Year 6 unit overview — Australian Curriculum: Science

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Science for Foundation–10* <www.australiancurriculum.edu.au/Science/Curriculum/F-10>.

| School name | Unit title | Duration of unit |
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| Our School | Our changing world | One term |

| Unit outline |
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| Students develop the view of Earth as a dynamic system, in which changes to one aspect of the system impact on other aspects. They explore sudden geological changes and extreme weather conditions that can affect the Earth’s surface and investigate ways in which scientific understanding can assist in early detection of natural disasters and in minimising their impact. They recognise that science can inform choices about where people live and how they manage natural disasters.Questions that shape the inquiry include:* What are examples of sudden geological changes? What are examples of extreme weather conditions?
* How do extreme weather conditions affect Earth’s surface?
* What are the causes and what are the effects of sudden geological changes on Earth’s surface?
* What measurement tools help us to draw conclusions about patterns in the data?
* How do geological changes and weather conditions affect local and global decisions made by communities?
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| Identify curriculum |
| Content descriptions to be taught | General capabilities and cross‑curriculum priorities |
| Science Understanding | Science as a Human Endeavour | Science Inquiry Skills |
| Earth and space sciences* Sudden geological changes or extreme weather conditions can affect Earth’s surface [(ACSSU096)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU096)
 | Nature and development of science* Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena [(ACSHE098)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE098)
* Important contributions to the advancement of science have been made by people from a range of cultures [(ACSHE099)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE099)

Use and influence of science * Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples’ lives [(ACSHE100)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE100)
* Scientific knowledge is used to inform personal and community decisions [(ACSHE220)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE220)
 | Processing and analysing data and information* Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate [(ACSIS107)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS107)

Communicating* Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts [(ACSIS110)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS110)
 | gc_literacy Literacy* Complete science journals and oral presentations.
* Use accurate scientific language.

Description: gc_ict ICT capability* Research using the internet.
* Use ICTs as a part of a multimodal presentation.

Description: gc_critical Critical and creative thinking* Analyse, evaluate and summarise information.

Description: gc_ethical Ethical behaviour* Consider ethical considerations when investigating geological changes or weather conditions.

Description: gc_personal_social Personal and social capability* Practise self-management skills by following procedures, sharing ideas and collaboratively planning a multimodal presentation.

Description: gc_intercultural Intercultural understanding* Develop the capacity to respect and appreciate the beliefs of other cultures and recognise traditional understandings of natural events.

Description: cc_asia Asia and Australia’s engagement with Asia* Discuss occurrences of geological changes and weather conditions in the Asia region.
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| Achievement standard |
| By the end of Year 6, students compare and [classify](http://www.australiancurriculum.edu.au/Glossary?a=S&t=classify) different types of [observable](http://www.australiancurriculum.edu.au/Glossary?a=S&t=observable) changes to [materials](http://www.australiancurriculum.edu.au/Glossary?a=S&t=materials). They [analyse](http://www.australiancurriculum.edu.au/Glossary?a=S&t=analyse) requirements for the transfer of electricity and describe how energy can be transformed from one form to another to generate electricity. They explain how natural events cause rapid change to the Earth’s surface. They describe and predict the effect of environmental changes on individual living things. Students explain how scientific knowledge is used in decision making and identify contributions to the development of science by people from a range of cultures.Students follow procedures to develop investigable questions and [design](http://www.australiancurriculum.edu.au/Glossary?a=S&t=design) [investigations](http://www.australiancurriculum.edu.au/Glossary?a=S&t=investigations) into simple cause-and-effect [relationships](http://www.australiancurriculum.edu.au/Glossary?a=S&t=relationships). They identify [variables](http://www.australiancurriculum.edu.au/Glossary?a=S&t=variables) to be changed and measured and describe potential safety risks when planning methods. They collect, organise and interpret their [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data), identifying where improvements to their methods or [research](http://www.australiancurriculum.edu.au/Glossary?a=S&t=research) could improve the [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data). They describe and [analyse](http://www.australiancurriculum.edu.au/Glossary?a=S&t=analyse) [relationships](http://www.australiancurriculum.edu.au/Glossary?a=S&t=relationships) in [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data) using graphic representations and construct [multi-modal texts](http://www.australiancurriculum.edu.au/Glossary?a=S&t=multi-modal+texts) to communicate ideas, methods and findings. |
| Relevant prior curriculum | Curriculum working towards |
| In the Australian Curriculum: Science at Year 4 Science UnderstandingEarth and space sciences* Earth’s surface changes over time as a result of natural processes and human activity.

In the Australian Curriculum: Science at Year 5Science as a Human Endeavour* The content descriptions for Science as a Human Endeavour are the same for Year 5 and Year 6.

Science Inquiry Skills* The content descriptions for Science Inquiry Skills are the same for Year 5 and Year 6.
 | In the Australian Curriculum: Science at Year 9 Science UnderstandingEarth and space sciences* The theory of plate tectonics explains global patterns of geological activity and continental movement

(Students next engage with Science Understanding focused on the concept of sudden geological changes in Year 9.)In the Australian Curriculum: Science at Year 7 Science as a Human EndeavourNature and development of science* Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people’s understanding of the world.
* Science knowledge can develop through collaboration and connecting ideas across the disciplines of science.

Use and influence of science* Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations.
* Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management.
* People use understanding and skills from across the disciplines of science in their occupations.

**Science Inquiry Skills**Processing and analysing data and information* Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate

Communicating* Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate.
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| Bridging content |
| The **Australian Curriculum: Science at Year 6** (Earth and space sciences) includes content not explicitly addressed by the **Essential Learnings**. |
| Links to other learning areas |
| In the Australian Curriculum: Mathematics at Year 6* Interpret secondary data presented in digital media and elsewhere.
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| Assessment | Make judgments |
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| Describe the assessment | Assessment date | Teachers gather evidence to make judgments about the following characteristics of student work:**Understanding*** description and identification of scientific information and concepts
* use of science knowledge to generate solutions and explanations
* description of the impacts of scientific developments and about the use of science knowledge to make decisions

**Skills*** description of patterns and relationships in data, suggesting explanations and making comparisons with predictions
* communication of ideas, methods and findings.

For further advice and guidelines on constructing guides to making judgments refer to the Learning area standard descriptors: [www.qsa.qld.edu.au](http://www.qsa.qld.edu.au) |
| Students are given opportunities to demonstrate their knowledge, skills and understanding through both formative and summative assessment. The assessment is collated in student folios and allows for ongoing feedback to students on their learning.Year 6 teachers make decisions about the length of time required to complete the tasks and the conditions under which the assessment is to be conducted.The teaching and learning experiences throughout the term provide opportunities for students to develop the understanding and skills required to complete these assessments. As students engage with these learning experiences the teacher can provide feedback on specific skills. |  |
| **Collection of work: Science journal (Written)** Throughout the unit, students plan and summarise their research. Students’ science journal entries include: * investigation methods
* predictions
* graphs and tables
* labelled diagrams
* written explanations
* conclusions, drawn from research
* science reports.
 | Ongoing throughout the unit |
| **Research: Interview (Multimodal)*** Students work in pairs to plan, research and present an interview about a geological or extreme weather event. Possible events or conditions could include earthquakes, tsunamis, volcanic eruptions, floods, cyclones, and droughts.
* Students may assume roles within the interview, with one or both students being experts on the event.
* Students can use a range of techniques to present the interview and use visual images and other support materials.

Suggested conditions:* 2–3 minutes
* open/supervised.
 | During the “evaluate” phase |

| Teaching and learning | Supportive learning environment |
| --- | --- |
| Teaching strategies and learning experiences | Adjustments for needs of learners | Resources |
| This unit overview has been developed using the 5E inquiry model for teaching and learning science. The 5E model follows a sequence of:* Engage — begin with a lesson that captures students’ interest through an activity or question.
* Explore — organise hands-on activities where students explore a concept or skill.
* Explain — guide students to develop explanations for the experience after they have explored a concept or skill.
* Elaborate — encourage students to apply what they have learnt to a new situation.
* Evaluate — provide an opportunity for students to review and reflect on their learning.

**Engage** * Capture students’ interest and find out what they know about the sudden geological changes and extreme weather conditions, e.g. earthquakes, tsunamis, volcanic eruptions, floods, cyclones, and droughts.
* Use before-and-after historical images that show changes due to earthquakes, tsunamis, volcanic eruptions, floods, cyclones, and droughts. Newspaper articles and documentaries could also be used.
* Elicit students’ questions to create a question board.
* Use a science journal to begin reflective entries (Note: This could be an electronic version such as a wiki or forum in a shared online space).
* Develop and investigate subject-specific language using a word wall and glossary.

**Explore*** Model sudden geological changes and extreme weather using a range of visual aids.
* Investigate and review understanding of sudden geological changes and extreme weather conditions using factual texts.
* Complete a 5W (Who, what, when, where, why?) template to summarise information.
* Observe the effects of historical and recent geological changes and extreme weather on environments and communities.

**Explain*** Collect numerical and factual information about sudden geological changes and extreme weather conditions.
* Investigate, analyse and interpret a model of Earth’s internal structure.
* Introduce concepts and terminology associated with geological events or weather conditions, e.g. magnitude, intensity, seismic scales (Richter scale and Modified Mercalli scale), volcanic plumes, satellite instruments, gas sampling, DART (deep‑ocean assessment and reporting of tsunamis) buoy.
* Explain that scientists such as seismologists, hydrologists, meteorologists and volcanologists use scientific instruments to observe, measure and record activity.
* Share information using scientific language. Students may use models and descriptions to represent their understanding of such changes to the Earth’s surface.
* Use online resources to provide examples of scientists as experts.

**Evaluate*** Work on the assessment task where students plan, research and present an interview about a geological or extreme weather event.
* Reflect on their investigations and learning during the unit.

**Elaborate*** Investigate and compare geological changes and extreme weather conditions in Australia and neighbouring countries.
* Suggest reasons for the higher rate of earthquake activity in some of Australia’s neighbouring countries.
* Research the scientific research and work being conducted in various centres around the world to advance global disaster alerts and communications.
* Discuss how the scientific information gathered from geological and weather events is used to inform future decisions of communities.
 | Section 6 of the *Disability Standards for Education* (The Standards for Curriculum Development, Accreditation and Delivery) states that education providers, including class teachers, must take reasonable steps to ensure a course/program is designed to allow any student to participate and experience success in learning. The *Disability Standards for Education 2005* (Cwlth) is available from: <www.ag.gov.au> select Human rights and anti-discrimination > Disability standards for education. | Web* websites for videos of geological and extreme weather events
* free images
* websites for factsheets and interactive worksheets

Print* free images
* newspapers
* worksheets
* word wall
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| Use feedback |
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| Ways to monitor learning and assessment | Teachers collaboratively plan the teaching, learning and assessment to meet the needs of all learners.Before the multimodal presentation, teachers discuss task-specific descriptors of the quality of student performance. Teachers individually mark all student responses, applying the shared understanding achieved through this calibration process. |
| Feedback to students | Teachers plan opportunities through the teaching strategies and learning experiences of the unit. Teachers provide ongoing feedback and encouragement to students on their strengths and areas for improvement. Through particular learning experiences students can reflect on and discuss with their teachers and peers what they are able to do well and what they need to do to improve. |
| Reflection on the unit plan | At the conclusion of the unit, all teachers who have been involved in planning, teaching, learning and assessment come together to reflect on the successes and challenges of the unit. They come with their personal reflections through answers to the following questions:* What worked well in this unit?
* What was a stumbling block?
* How would you refine it?
* What trends and gaps in learning have you identified?
* How will you build on these learning experiences next term and beyond?
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