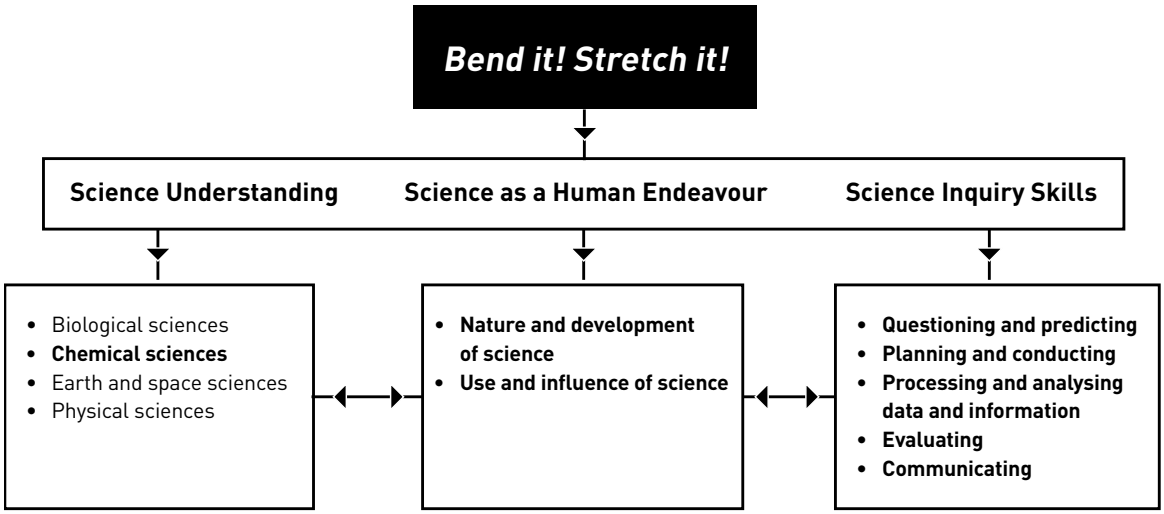
Bend it! Stretch it!—Alignment with the Australian Curriculum

Bend it! Stretch it! is written to align to the Year 1 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 F–2	Incorporation in *Bend it! Stretch it!*
Awareness of self and the local world	Students use their senses to explore physical changes in their everyday lives, including ones they are responsible for through the actions of bending, stretching and scrunching. They discuss how their actions physically change everyday objects and materials. They explore the effect that drying out has on the ability of objects made of playdough to change their shape.

Year 1 Achievement Standard

The Australian Curriculum: Science Year 1 achievement standard indicates the quality of learning that students should demonstrate by the end of Year 1.

> **By the end of Year 1, students describe objects and events that they encounter in their everyday lives, and the effects of interacting with materials and objects.** They describe changes in their local environment and how different places meet the needs of living things. **Students respond to questions, make predictions, and participate in guided investigations of everyday phenomena. They follow instructions to record and sort their observations and share them with others.**

The sections relevant to *Bend it! Stretch it!* 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. To assist teachers in making these judgements, assessment rubrics and work samples are provided in Appendix 9.

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 *Bend it! Stretch it!* these overarching ideas are represented by:

Overarching idea	Incorporation in *Bend it! Stretch it!*
Patterns, order and organisation	Students predict and explore how similar actions affect objects made of different materials, or different objects made of the same material. This provides opportunities to observe and describe patterns, for example, the number of times a sheet of paper can be folded is limited less by its length than by its thickness.
Form and function	Students investigate how changing the form of an object can change its use, for example, cutting a sheet of paper can change it to a loop which can be worn around the neck.
Stability and change	Students identify and describe how changes are more or less stable. For example, elastic materials regain their shape after being stretched whereas plastic materials are deformed by the same action.
Scale and measurement	Students measure and compare the elasticity of jelly snakes by measuring the length of the snake before, during and after it has been stretched.
Matter and energy	Students explore how the change in the material of playdough (loss of water) can affect its properties, namely its plasticity (ability to be shaped).
Systems	Students identify that objects are composed of one or more different materials.

Bend it! Stretch it!—Australian Curriculum: Science

Bend it! Stretch it! embeds all three strands of the Australian Curriculum: Science. For ease of reference, the table below outlines the sub-strands covered in *Bend it! Stretch it!*, the content descriptions for Year 1 and the aligned lessons.

Strand	Sub-strand	Code	Year 1 content descriptions	Lessons
Science Understanding	**Chemical sciences**	ACSSU018	Everyday materials can be physically changed in a variety of ways[1]	1–7
Science as a Human Endeavour	**Nature and development of science**	ACSHE021	Science involves observing, asking questions about, and describing changes in, objects and events	1–7
	Use and influence of science	ACSHE022	People use science in their daily lives, including when caring for their environment and living things	1–7
Science Inquiry Skills	**Questioning and predicting**	ACSIS024	Pose and respond to questions, and make predictions about familiar objects and events	1–7
	Planning and conducting	ACSIS025	Participate in guided investigations to explore and answer questions	2–6
		ACSIS026	Use informal measurements to collect and record observations, using digital technologies as appropriate	3, 4, 6
	Processing and analysing data and information	ACSIS027	Use a range of methods to sort information, including drawings and provided tables and through discussion, compare observations with predictions	1–7
	Evaluating	ACSIS213	Compare observations with those of others	2–6
	Communicating	ACSIS029	Represent and communicate observations and ideas in a variety of ways	1–7

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

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 curriculum. For further information see: www.australiancurriculum.edu.au

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

1 This unit also addresses how physical changes affect everyday objects made of different materials, aligning with the Elaboration: *'Predicting and comparing how the shapes of objects made from different materials can be physically changed through actions such as bending, stretching and twisting'.*

Bend it! Stretch it!—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	*Bend it! Stretch it!* examples
Literacy	Literacy knowledge specific to the study of science develops along with scientific understanding and skills. 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.	In *Bend it! Stretch it!* the literacy focuses are: • science journals • word walls • tables • annotated drawings • flow charts.
 **Numeracy**	Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.	Students: • collaboratively use tables to organise data • interpret tables to compare observed changes • measure and compare the elasticity of jelly snakes.
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 analyse information.
 **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 about ways to change everyday materials • give reasons to justify their responses to questions.
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 respecting each other's point of view • consider the health and safety of others.
 **Personal and social competence**	Students develop personal and social competence as they 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 • follow directions to work safely.
 **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.

Bend it! Stretch it!—Australian Curriculum: English

Strand	Sub-strand	Code	Year 1 content descriptions	Lessons
Language	**Language for interaction**	ACELA1444	Understand that language is used in combination with other means of communication, for example facial expressions and gestures to interact with others	1–7
		ACELA1446	Understand that there are different ways of asking for information, making offers and giving commands	1–7
	Expressing and developing ideas	ACELA1451	Identify the parts of a simple sentence that represent 'What's happening?', 'What state is being described?', 'Who or what is involved?' and the surrounding circumstances	1–7
		ACELA1454	Understand the use of vocabulary in everyday contexts as well as a growing number of school contexts, including appropriate use of formal and informal terms of address in different contexts	1–7
Literacy	**Interacting with others**	ACELY1656	Engage in conversations and discussions, using active listening behaviours, showing interest, and contributing ideas, information and questions	1–7
		ACELY1788	Use interaction skills including turn-taking, recognising the contributions of others, speaking clearly and using appropriate volume and pace	1–7
		ACELY1657	Make short presentations using some introduced text structures and language, for example opening statements	2–7

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

Bend it! Stretch it!—Australian Curriculum: Mathematics

Strand	Sub-strand	Code	Year 1 content descriptions	Lessons
Number and Algebra	**Fractions and decimals**	ACMNA016	Recognise and describe one-half as one of two equal parts of a whole	2
Measurement and Geometry	**Using units of measurement**	ACMMG019	Measure and compare the lengths and capacities of pairs of objects using uniform informal units	2, 3, 6
		ACMMG021	Describe duration using months, weeks, days and hours	6

AC All the material in the first four 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 *Bend it! Stretch it!*, 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

Bend it! Stretch it! focuses on the Western science method of using evidence-based claims to explain how everyday materials and objects can be physically changed in a variety of ways. For example, scientists may claim that the deformation of some jelly snakes is due to both the properties of the material (for example, its elasticity) and the sum of the forces acting upon it. They would back this claim with evidence and reasoning as to why that evidence supports their claim. Indigenous cultures might have other frames of reference to examine similar events and for explaining the underlying process causing changes in objects and materials.

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.

Sustainability

In the *Bend it! Stretch it!* unit students discuss how sheets of kitchen material are scrunched into small balls before being thrown away. Students investigate how different materials make balls of different sizes, and how permanent the change is. This provides a basis for understanding how human activities might impact the environment around them, for example, in waste management such as recycling and landfills.