 Natural environments

Focus area – The Earth’s environment

Content

* Different environments
* Significance of environments

Key inquiry questions

* How does the environment support the lives of people and other living things?
* How can people use places and environments more sustainably?

Content focus

Students:

* explore the climate, natural vegetation and native animals of places in Australia
* examine the importance of natural vegetation and natural resources to the environment, animals and people
* learn about the ways people value environments, including Aboriginal and Torres Strait Islander Peoples.

Outcomes

A student:

* examines features and characteristics of places and environments **GE2 1**
* describes the ways people, places and environments interact **GE2 2**
* acquires and communicates geographical information using geographical tools for inquiry **GE2 4**

Outcomes and other syllabus material referenced in this document are from:

* [Geography K-10 Syllabus](http://syllabus.nesa.nsw.edu.au/hsie/geography-k10/) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2015

Overview

The geographical inquiry process will locate the natural vegetation types of Australia, investigate the ways vegetation is used by animals in the environment and the ways people use natural resources.

This learning is shaped by four inquiries, which vary in length.

Note – teachers may need to adjust and scaffold learning activities as appropriate. Teachers can choose whether the inquiries are undertaken by individuals, pairs or groups, or as a whole class.

Assessment

Many of the activities require students to demonstrate their learning. These activities can be used to assess student progress at various stages throughout the inquiry process.

Inquiry 1 – Natural vegetation of Australia

Students map and describe the characteristics of the natural vegetation types in Australia.

Note – the syllabus requires an investigation of natural characteristics in Australia and a country of Asia. Examining the natural characteristics of an Asian country forms part of a cultural study of Australia’s neighbours in the focus area Places are similar and different. If it is not covered there, repeat Inquiry 1 for an Asian country, e.g. China, and make comparisons between the two countries.

Content

Different environments

Students:

* investigate the natural characteristics of Australia and a country in Asia, for example: (ACHGK020)
  + comparison of climate, natural vegetation and native animals

Significance of environments

Students:

* investigate the importance of natural vegetation and natural resources to the environment, animals and people, for example: (ACHGK021, ACHGK022, ACHGK024)
  + identification of types of natural vegetation eg forests, grasslands, deserts

Acquiring geographical information

Question

* What are the natural vegetation types of Australia?
* Where are the natural vegetation types located in Australia?

Acquire data and information

Identify the geographical tools required to support student learning, for example:

* Reference a Google satellite image of Australia to observe and identify the natural vegetation types in Australia, e.g. forest, woodland.
* Reference a vegetation map of Australia, e.g. [Australia’s vegetation](https://www.anbg.gov.au/aust-veg/veg-map.html) map by Australian National Botanic Gardens.
* Reference the BOM [climate zone map](http://www.bom.gov.au/iwk/climate_zones/map_1.shtml) of Australia.
* Observe photographs of each vegetation type.
* Research information to describe each vegetation type.
* Research information on native animals that are typically found in each vegetation type.

Processing geographical information

* View a satellite image of Australia, noticing colours.
* On a base map of Australia, add a mapping overlay to represent the major vegetation types. Add a second overlay to represent the climate zone. Analyse the results. How does climate influence vegetation?
* Match photographs of each vegetation type to the vegetation types overlay.
* Construct a summary table of Australian vegetation types, illustrating and describing each type, its location and associated native animals.

Communicating geographical information

Communicate

Students create an annotated map of the major vegetation types of Australia, plotting and describing each type.

Respond

Students select images that promote the aesthetic values of each vegetation type.

Inquiry 2 – Case study of a natural environment – fieldwork investigation

Students investigate the environment and produce a fieldwork report describing the importance of the environment to animals and people.

Note: Select a specific Australian natural environment that is readily accessible for a fieldwork investigation, e.g. eucalyptus forest, mangrove forest, woodland, rainforest, wetland. The geographical inquiry process will need to be modelled and guided by the teacher.

Content

Significance of environments

Students:

* investigate the importance of natural vegetation and natural resources to the environment, animals and people, for example: (ACHGK021, ACHGK022, ACHGK024)
  + identification of types of natural vegetation eg forests, grasslands, deserts
  + explanation of the importance of natural vegetation to animals and the functioning of the environment eg provision of habitats, production of oxygen

Acquiring geographical information

Question

Inquiry questions should be specific to the natural environment selected for investigation, e.g. How does a eucalyptus forest provide for the needs of animals, people and the environment?

* Where is the environment located?
* What are the characteristics of the environment?
* What habitats are found in the environment?
* How do native animals use habitats in the environment?
* Why is this environment significant?

Acquire data and information

* Locate the natural environment on a satellite image of the region. Identify other nearby natural environments.
* View photographs of the environment and identify the main vegetation type.
* Fieldwork – visit the environment. Use tools such as field sketches, photographs, plant surveys, invertebrate and vertebrate surveys and habitat checklists to record the natural and human features of the environment.
* Consult with local Aboriginal and Torres Strait Islander Peoples to share traditional knowledge on interrelationships between plants and animals in the environment.

Processing geographical information

Students use geographical tools to represent, organise and analyse the data and information, for example:

* Create a map of the site that labels key features.
* Use native animal identification apps to identify the animals found in the environment and how they use the natural vegetation.
* Collate, categorise and annotate photographs taken during fieldwork.
* Create a table that lists the main plants and explains how they are used by animals in the environment.
* Construct a concept map for one habitat and list the animals that use it. Use arrows to identify the connections between the animals.
* Represent connections between specific plants and animals using illustrated flow charts.

Communicating geographical information

Communicate

Students compile a fieldwork report that includes:

* a location map
* labelled field sketch
* annotated photographs
* description of the features of the environment
* plant and animal lists
* interrelationships between animals and plants
* actions that can protect the environment.

The report could be digital and/or multimodal, combining photographs, videos, sketches, diagrams and verbal or written explanations.

Respond

Describe actions that people can take to protect the natural environment, e.g. bells on cats in surrounding areas, staying on walking tracks, native habitat gardens.

Resources

* [Environmental and Zoo Education Centres NSW](http://www.ezec.org.au/) (DoE fieldwork opportunities)
* Australian Museum, [Field Guide to NSW Fauna Mobile App](http://australianmuseum.net.au/field-guide-to-nsw-fauna-mobile-app)
* Field of Mars EEC, [Habitat Multitouch Book](https://itunes.apple.com/WebObjects/MZStore.woa/wa/viewMultiRoom?mt=11&at=10lGCa&ls=1&fcId=989692225)

Learning connections

Science and Technology K–6 Syllabus – Living world (Living things depend on each other and the environment to survive).

Inquiry 3 – Animal habitats

Students investigate the habitat of their favourite animal and produce a fact sheet describing the importance of the vegetation to the animal, which they present to the class, advocating for their animal.

Note – The geographical inquiry process will need to be guided by the teacher.

Content

Significance of environments

Students:

* investigate the importance of natural vegetation and natural resources to the environment, animals and people, for example: (ACHGK021, ACHGK022, ACHGK024)
  + identification of types of natural vegetation eg forests, grasslands, deserts
  + explanation of the importance of natural vegetation to animals and the functioning of the environment eg provision of habitats, production of oxygen

Acquiring geographical information

Question

Inquiry questions should be specific to the animal and habitat selected for investigation, e.g. How does a Jabiru black-necked stork use natural vegetation?

* Where does the Jabiru live?
* What are the features of its habitat?
* How does a Jabiru use its habitat?
* What other plants and animals does a Jabiru interact with and how?
* How is the Jabiru and its habitat protected?

Acquire data and information

Support students to access a range of information sources and use a variety of geographical tools to support the geographical inquiry. For example:

* Use a wildlife fact sheet or websites to identify:
  + distribution of the animal
  + preferred habitat
  + diet
  + behaviours (interactions with the environment, breeding)
* View photographs and videos showing the relationships between animal and the environment.
* Access information that describes threats to the habitat and measures that protect the animal and its habitat.

Processing geographical information

Students use geographical tools to represent, organise and analyse the data and information, for example:

* Plot the distribution of the animal on a map. Overlay the vegetation types.
* Record and organise the information collected into a table.
* Represent connections between the animal and specific plants using illustrated flow charts.
* Construct a cause and effect chart explaining threats to the habitat and measures that protect it.

Communicating geographical information

Communicate

Support students to draw conclusions on the importance of natural vegetation to the animal. Students create an illustrated fact sheet on the animal, describing its habitat, diet, behaviours and other uses of the environment. Students present their animal and its habitat to the class in a creative way, advocating for their animal.

Respond

If only five animals and their habitats were to be protected, determine as a class the five to ‘save’. Students work collaboratively on a ‘SWOT’ analysis of each animal researched by students. Use strategies to reach consensus on five.

Resources

* Australian Museum, [Animals](http://australianmuseum.net.au/animals)
* [Birds in Backyards](http://www.birdsinbackyards.net)
* Field of Mars EEC, [Habitat Multitouch Book](https://itunes.apple.com/WebObjects/MZStore.woa/wa/viewMultiRoom?mt=11&at=10lGCa&ls=1&fcId=989692225)
* Field of Mars EEC, [Ringtail Possum Multitouch Book](https://itunes.apple.com/au/book/ringtail-possum/id881338771?mt=13)

Learning connections

Science and Technology K–6 Syllabus – Living world (Living things depend on each other and the environment to survive).

Inquiry 4 – Using natural resources sustainably

Students investigate the importance of natural resources to people and consider how they can be used sustainably. They create an animation that shows the natural resources used in the production of a geography exercise book (or other product).

Content

Significance of environments

Students:

* investigate the importance of natural vegetation and natural resources to the environment, animals and people, for example: (ACHGK021, ACHGK022, ACHGK024)
  + identification of types of natural vegetation eg forests, grasslands, deserts
  + discussion of the importance of natural vegetation and natural resources to people eg provision of food, medicine, fuel, timbers, fibres, metals

Protection of environments

Students:

* investigate sustainable practices that protect environments, including those of Aboriginal and Torres Strait Islander Peoples, for example: (ACHGK023, ACHGK024, ACHGK025)
  + examination of how environments can be used sustainably eg sustainable agricultural, commercial
  + discussion of ways waste can be managed sustainably

Acquiring geographical information

Question

Inquiry questions should be specific to the natural environment selected for investigation, e.g. What is my geography journal made of and where did the natural resources come from?

* What are the components of my geography journal?
* What natural resource is each component made from? (paper, steel staples, printing inks)
* Where are the natural resources for each component sourced?
* What other natural resources do forests provide for people?
* How can natural resources be managed sustainably?

Acquire data and information

Support students to access a range of information sources and to use a range of geographical tools to support the geographical inquiry. For example:

* Use natural resources websites to collect information on natural resources used in making this product.
* Use search terms such as ‘paper life cycle’ and ‘steel life cycle’ to source ‘cradle to grave’ flowcharts, paying attention to the ‘cradle’ phase. (Note: The focus in geography is on the interconnection between natural resources and people. Production processes are the domain of Science and Technology.)
* Source natural resource maps in atlases to identify the natural resources in Australia.
* Research information on other forest and rainforest resources currently used by people, e.g. food, medicine, timber, fibres.
* Consult with Aboriginal and Torres Strait Islander people on natural resource use.

Processing geographical information

Students use geographical tools to represent, organise and analyse the data and information, for example:

* Construct a flowchart to explain the source of the components of this product and a brief explanation of their life cycle. Students provide waste options and the impacts of these, e.g. landfill and recycling.
* Plot the location of the source of the natural resources on a map, e.g. location of plantation forests, location of iron ore mines.
* Construct a table listing forest and rainforest products and their uses by people. Include a column to identify sustainable management practices.
* Create a concept map that illustrates and explains the variety of ways that people, including Aboriginal and Torres Strait Islander people, use the natural resources forests provide.

Communicating geographical information

Communicate

Support students to draw conclusions on the importance of natural resources to people. Students create an animation that shows the natural resources used in the production of a geography journal (or other product) and how they are important to people.

The animation can be created using 3D materials in apps such as iMotion or by using the [Slowmation](http://www.slowmation.com/) technique. Alternatively it can be created in 2D with a narration using an app such as Show Me or Explain Everything.

Respond

Explain ways of reducing natural resource use though actions at home and school, e.g. recycling.

Resources

CERES, [Product Life Cycle Resources](http://sustainability.ceres.org.au/resource/rmit-life-cycle-resources/)

Learning connections

* Science and Technology K-6 Syllabus – Products (There are various processes involved in the ways products are designed and produced).
* History K-10 Syllabus – First contacts (The diversity and longevity of Australia’s first peoples and the ways Aboriginal and /or Torres Strait Islander peoples are connected to Country and Place and the implications for their daily lives).

Concepts, inquiry skills and tools

Geographical concepts

The following geographical concepts have been integrated into the teaching and learning sequence:

* Place – the significance of places and what they are like eg natural and human features and characteristics of different places and their similarities and differences; how people’s perceptions about places influence their responses and actions to protect them.
* Space – the significance of location and spatial distribution, and ways people organise and manage the spaces that we live in e.g. settlement patterns within Australia, neighbouring countries and other countries.
* Environment – the significance of the environment in human life, and the important interrelationships between humans and the environment e.g. how climate and environment influence settlement patterns; interconnections between people and environments; differing ways people can use environments sustainably.
* Interconnection – no object of geographical study can be viewed in isolation eg interconnections between people, places and environments; influence of people’s values on the management and protection of places and environments and the custodial responsibilities of Aboriginal and Torres Strait Islander Peoples.
* Scale – the way that geographical phenomena and problems can be examined at different spatial levels eg types of settlement across a range of scales; the influence of climate across a range of scales.
* Sustainability – the capacity of the environment to continue to support our lives and the lives of other living creatures into the future eg ways in which people, including Aboriginal and Torres Strait Islander Peoples, use and protect natural resources; differing views about environmental sustainability; sustainable management of waste.

Geographical inquiry skills

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)
* represent information by constructing large-scale maps that conform to cartographic conventions, using spatial technologies as appropriate (ACHGS022, ACHGS029)
* 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)

Geographical tools

The following geographical tools have been integrated into the unit.

Maps

* large-scale maps, world map, globe, sketch maps
* maps to identify location, direction, distance, map references, spatial distributions and patterns

Fieldwork

* observing, measuring, collecting and recording data, conducting surveys or interviews
* fieldwork instruments such as measuring devices, maps, photographs

Graphs and statistics

* tally charts, pictographs, data tables, column graphs, simple statistics

Spatial technologies

* virtual maps, satellite images, global positioning systems (GPS)

Visual representations

* photographs, illustrations, diagrams, story books, multimedia, web tools.