Scope and sequence

Science

Reception to year 6

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Science: Scope and sequence reception to year 6

Contents

Context statement

The Australian Curriculum: Science is organised around 6 key ideas and 3 interrelated strands. The 6 key ideas are:

- patterns, order and organisation
- form and function
- stability and change
- scale and measurement
- matter and energy
- systems.

All units of work can be categorised in 1 or more of these key ideas to support students in constructing deep and coherent understandings of the scientific phenomena, comprising their world. The 3 strands include:

- science understanding
- science as a human endeavour
- science inquiry skills.

These 3 strands should be taught using an integrated approach.

Across these strands, 9 key science concepts are developed:

- form and function
- diversity and evolution
- interdependence and ecosystems
- properties of matter
- changes in matter
- forces and motion
- energy
- Earth in space
- Earth's surface.

Within this scope and sequence document, strands are used to structure the curriculum with the key ideas and key concepts highlighted to show how they develop in conceptual sophistication, from reception to year 10.

The South Australian science scope and sequence reception to year 10 provides:

- Achievement standards:
  - presented as dot points and separated into the three strands.
- Science understanding strand:
  - details depth and breadth of the key scientific concepts to be taught at each year level
  - focuses on the scientific concepts which enables flexibility of how they are taught within different content and contexts
  - is divided into four sub-strands : biological sciences, chemicals sciences, Earth and space sciences, and physical sciences.
- Aboriginal knowledge and ways of knowing:
  - have been included from Australian Curriculum: Science elaborations
  - are highlighted up front and with purpose.
- Science as a human endeavour:
  - provides content examples of the nature of science and the ability to think and act scientifically, using a range of inquiry processes
  - examples are inclusive of South Australian scientists, occupations, developments and the use and influence of science locally, nationally and globally.
- Science inquiry skills
  - described as they are in the Australian Curriculum: Science.
- Science key ideas
  - translated to show how they connect with the key concepts for each content description.

Achievement standards

Together, the 3 interrelated strands of Science understanding, Science as a human endeavour and Science inquiry skills provide students with understanding, knowledge and skills through which they can develop a scientific view of the world. Students are challenged to explore science, its concepts, nature and uses, through clearly described inquiry processes.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science understanding By the end of reception, students: • **describ**e the properties and behaviour of familiar objects • **suggest** how the environment affects them and other living things.	**Science understanding** By the end of year 1, students: • **describe** objects and events that they encounter in their everyday lives • **describe** the effects of interacting with materials and objects • **describe** changes in their local environment • **describe** how different places meet the needs of living things.	**Science understanding** By the end of year 2, students: • **describe** changes to objects • **describe** changes to materials • **describe** changes to living things • **identify** that certain materials and resources have different uses.	**Science understanding** By the end of year 3, students: • **use** their understanding of the movement of Earth to **suggest** explanations for everyday observations • **use** their understanding of materials to **suggest** explanations for everyday observations • **use** their understanding of the behaviour of heat to **suggest** explanations for everyday observations • **group** living things based on observable features • **distinguish** living things from non-living things.	**Science understanding** By the end of year 4, students: • **apply** the observable properties of materials to **explain** how objects and materials can be used • **describe** how contact and non-contact forces affect interactions between objects • **discuss** how natural processes and human activity cause changes to Earth's surface • **describe** relationships that assist the survival of living things • **sequence** key stages in the life cycle of a plant or animal.	**Science understanding** By the end of year 5, students: • **classify** substances according to their observable properties and behaviours • **explain** everyday phenomena associated with the transfer of light • **describe** the key features of our solar system • **analyse** how the form of living things enables them to function in their environments.	**Science understanding** By the end of year 6, students: • **compare** and **classify** different types of observable changes to materials • **analyse** requirements for the transfer of electricity • **describe** how energy can be transformed from one form to another when generating electricity • **explain** how natural events cause rapid change to Earth's surface • **describe** and **predict** the effect of environmental changes on living things.
Science as a human endeavour By the end of reception, students: • **share** and **reflect** on observations • **ask** and **respond** to questions about familiar objects and events.	**Science as a human endeavour** By the end of year 1, students: • **respond** to questions • **make** predictions • **participate** in guided investigations of everyday phenomena.	**Science as a human endeavour** By the end of year 2, students: • **describe** examples of where science is used in people's daily lives.	**Science as a human endeavour** By the end of year 3, students: • **describe** how to use science investigations to respond to questions.	**Science as a human endeavour** By the end of year 4, students: • **identify** when science is used to understand the effect of their actions.	**Science as a human endeavour** By the end of year 5, students: • **discuss** how scientific developments have affected people's lives and helped us solve problems • **discuss** how science knowledge develops from many people's contributions.	**Science as a human endeavour** By the end of year 6, students: • **explain** how scientific knowledge helps us to solve problems and inform decisions • **identify** historical and cultural contributions of science knowledge.
	Science inquiry skills By the end of year 1, students: • **follow** instructions to **record** and **sort** their observations • **share** instructions and observations with others.	**Science inquiry skills** By the end of year 2, students: • **pose** questions about their experiences • **respond** to questions about their experiences • **predict** outcomes of investigations • **use** informal measurements to **make** observations • **use** informal measurements to **compare** observations	**Science inquiry skills** By the end of year 3, students: • **use** experiences to identify questions and **make** predictions about scientific investigations • **follow** procedures to collect and record observations • **suggest** possible reasons for their findings, based on patterns in their data • **describe** how safety and fairness were considered	**Science inquiry skills** By the end of year 4, students: • **follow** instructions to **identify** investigable questions about familiar contexts • **make** predictions based on prior knowledge • **describe** ways to conduct investigations • safely **use** equipment to **make** and **record** accurate observations	**Science inquiry skills:** • **follow** instructions to **pose** questions for investigation • **predict** the effect of changing variables when planning an investigation • **use** equipment in ways that are safe and improve the accuracy of their observations • **construct** tables and graphs to **organise** data and **identify** patterns in the data	**Science inquiry skills** By the end of year 6, students: • **follow** procedures to develop investigable questions • **design** investigations into simple cause-and-effect relationships • **identify** variables to be changed and measured • **describe** potential safety risks when planning methods • **collect**, **organise** and **interpret** their data, **identifying** where

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		• **record** and **represent** observations • **communicate** ideas in a variety of ways.	• **use** diagrams and other representations to communicate ideas.	• **use** provided tables and column graphs to **organise** data and identify patterns • **suggest** explanations for observations • **compare** observation findings with their predictions • **suggest** reasons why a test was fair or not • **use** formal and informal ways to **communicate** their observations and findings.	• **compare** patterns in their data with predictions when suggesting explanations • **describe** ways to improve the fairness of their investigations • **communicate** ideas and findings using multimodal texts.	improvements to their methods or research could improve the data • **describe** and **analyse** relationships in data using appropriate representations • **construct** multimodal texts to **communicate** ideas, methods and findings.

Scope and sequence

Strand: Science understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time. This strand provides the content through which the key ideas and skills of science are developed within contexts appropriate to the learners. The Science Understanding strand comprises of four sub strands.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biological sciences A diverse range of living things have evolved on Earth over hundreds of millions of years; living things are interdependent and interact with each other and their environment; and the form and features of living things are related to the functions that their body systems perform.	**Key idea: Systems** • relationship between the needs of animals and plants within a local system. **Interdependence and ecosystems** **Understand that living things have basic needs, including food and water:** • people, plants and animals need food, water and shelter to survive • the needs of living things at home and in nature • needs of plants and animals. **Aboriginal science elaboration** Aboriginal people understand the basic needs of plants and animals and have long cared for the living things in their environment.	**Key idea: Form and function** the functions are determined by the physical characteristics of animals and plants. **Form and function** **Understand that living things have a variety of external features:** • the features of plants and animals have specific functions • animal body parts are used for specific purposes such as moving or feeding • common features of animals • features of plants are used for particular purposes such as roots for obtaining water. **Aboriginal science elaboration** Aboriginal peoples' observations of the external features of living things are mimicked and replicated in traditional dance.	**Key idea: Stability and change** • plants and animals grow and change over time. **Diversity and evolution** **Understand that living things grow, change and have offspring similar to themselves:** • animals and plants change from birth to maturity • there are predictable patterns in the growth and change of living things • living things have offspring similar to themselves.	**Key idea: Patterns, order and organisation** • identify the patterns of similarities and differences to be able to group living and non-living things. **Diversity and evolution** **Understand that living things can be grouped on the basis of observable features and can be distinguished from non-living things:** • recognise observable ~~features~~ characteristics of living things • living things can be grouped as plants or animals based on their observable ~~features~~ characteristics • there are features common to living things • sorting living and non-living things based on characteristics • differences between living and once living. **Aboriginal science elaboration** Aboriginal people use observable features to develop classification systems for living things.	**Key idea: Stability and change** Changes in the stages of life cycles of animals and plants. **Diversity and evolution** **Understand that living things have life cycles:** • life cycles of different living things. For example compare a frogs life cycle with that of a chicken, or compare an animal with a plant • some young resemble their parents while others look different and change form • the stages of life cycles. **Aboriginal science elaboration** The intricate understanding of the life cycles of organisms has long informed Aboriginal and Torres Strait Islander peoples' decisions regarding when to acquire and utilise resources.	**Key idea: Form and function** • the relationship between the structure of animal features and their uses. **Form and function** **Understand that living things have structural features and adaptations that help them to survive in their environment:** • particular adaptations aid survival. For example, native and introduced plants and animals have adapted to different Australian environments • the differences between structural and behavioural adaptations that help living things to survive. **Aboriginal science elaboration** Aboriginal people understand that the structural adaptations of organisms have enabled the survival of the organism in the environment and that these adaptations can be exploited for other purposes.	**Key idea: Systems** • components between living systems and the environment are interdependent. **Interdependence and ecosystems** **Understand that the growth and survival of living things are affected by physical conditions of their environment:** • physical environmental factors include light, temperature, soil type, water and other substances or species that may be present • changing the physical conditions of plants and animals can affect their growth and survival. **Aboriginal science elaboration** Aboriginal peoples' understanding of the requirement of specific physical conditions for the growth and survival of particular plant and animal species is evidenced through intricate seasonal calendars, land management practices and important cultural gatherings.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Key idea: Systems living things exist where their needs are met within a local system. **Interdependence and ecosystems** **Understand that living things live in different places where their needs are met:** • plants live where there is enough light, water, soil and shelter • animals live where there is enough food, water and shelter • when habitats change, living things can no longer have their needs met.			**Key idea: Systems** Interactions between animals and plants are independent within an environment. **Interdependence and ecosystems** **Understand that living things depend on each other and the environment to survive:** • living things depend on each other (producers, consumers, decomposers), and the environment to survive • interactions between living things may be competitive (predator and prey). **Aboriginal science elaboration** A reciprocal interrelationship exists between Aboriginal people and the environment, which integrates sustainable practices with obligations to Country or place.		

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Chemical sciences Chemical and physical properties of substances are determined by their structure at an atomic scale; substances change and new substances are produced by rearranging atoms through atomic interactions and energy transfer.	Key idea: Patterns, order and organisation • classify objects into groups based on their observable properties. Properties of matter Understand that objects are made of materials that have observable properties: • different materials can be grouped based on properties such as colour, texture and flexibility • different forms of clothing are used for different purposes • the difference between objects and the material that they are made from.	Key idea: Stability and change • the properties of familiar objects can be changed. Changes of matter Understand that everyday materials can be physically changed in a variety of ways: • physical changes to materials include cutting, crumpling and moulding • changes can be caused by people or the environment • materials such as chocolate, play dough or water can change when they are warmed and cooled. Aboriginal science elaboration Aboriginal people apply physical changes to natural materials to render them useful for particular purposes.	Key idea: Stability and change • materials can be combined and changed in different ways. Changes of matter Understand that different materials can be combined for a particular purpose: • materials can be combined or mixed with other materials • mixtures may be used for new purposes • the effects of mixing different materials together • materials can be changed, remade or recycled. Aboriginal science elaboration Aboriginal people combine materials to produce utensils such as spears, drills, blankets, spear-throwers, nets, axes, and adzes.	Key idea: Matter and energy • addition or removal of heat can affect solids and liquids. Changes of matter Understand that a change of state between solid and liquid can be caused by adding or removing heat: • the addition or removal of heat can change the state of matter on different materials • when heat is removed a liquid cools down to a solid • when heat is added a solid changes into a liquid. Aboriginal science elaboration Aboriginal people recognise that matter exists in different states, including solids and liquids. They have long used the application or removal of heat to induce a change in state of specific materials for desired purposes.	Key idea: Form and function • the properties of natural and processed materials determine how they can be used. Properties of matter Understand that natural and processed materials have a range of physical properties that can influence their use: • there are similarities and differences between the properties of natural and processed materials • materials can be used for different purposes, based on their properties • properties of materials can affect the way they are managed, for example recycling. Aboriginal science elaboration Aboriginal people use natural and processed materials for different purposes, such as tools, clothing and shelter, based on their properties.	Key idea: Matter and energy • the addition or removal of heat affects the behaviour of matter. Properties of matter Understand that solids, liquids and gases have different observable properties and behave in different ways: • there are 3 states of matter: solids, liquids and gases • solids have a definite shape and volume • liquids have a defined volume but take the shape of their container • gases take both the volume and shape of their container • evaporation and condensation are 2 examples of matter changing from one state to another. Aboriginal science elaboration Aboriginal peoples' knowledge about states of matter is used in many processes and practices. This includes the extraction of oils (solid to liquid), medicinal therapies (liquid to gas) and cooking practices (liquid to gas).	Key idea: Matter and energy • changes of matter can be classified in different ways. Changes of matter Understand that changes to materials can be reversible or irreversible: • reversible changes occur when you can return to the original state of the material because the change can be undone. For example melting chocolate • a reversible change might change the appearance or feel, but does not make a new material • irreversible changes occur when you cannot return to the original state of the material because it cannot be undone For example, burning wood to get ash and smoke • irreversible changes create new materials. Aboriginal science elaboration Aboriginal peoples' understanding of reversible changes are evidenced in the use of resins as adhesives, and their understanding of irreversible changes, in the use of fuel for torches.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and space sciences Earth is part of a solar system that is part of a larger universe; Earth is subject to change within and on its surface, over a range of timescales as a result of natural processes and human use of resources.	Key idea: Stability and change • changes in their environment within their everyday life. The Earth's surface **Understand that daily and seasonal changes in our environment affect everyday life:** • weather affects living things differently • some animals may migrate or hibernate • weather includes rain, wind and clouds • changes in the daily weather effect behaviour and clothing choices for different conditions. **Aboriginal science elaboration** Aboriginal peoples' concepts of time and weather patterns explain how things happen in the world around them.	Key idea: Stability and change • the link between natural phenomena and observations of their surroundings. Earth in space **Understand that observable changes occur in the sky and landscape:** • changes in the sky include movement and appearance of sun, moon and stars • changes occur in predictable patterns, such as the seasons. **Aboriginal science elaboration** Aboriginal people have extensive knowledge of changes in the landscape and sky which connects with daily and seasonal changes.	Key idea: Systems • resources from the Earth are part of a larger system. The Earth's surface **Understand that Earth's resources are used in a variety of ways:** • Earth's resources are water, soil and minerals • water comes from a source and transferred to where it is used • identify actions in the local environment to conserve resources, such as a dripping tap at school. **Aboriginal science elaboration** For many thousands of years Aboriginal people have accessed resources in a variety of ways to procure required supplies while maintaining environmental balance.	Key idea: Patterns, order and organisation • the relationships that underpin the patterns of day and night. Earth in space **Understand that Earth's rotation on its axis causes regular changes, including night and day:** • day and night are regular predictable cycles • the Earth's rotation on its axis causes these regular cycles. **Aboriginal science elaboration** The cultural stories of Aboriginal people explain regular changes in the sky that have been observed and understood for many thousands of years.	Key idea: Stability and change • the Earth's surface has characteristics that have resulted from past changes. The Earth's surface **Understand that Earth's surface changes over time as a result of natural processes and human activity:** • environmental changes can be the result of natural processes, for example, an eroded gully or sand dunes • human activity can cause erosion on Earth's surface • flooding and extreme weather events can affect landscapes. **Aboriginal science elaboration** Aboriginal peoples' fire management practices over tens of thousands of years have changed the distribution of flora and fauna in most regions of Australia.	Key idea: Systems • Earth as a component within a larger system. Key idea: Scale and measurement • models are used to investigate astronomical scales. Earth in space **Understand that the Earth is part of a system of planets orbiting around a star (the sun):** • Earth is one component within a solar system • there are similarities and differences between the planets of the solar system • models can be used to investigate astronomical scales in the solar system. **Aboriginal science elaboration** Aboriginal people have an understanding of the night sky and its use for timekeeping purposes as evidenced in oral cultural records, petroglyphs, paintings, and stone arrangements.	Key idea: Stability and change • Earth as a dynamic system • scale and measurement • geological changes can have significant effects over time. The Earth's surface **Understand that sudden geological changes and extreme weather events can affect Earth's surface:** • major geological events such as earthquakes, volcanoes, tsunamis, sink holes and landslides can change Earth's surface • science can help predict and explain geological changes and events as well as their effects • the effects of drought on living and non-living aspects of the environment. **Aboriginal science elaboration** Aboriginal peoples' cultural stories provide evidence of geological events.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Physical sciences Forces affect the behaviour of objects; energy can be transferred and transformed from one form to another.	Key idea: Stability and change • changes they can make to affect the way objects move. Forces and motion **Understand that the way objects move depends on a variety of factors, including their size and shape:** • different shaped objects move in different ways • there are similarities and differences in the way that similar shaped but different sized objects roll or bounce. For example tennis balls, marbles, and golf balls. **Aboriginal science elaboration** The size and shape of traditional instructive toys used by Aboriginal people influence their movement.	Key idea: Matter and energy • light and heat are different energy forms. Energy **Understand that light and sound are produced by a range of sources and can be sensed:** • our senses are used to explore our world. For example our eyes to see light, our ears to detect sound and our touch to feel vibrations • objects can be seen when light sources shine on them • a light source is needed to see things. For example, the sun is a source of light • sound is produced by a range of things • sound travels to our ears where it can be heard • the similarities and differences between sounds made by different instruments. **Aboriginal science elaboration** Aboriginal people's scientific understanding of how to produce and control sound has resulted in the development of a range of musical instruments that produce characteristic sounds.	Key idea: Stability and change • a push and pull can affect stationary objects. Forces and motion **Understand that a push or a pull affects how an object moves or changes shape:** • looking at the impact of pushing and pulling • objects move when they are pushed or pulled • different strength pushes and pulls affect the movement of objects • an object can change shape when it is pushed or pulled, for example play dough. **Aboriginal science elaboration** Aboriginal people have long-held understandings of the physics of movement and share this knowledge through the push and pull movements of instructive toys.	Key idea: Matter and energy • heat energy and its transfer within simple systems. Energy **Understand that heat can be produced in many ways and can move from one object to another:** • heat is produced in different ways, like electricity, burning (chemical reaction), friction, or motion • heat can move from one object to another, flowing from the hotter object to the cooler object • insulators and conductors and how they affect the transfer of heat • removing heat makes things cooler. **Aboriginal science elaboration** Aboriginal peoples' production and transfer of heat in traditional methods of cooking, such as the use of ground ovens.	Key idea: Systems • within systems, interactions between components can involve forces and changes acting in opposing directions. Forces and motion **Understand that forces can be exerted by one object on another through direct contact or from a distance:** • forces can act in direct contact, for example friction • forces can act at a distance, for example gravity or magnetism • contact and non-contact forces are similar, for example push and pull. **Aboriginal science elaboration** Aboriginal peoples' knowledge of the effect of contact and non-contact forces on the movement of objects in traditional children's instructive toys and games.	Key idea: Matter and energy • transfer of light can produce observable phenomena. Energy **Understand that light from a source forms shadows and can be absorbed, reflected and refracted:** • light is produced by a variety of sources, for example, electricity, burning, and the sun • light travels in straight lines • understanding of the terms absorbed, opaque, translucent, and transparent and that particular materials influence the amount of light passing through or not • reflection using mirrors • refraction of light at the surfaces of different materials, for example, when light travels from air to water • the colour of an object depends on the properties of the object and the colour of the light source. **Aboriginal science elaboration** Aboriginal peoples' knowledge and understanding of the properties of light, such as their understanding of refraction as experienced in spear fishing.	Key idea: Matter and energy • the role of electrical energy in the changes that take place in a closed circuit. Energy **Understand that electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources:** • a complete circuit is needed for electricity to flow • electricity can be produced from light, movement, heat, and chemical sources • differences between electrical conductors and insulators.

Strand: Science as a human endeavour

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and science knowledge can be changed as new evidence becomes available. Science influences society by posing, and responding to, social and ethical questions, and scientific research is itself influenced by the needs and priorities of society.
This strand highlights the development of science as a unique way of knowing and doing, and the importance of science in contemporary decision-making and problem-solving. It acknowledges that in making decisions about science practices and applications, ethical and social implications must be taken into account. This strand also recognises that science advances through the contributions of many people from different cultures, and that there are many rewarding science-based career paths. This strand provides context and relevance to students and to our broader community. There are 2 sub-strands of Science as a Human Endeavour.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Nature and development of science Develop an appreciation of the unique nature of science and scientific knowledge, including how current knowledge has developed over time through the actions of many people.	Science involves observing, asking questions about, and describing changes in objects and events. Content example: • observations of different animals, such as a bat, hermit crab, or koala, arouse curiosity which enables students to ask questions. Aboriginal science elaboration Aboriginal people gain knowledge about the land and its vital resources, such as water and food, through observation.	Science involves observing, asking questions about, and describing changes in objects and events. Content example: • why the moon is visible in our sky during the daytime. Aboriginal science elaboration Aboriginal people use changes in the landscape and the sky to answer questions about when to gather certain resources.	Science involves observing, asking questions about, and describing changes in objects and events. Content example: • knowledge of changes to materials helps us understand how they are used or recycled. Aboriginal science elaboration Aboriginal people observe and describe developmental changes in living organisms. They can answer questions about when to harvest certain resources.	Science involves making predictions and describing patterns and relationships. Content example: • predictions about environmental events can help us plan for the future. Aboriginal science elaboration Knowledge of astronomy has been used by Aboriginal people.	Science involves making predictions and describing patterns and relationships. Content example: • knowing the life cycles of different plants and animals helps us to think about ways the environment can be protected for its survival. Aboriginal science elaboration Scientific practices such as sorting, classification and estimation are used by Aboriginal people in everyday life.	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena, and reflects historical and cultural contributions. Content example: • scientists develop their ideas and understanding about space and our solar system through global research and collaboration • in the development of laser technology, scientists from a range of cultures help us improve our understanding of the way light behaves and how it affects other objects. Aboriginal science elaboration Aboriginal people use observation of the night sky to assist with navigation.	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena, and reflects historical and cultural contributions. Content example: • gathering evidence from across the world helps scientists predict the effects of major geological or climatic events. • knowledge about the effects of using the Earth's resources has changed over time. • observations of the growth of mould inhibiting bacteria has led to new discoveries in antibiotic medication. • people from different cultures used sustainable sources of energy like water and solar power.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use and influence of science Explore how science knowledge and applications affect people's lives, including their work, and how science is influenced by society and can be used to inform decisions and actions.		**People use science in their daily lives, including when caring for their environment and living things.** **Content example:** • science knowledge is used in the care of the local environment such as animal habitats, and changes to parks and gardens to better meet the needs of native animals • science is used in our daily lives. **Aboriginal science elaboration** Technologies used by Aboriginal people require an understanding of how materials can be sustainably sourced to make tools and weapons, musical instruments, clothing, cosmetics, and artworks.	**People use science in their daily lives, including when caring for their environment and living things.** **Content example:** • monitoring of Earth's resources and conditions. For example, water usage and soil conditions • wearing helmets during magpie mating season. **Aboriginal science elaboration** Aboriginal people use science to meet needs like food supply.	**Science knowledge helps people to understand the effect of their actions.** **Content example:** • materials, including solids and liquids affect the environment in different ways • nurses, doctors, dentists, mechanics and gardeners use science to help them make decisions. **Aboriginal science elaboration** Aboriginal peoples have knowledge of the local natural environment, such as the characteristics of plants and animals.	**Science knowledge helps people to understand the effect of their actions.** **Content example:** • weather predictions can help to develop a plan to protect South Australia's costal dunes • new screen technology used by the swipe generation comes from the exploration and use of different materials.	**Scientific knowledge is used to solve problems and inform personal and community decisions.** **Content example:** • decisions are made to grow particular plants and crops depending on the environmental conditions. For example, Goyder's Line. • there are recognised benefits and drawbacks associated with using solid, liquid or gaseous fuels to heat homes • technologies developed to aid space exploration have changed the way people live, work, and communicate. **Aboriginal science elaboration** Aboriginal people of arid regions of Australia use scientific knowledge to manage precious water resources.	**Scientific knowledge is used to solve problems and inform personal and community decisions.** **Content example:** • the discovery of cheese led to solving the problem of a short shelf-life for milk. Milk became more easily transportable and longer lasting • scientific knowledge about the optimal conditions for mould growth is used to add flavour to or protect foods during their production • personal and community choices influence our use of sustainable sources of energy. For example, nuclear power generation, wind or solar farms • electricity energy generation has significantly changed, both in Australia and around the world. An example of this is the use of renewable energy. **Aboriginal science elaboration** Modern approaches to fire ecology in Australia are being informed by Aboriginal peoples' traditional ecological knowledge and fire management practices.

Strand: Science inquiry skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments. The skills students develop give them the tools they need to achieve deeper understanding of the science concepts and how scientific thinking applies to these understandings.

Science investigations are activities in which ideas, predictions or hypotheses are tested and conclusions are drawn in response to a question or problem. Investigations can involve a range of activities, including experimental testing, field work, locating and using information sources, conducting surveys, and using modelling and simulations. The choice of the approach taken will depend on the context (science as a human endeavour), and subject of the investigation (science understanding).

In science investigations, collection and analysis of primary data and evidence play a major role. This can involve collecting or extracting information and reorganising data in the form of tables, graphs, flow charts, diagrams, prose, keys, spreadsheets and databases. Students will also develop their understandings through the collection and analysis of secondary data and information. There are 5 sub-strands of Science Inquiry Skills.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning and predicting Identifying and constructing questions, proposing hypotheses and suggesting possible outcomes.	Pose and respond to questions about familiar objects and events.	Pose and respond to questions and make predictions about familiar objects and events.	Pose and respond to questions and make predictions about familiar objects and events.	Identify questions that can be investigated scientifically and make predictions based on prior knowledge. This is done with guidance and using familiar contexts.	Identify questions that can be investigated scientifically and make predictions based on prior knowledge. This is done with guidance and using familiar contexts.	With guidance, pose clarifying questions and make predictions about scientific investigations.	With guidance, pose clarifying questions and make predictions about scientific investigations.
Planning and conducting Making decisions about how to investigate or solve a problem and carrying out an investigation, including the collection of data.	Participate in guided investigations and make observations using the senses.	Participate in guided investigations to explore and answer questions. Use informal measurements to collect and record observations, using digital technologies as appropriate.	Participate in guided investigations to explore and answer questions. Use informal measurements to collect and record observations, using digital technologies as appropriate.	With guidance, plan and conduct scientific investigations to find answers to questions. Consider the safe use of appropriate materials and equipment. Consider the elements of fair tests and use formal measurements to make and record observations accurately. Use digital technologies as appropriate.	With guidance, plan and conduct scientific investigations to find answers to questions. Considering the safe use of appropriate materials and equipment. Consider the elements of fair tests and use formal measurements to make and record observations accurately. Use digital technologies as appropriate.	Identify, plan and apply the elements of scientific investigations to answer questions and solve problems. Use equipment and materials safely and identify potential risks. Decide variables to be changed and measured in fair tests. Observe, measure, and record data with accuracy using digital technologies as appropriate.	Identify, plan and apply the elements of scientific investigations to answer questions and solve problems. Use equipment and materials safely and identify potential risks. Use informal measurements to collect and record observations, using digital technologies as appropriate. Decide on variables to be changed and measured in fair tests. Observe, measure, and record data with accuracy using digital technologies as appropriate.
Processing and analysing data and information Representing data in meaningful and useful ways; identifying trends, patterns and relationships in data,	Engage in discussions about observations and represent ideas.	Use a range of methods to sort information including drawings and tables. Through discussion, compare observations with predictions.	Use a range of methods to sort information including drawings and tables. Through discussion, compare observations with predictions.	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends. Compare results with predictions, suggesting possible reasons for findings.	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends. Compare results with predictions, suggesting possible reasons for findings.	Construct and use a range of representations, including tables and graphs. Describe observations, patterns or relationships in data using digital technologies as appropriate.	Construct and use a range of representations, including tables and graphs. Describe observations, patterns or relationships in data using digital technologies as appropriate.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
and using this evidence to justify conclusions.						Compare data with predictions and use as evidence in developing explanations.	Compare data with predictions and use as evidence in developing explanations.
Evaluating Considering the quality of available evidence and the merit or significance of a claim, proposition or conclusion with reference to that evidence.		Compare observations with those of others.	Compare observations with those of others.	Reflect on investigations, including whether a test was fair or not.	Reflect on investigations, including whether a test was fair or not.	Reflect on and suggest improvements to scientific investigations.	Reflect on and suggest improvements to scientific investigations.
Communicating Conveying information or ideas to others through appropriate representations, text types and modes.	Share observations and ideas.	Represent and communicate observations and ideas in a variety of ways.	Represent and communicate observations and ideas in a variety of ways.	Represent and communicate observations, ideas and findings using formal and informal representations.	Represent and communicate observations, ideas and findings using formal and informal representations.	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multimodal texts.	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multimodal texts.