Reception to year 6

Science

September 2022

Scope and sequence

Revised to align with the Australian Curriculum V9.0 (2022)

V2.0

Government of South Australia
Department for Education

Science: 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 one 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 should be taught using an integrated approach and include:

- Science understanding
- Science as a human endeavour
- Science inquiry.

Across these strands, 10 core science concepts are developed:

- Form and function – The form and features of living things are related to the functions that their body systems perform.
- Diversity and evolution – A diverse range of living things have evolved on Earth over hundreds of millions of years; this process is ongoing.
- Interdependence and ecosystems – Biological systems are interdependent and interact with each other and their environment.
- Properties of matter – The chemical and physical properties of substances are determined by their structure at a range of scales.
- Changes of matter – Substances change (form) and new substances are produced by rearranging atoms; these changes involve energy transfer and transformation.
- Forces and motion – Forces affect the motion and behaviour of objects.
- Energy – Energy can be transferred and transformed from one form to another and is conserved within systems.
- Earth in space – Earth is part of an astronomical system; interactions between Earth and celestial bodies influence the Earth system.
- Earth's surface – The Earth system comprises dynamic and interdependent systems; interactions between these systems cause continuous change over a range of scales.
- Sustainability of the Earth system – All living things are connected through the Earth's systems and depend on sustainability of the Earth system.

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

The South Australian Scope and sequence: Science Reception to year 10 document provides the following:

- Achievement standards:
  - presented as dot points and separated into the 3 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 4 sub-strands: biological sciences, chemicals sciences, Earth and space sciences, and physical sciences.

- First Nations 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 Australian scientists, occupations, developments and the use and influence of science locally, nationally and globally.

- Science inquiry
  - are described as they are in the Australian Curriculum: Science.

- Science core concepts
  - are included for each sub-strand to highlight conceptual progression at and across year levels.

Achievement standards

Together, the 3 interrelated strands of Science understanding, Science as a human endeavour and Science inquiry provides 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 practices.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science understanding By the end of reception, students: • **group** plants and animals based on external features • **identify** factors that influence the movement of objects • **describe** the observable properties of the materials that make up objects.	**Science understanding** By the end of year 1, students: • **identify** how living things meet their needs in the places they live • **identif**y daily and seasonal changes and **describe** ways these changes affect their everyday life • **describe** how different pushes and pulls change the motion and shape of objects.	**Science understanding** By the end of year 2, students: • **identify** celestial objects and **describe** patterns they observe in the sky • **demonstrate** how different sounds can be produced and **describe** the effect of sound energy on objects • **identify** ways to change materials without changing their material composition.	**Science understanding** By the end of year 3, students: • **classify** and **compare** living and non-living things, and different life cycles • **describe** the observable properties of soils, rocks and minerals, and **describe** their importance as resources • **identify** sources of heat energy and examples of heat transfer, and **explain** changes in the temperature of objects • **classify** solids and liquids based on observable properties and **describe** how to cause a change of state.	**Science understanding** By the end of year 4, students: • **identify** the roles of organisms in a habitat and **construct** food chains • **identify** key processes in the water cycle and **describe** how water cycles through the environment • **identify** forces acting on objects and **describe** their effect • **relate** the uses of materials to their properties.	**Science understanding** By the end of year 5, students: • **explain** how the form and behaviour of living things enables survival • **describe** key processes that change the Earth's surface • **identify** sources of light and **model** the transfer of light to explain observed phenomena • **relate** the particulate arrangement of solids, liquids and gases to their observable properties.	**Science understanding** By the end of year 6, students: • **explain** how changes in physical conditions affect living things • **model** the relationship between the Sun and planets of the Solar System, and **explain** how the relative positions of the Earth and the Sun relate to observed phenomena on Earth • **identify** the role of circuit components in the transfer and transformation of electrical energy • **classify** and **compare** reversible and irreversible changes to substances.
Science as a human endeavour By the end of reception, students: • **identify** examples of people using observation and questioning to learn about the natural world.	**Science as a human endeavour** By the end of year 1, students: • **describe** situations where they use science in their daily lives • **identify** examples of people making scientific predictions.	**Science as a human endeavour** By the end of year 2, students: • **describe** how people use science in their daily lives • **describe** how people use patterns to make scientific predictions.	**Science as a human endeavour** By the end of year 3, students: • **describe** how people use data to develop explanations • **identify** solutions that use scientific explanations.	**Science as a human endeavour** By the end of year 4, students: • **explain** the role of data in science inquiry • **identify** solutions based on scientific explanations and **describe** the needs these meet.	**Science as a human endeavour** By the end of year 5, students: • **describe** examples of collaboration leading to advances in science and scientific knowledge that has changed over time • **identify** examples where scientific knowledge informs the actions of individuals and communities.	**Science as a human endeavour** By the end of year 6, students: • **explain** why science is often collaborative and **describe** different individuals' contributions to scientific knowledge • **describe** how individuals and communities use scientific knowledge.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science inquiry By the end of reception, students: • **pose** questions and **make** predictions based on their experiences • **engage** in investigations and **make** observations safely • **represent** observations and **identify** patterns, with guidance • **compare** their observations with predictions, with guidance • **share** questions, predictions, observations, and ideas about their experiences with others.	**Science inquiry** By the end of year 1, students: • **pose** questions to explore observations and **make** predictions based on experiences • **follow** safe procedures to **make** and **record** observations • **use** provided tables and organisers to **sort** and **order** data and information • **represent** patterns, with guidance • **compare** observations with predictions and **identify** further questions, with guidance • **use** everyday vocabulary to **communicate** observations, findings and ideas.	**Science inquiry** By the end of year 2, students: • **pose** questions to explore observed patterns or relationships and **make** predictions based on experience • **suggest** steps to be followed in an investigation • **follow** safe procedures to **make** and **record** observations • **use** provided tables and organisers to **sort** and **order** data and **represent** patterns in data • **compare** their observations with those of others, with guidance • **identify** whether their investigation was fair and **identify** further questions, with guidance • **use** everyday and scientific vocabulary to **communicate** observations, findings and ideas.	**Science inquiry** By the end of year 3, students: • **pose** questions to explore patterns and relationships and **make** predictions based on observations • **use** scaffolds to plan safe investigations and fair tests • **use** familiar classroom instruments to make measurements • **organise** data and information, using provided scaffolds, and **identify** patterns and relationships • **compare** their findings with those of others • **explain** how they kept their investigation fair • **identify** further questions and **draw** conclusions • **communicate** ideas and findings for an identified purpose, including using scientific vocabulary when appropriate.	**Science inquiry** By the end of year 4, students: • **pose** questions to identify patterns and relationships and **make** predictions based on observations • **plan** investigations, using planning scaffolds • **identify** key elements of fair tests and **describe** how they conduct investigations safely • **use** simple procedures to **make** accurate formal measurements • **construct** representations to organise data and information • **identify** patterns and relationships • **compare** their findings with those of others • **assess** the fairness of their investigation • **identify** further questions for investigation • **draw** conclusions • **communicate** ideas and findings for an identified audience and purpose, including using scientific vocabulary when appropriate.	**Science inquiry** By the end of year 5, students: • **plan** safe investigations to **identify** patterns and relationships and **make** reasoned predictions • **identify** risks associated with investigations and key intercultural considerations when planning field work • **identify** variables to be changed and measured • **use** equipment to generate data with appropriate precision • **construct** representations to organise data and information, and **describe** patterns, trends and relationships • **compare** their methods and findings to those of others • **identify** possible sources of error in their investigation • **pose** questions for further investigation • **draw** reasoned conclusions • **use** language features that reflect their purpose and audience when **communicating** their ideas and findings.	**Science inquiry** By the end of year 6, students: • **plan** safe, repeatable investigations to **identify** patterns, test relationships and **make** reasoned predictions • **describe** risks associated with investigations and key intercultural considerations when planning field work • **identify** variables to be changed, measured and controlled • **use** equipment to generate and **record** data with appropriate precision • **construct** representations to **organise** and **process** data and information, and **describe** patterns, trends and relationships • **identify** possible sources of error in their own and others' methods and findings • **pose** questions for further investigation • **select** evidence to support reasoned conclusions • **select** and use language features effectively for their purpose and audience when **communicating** their ideas 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 4 sub-strands.

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biological sciences	**Form and function** **Observe external features of plants and animals, and describe ways they can be grouped, based on these features:** • Plants have a variety of features, such as roots, flowers, stems, leaves. • Animals, including humans, have a variety of different external features. • The features of plants and animals have specific functions. For example, eyes for seeing and legs for movement. • Features of plants and animals can be used to group them. **First Nations Australians science elaboration** Explore how First Nations Australians' observations of external features of living things are mimicked in traditional dance.	**Interdependence and ecosystems** **Identify the basic needs of plants and animals, including air, water, food or shelter, and describe how the places they live meet those needs:** • People, plants and animals need air, food, water and shelter to survive. • Plants live where there is enough air, light, water, soil and shelter. • Animals live where there is enough air, food, water and shelter. • Living things may be found in many different places, including our homes, local areas, zoos and national parks. **First Nations Australians science elaboration** Recognise how First Nations Australians care for living things.		**Diversity and evolution** **Compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals:** • All living things breathe, need energy from food, grow, move, reproduce, produce waste and are sensitive to their environment. • Non-living things do not have all 7 characteristics of living things (see above). They may have some of the 7. • Some young resemble their parents while others look different and change form. • All living things of a particular kind go through the same stages.	**Interdependence and ecosystems** **Explain the roles and interactions of consumers, producers and decomposers within a habitat and how food chains represent feeding relationships:** • Living things can be classified according to how they obtain their food (energy). • Producers (plants) make their own food. • Consumers (animals) eat other living things. • Decomposers break down dead organisms. • Food chains can be used to represent the feeding relationships between organisms in various environments. **First Nations Australians science elaboration** Recognise how First Nations Australians perceive themselves as	**Form and function** **Examine how particular structural features and behaviours of living things enable their survival in specific habitats:** • Living things have features (adaptations) that help them survive in their environment. For example, animal and plant features that help them survive in a desert environment. • Structural features are physical features, such as waxy leaves to minimise water loss or large eyes to see in the darkness. • Behavioural features are the actions of living things, such as running from danger or unrolling of leaves when sunlight hits them.	**Interdependence and ecosystems** **Investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions:** • The physical conditions of a habitat include light, temperature, soil type, water availability. • These factors affect the growth and survival of plants and animals. For example, the salinity levels in the local environment affect the types of plants and animals that live there. **First Nations Australians science elaboration** Investigate First Nations Australians' knowledges and understandings of the physical conditions necessary for the survival of certain plants and animals.

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				First Nations Australians science elaboration Investigate how First Nations Australians understand and utilise the life cycles of certain species.	being an integral part of the environment.	**First Nations Australians science elaboration** Investigate First Nations Australians' knowledges of the structural features of certain species and how those features can be exploited.	
Earth and space sciences		**Earth's surface** **Sustainability of the Earth system** **Describe daily and seasonal changes in the environment and explore how these changes affect everyday life:** • Weather changes daily and includes temperature, wind, rain and cloud cover. • Changes in the daily weather affect behaviour and clothing choices for different conditions. • Seasonal changes affect living things. For example, plants, flowers, fruit and trees drop their leaves. **First Nations Australians science elaboration** Recognise the extensive knowledges of daily and seasonal changes in weather patterns and	**Earth in space** **Recognise Earth is a planet in the Solar System and identify patterns in the changing position of the Sun, Moon, planets and stars in the sky:** • Earth is a planet in our Solar System. • The Sun, Moon, stars and planets can be observed in space. • The Sun, Moon, planets and stars appear to move slowly across the sky. • The Sun is only visible during the day. • The Moon can be sometimes seen during the day and sometimes at night. **First Nations Australians science elaboration** Explore how cultural stories of First Nations Peoples of Australia describe the patterns in	**Earth's surface** **Compare the observable properties of soils, rocks and minerals and investigate why they are important Earth resources:** • Soils consist of a variety of different, observable components. • Minerals form the building blocks of rocks. • Minerals have different observable properties, such as colour, hardness and lustre. • The properties of rocks depend on the minerals they are made of. • Soils, minerals and rocks are important resources, used in many different ways. **First Nations Australians science elaboration** Investigate First Nations Australians' knowledges	**Earth's surface** **Sustainability of the Earth system** **Identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and ocean, precipitation, evaporation and condensation:** • Water is found in many different sources. • The water cycle describes the movement of water through the environment. • Water is a precious resource, that plays a key role in maintaining life on Earth. **First Nations Australians science elaboration** Explore First Nations Australians' connections with and valuing of water	**Earth's surface** **Sustainability of the Earth system** **Describe how weathering, erosion, transportation and deposition cause slow or rapid changes to the Earth's surface:** • Weathering is the breakdown of rocks. • Erosion is the removal of broken down rock or other materials. • Broken down rock and materials can be transported and deposited in new locations, resulting in changes to the Earth's surface. • Both natural and human activity may contribute to weathering and erosion. **First Nations Australians science elaboration** Consider how First Nations Australians are	**Earth in space** **Sustainability of the Earth system** **Describe the movement of Earth and other planets, relative to the Sun, and model how Earth's tilt, rotation on its axis and revolution around the Sun relate to cyclic observable phenomena, including variable day and night length:** • Earth and 7 other planets orbit around the Sun. • Earth's rotation on its axis results in day and night. • Earth revolves around the Sun once every 365 days. • The tilt of Earth's axis results in variable day and night length and the seasons. • Modelling and simulations can be used to demonstrate

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		landscapes held by First Nations Australians. Explore how First Nations Australians' concepts of time and weather patterns explain how things happen in the world around them.	the changing positions of the Sun, Moon and stars.	of different rock and mineral types, and how they were used, such as for stone blades, grindstones and pigments.	and water resource management. Recognise First Nations Australians' knowledges and understandings of evaporation and how the effect of evaporation can be reduced to conserve water, such as by covering surfaces.	impacted by the rapid erosion of sand dunes and the resulting effect of saltwater on culturally significant freshwater swamps.	the relationships between the Sun, Earth, Moon and planets. **First Nations Australians science elaboration** Research First Nations Australians' understandings of the night sky and its use for timekeeping purposes, as evidenced in oral cultural records, rock paintings, petroglyphs and stone arrangements.
Physical sciences	**Force and motion** **Describe how objects move and how factors including their size, shape or material, influence their movement:** • Things move in a variety of different ways, such as slide, roll, spin, and bounce. • There are similarities and differences in the way objects move. • The size and shape of an object influences its movement. • The material an object is made from affects the way it moves. **First Nations Australians science elaboration**	**Force and motion** **Describe pushes and pulls in terms of strength and direction and predict the effect of these forces on an object's motion and shape:** • The strength and direction of a push or pull determines its effect. • Pushes and pulls can start or stop the motion of an object. • Pushes and pulls may change the direction an object is travelling in. • An object can change shape when it is pushed or pulled, for example playdough.	**Energy** **Explore different actions to make sounds and how to make a variety of sounds, and recognise that sound energy causes objects to vibrate:** • Sounds can be produced by a variety of different actions. For example, striking, blowing, scraping, plucking, and shaking. • Things that make sound vibrate. • Sound travels from a source and is detected by our ears. **First Nations Australians science elaboration** Explore how traditional musical instruments used by First Nations	**Energy** **Identify sources of heat energy and examine how temperature changes when heat energy is transferred from one object to another:** • Heat may be produced by a variety of sources including the Sun, fire, electrical appliances, geothermal springs or rubbing 2 objects against each other. • Heat can move from one object to another, flowing from the hotter object to the cooler object. • Some substances, such as metals, allow heat energy to move through them easily. • Some substances, such as plastic and wood, do	**Forces and motion** **Identify how forces can be exerted by one object on another and investigate the effect of frictional, gravitational and magnetic forces on the motion of objects:** • A force applied to an object can change its motion or shape. • Forces can not be seen, just their effects. • Gravity is downward force pulling all objects towards the centre of the Earth. • Frictional forces occur between 2 objects that are rubbed against each other. • Magnetic forces occur between objects made	**Energy** **Identify sources of light, recognise that light travels in a straight path, and describe how shadows are formed and light can be reflected and refracted:** • Light is produced by a range of sources, including electricity, burning, and the sun. • Light travels in straight lines. • Shadows are formed when light is blocked by an object. • Reflective materials, such as mirrors, bounce light off their surface. • Some materials bend (refract) light as it passes through them.	**Energy** **Investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors:** • Electric circuits require a complete pathway (circuit) to transfer energy from a source. • Electrical appliances transform electrical energy into various forms, including heat, light and movement. • Electrical circuits contain specific components that perform different functions. • Electrical circuits and their components are

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Explore how the size and shape of traditional instructive toys used by First Nations Australians influence their movement.	**First Nations Australians science elaboration** Investigate the push and pull movements of traditional First Nations Australians children's instructive toys.	Australians produce their characteristic sounds.	not allow heat energy to move through them easily. • Adding heat makes things warmer and removing heat makes things cooler. • Thermometers can be used to measure the temperature of an object or substance. **First Nations Australians science elaboration** Explore how First Nations Australians developed clothing from animal skins, such as possum furs and kangaroo skin cloaks, that trap heat close to the body to stay warm.	from magnetic materials. **First Nations Australians science elaboration** Investigate the effect of forces on the movement of objects in traditional First Nations Australians' children's instructive toys and games.	• The colour of an object depends on the properties of the object and the colour of the light source. **First Nations Australians science elaboration** Recognise First Nations Australians' understanding of refraction, as experienced in spearfishing and in shimmering body paint, and reflection, as evidenced by materials selected for construction of housing.	represented using specific conventions. • Electricity can be hazardous. Safety measures are used to reduce these hazards • Conductors and insulators affect the flow of electricity.
Chemical sciences	**Properties of matter** **Recognise that objects can be composed of different materials and describe the observable properties of those materials:** • Objects are made from different materials. For example, wood, metal, glass, plastic, rock and fabric. • Different materials have different properties, such as colour, hardness, texture and flexibility.		**Properties of matter** **Changes of matter** **Recognise that materials can be changed physically without changing their material composition and explore the effect of different actions on materials, including bending, twisting, stretching and breaking into smaller pieces:** • Physical changes to materials include cutting, twisting, stretching, tearing,	**Properties of matter** **Changes of matter** **Investigate the observable properties of solids and liquids and how adding or removing heat energy leads to a change of state:** • When heat is removed, a liquid, such as water, cools down to a solid. • When heat is added, a solid changes into a liquid. For example, solid ice changes into liquid water.	**Properties of matter** **Examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use:** • Natural materials are used as they are found. • Made materials have been changed by humans. • The properties of these materials determine how they are used.	**Properties of matter** **Changes of matter** **Explain observable properties of solids, liquids and gases by modelling the motion and arrangement of particles:** • There are 3 states of matter: solids, liquids and gases. • Solids have definite shape and volume. • Liquids have a defined volume but take the shape of their container.	**Changes of matter** **Compare reversible changes, including dissolving and changes of state, and irreversible changes, including cooking and rusting that produce new substances:** • Reversible changes are when you can get back what you started with because it can be undone or reversed. • A reversible change might change how a material looks or feels, but it doesn't make new materials.

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	• Objects may be made of more than one type of material. • Different materials can be grouped based on their properties. **First Nations Australians science elaboration** Investigate the ways in which First Nations Australians make utensils for different purposes by combining different materials.		bending, folding, rolling, scrunching, squeezing and squashing. • Materials may be physically changed for a specific purpose. For example, twisting yarn together to make it stronger. • Materials can be physically changed without changing what they are made of. For example, scrunching flat pieces of paper to use as filling for packaging. **First Nations Australians science elaboration** Explore how First Nations Australians make physical changes to natural materials to produce objects, such as nets, baskets, fish and eel traps and various fibre products.	• The addition or removal of heat can change the state of matter. • Changes of state between solid and liquid are used in the process of recycling materials, such as plastics and glass. **First Nations Australians science elaboration** Investigate how changes of state in materials used by First Nations Australians, such as beeswax or resins, are important for their use.	• Properties of materials can affect the way they are managed, for example recycling. **First Nations Australians science elaboration** Consider how First Nations Australians use materials for different purposes, such as tools, clothing and shelter, based on their properties.	• Gases take both the volume and shape of their container. • The properties of a substance in different states (solid, liquid, gas) are determined by the arrangement and movement of its particles. **First Nations Australians science elaboration** Recognise First Nations Australians' knowledges and understandings of solids, liquids and gases and how these knowledges are applied in a range of processes and practices, including the extraction of oils, medical therapies and cooking.	• Irreversible changes are when you cannot get back what you started with because it cannot be undone and is a permanent change. • In an irreversible change, new materials are always formed. **First Nations Australians science elaboration** Investigate First Nations Australians' knowledges of reversible processes, such as the application of adhesives, and of irreversible processes, such as the use of fuels for torches.

Strand: Science as a human endeavour

In this strand, students learn about the nature of science, including the role of science inquiry in developing science knowledge, and the factors that affect the use and advancement of science. Students learn that through science, humans seek to improve their understanding of, and explanations for, the natural and physical world, and that science knowledge is refined and revised as new evidence becomes available. They appreciate that science influences society by posing and responding to ethical, environmental and social questions, and individual and collective 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 role of science in contemporary decision-making and problem-solving.

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Nature and development of science Students develop an appreciation of the unique nature of science and scientific knowledge, including that scientific knowledge is based on empirical evidence and can be modified considering new or reinterpreted evidence. They explore historical and global contributions to scientific knowledge and appreciate that individual and collaborative scientific endeavours are influenced by cultural perspectives and world views.				**Examine how people use data to develop scientific explanations:** • Observations and data collected by scientists is used to better understand and care for living things. • Scientists have developed various hardness testing scales that are used during field work and in industry to determine the hardness of different substances.	**Examine how people use data to develop scientific explanations:** • Observations and data collected to create Goyder's line, indicate the areas within South Australia most likely to receive adequate rainfall for crop farming. • Field work provides scientists with vital information about population numbers and the effect of introduced species. **First Nations Australians science elaboration** Investigate how First Nations Australians test predictions and gather data in the development of technologies and processes.	**Examine why advances in science are often the result of collaboration or build on the work of others:** • Methods for generating and using light have developed over thousands of years with each new development building on the ideas and understandings of others. **First Nations Australians science elaboration** Investigate how contemporary soil erosion management practices adapt and build on First Nations Australians' fire management and agricultural practices.	**Examine why advances in science are often the result of collaboration or build on the work of others:** • Current understandings of the relative positions and movement of celestial bodies has developed over thousands of years, resulting from the scientific endeavours of many individuals and groups. • Knowledge, understanding and uses of electricity have changed over time. • Observations of the growth of mould and its effect on inhibiting the growth of bacteria led to the discovery and development of antibiotic medications. **First Nations Australians science elaboration** Investigate how industry and scientists are working with the Narungga Nation Aboriginal Corporation to identify and utilise

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							optimal growth conditions for seaweed food-stock used in the livestock industry.
Use and influence of science Students explore how scientific knowledge and applications affect individuals and communities, including informing their decisions and identifying responses to contemporary issues. They learn that in making decisions about science practices and applications, ethical, environmental and social implications must be considered. Students also gain an appreciation for the ways in which science is influenced by the needs and priorities of society.	**Explore the ways people make and use observations and questions to learn about the natural world:** • Using the senses to make observations about the world around us. • Observations can be made and recorded in many different ways, including photographs, labelled drawings, descriptions and numbers. • Observations about the world around us may lead to questions and further investigations. **First Nations Australians science elaboration** Explore how First Nations Australians gain knowledge about the land and its vital resources, such as water and food, through observation.	**Describe how people use science in their daily lives, including using patterns to make scientific predictions:** • Understanding the needs of living things helps people to care for them and their environments. • Observing patterns in daily and seasonal changes can be used to predict weather. **First Nations Australians science elaboration** Investigate how First Nations Australians use science to meet their needs, such as food and water supply and shelter. Recognise how First Nations Australians use changes in the landscape and the sky to answer questions about when to gather certain resources.	**Describe how people use science in their daily lives, including using patterns to make scientific predictions:** • Knowledge of changes to materials helps us understand how they are used or recycled. • Understanding sound helps us design strategies and technology that can amplify or decrease the sound detected by our ears. For example, hearing aids and headphones. **First Nations Australians science elaboration** Learn how First Nations Australians use observations of the night sky to assist with navigation. Consider how First Nations Australians use scientific practices, such as sorting, classification and estimation, to make predictions.	**Consider how people use scientific explanations to meet a need or solve a problem:** • Understanding the transfer of heat energy helps people make decisions about what clothing to wear, cooking techniques and food handling. • Understanding of life cycles of insect pests, for example fruit flies, has led to the development of effective control strategies. **First Nations Australians science elaboration** Recognise how First Nations Australians observe and describe developmental changes in plants and animals to make decisions about when to harvest certain resources.	**Consider how people use scientific explanations to meet a need or solve a problem:** • Applying scientific knowledge of the properties of materials can be used to reduce the impact of waste materials on the environment. • Understanding key processes in the water cycle can be used in domestic and industrial settings to help conserve and manage water availability. **First Nations Australians science elaboration** Investigate how First Nations Australians of arid regions of Australia use scientific knowledge to manage precious water resources.	**Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions:** • Knowledge of the causes and effects of weathering and erosion are used to reduce their impact. • 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. **First Nations Australians science elaboration** Examine how decisions are made through consultation to protect First Nations Australians' heritage sites from erosion caused by natural or human interventions.	**Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions:** • Understanding the transfer of electrical energy and its potential hazards are used to create safety guidelines and devices that minimise these hazards. • Knowledge of conditions that reduce the growth of mould and bacteria are used to reduce food spoilage. • Technologies developed to aid space exploration have changed the way people live, work, and communicate.

Strand: Science inquiry

This strand is concerned with investigating ideas, developing explanations, solving problems, drawing valid conclusions, evaluating claims and constructing evidence-based arguments. Students learn the essential practices of science, including identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings.

Science investigations are activities in which ideas, predictions or hypotheses are tested and conclusions are drawn in response to a question or problem. They can involve a range of activities, including experimental testing, field work, locating and using information sources, conducting surveys, and using modelling and simulations.

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning and predicting	• Pose questions and make predictions based on experiences.	• Pose questions to explore observed simple patterns and relationships and make predictions based on experiences.	• Pose questions to explore observed simple patterns and relationships and make predictions based on experiences.	• Pose questions to explore observed patterns and relationships and make predictions based on observations.	• Pose questions to explore observed patterns and relationships and make predictions based on observations.	• Pose investigable questions to identify patterns and test relationships and make reasoned predictions.	• Pose investigable questions to identify patterns and test relationships and make reasoned predictions.
Planning and conducting	• Engage in investigations safely and make observations using their senses.	• Suggest and follow safe procedures to investigate questions and test predictions. • Make and record observations, including informal measurements, using digital tools as appropriate.	• Suggest and follow safe procedures to investigate questions and test predictions. • Make and record observations, including informal measurements, using digital tools as appropriate.	• Use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment. • Follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate.	• Use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment. • Follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate.	• Plan and conduct repeatable investigations to answer questions, including, as appropriate, deciding the variables to be changed, measured and controlled in fair tests; describing potential risks; planning for the safe use of equipment and materials; and identifying required permissions to conduct investigations on Country/Place. • Use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate.	• Plan and conduct repeatable investigations to answer questions, including, as appropriate, deciding the variables to be changed, measured and controlled in fair tests; describing potential risks; planning for the safe use of equipment and materials; and identifying required permissions to conduct investigations on Country/Place. • Use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate.
Processing, modelling and analysing	• Represent observations in provided templates and identify patterns with guidance.	• Sort and order data and information and represent patterns, including with provided	• Sort and order data and information and represent patterns, including with provided	• Construct and use representations, including tables, simple column graphs and visual or physical	• Construct and use representations, including tables, simple column graphs and visual or physical	• Construct and use appropriate representations, including tables, graphs and visual or physical	• Construct and use appropriate representations, including tables, graphs and visual or physical

Sub-strand:	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		tables and visual or physical models.	tables and visual or physical models.	models, to organise data and information, show simple relationships and identify patterns.	models, to organise data and information, show simple relationships and identify patterns.	models, to organise and process data and information and describe patterns, trends and relationships.	models, to organise and process data and information and describe patterns, trends and relationships.
Evaluating	• Compare observations with predictions with guidance.	• Compare observations with predictions and others' observations, consider if investigations are fair, and identify further questions with guidance.	• Compare observations with predictions and others' observations, consider if investigations are fair, and identify further questions with guidance.	• Compare findings with those of others, consider if investigations were fair, identify questions for further investigation, and draw conclusions.	• Compare findings with those of others, consider if investigations were fair, identify questions for further investigation, and draw conclusions.	• Compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation, and select evidence to draw reasoned conclusions.	• Compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation, and select evidence to draw reasoned conclusions.
Communicating	• Share questions, predictions, observations and ideas with others.	• Write and create texts to communicate observations, findings and ideas, using everyday and scientific vocabulary.	• Write and create texts to communicate observations, findings and ideas, using everyday and scientific vocabulary.	• Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate.	• Write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate.	• Write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate.	• Write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate.