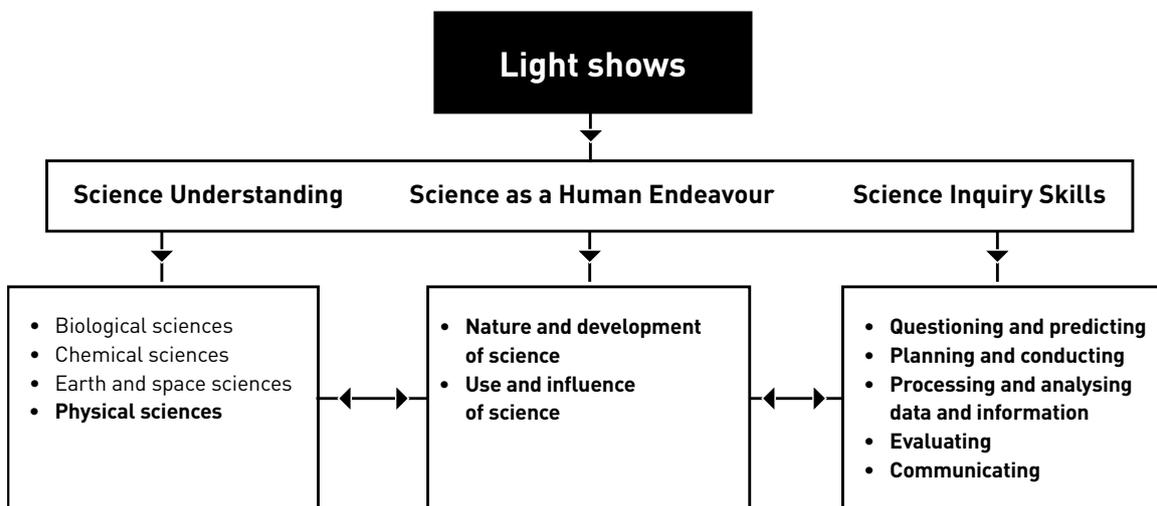


Light shows—Alignment with the Australian Curriculum

Light shows is written to align to the Year 5 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 <i>Light shows</i>
Recognising questions that can be investigated scientifically and investigating them	Students generate questions to explore the properties of light and investigate them through hands-on activities. Using a fair test, they develop claims based on evidence about the variation in height of a shadow.

Year 5 Achievement Standard

The Australian Curriculum: Science Year 5 achievement standard indicates the quality of learning that students should demonstrate by the end of Year 5.

By the end of Year 5, students classify substances according to their observable properties and behaviours. They **explain everyday phenomena associated with the transfer of light**. They describe the key features of our solar system. They analyse how the form of living things enables them to function in their environments. **Students discuss how scientific developments have affected people's lives and how science knowledge develops from many people's contributions.**

Students follow instructions to pose questions for investigation, predict what might happen when variables are changed, and plan investigation methods. They use equipment in ways that are safe and improve the accuracy of their observations. Students construct tables and graphs to organise data and identify patterns. They use patterns in their data to suggest explanations and refer to data when they report findings. They describe ways to improve the fairness of their methods and communicate their ideas, methods and findings using a range of text types.

The sections relevant to *Light shows* 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.

Light shows—Australian Curriculum: Science

This *Light shows* 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
Science Understanding	Physical sciences	ACSSU080	Light from a source forms shadows and can be absorbed, reflected and refracted	1–8
Science as a Human Endeavour	Nature and development of science	ACSHE081	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	1, 4, 5
	Use and influence of science	ACSHE083	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives	1, 5, 8
		ACSHE217	Scientific knowledge is used to inform personal and community decisions	4
Science Inquiry Skills	Questioning and predicting	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, 2, 5, 6, 7
	Planning and conducting	ACSIS086	With guidance, plan appropriate investigation methods to answer questions or solve problems	2, 3, 5, 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	5, 6, 7
		ACSIS088	Use equipment and materials safely, identifying potential risks	5, 7
	Processing and analysing data and information	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	3, 4, 6, 7
		ACSIS218	Compare data with predictions and use as evidence in developing explanations	5
	Evaluating	ACSIS091	Suggest improvements to the methods used to investigate a question or solve a problem	7
	Communicating	ACSIS093	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	2, 3, 4, 5, 6, 8

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 *Light shows* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Light shows</i>
Patterns, order and organisation	Students identify and describe relationships that underpin the cause and effect of light forming shadows and enabling us to see. Students order and categorise materials according to their light-transmitting properties.
Form and function	Students describe physical properties of light and the materials light encounters, and relate them to their function and use. Students manipulate light by choosing appropriate materials to create a periscope.
Stability and change	Students recognise the stable properties and predictable nature of light, such as travelling in straight lines from a source and how it interacts with different materials.
Scale and measurement	Students measure the effects of light and describe light travelling continuously in a straight line until it encounters objects. Students quantify the height of shadows using formal units of measurement.
Matter and energy	Students use direct experience and observation of rays of light to explain how light can form shadows and be reflected, refracted or absorbed.
Systems	Students learn about the role light plays in our ability to see and relate the properties of materials to the effect they have on light.

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.

Light shows—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	Light shows 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>Light shows</i> the literacy focuses are:</p> <ul style="list-style-type: none"> • science journals • science chat-boards • word walls • tables • ray diagrams • labelled diagrams • procedural texts • graphs.
 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 in tables • use measurement when collecting data • represent and interpret data in simple graphs.
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 discuss information • use digital technologies to assist in their investigations.
 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"> • formulate, pose and respond to questions • consider different ways of thinking • develop evidence-based claims.
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 • listen to and follow instructions to safely complete investigations • 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.

 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.

One of these is embedded within *Light shows*, as described below.



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

Light shows focuses on the Western science way of making evidence-based claims for why we have night and day.

Aboriginal and Torres Strait Islander Peoples might have other explanations for the observed phenomenon of day and night, often referring to the Dreamtime. For example, some groups tell stories of a female Sun who walks across the sky with a bright torch during the day and at night travels in an underground tunnel back to the camp in the East. These stories may serve as reminders to the group about their laws and customs.

For information and activities about Aboriginal and Torres Strait Islander Peoples' use of astronomy, access *Astronomy and Australian Indigenous People* written by Adele Pring from the Astronomical Association of South Australia (<http://www.assa.org.au/media/2912/aaaip.pdf>).

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.

Light shows—Australian Curriculum: English

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
Language	Language for interaction	ACELA1502	Understand how to move beyond making bare assertions and take account of differing perspectives and points of view	1, 4, 5, 7
	Text structure and organisation	ACELA1504	Understand how texts vary in purpose, structure and topic as well as the degree of formality	1–8
	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	1–8
		ACELA1513	Understand how to use banks of known words, as well as word origins, prefixes and suffixes, to learn and spell new words	1–8
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	1–6
		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, 3, 4, 5, 7, 8
		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	5, 6, 7
	Creating texts	ACELY1704	Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience	8

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

Light shows—Australian Curriculum: Mathematics

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
Measurement and Geometry	Using units of measurement	ACMMG108	Choose appropriate units of measurement for length, area, volume, capacity and mass	5, 7
Statistics and Probability	Data representation and interpretation	ACMSP118	Pose questions and collect categorical or numerical data by observation or survey	5, 7
		ACMSP119	Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies	5, 7
		ACMSP120	Describe and interpret different data sets in context	5, 7

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