





















Science & Technology K-6

Stage 3		
OUTCOMES	Values & Attitudes (VA)	<ul style="list-style-type: none"> • shows interest in and enthusiasm for science and technology, responding to their curiosity, questions and perceived needs, wants and opportunities ST3-1VA • demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures ST3-2VA • develops informed attitudes about the current and future use and influence of science and technology based on reason ST3-3VA
Content		
SKILLS	Working Scientifically (WS)	<ul style="list-style-type: none"> • investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations ST3-4WS
		<p>Students question and predict by:</p> <ul style="list-style-type: none"> • with guidance, posing questions to clarify practical problems or inform a scientific investigation (ACSIS231, ACSIS232) • predicting what the findings of an investigation might be (ACSIS231, ACSIS232) 📄 • applying experience from similar situations in the past to predict what might happen in a new situation ⚙️ <p>Students plan investigations by:</p> <ul style="list-style-type: none"> • with guidance, planning appropriate investigation methods to test predictions, answer questions or solve problems including surveys, fieldwork, research and fair tests (ACSIS086, ACSIS103, ACSHE081, ACSHE098) • deciding which variable should be changed and measured in fair tests while keeping everything else the same (ACSIS087, ACSIS104) ⚙️ • collaboratively & individually selecting suitable methods for gathering data & information first-hand and from reliable secondary sources 📄 👤 ⚙️ <p>Students conduct investigations by:</p> <ul style="list-style-type: none"> • working individually & collaboratively in conducting a range of appropriate investigation methods, including fair tests, to answer questions or solve problems 👤 ⚙️ • using suitable equipment and materials, checking observations and measurements by repeating them where appropriate • using equipment and materials safely, identifying potential risks (ACSIS088, ACSIS105) 👤 • accurately observing, measuring and recording data, using digital technologies as appropriate (ACSIS087, ACSIS104) 📄 📄 • using formal units and abbreviations for measuring and recording data 📄 • suggesting improvements to the methods used to investigate a question or solve a problem (ACSIS091, ACSIS108) ⚙️ <p>Students process and analyse data and information by:</p> <ul style="list-style-type: none"> • constructing & using a range of representations, including tables, graphs (column, picture, line & divided bar graphs) & labelled diagrams 📄 📄 • using numerical techniques to analyse data and information, including calculating the means and percentages of small sets of data 📄 • drawing conclusions and providing explanations based on data and information gathered first-hand or from secondary sources ⚙️ • comparing gathered data with predictions, and using as evidence in developing explanations of events and phenomena (ACSIS218, ACSIS221, ACSHE081, ACSHE098) ⚙️ • reflecting on their gathered evidence in relation to: ⚙️ <ul style="list-style-type: none"> – the process used to gather, process & analyse their data & information – their own prior knowledge as well as accepted scientific explanations – their own and others' conclusions <p>Students communicate by:</p> <ul style="list-style-type: none"> • constructing and using a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data including using digital technologies as appropriate (ACSIS090, ACSIS107) 📄 📄 📄 ⚙️ • using a variety of ways to honestly and accurately communicate ideas, explanations and processes, including multi-modal texts, labelled diagrams, as well as written and oral factual texts as appropriate (ACSIS093, ACSIS110) 📄 📄 📄 📄

SKILLS	Working Technologically (WT)	<ul style="list-style-type: none"> plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints ST3-5WT 	<p>Students explore and define a task by:</p> <ul style="list-style-type: none"> exploring needs for, or opportunities to undertake, the task identifying the users' needs and wants using techniques, eg observations, surveys, interviews and market research ★ developing a design brief individually and in collaboration with others 👤 developing design criteria that considers, where relevant, function, aesthetics, social and environmental considerations ⚙️🌿 planning the process considering constraints where relevant, eg time, finance, resources and expertise ★ <p>Students generate and develop ideas by:</p> <ul style="list-style-type: none"> selecting and using creative thinking techniques, including mind-mapping, brainstorming, sketching and modelling ⚙️ selecting and using research techniques appropriate to the task 👤 selecting and using techniques for documenting and communicating design ideas to others, eg drawings, plans, flow charts, storyboarding, modelling and presentations, using digital technologies 🖥️📱★👤 identifying a range of appropriate materials for the task selecting & using techniques to investigate the suitability of materials ⚙️ applying established criteria to evaluate and modify ideas <p>Students produce solutions by:</p> <ul style="list-style-type: none"> testing the suitability of materials, considering whether the test was fair or not developing a plan and specifications to guide production ⚙️ using their plans and production sequence for a design project, selecting and safely using a range of tools, equipment and related techniques to cut, edit, join, manipulate and shape materials and/or information 🖥️★👤 <p>Students evaluate by:</p> <ul style="list-style-type: none"> identifying the strengths and limitations of the process used ⚙️ self/peer assessing final product by using the established design criteria 👤
	KNOWLEDGE & UNDERSTANDING	Natural Environment (NE) Physical World	<ul style="list-style-type: none"> describes how scientific understanding about the sources, transfer and transformation of electricity is related to making decisions about its use ST3-6PW uses scientific knowledge about the transfer of light to solve problems that directly affect people's lives ST3-7PW

KNOWLEDGE & UNDERSTANDING	Natural Environment (NE)	Earth & Space	<ul style="list-style-type: none"> describes how discoveries by people from different cultures and times have contributed to advancing scientific understanding of the solar system ST3-8ES explains rapid change at the Earth's surface caused by natural events, using evidence provided by advances in technology and scientific understanding ST3-9ES 	<p>The Earth is part of a system of planets orbiting around a star (the sun). (ACSSU078)</p> <p>Students:</p> <ul style="list-style-type: none"> research the key features of the planets of the solar system and compare how long each takes to orbit the sun 🎓📊 demonstrate using models that the Earth revolves around the sun and the moon revolves around the Earth research the important contributions made by people from a range of cultures and organisations, using technologies of the time, to advancing scientific understanding of the solar system such as Aryabhata, Copernicus, Galileo, CSIRO and NASA (ACSHE082, ACSHE099) 🌐⚙️🌍🌟 describe how Aboriginal and Torres Strait Islander peoples use observations of the night sky to inform decisions about some everyday activities, eg food gathering and ceremonies 🙌 <p>Sudden geological changes or extreme weather conditions can affect Earth's surface. (ACSSU096)</p> <p>Students:</p> <ul style="list-style-type: none"> describe using examples how natural geological events cause rapid changes to the Earth's surface, eg earthquakes, volcanic eruptions or tsunamis in the Asian region or throughout the world 🌐 research how some discoveries or inventions have increased scientific knowledge and provided evidence about natural events that cause rapid changes at the Earth's surface 🎓 investigate a recent Australian example of the effect on the Earth's surface of extreme weather conditions, eg cyclones, droughts or floods identify ways that advances in science and technology have assisted people to plan for and manage natural disasters to minimise their effects, eg detection systems for tsunamis, floods and bush fires 🌿
KNOWLEDGE & UNDERSTANDING	Natural Environment (NE)	Living World	<ul style="list-style-type: none"> describes how structural features and other adaptations of living things help them to survive in their environment ST3-10LW describes some physical conditions of the environment and how these affect the growth and survival of living things ST3-11LW 	<p>Living things have structural features and adaptations that help them to survive in their environment. (ACSSU043)</p> <p>Students:</p> <ul style="list-style-type: none"> observe and describe the structural features of some native Australian animals and plants 🌿 present ideas and explanations about how the structural features and behaviour of some plants and animals help them to survive in their environment, eg shiny surfaces of leaves on sand dune plants and nocturnal behaviour in some animals 🎓⚙️ research the conditions needed for a particular plant to grow and survive in its environment, eg an indoor plant, plants in deserts, drought-resistant wheat or salt-tolerant plants 🎓 <p>The growth and survival of living things are affected by the physical conditions of their environment. (ACSSU094)</p> <p>Students:</p> <ul style="list-style-type: none"> identify some physical conditions of a local environment, eg temperature, slope, wind speed, amount of light and water make predictions about how changing the physical conditions of the environment impacts on the growth and survival of living things, eg different amounts of light or water on plant growth or the effect of different temperatures on the growth of yeast or bread mould ⚙️👥📊 use gathered data to develop explanations about how changing the physical conditions of the environment affects the growth and survival of living things 🎓📊🌿

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">KNOWLEDGE & UNDERSTANDING</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Natural & Made Environment</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Material World (MW)</p>	<ul style="list-style-type: none"> identifies the observable properties of solids, liquids and gases, and that changes made to materials are reversible or irreversible ST3-12MW describes how the properties of materials determine their use for specific purposes ST3-13MW 	<p>Solids, liquids and gases have different observable properties and behave in different ways. (ACSSU077)</p> <p>Students:</p> <ul style="list-style-type: none"> observe and compare the differences in the properties and behaviour of solids and liquids, eg shape and ability to flow demonstrate that air has mass and takes up space, eg in an inflated basketball, bubbles, balloons and beaten egg white <p>Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting. (ACSSU095)</p> <p>Students:</p> <ul style="list-style-type: none"> observe and describe some readily observable reversible changes that materials can undergo, eg by melting and then solidifying chocolate, and dissolving and retrieving salt or sugar from water  make and test predictions about the effect of temperature on the state of some substances, eg adding and removing heat from water observe some irreversible changes that common materials undergo to identify that the changes may result in new materials or products, eg rusting iron, burning paper, cooking a cake and making toffee classify some observable changes that materials undergo as reversible or irreversible <p>The properties of materials determine their use for specific purposes.</p> <p>Students:</p> <ul style="list-style-type: none"> identify the properties of materials used in a familiar product and relate them to its use explore how materials are used in innovative ways for specific purposes, eg the use of soft-fall materials in playgrounds and geotextiles to retain water in landscaping describe how scientific and technological knowledge about the properties of materials can be used to inform decisions about use for their specific purposes  research the reasons for and the benefits of using solid, liquid and gaseous fuels for heating 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">KNOWLEDGE & UNDERSTANDING</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Made Environment (ME)</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Built Environments</p>	<ul style="list-style-type: none"> describes systems in built environments and how social and environmental factors influence their design ST3-14BE 	<p>Systems in built environments are designed to meet the needs of people.</p> <p>Students:</p> <ul style="list-style-type: none"> identify elements that work together as a system to serve and support built environments and how they are designed to meet the needs of people, eg transport systems that provide access for people to get to work or systems that provide electricity to sites  draw a plan of, or model, a built environment that includes a range of systems to meet the needs and wants of a specific group of users, eg shade for a playground <p>Social and environmental factors influence the design of built environments.</p> <p>Students:</p> <ul style="list-style-type: none"> consider ways that the design or use of places and spaces have changed over time and the social and/or environmental factors that have influenced these changes, eg changes in the design and use of a library due to technological developments or the design of buildings after an earthquake  generate and develop ideas about how built environments might be designed and constructed in the future to incorporate sustainable environmental practices, eg the use of recycled materials, natural lighting and solar energy  develop designs and solutions to meet specific social or environmental needs of users, eg an energy-efficient building or high-traffic airport terminal/train station

KNOWLEDGE & UNDERSTANDING	Made Environment (ME)	Information	<ul style="list-style-type: none"> describes how social influences impact on the design and use of information and communication systems ST3-15I 	<p>Systems can be used to transfer information and support communication.</p> <p>Students:</p> <ul style="list-style-type: none"> explore how information and communication systems can be used to exchange ideas, collaborate with others, organise and present data, eg a database, spreadsheet and multimedia designs  communicate with others in different social and/or cultural contexts when designing an information solution, eg being a member of a collaborative online learning community  <p>Social influences can impact on the design of information sources & technologies.</p> <p>Students:</p> <ul style="list-style-type: none"> demonstrate appropriate and responsible use of information sources and technologies considering, where relevant, different points of view and/or stereotyping    explore a range of emerging information technologies and the ways that communicating with others has changed, eg the use of video-conferencing, blogs and wikis  discuss issues of safety and privacy of personal information when communicating, selecting and using information sources and technologies  
	Made Environment (ME)	Products	<ul style="list-style-type: none"> describes systems used to produce or manufacture products, and the social and environmental influences on product design ST3-16P 	<p>Systems are used to produce or manufacture products.</p> <p>Students:</p> <ul style="list-style-type: none"> investigate a system to produce or manufacture a product, eg using an assembly line to produce a food product for sale in the school canteen, or the use of robotics in manufacturing a product  compare the production process in a domestic setting to mass production, eg baking bread in the home to making it in a bakery <p>Social and environmental factors can influence the design of products.</p> <p>Students:</p> <ul style="list-style-type: none"> research the environmental impact of an everyday product from its production through to its use and disposal, eg a PET bottle, a car or newspaper    redesign a product to respond to a specific social or environmental consequence, eg redesign the packaging of a food product to reduce garbage  

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