


## Alignment with the Australian Curriculum: Science

This *Desert survivors* unit embeds all three strands of the Australian Curriculum: Science.

The table below lists sub-strands and their content for Year 5. This unit is designed to be taught in conjunction with other Year 5 units to cover the full range of the Australian Curriculum: Science content for Year 5.

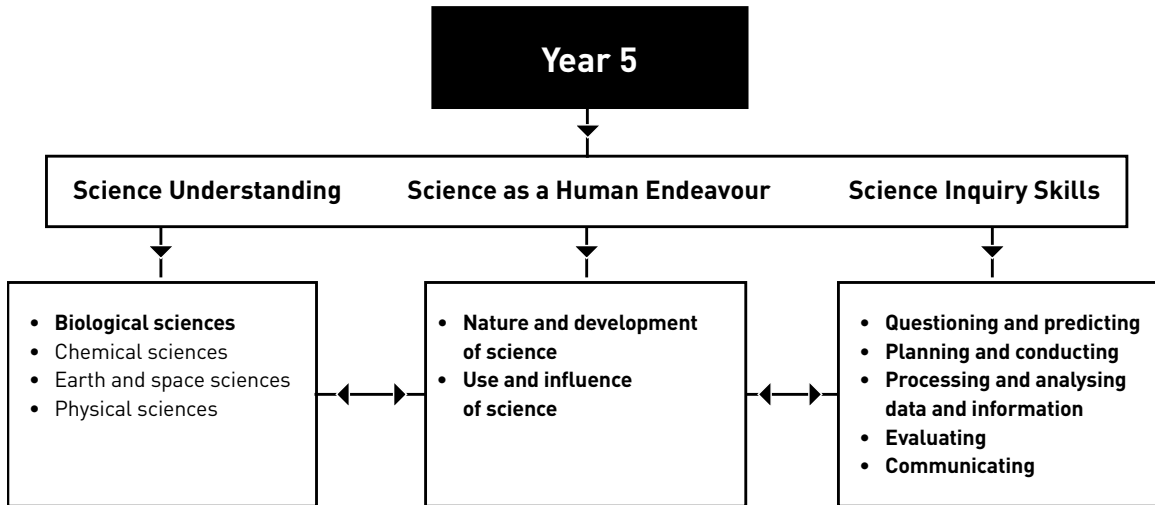
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
<b>Science Understanding (SU)</b>	<b>Biological sciences</b>	ACSSU043	Living things have structural features and adaptations that help them to survive in their environment	1–9
<b>Science as a Human Endeavour (SHE)</b>	<b>Nature and development of science</b>	ACSHE081	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	2–5, 7, 9
		ACSHE082	Important contributions to the advancement of science have been made by people from a range of cultures	1
	<b>Use and influence of science</b>	ACSHE083	Science understandings, discoveries and inventions are used to solve problems that directly affect people's lives	1
		ACSHE217	Science knowledge is used to inform personal and community decisions	1–9
<b>Science Inquiry Skills (SIS)</b>	<b>Questioning and predicting</b>	ACSIS231	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	1–4, 6, 7
	<b>Planning and conducting</b>	ACSIS086	With guidance, plan appropriate investigation methods to answer questions or solve problems	6, 7
		ACSIS087	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate	2–4, 7
		ACSIS088	Use equipment and materials safely, identifying potential risks	2–4, 7
	<b>Processing and analysing data and information</b>	ACSIS090	Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate	2–4, 7
		ACSIS218	Compare data with predictions and use as evidence in developing explanations	2–4, 6–8
	<b>Evaluating</b>	ACSIS091	Suggest improvements to the methods used to investigate a question or solve a problem	3, 7
	<b>Communicating</b>	ACSIS093	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	1–9

 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 *Desert survivors* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Desert survivors</i>
<b>Patterns, order and organisation</b>	Students observe and describe similarities and differences in features of different desert-dwelling species. They recognise patterns and investigate whether specific features help plants and animals to survive in their environment. They develop criteria for classifying different structural features and behaviours as adaptations.
<b>Form and function</b>	Students identify structural features of desert-dwelling species and describe their form. They investigate whether this form could play a role for survival in environments. They identify relationships, for example, how increased surface area of ears can promote heat loss, which helps survival in a hot environment.
<b>Stability and change</b>	Students explore how structural features of animals and plants that might appear stable can slowly evolve over time to adapt to their environment and to each other.
<b>Scale and measurement</b>	Students discuss how evolutionary adaptations can happen over long timescales whereas behavioural adaptations can happen over short timescales. They use precise measurements of time and volume in their scientific investigations. They explore 'surface area' and how it influences heat loss and water retention in desert conditions.
<b>Matter and energy</b>	Students explore some principles of heat (energy) transfer, including how heat exchange depends on available surface areas. They investigate water evaporation (movement of matter) and relate it to surface area.
<b>Systems</b>	Students explore desert environments and identify them as ecosystems with many different living things. They investigate how non-living elements, such as water and heat from the Sun, affect living things.

## 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>Desert survivors</i>
<p><b>Recognising questions that can be investigated scientifically and investigating them</b></p>	<p>Students generate inquiry questions about adaptations of living things to desert environments. They discuss and formulate plans of action to answer these questions, including literature reviews and conducting scientific investigations. They generate new claims based on evidence to answer their original questions. Investigations might include how surface area affects heat loss and water retention of animals and plants in desert environments.</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 5 achievement standard. Rubrics to help teachers make these judgements will be available on the website ([www.primaryconnections.org.au](http://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 further information see: [www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)

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

## Desert survivors—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	<i>Desert survivors</i> examples
<b>Literacy</b>	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>PrimaryConnections 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>Desert survivors</i> the literacy focuses are:</p> <ul style="list-style-type: none"> <li>• science journals</li> <li>• TWLH charts</li> <li>• word walls</li> <li>• annotated drawings</li> <li>• tables</li> <li>• graphs</li> <li>• summaries</li> <li>• oral presentations.</li> </ul>
 <b>Numeracy</b>	<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"> <li>• collect and interpret data in tables</li> <li>• represent and interpret data in simple graphs</li> <li>• identify trends and patterns from numerical data.</li> </ul>
<b>Information and communication technology (ICT) competence</b>	<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"> <li>• use interactive resource technology to view, record and discuss information</li> <li>• use the internet to research further information on animals and plants</li> <li>• use ICT to create multimedia presentations.</li> </ul>
 <b>Critical and creative thinking</b>	<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"> <li>• ask questions on a TWLH chart and answer them based on investigations</li> <li>• analyse data from investigations and use it to answer their questions</li> <li>• respond to questions and compare predictions with results to formulate conclusions</li> <li>• discuss the uses and limits of models used in an investigation to answer questions</li> <li>• make evidence-based claims about whether different features are adaptations to a particular environment.</li> </ul>
<b>Ethical behaviour</b>	<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"> <li>• ask questions of others respecting each other's point of view.</li> </ul>
 <b>Personal and social competence</b>	<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"> <li>• participate in discussions</li> <li>• work collaboratively in teams</li> <li>• listen to and follow instructions to safely complete investigations.</li> </ul>
 <b>Intercultural understanding</b>	<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"> <li>• cultural perspectives opportunities are highlighted where relevant.</li> <li>• important contributions made to science by people from a range of cultures are highlighted where relevant.</li> </ul>

## 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](http://www.australiancurriculum.edu.au)



### Aboriginal and Torres Strait Islander histories and cultures

The Primary**Connections** 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](http://www.primaryconnections.org.au)

*Desert survivors* focuses on the Western science way of making evidence-based claims about how living things have evolved adaptations to survive in their environment. When studying an emu, scientists seek to describe selective environmental pressures that can explain some of its structural features and adaptations. For example, they might explain that when ancestors of emus started running fast rather than flying, their wings gradually become vestigial structures that help with heat regulation.

Aboriginal and Torres Strait Islander Peoples might have other explanations for why living things have particular features, often referring to the Dreamtime. For example, some Indigenous groups might explain that the emu lost its wings because it was greedy—the wild turkey tricked the emu into cutting off its wings by saying it could eat more fish that way. Dreamtime stories can be specific to particular people or communities, or can be shared.

Primary**Connections** 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 Primary**Connections** website.

### Asia and Australia's engagement with Asia

The *Desert survivors* unit provides opportunities for students to discuss the plumage of a peacock. This is the national bird of India, chosen because of its rich religious and legendary involvement in Indian traditions. This provides a link to explore the emblems of different countries in Asia and their associated mythologies, literature and artwork.

### Sustainability

In *Desert survivors*, students develop an understanding of the desert as an ecosystem, with a diversity of unique life. Through studying adaptations, they explore how some living things are uniquely adapted to survive in their environments and are unable to survive when their environment is disturbed or changed. *Desert survivors* therefore provides opportunities for students to better understand ecosystems and how human activity can affect them. 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 5 content descriptions	Lessons
English– Language	Language for interaction	ACELA1502	Understand how to move beyond making bare assertions and take account of differing perspectives and points of view	1–9
	Text structure and organisation	ACELA1504	Understand how texts vary in purpose, structure and topic as well as the degree of formality	1–4, 6
	Expressing and developing ideas	ACELA1512	Understand the use of vocabulary to express greater precision of meaning, and know that words can have different meanings in different contexts	1–9
English– Literacy	Interacting with others	ACELY1699	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view	1–9
		ACELY1796	Use interaction skills, for example paraphrasing, questioning and interpreting non-verbal cues and choose vocabulary and vocal effects appropriate for different audiences and purposes	1–9
		ACELY1700	Plan, rehearse and deliver presentations for defined audiences and purposes incorporating accurate and sequenced content and multimodal elements	8
	Interpreting, analysing, evaluating	ACELY1703	Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources	6, 8
	Creating texts	ACELY1707	Use a range of software including word processing programs with fluency to construct, edit and publish written text, and select, edit and place visual, print and audio elements	8
	Mathematics– Number and Algebra	Number and place value	ACMNA291	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems
Mathematics– Measurement and Geometry	Using units of measurement	ACMMG108	Choose appropriate units of measurement for length, area, volume, capacity and mass	2, 3, 7
	Shape	ACMMG111	Connect three-dimensional objects with their nets and other two-dimensional representations	2, 3
Mathematics– Statistics and Probability	Data representation and interpretation	ACMSP118	Pose questions and collect categorical or numerical data by observation or survey	3, 4, 7
		ACMSP119	Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies	2–4, 7, 8
		ACMSP120	Describe and interpret different data sets in context	2–4, 7, 8

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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](http://www.primaryconnections.org.au)).