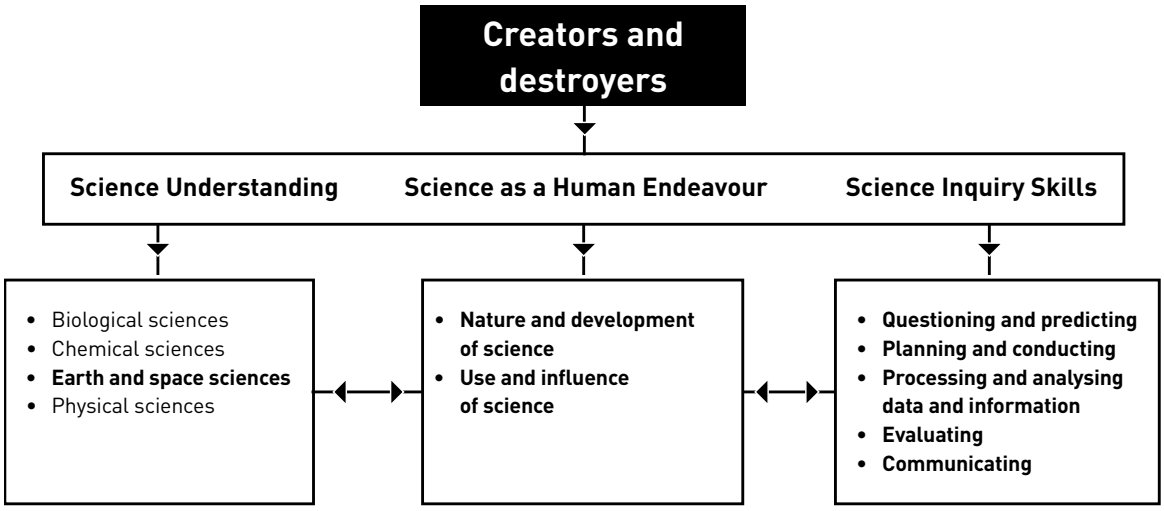
Creators and destroyers—Alignment with the Australian Curriculum

Creators and destroyers is written to align to the Year 6 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 *Creators and destroyers*
Recognising questions that can be investigated scientifically and investigating them	Students formulate investigable questions and make predictions to investigate the formation and shape of volcanoes, the location of volcanoes, and the effect of volcanoes on Earth's surface.

Year 6 Achievement Standard

The Australian Curriculum: Science Year 6 achievement standard indicates the quality of learning that students should demonstrate by the end of Year 6.

By the end of Year 6, students compare and classify different types of observable changes to materials. They analyse requirements for the transfer of electricity and describe how energy can be transformed from one form to another when generating electricity. They **explain how natural events cause rapid change to Earth's surface**. They describe and predict the effect of environmental changes on individual living things. **Students explain how scientific knowledge helps us to solve problems and inform decisions** and identify historical and cultural contributions.

Students follow procedures to develop investigable questions and design investigations into simple cause-and-effect relationships. They identify variables to be changed and measured and describe potential safety risks when planning methods. They collect, organise and interpret their data, identifying where improvements to their methods or research could improve the data. They describe and analyse relationships in data using appropriate representations and construct multi-modal texts to communicate ideas, methods and findings.

The sections relevant to *Creators and destroyers* are bolded above. 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 achievement standard for the sections bolded above.

Creators and destroyers—Australian Curriculum: Science

This *Creators and destroyers* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 6. This unit is designed to be taught in conjunction with other Year 6 units to cover the full range of the Australian Curriculum: Science content for Year 6.

For ease of assessment the table below outlines the sub-strands, the content descriptions for Year 6 and the aligned lessons.

Strand	Sub-strand	Code	Year 6 content descriptions	Lessons
Science Understanding	**Earth and space Sciences**	ACSSU096	Sudden geological changes and extreme weather events can affect Earth's surface	1–8
Science as a Human Endeavour	**Nature and development of science**	ACSHE098	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions	1–8
	Use and influence of science	ACSHE220	Scientific knowledge is used to solve problems and inform personal and community decisions	2–8
Science Inquiry Skills	**Questioning and predicting**	ACSIS232	With guidance, pose clarifying questions and make predictions about scientific investigations	1, 3, 5, 7
	Planning and conducting	ACSIS103	Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks	1, 3, 5, 7
		ACSIS104	Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy, using digital technologies as appropriate	3
	Processing and analysing data and information	ACSIS107	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	1–8
		ACSIS221	Compare data with predictions and use as evidence in developing explanations	3, 7
	Evaluating	ACSIS108	Reflect on and suggest improvements to scientific investigations	3
	Communicating	ACSIS110	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts	7, 8

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 *Creators and destroyers*, these overarching ideas are represented by:

Overarching idea	Incorporation in *Creators and destroyers*
Patterns, order and organisation	Students interpret secondary data on weekly volcanic activity patterns during the unit. They identify and describe patterns of distribution and relate them to processes happening on different timescales, for example, tectonic plate movement.
Form and function	Students investigate how the form of a volcano depends on variables, such as the viscosity of its lava. They identify that different types of volcanic events are more related to certain forms.
Stability and change	Students discuss how apparently stable environments (such as dormant or extinct volcanoes) can be subject to sudden, violent change. They explore whether that change can be predicted, and how accurately.
Scale and measurement	Students use formal measurements in their investigations. They discuss how volcanic eruptions have short timeframes, but are due to processes that occur over geological time.
Matter and energy	Students identify that volcanoes transfer matter and energy from the interior of the Earth to the surface.
Systems	Students identify and describe relationships between tectonic plate boundaries and volcanic distribution. They explore different volcanic systems, the types of eruptions that result and how predictable those events are.

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.

Creators and destroyers—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	*Creators and destroyers* 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 *Creators and destroyers* the literacy focuses are: • science journals • T-charts • TWLH charts • word walls • glossaries • factual recounts • summaries • cross sections • tables • ideas maps • oral presentations.
Numeracy	Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.	Students: • collect, interpret and represent data about lava and volcanic eruptions.
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 resource technology to view, record and discuss information • use the internet to research further information about volcanoes, where they are located and why.
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 • consider different ways of thinking • develop evidence-based claims.
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. • Important contributions made to science by people from a range of cultures are highlighted.

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.

Two of these are embedded within *Creators and destroyers*, as described below.

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

Creators and destroyers focuses on the Western science method of using evidence based claims about how the surface of the Earth is shaped by geological events. Aboriginal and Torres Strait Islander Peoples might have other ways of understanding how lands are shaped.

For example, the Dyirbal and Yidiny people explain that the formation of three volcanic crater lakes Yidyam (Lake Eacham), Barany (Lake Barrine) and Ngimun (Lake Euramo) happened "when two newly-initiated men broke a taboo and angered the rainbow serpent" back when the land was bush not rainforest. The description of events (see page 12, end of *Explore* Lesson 2) would be understood by scientists as accurately depicting a volcanic eruption. Geological evidence places the event as occurring over 10,000 years ago, and pollen samples confirm the land was bush at that time.

Reference: Dixon, R.M.W. (1996). Origin Legends and Linguistic Relationships. Oceania Vol 67, No. 2, Oceania Publications, University of Sydney.

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

Creators and destroyers provides opportunities for students to explore volcanic activity throughout the world, including the much higher incidence in some neighbouring Asian countries. They investigate and discuss physical characteristics of volcanoes and discuss the relationship local people share with them.

Creators and destroyers—Australian Curriculum: English

Strand	Sub-strand	Code	Year 6 content descriptions	Lessons
Language	**Expressing and developing ideas**	ACELA1524	Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts	1, 2, 7
		ACELA1525	Investigate how vocabulary choices, including evaluative language can express shades of meaning, feeling and opinion	2
Literacy	**Interacting with others**	ACELY1709	Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions	1–8
		ACELY1710	Plan, rehearse and deliver presentations, selecting and sequencing appropriate content and multimodal elements for defined audiences and purposes, making appropriate choices for modality and emphasis	7, 8
	Interpreting, analysing, evaluating	ACELY1712	Select, navigate and read texts for a range of purposes, applying appropriate text processing strategies and interpreting structural features, for example table of contents, glossary, chapters, headings and subheadings	1–8
		ACELY1713	Use comprehension strategies to interpret and analyse information and ideas, comparing content from a variety of textual sources including media and digital texts	1–8
	Creating texts	ACELY1714	Plan, draft and publish imaginative, informative and persuasive texts, choosing and experimenting with text structures, language features, images and digital resources appropriate to purpose and audience	8
		ACELY1717	Use a range of software, including word processing programs, learning new functions as required to create texts	8

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

Creators and destroyers—Australian Curriculum: Mathematics

Strand	Sub-strand	Code	Year 6 content descriptions	Lessons
Number and Algebra	**Number and place value**	ACMNA123	Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers	3
Statistics and Probability	**Data representation and interpretation**	ACMSP147	Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables	5, 7
		ACMSP148	Interpret secondary data presented in digital media and elsewhere	1–7

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

Creators and destroyers—Australian Curriculum: Design and technologies

Strand	Code	Year 6 content descriptions	Lessons
Processes and Production skills	ACTDEP025	Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques	2, 8
	ACTDEP027	Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions	2, 8
	ACTDEP028	Develop project plans that include consideration of resources when making designed solutions individually and collaboratively	2

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

(Note: Design and Technologies Curriculum available for use: awaiting final endorsement)