Integrated Geography and Science and Technology sample unit	The Earth's Environment (including Science and Technology – Living World)	Stage 2
		Duration: One term (10 weeks)

Unit description	Key inquiry questions
Students explore the climate, natural vegetation and native animals of places in Australia and China. They develop an understanding of the diversity of living things, how they affect each other, and the interdependence of living things and the environment. They examine the importance of natural vegetation and natural resources and learn about the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments. Students identify sustainable practices, recognising that there are differing views on how sustainability can be achieved and they recognise how science knowledge helps people to understand the effect of their actions on the environment. Students create an improved waste collection process to demonstrate how waste can be managed more sustainably in their local area or school.	• How does the environment support the lives of people and other living things? • How do different views about the environment influence approaches to sustainability? • How can people use places and environments more sustainably?

Outcomes

A student:

- examines features and characteristics of places and environments **GE2-1**

- describes the ways people, places and environments interact **GE2-2**

- examines differing perceptions about the management of places and environments **GE2-3**

- acquires and communicates geographical information using geographical tools for inquiry **GE2-4**

- describes ways that science knowledge helps people understand the effect of their actions on the environment and on the survival of living things **ST2-11LW**

- investigates their questions and predictions by analysing collected data, suggesting explanations for their findings, and communicating and reflecting on the processes undertaken **ST2-4WS**

- applies a design process and uses a range of tools, equipment, materials and techniques to produce solutions that address specific design criteria **ST2-5WT**

Geographical concepts	Geographical inquiry skills	Geographical tools
The following **geographical concepts** have been integrated into the unit: **Space:** *the significance of location and spatial distribution, and ways people organise and manage spaces that we live in* **Environment:** *the significance of the environment in human life, and the important interrelationships between humans and the environment* **Interconnection:** *no object of geographical study can be viewed in isolation* **Scale:** *the way that geographical phenomena and problems can be examined at different spatial levels* **Sustainability:** *the capacity of the environment to continue to support our lives and the lives of other living creatures into the future*	The following **geographical inquiry skills** have been integrated into the unit: **Acquiring geographical information** • develop geographical questions to investigate (ACHGS019, ACHGS026) • collect and record relevant geographical data and information, for example, by observing, by interviewing, conducting surveys, or using maps, visual representations, the media or the internet (ACHGS020, ACHGS027) **Processing geographical information** • represent data by constructing tables, graphs and maps (ACHGS021, ACHGS028) • interpret geographical data to identify distributions and patterns and draw conclusions (ACHGS023, ACHGS030) **Communicating geographical information** • present findings in a range of communication forms, for example, written, oral, digital, graphic, tabular, and visual, and use geographical terminology (ACHGS024, ACHGS031) • reflect on their learning to propose individual action in response to a contemporary geographical challenge and identify the expected effects of the proposal (ACHGS025, ACHGS032)	The following **geographical tools** have been integrated into the unit: **Maps – M** • world map, globe, maps of Australia and China **Fieldwork – F** • observing, measuring, collecting and recording data, conducting surveys or interviews • fieldwork instruments such as maps, photographs **Graphs and statistics – GS** • tally charts, pictographs, data tables, column graphs, simple statistics **Spatial technologies – ST** • virtual maps, satellite images, global positioning systems (GPS) **Visual representations – VR** • photographs, illustrations, diagrams, story books, multimedia, web tools

Content	Teaching, learning and assessment	Student diversity

Students:
 	
• investigate the natural characteristics of Australia and a country in Asia (ACHGK020) ⓐ
 	
• investigate the importance of natural vegetation and natural resources to the environment, animals and people (ACHGK021, ACHGK022, ACHGK024)
 	
• investigate how living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)
 	
• question and predict what might happen based on prior knowledge in an investigation (ACSIS053, ACSIS064)
 	
• investigate the ways
	Environments are different
	
	• Students develop geographical questions to investigate the natural characteristics of environments.
	
	  Students use a variety of sources, including the internet, maps and graphs to develop their understanding of the natural characteristics of environments by identifying the major climate types, native plants and animals of Australia and China.
	
	  Students complete a table or other visual representation to show which climate zones suit particular native plants and animals **M GS VR** ⓐ 🖥
	
	  http://www.australia.gov.au/about-australia/our-country/our-natural-environment
	  http://en.people.cn/92824/92845/92876/index.html
	  http://www.yourhome.gov.au/australian-climate-zones
	  http://kids.britannica.com/comptons/art-137856/Climatic-regions-of-China
	
	Living things need each other
	
	• Using examples from both Australia and China, students investigate the importance of one type of natural vegetation to animals, people and the environment eg eucalyptus and bamboo. They communicate their findings by explaining: ⓐ
	
	  – which climate zone eucalyptus and bamboo is found in **M ST**
	
	  – the importance of natural vegetation to the survival of a specific animal species eg eucalyptus and bamboo provide food and habitat for koalas and pandas 🌱 ⚙
	
	  education.nationalgeographic.com
	  http://australianmuseum.net.au/wild-kids-habitats
	  http://www.environment.nsw.gov.au/animals/TheKoala.htm
	  http://nationalzoo.si.edu/Animals/GiantPandas/PandaFacts/
	  http://giantpanda.org.au/giant-pandas/panda-conservation.html
	
	• Students investigate how living things depend on each other and the environment to survive by exploring: 🌱 ⓐ 📖
	
	  – the role of living things in a habitat
	
	  – if koalas or pandas have mutually beneficial relationships with other living things
		Use photographs, pictures or symbols of weather, vegetation and animals to indicate where they can be found on a map
		
		Provide questions/prompts to scaffold investigations
		
		Use mind maps to organise investigations

people, including Aboriginal and Torres Strait Islander Peoples, value environments (ACHGK022, ACHGK023, ACHGK024) ✋
 	
• investigate sustainable practices that protect environments, including those of Aboriginal and Torres Strait Islander Peoples (ACHGK023, ACHGK024, ACHGK025) ✋ ✤
 	
• evaluate, using established design criteria, the process, product or solution, and suggest how their design solution could be improved (Working Technologically)
	– the possible effect of drought, fire or changing climates on eucalyptus/koalas and/or bamboo/pandas
	
	   http://idahoptv.org/dialogue4kids/season10/habitat/facts.cfm
	   http://www.huffingtonpost.com/2010/01/04/mutually-beneficial-anima_n_391888.html
	
	People need the environment
	
	• Students share ideas about why natural vegetation and natural resources are important to people eg provision of food, medicine, energy, timbers **F**
	   http://www.australianminesatlas.gov.au/education/down_under/index.html
	   http://www.epa.gov/osw/education/quest/pdfs/unit1/chap1/u1_natresources.pdf
	
	• Students predict how the extraction and use of natural vegetation and natural resources can affect the environment eg loss of habitats **ST** ✤ ☛
	   http://www.wwf.org.au/our_work/saving_the_natural_world/wildlife_and_habitats/habitat_loss_and_degradation/
	
	• Students consider how science knowledge helps people to understand the effect of their actions on the environment and the survival of living things eg overfishing, pollution, industrial or agricultural runoff, climate change ✤ ⚖
	
	Valuing and protecting environments
	
	• Students select from a choice of scenarios and work collaboratively to plan and present a role play of a town meeting to demonstrate the different perspectives of people to the environment in various situations ✤ ☛ ✦
	
	   – scenarios may include tourism, road expansion, bushland or coastal regeneration, airport development, urban expansion adjacent to national parks **VR** ⚖
	
	   – people with different perspectives may include farmers, residents, local Aboriginal community members, property developers, environment advocates, tourists, recreational users, local business owners, national parks rangers, tourism operators, government ‡
	
	• Students consider how different perceptions and values of the environment may affect the protection of the environment ‡
	
	• Students describe how environments are used sustainably by different groups eg sustainable agricultural, commercial or recreational practices ✋ ✤ ☛
	   http://www.landlearnnsw.org.au/sustainability/primary-industries-and-sustainability
	   http://www.piefa.edu.au/
	   http://www.environment.gov.au/indigenous/ipa/declared/ngunya.html
		Allocate specific scenario
		
		Allocate roles for the simulated town meeting

| | • Using a stimulus such as the story of *The Geosix and the swamp monster*, students share ideas about some of the challenges for the environment in their own local area **VR** ☞http://www.geogspace.edu.au/swampmonster

Students:

– investigate how waste is managed at home or school **F**

– evaluate the current process of waste collection and create an improved process for the home or school (Working Technologically) ⚙ ⚖

– choose how they present their findings eg a flow diagram to show the improved process; a model of improved waste collection facilities; a written account of the improved process and facilities **VR** ☞ http://creately.com/diagram-type/flowchart

– present findings and reflect on their learning to propose individual action such as writing to the local government or presenting their idea to their school principal or a public audience at the school to discuss how waste can be managed more sustainably in their local area or school **VR** ✢ ✿

– predict the effects of their individual action ⚙ 👥 ✿ | |

Sample assessment activity

Outcomes assessed: GE2-1, GE2-2, GE2-4

Students are given stimulus materials of natural characteristics of an environment they have studied. The stimulus materials may include images, diagrams, maps, photographs, multimedia etc.

In response to the stimulus materials they describe how the natural characteristics of an environment affect each other and explain why environments are perceived differently by people.

Responses may include spoken, written, pictorial, multimedia forms.

Adjustments may include:

– students use matching activities, or cloze procedure as an alternative to giving descriptions

– modelled responses and/or a demonstration of what is expected before the student attempts the task

– students are provided with a blank or partially completed scaffold to structure their response