6, 7
	Use and influence of science	ACSHE062	Science knowledge helps people to understand the effect of their actions	3, 5
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	1, 3, 7
	Planning and conducting	ACSIS065	Suggest ways to plan and conduct investigations to find answers to questions	2,4,7
		ACSIS066	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	2, 3, 4, 5, 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, 3, 4, 5, 6, 7
		ACSIS216	Compare results with predictions, suggesting possible reasons for findings	7
	Evaluating	ACSIS069	Reflect on the investigation, including whether a test was fair or not	2, 4, 7
	Communicating	ACSIS071	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	1, 2, 3, 4, 6, 7

 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.



AC 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 *Beneath our feet*, these overarching ideas are represented as follows:

Overarching Idea	Incorporation in <i>Beneath our feet</i>
Patterns, order and organisation	Students observe and describe the patterns in landscapes that result from erosion over time.
Form and function	Students explore how the forms in the landscape affect how they are eroded which in turn affects their form.
Stability and change	Students understand that landscapes, which seem stable in our timescale, change over geological time.
Scale and measurement	Students compare the magnitude of events and processes at the Earth's surface that occur over very long periods of time.
Matter and energy	Students discuss the features of rocks and soils and how they can change over time.
Systems	Students describe interactions between non-living elements of ecosystems, such as the effect of water on rocks.

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>Beneath our feet</i>
<p>Recognising questions that can be investigated scientifically and investigating them</p>	<p>Students discuss factors that influence the erosion of soils and pose questions for investigation. They use science inquiry skills to conduct fair tests of the effect of water erosion on soils.</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 the 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. Rubrics to help teachers make these judgements are available on the PrimaryConnections website (www.primaryconnections.org.au).

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.

Beneath our feet—Australian Curriculum General capabilities

General capabilities	Australian Curriculum description	<i>Beneath our feet</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>Beneath our feet</i> the literacy focuses are:</p> <ul style="list-style-type: none"> • maps • science journals • TWLH charts • word walls • tables • labelled diagrams • graphs • annotated diagrams • procedural texts • factual texts.
 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"> • collect, interpret and represent data through tables and graphs • use measurement.
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 interactive resource technology to view, record and analyse information • use the internet to research further information about landforms, weathering and erosion.
 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 reasoning to develop questions for inquiry • formulate, pose and respond to questions • consider different ways of thinking about rocks, soils and landscapes • develop evidence-based claims about patterns of erosion.
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"> • work collaboratively in teams • follow a procedural text for working safely • participate in discussions.
 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.

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

Beneath our feet focuses on the Western science way of making evidence-based claims about how environmental factors, such as rain and wind, erode rocks and soil and are responsible for the creation of landscapes over time. When scientists study rock formations, they examine rock types and look at surrounding soils to create hypotheses about what the land looked like thousands and millions of years ago.

Aboriginal and Torres Strait Islander Peoples might have different explanations for why landscapes look the way they do, often referring to Dreamtime. For example, many groups have legends of the Rainbow Serpent, an immense serpent that created mountains and gorges. Dreamtime stories can be specific to particular people or communities or can be shared across different groups.

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

Sustainability

In *Beneath our feet* students discuss mechanisms of erosion and how these can affect soils and landscapes. This provides opportunities for students to develop understanding of how human impact on the environment affects soils and landscapes. 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 students' own views and reporting them to a larger group	1–8
		ACELA1489	Understand differences between the language of opinion and feeling and the language of factual reporting or recording	1–8
	Expressing and developing ideas	ACELA1498	Incorporate new vocabulary from a range of sources into students' own texts, including vocabulary encountered in research	2,3,6,8
English— Literature	Responding to literature	ACELT1603	Discuss literary experiences with others, sharing responses and expressing a point of view	1,6
	Creating literature	ACELT1607	Create literary texts that explore students' own experiences and imagining	2,6,8
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	1,3,4,5, 6,7
		ACELY1688	Use interaction skills such as acknowledging another's point of view and linking students' response 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	1–8
		ACELY1689	Plan, rehearse and deliver presentations incorporating learned content and taking into account the particular purposes and audiences	4,6,7
	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	2,3,6,8
Mathematics— Measurements and Geometry	Using units of measurement	ACMMG084	Use scaled instruments to measure and compare lengths, masses, capacities and temperatures	2,3,4,7
	Location and transformation	ACMMG090	Use simple scales, legends and directions to interpret information contained in basic maps	1,8
Mathematics— Statistics and Probability	Data representation and interpretation	ACMSP095	Select and trial methods for data collections, including survey questions and recording sheets	2,7
		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	2,3,4,7

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

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).