Year 6 Science
Curriculum and assessment plan

Example

Level description	Context and cohort considerations
In Year 6 students develop an understanding of interdependencies between systems as they explore the relationship between physical conditions of habitats and the growth and survival of living things and investigate the effect of the relative positions of Earth and the sun on phenomena such as day length. They identify and classify components in electrical circuits and learn to describe energy flows in terms of transfer and transformation. They are introduced to ways to classify changes to substances. Students begin to appreciate the role of controlling variables in fair testing and the value of accuracy in measurements. They generalise about relationships between events, phenomena and systems and use identified patterns, trends and relationships to develop scientific explanations and draw reasoned conclusions. Inquiry questions can help excite students' curiosity and challenge their thinking. Following are examples of inquiry questions that could be used to prompt discussion and exploration: • How would life be different if we couldn't harness electrical energy? • What if Earth were not on a tilt? • Are you more likely to win a Nobel prize in science as a team or an individual? • Why is it important for a test to be 'fair'? • How does the weather affect local habitats?	The Year 6 cohort have two Science sessions each week, taught by the classroom teacher. Units 1 and 3 can be best implemented if supported by advice from local Aboriginal or Torres Strait Islander elders. Unit 2 requires access to a wet area and PPE, such as safety goggles for the chemistry experiments. The timing of Unit 4 may need to be negotiated between teachers to ensure access to the electrical circuit components since it is not practical for students to deconstruct circuits between lessons. Online virtual circuit building programs are available as an alternative. If data loggers with sound sensors are not available, devices with sound sensing app capability can be used instead.

Unit 1 — How does your garden grow?	Unit 2 — Can you reverse that?	Unit 3 — Once around the sun	Unit 4 — Turn it up!
Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks
School gardens contain habitats that undergo disturbance (e.g. soil compaction, litter and lack of water) that impacts the growth and survival of living things. In this unit, students build on their understanding from Year 5 of how living things survive in different habitats, by investigating how changing physical conditions (e.g. water, light, temperature) impacts seed germination and seedling growth. Before exploring the habitats in the school grounds, students identify the value of field work and describe key considerations for planning it. Students apply the knowledge from their seed experiment to select a habitat in the school grounds that could be used to illustrate how changed physical conditions impact the survival of organisms. Students photograph the habitat and use annotations to record their explanation of the impact on living things due to changed conditions. This annotated photograph is included in a narrated slideshow that they develop and present to their peers, to describe how individuals and communities use science knowledge to draw reasoned conclusions about disturbing and restoring habitats. In drawing their own conclusions, students use critical and creative thinking to evaluate their choices. They develop social awareness through their explanation of how the actions of others (e.g. damaging gardens) impact the community.	Some changes to chemicals can be undone or reversed, and some cannot. There are predictable products of chemical and physical changes based on whether a new substance is formed or not. In this unit, students work in groups to plan and conduct a series of investigations to classify and compare reversible and irreversible changes. They: • observe rust forming on nails • observe the changes in an egg being fried • grind chalk into powder • add baking soda to vinegar • make mixtures with ground chalk and salt in water • light the wick of a candle to start a chemical reaction. In conducting these investigations, students develop skills in planning safe experiments and use their understanding of reversible and irreversible changes to make reasoned predictions of the outcomes of each experiment. Using these classroom experiments to build their expertise, students individually plan and conduct an experiment to compare a reversible with an irreversible change. They record their plan, results and conclusion in a provided science journal, that introduces them to the science report writing style used in Year 7.	How have cultures made sense of cyclic phenomena such as day and night? In this unit, students investigate how the Earth's movement relative to the Sun creates observable phenomena such as variable day and night lengths throughout the year. Through research, students develop their understanding of the movement of the sun and planets of our solar system. They construct models to demonstrate how Earth's tilt, rotation and revolution cause varying day and night lengths and interpret the scales used on diagrams representing our solar system. Students examine the ways Aboriginal, Torres Strait Islander, and European cultures have understood and used these patterns. They will learn how Aboriginal and Torres Strait Islander peoples integrated knowledge of the sun's movement into ceremonial and cultural practices (e.g. spiritual significance of sun and moon in dreaming stories and Wurdi Youang) and how European peoples studied the the sun, moon and stars to develop technologies for timekeeping and navigation (e.g. calendars and sextants). Students discuss the ethical considerations involved in using and sharing knowledge from different cultures. A 60-minute supervised assessment provides an opportunity for students to demonstrate their knowledge and understanding as well as preparing them for the transition to examinations as assessment in Year 7.	Energy makes things happen. Recognising when energy is transferred or transformed enables students to begin to understand how everyday technologies work. In this unit, students build simple electrical circuits, including a switch and a buzzer, to explore the role of circuit components in the transformation of chemical energy to electrical energy and electrical energy to both heat and sound energy. Working in groups, students plan and conduct safe investigations to test the relationship between the amount of electrical energy (i.e. voltage) from batteries and the loudness of the buzzer. By managing variables, they ensure their investigations are repeatable and, by using either a data logger with a sound sensor or an app, students record data with precision. This data is used to identify patterns, trends and relationships in the transformation of energy. Through evaluating the effectiveness of their method, students develop critical and creative thinking. Once they have identified errors in their own method, they use empathy when identifying possible sources of error in other groups' methods or findings. Building on the assessment from Unit 2, students individually write a report in a science journal with less scaffolding than in Unit 2, which continues to support their transition to Year 7 Science.

	Unit 1 — How does your garden grow?		Unit 2 — Can you reverse that?		Unit 3 — Once around the sun		Unit 4 — Turn it up!	
	Assessment 1 — Investigation	**Timing**	**Assessment 2 — Experimental investigation**	**Timing**	**Assessment 3 — Supervised assessment**	**Timing**	**Assessment 4 — Experimental investigation**	**Timing**
Assessment	**Description:** Students develop a narrated slideshow, using a provided template, to explain how changing physical conditions impact organisms in a habitat. **Technique:** Investigation **Mode:** Multimodal (narrated slideshow) **Conditions:** • 1½ – 2 min • slideshow template provided	Weeks 9–10	**Description:** Students plan and conduct an experiment to classify and compare reversible and irreversible changes. They record their plan, results and conclusion in a provided science journal. **Technique:** Experimental investigation **Mode:** Written (report) **Conditions:** • group work • individual response • scaffolded report template provided • 300–400 words	Weeks 9–10	**Description:** Students answer questions on the solar system, the relative positions of Earth and the sun and variable day and night length. They respond to an extended response item on the contribution of different cultures to our knowledge of the solar system and the importance of collaboration in developing scientific knowledge. **Technique:** Supervised assessment **Mode:** Written **Conditions:** • supervised • 60 minutes plus 10 minutes perusal • up to 300 words • short response items and one extended response item	Week 10	**Description:** Students plan and conduct an experiment testing the relationship between the amount of electrical energy (i.e. voltage) in a circuit and the loudness of an electrical buzzer. They record their plan, results and conclusion in a provided science journal. **Technique:** Experimental investigation **Mode:** Written (report) **Conditions:** • group work • individual response • report template provided • 300–400 words	Weeks 9–10
Achievement standard	By the end of Year 6 students explain how changes in physical conditions affect living things. They model the relationship between the sun and planets of the solar system and explain how the relative positions of Earth and the sun relate to observed phenomena on Earth. They identify the role of circuit components in the transfer and transformation of electrical energy. They classify and compare reversible and irreversible changes to substances. They explain why science is often collaborative and describe different individuals' contributions to scientific knowledge. They describe how individuals and communities use scientific knowledge. Students plan safe, repeatable investigations to identify patterns and test relationships and make reasoned predictions. They describe risks associated with investigations and key intercultural considerations when planning field work. They identify variables to be changed, measured and controlled. They use equipment to generate and record data with appropriate precision. They construct representations to organise and process data and information and describe patterns, trends and relationships. They identify possible sources of error in their own and others' methods and findings, pose questions for further investigation and select evidence to support reasoned conclusions. They select and use language features effectively for their purpose and audience when communicating their ideas and findings.		By the end of Year 6 students explain how changes in physical conditions affect living things. They model the relationship between the sun and planets of the solar system and explain how the relative positions of Earth and the sun relate to observed phenomena on Earth. They identify the role of circuit components in the transfer and transformation of electrical energy. They classify and compare reversible and irreversible changes to substances. 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Moderation	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		**Calibration:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		**Expert:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	

Content descriptions	Units				Content descriptions	Units				Content descriptions	Units			
Science understanding	**1**	**2**	**3**	**4**	**Science as a human endeavour**	**1**	**2**	**3**	**4**	**Science inquiry**	**1**	**2**	**3**	**4**
Biological sciences investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions AC9S6U01	☑	☐	☐	☐	**Nature and development of science** examine why advances in science are often the result of collaboration or build on the work of others AC9S6H01	☐	☐	☑	☐	**Questioning and predicting** pose investigable questions to identify patterns and test relationships and make reasoned predictions AC9S6I01	☐	☑	☐	☑
Earth and space sciences 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 AC9S6U02	☐	☐	☑	☐	**Use and influence of science** investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions AC9S6H02	☑	☐	☑	☐	**Planning and conducting** 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 AC9S6I02	☑	☑	☐	☑
Physical sciences investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors AC9S6U03	☐	☐	☐	☑						use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate AC9S6I03	☐	☐	☐	☑
Chemical sciences compare reversible changes, including dissolving and changes of state, and irreversible changes, including cooking and rusting that produce new substances AC9S6U04	☐	☑	☐	☐						**Processing, modelling and analysing** construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships AC9S6I04	☐	☑	☑	☑
										Evaluating 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 AC9S6I05	☐	☑	☐	☑
										Communicating write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate AC9S6I06	☑	☐	☑	☐

General capabilities	Units			
	1	2	3	4
Critical and creative thinking	☑	☐	☐	☑
Digital literacy	☑	☐	☐	☐
Ethical understanding	☐	☐	☑	☐
Intercultural understanding	☐	☐	☐	☐
Literacy	☑	☐	☐	☐
Numeracy	☐	☐	☑	☐
Personal and social capability	☑	☐	☐	☑

Cross-curriculum priorities	Units			
	1	2	3	4
Aboriginal and Torres Strait Islander histories and cultures	☐	☐	☑	☐
Asia and Australia’s engagement with Asia	☐	☐	☐	☐
Sustainability	☑	☐	☐	☐