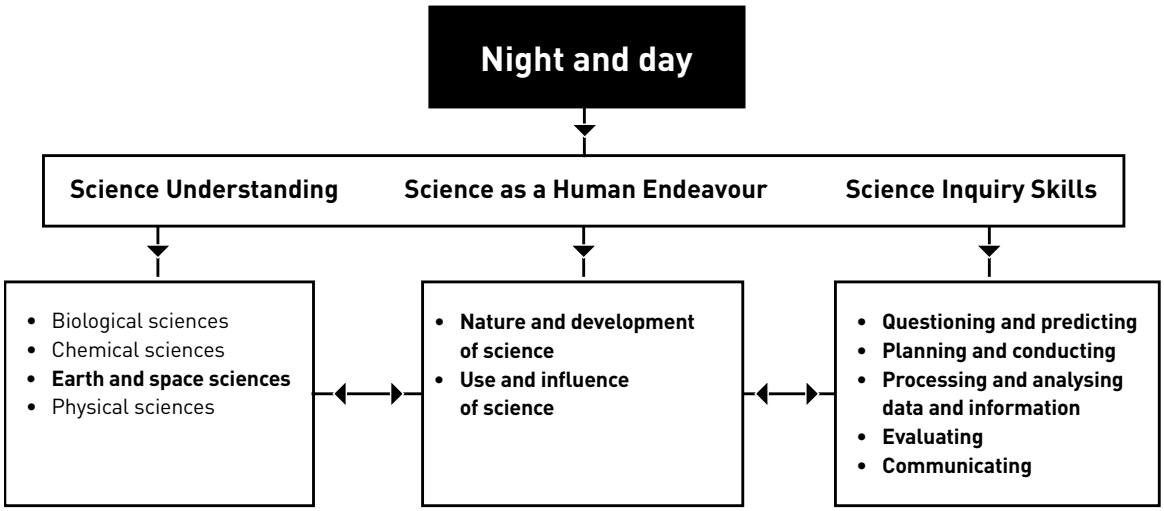
Night and day—Alignment with the Australian Curriculum

Night and day is written to align to the Year 3 level of the Australian Curriculum Science. The interrelationship between the three strands—Science Understanding, Science as a Human Endeavour and Science Inquiry Skills—and their sub-strands at this year level 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 (aside from the title).

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 *Night and day*
Recognising questions that can be investigated scientifically and investigating them	Students explore how the spinning of the Earth on its axis causes night and day through observations, models and role-play. They investigate changing shadows throughout the day, observing the change to the length and direction of shadows using a shadow stick.

Year 3 Achievement Standard

The Australian Curriculum: Science Year 3 achievement standard indicates the quality of learning that students should demonstrate by the end of Year 3.

By the end of Year 3, students use their understanding of the movement of the Earth, materials and the behaviour of heat **to suggest explanations for everyday observations.** They describe features common to living things. **They describe how they can use science investigations to respond to questions and identify where people use science knowledge in their lives.**

Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.

The sections relevant to *Night and day* are bolded above. By the end of the unit, teachers will be able to make evidence-based judgements on whether the students are achieving below, at or above the achievement standard for the sections bolded above.

Night and day—Australian Curriculum: Science

This *Night and day* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 3. This unit is designed to be taught in conjunction with other Year 3 units to cover the full range of the Australian Curriculum: Science content for Year 3.

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

Strand	Sub-strand	Code	Year 3 content descriptions	Lessons
Science Understanding	**Earth and space sciences**	ACSSU048	Earth's rotation on its axis causes regular changes, including night and day	1–6
Science as a Human Endeavour	**Nature and development of science**	ACSHE050	Science involves making predictions and describing patterns and relationships	2, 5
	Use and influence of science	ACSHE051	Science knowledge helps people to understand the effect of their actions	3
Science Inquiry Skills	**Questioning and predicting**	ACSIS053	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	2, 3, 5
	Planning and conducting	ACSIS054	Suggest ways to plan and conduct investigations to find answers to questions	5
		ACSIS055	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	3, 4, 5, 6
	Processing and analysing data and information	ACSIS057	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	5
		ACSIS215	Compare results with predictions, suggesting possible reasons for findings	3, 4, 5
	Evaluating	ACSIS058	Reflect on the investigation, including whether a test was fair or not	5
	Communicating	ACSIS060	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	1–6

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

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 *Night and day* these overarching ideas are represented by:

Overarching idea	Incorporation in *Night and day*
Patterns, order and organisation	Students observe and identify patterns in the changing length and directions of shadows over the duration of a day as the Sun rises and sets.
Form and function	Students describe and compare the spherical shapes and sizes of the Earth, Sun and Moon.
Stability and change	Students identify the predictable occurrence of night and day. They observe changes in the position of the Sun in the sky during the day and the regular pattern of the Sun rising in the East and setting in the West.
Scale and measurement	Students explore the differences in size of the Sun, Moon and Earth and select scaled-down 3-D versions of each. They investigate why the Sun and Moon can appear to be the same size.
Matter and energy	Students role-play the spinning of the Earth on its axis and the observable effects of sunrise and sunset. They explore how the Sun provides light energy to one side of the Earth at a time, causing night and day as the Earth spins.
Systems	Students investigate the relationship between the Sun, Earth and Moon and how they interact to cause regular events, such as night and day.

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.

Night and day—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	*Night and day* examples
Literacy	Literacy knowledge specific to the study of science develops along with scientific understanding and skills. 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.	In *Night and day* the literacy focuses are: • T-charts • science journals • annotated drawings • word walls • labelled diagrams • role-plays • tables • graphs.
 **Numeracy**	Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.	Students: • select spheres to represent the Earth, Sun and Moon to scale • measure the changing length and direction of shadows • collect and represent data in tables and simple column graphs.
Information and communication technology (ICT) competence	ICT competence is particularly evident in Science Inquiry Skills. Students use digital technologies to investigate, create, communicate, and share ideas and results.	Students are given optional opportunities to: • use interactive technology to view the interaction between the Earth and Sun that causes night and day • use a digital camera to record observations.
 **Critical and creative thinking**	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.	Students: • formulate, pose and respond to questions • develop evidence-based claims • use reasoning to explain how evidence supports a claim.
Ethical behaviour	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.	Students: • ask questions of others, respecting each other's point of view.
 **Personal and social competence**	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.	Students: • work collaboratively in teams • participate in discussions.
 **Intercultural understanding**	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.	• Cultural perspectives opportunities are highlighted where relevant • Important contributions made to science by people from a range of cultures are highlighted where relevant.

AC 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

Night and day focuses on the Western science way of making evidence-based claims about how the Earth's rotation on its axis causes regular changes, including night and day.

Aboriginal and Torres Strait Islander Peoples might have other explanations for the observed phenomenon of night and day. For information and activities see:

- *Astronomy and Australian Indigenous People* written by Adele Pring from the Astronomical Association of South Australia. See http://www.assa.org.au/media/2912/aaaip.pdf

Other useful sites on Indigenous astronomy include:

- http://www.questacon.edu.au/burarra-gathering/extra-information/navigation
- http://www.atnf.csiro.au/research/AboriginalAstronomy/index.html
- http://members.optusnet.com.au/virgothomas/space/abobeliefs2.html
- http://www.abc.net.au/science/articles/2009/07/27/2632463.htm

PrimaryConnections recommends working with Aboriginal and Torres Strait Islander Peoples 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.

Night and day—Australian Curriculum: English

Strand	Sub-strand	Code	Year 3 content descriptions	Lessons
Language	**Language for interaction**	ACELA1476	Understand that successful cooperation with others depends on shared use of social conventions, including turn-taking patterns, and forms of address that vary according to the degree of formality in social situations	1–6
Literacy	**Interacting with others**	ACELY1676	Listen to and contribute to conversations and discussions to share information and ideas and negotiate in collaborative situations	1, 3, 5, 6
		ACELY1792	Use interaction skills, including active listening behaviours and communicate in a clear, coherent manner using a variety of everyday and learned vocabulary and appropriate tone, pace, pitch and volume	1, 3, 4, 5, 6
		ACELY1677	Plan and deliver short presentations, providing some key details in logical sequence	4, 5, 6
	Creating texts	ACELY1682	Plan, draft and publish imaginative, informative and persuasive texts demonstrating increasing control over text structures and language features and selecting print, and multimodal elements appropriate to the audience and purpose	1, 6

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

Night and day—Australian Curriculum: Mathematics

Strand	Sub-strand	Code	Year 3 content descriptions	Lessons
Measurement and Geometry	**Using units of measurement**	ACMMG061	Measure, order and compare objects using familiar metric units of length, mass and capacity	2, 5
	Shape	ACMMG063	Make models of three-dimensional objects and describe key features	2
Statistics and Probability	**Data representation and interpretation**	ACMSP068	Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording	5
		ACMSP069	Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies	5
		ACMSP070	Interpret and compare data displays	5

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