OneSchool
Unit Plan

Name: Unit 6 - Science Year 9 (V1.1)  Duration: 5 Weeks

Year Level/s: 9  Type: Master
Class:  

Applicable Learning Areas: SCIENCE  Teachers: Corporate

Unit Outline

Responding to change
In this unit students engage in the exploration of concepts of change and sustainability within an ecosystem. It focuses on engaging students in the understanding that all life is connected through ecosystems and changes to its balance can have an affect on the populations and interrelationships that exist. It provides students with an opportunity to investigate and reflect upon the state of Australian environments, locally and nationally, and their individual and collective responsibility for the sustainability of ecosystems.

It is recommended that this unit be delivered after Year 9 Unit 5 My life in balance.

Safety
Teachers need to identify safety issues and conduct risk assessments. For this unit teachers should:
- refer to Workplace Health and Safety (WHS) policy pertaining to schools
- ensure risk assessments are conducted for practical exercises inside and outside the classroom
- ensure students observe laboratory safety procedures.

In addition to the teacher's risk assessment, students are required to complete risk assessments for their own projects, under the guidance of their teacher.

Schools should consult the Guideline for Managing Risks with Chemicals in DET Workplaces (HLS-P-006). This document (p.10) contains information relating to the Department's online subscription to ChemWatch Gold. Detailed instructions are available to assist schools when registering for the first time.
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**Curriculum Summary**
- Curriculum Tracking
Australian Curriculum - Year 9

Year Level Description

The Science Inquiry Skills and the Science as a Human Endeavour strands are described across a two-year band. In their planning, schools and teachers refer to the expectations outlined in the Achievement Standards and also to the content of the Science Understanding strand for the relevant year level to ensure that these two strands are addressed over the two-year period. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching/learning programs are decisions to be made by the teacher.

Over Years 7 to 10, students develop their understanding of microscopic and atomic structures, how systems at a range of scales are shaped by flows of energy and matter and interactions due to forces, and develop the ability to quantify changes and relative amounts. In Year 9, students consider the operation of systems at a range of scales. They explore ways in which the human body as a system responds to its external environment and the interdependencies between biotic and abiotic components of ecosystems. They are introduced to the notion of the atom as a system of protons, electrons and neutrons, and how this system can change through nuclear decay. They learn that matter can be rearranged through chemical change and that these changes play an important role in many systems. They are introduced to the concept of the conservation of matter and begin to develop a more sophisticated view of energy transfer. They begin to apply their understanding of energy and forces to global systems such as continental movement.

Content Descriptions

Science as a Human Endeavour

Nature and development of science
- Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE158)
- Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE157)

Use and influence of science
- Advances in science and emerging sciences and technologies can significantly affect people’s lives, including generating new career opportunities (ACSHE161)

Science Inquiry Skills

Communicating
- Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)

Evaluating
- Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS172)
- Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171)

Science Understanding

Biological sciences
- Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)
**Planning and conducting**

- Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods ([ACSIS165](#)).
- Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data ([ACSIS166](#)).

**Processing and analysing data and information**

- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies ([ACSIS169](#)).
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence ([ACSIS170](#)).

**Questioning and predicting**

- Formulate questions or hypotheses that can be investigated scientifically ([ACSIS164](#)).
By the end of Year 9, students use their knowledge to pose different types of questions that can be investigated using a range of inquiry skills. They apply their knowledge of science to explain phenomena in the environment and their own lives and describe how knowledge has developed through the work of scientists. They plan experimental procedures which include the accurate control and measurement of variables. They identify inconsistencies in results and suggest reasons for uncertainty in data. They use scientific language and representations when communicating their results and ideas.

Students use knowledge of body systems to explain how complex organisms respond to external changes. They use knowledge of interrelationships to describe how changes affect ecosystems. They explain geological features and events in terms of geological processes and timescales. They describe the structure of atoms and explain chemical changes in terms of the behaviour of atoms. They describe a range of chemical reactions and explain their importance. They compare, in qualitative terms, how two different forms of energy can be transferred. They describe interrelationships between science and technology and give examples of developments in science that have affected society.

### ACARA Work Samples

- Ecosystems
- Investigating response and reaction time

* These work samples are generic samples provided by ACARA in relation to the Year Level Achievement Standard. They are not related to the specific Assessment Tasks contained in this unit.
Curriculum Priorities - Pedagogy

Dimensions of teaching and learning

Curriculum intent
What do my students need to learn?

Curriculum is the planned learning that a school offers and enacts.

Curriculum intent is what we want students to learn from the mandated curriculum.

Teachers decide how best to plan and deliver the curriculum to ensure all students have opportunities to engage in meaningful learning.

General capabilities

Literacy
Students will:
- use appropriate science language specific to this unit including:
  - technical vocabulary and everyday language used in science contexts (e.g. ecosystem, biotic, abiotic, interrelationships, energy, predator, prey, populations)
  - procedural vocabulary (e.g. collect, analyse, discuss, hypothesise, reflect)
  - visual representations (e.g. food webs, graphs, tables, flowcharts)
  - conventions and symbols (e.g. °C, pH, Lux)
- create print and visual materials accurately and purposefully.

Numeracy
Students will:
- use practical measurement, collect, represent and analyse first- and second-hand data from investigations and research on ecosystem interrelationships and dynamics
- identify trends and patterns from numerical data and graphs on population sizes and changes
- use appropriate units of measurement.

ICT competence
Students will have opportunities to demonstrate Student ICT Expectations in:

Inquiring with ICT
- Locate information relevant to an inquiry by conducting an effective search using selected ICT resources.
- Critically evaluate data, information and sources for usefulness, credibility, relevance, accuracy and reliability.

Ethics, Issues and ICT
- Comply with school expectations and protocols when using ICT.

Operating with ICT
Independent select and use navigation features within learning objects, software programs and websites.

Critical and creative thinking
Students will:
- generate and evaluate ideas and possibilities about ecological management
- pose questions, make predictions, speculate, and solve problems related to ecosystem dynamics and populations
- analyse and evaluate evidence and summarise information.

Ethical behaviour
- Students will consider how decisions regarding the management of ecosystems affect life.

Personal and social competence
Students will:
- make responsible decisions
- work effectively in teams
- follow procedures and work safely.

Intercultural understanding
Students will consider how different cultures view changes in ecosystems and sustainably manage their environment.

Cross-curriculum priorities
Aboriginal and Torres Strait Islander histories and cultures
Students will discuss Aboriginal peoples' and Torres Strait Islander peoples' knowledge about changes and management of ecosystems.

The Embedding of Aboriginal and Torres Strait Islander perspectives into the curriculum requires more than addressing curriculum and pedagogy. To ensure holistic learning, teachers need to address the other realms of the
Embedding Aboriginal and Torres Strait Islander Perspectives in Schools (EATSIPS) framework, these are: Personal and Professional Accountability, Community Engagement and Organisational Environment.

For further information refer to Delivering Aboriginal and Torres Strait Islander Perspectives in the classroom.

**Asia and Australia’s engagement with Asia**
Students will recognise Asian cultural perspectives on environmental management and the impact that modern society has had on the continuation and implementation of traditional practices.

**Sustainability**
Students will:
- consider a balanced approach to the way humans interact with each other and the environment
- focus on protecting environments, recognising the interdependence of environmental, social, cultural and economic considerations.

**Relevant prior curriculum**
Students require prior experience from Year 8 with:

**Science Understandings**
**Biological sciences**
Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce

**Science as a Human Endeavour**
**Nature 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**
Use and influence of 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 understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management

**Science Inquiry Skills**
**Questioning and predicting**
### Planning and conducting
- Processing and analysing data and information
- Evaluating
- Communicating

**Curriculum working towards**
The teaching and learning in this unit works towards the following in Year 10:

**Science Understandings**

**Biological sciences**
The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence

**Science as a Human Endeavour**

**Nature and development of science**
Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community.

Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries.

**Use and influence of science**
Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities.

**Science Inquiry Skills**
- Questioning and predicting
- Planning and conducting
- Processing and analysing data and information
- Evaluating
- Communicating

**Feedback**

**Supportive learning environment**

**Differentiation**
What do your students already know and what do your students need to learn? Consider the individual needs of your...
What do my students already know? What do my students need to learn?

How do I teach it?

Feedback is information and advice provided by a teacher, peer, parent or self about aspects of someone's performance. The aim of feedback is to improve learning and is used to plan what to teach next and how to teach it.

Teachers and students use feedback to close the gap between where students are and where they aim to be. Teachers use self-feedback to guide and improve their teaching practice.

Students - including ESL, gifted and talented and students requiring additional support.

Start where students are at and differentiate teaching and learning to support the learning needs of all students. Plan and document how you will cater for individual learning needs.

The learning experiences within this unit can be differentiated by increasing:
- the frequency of exposure for some students
- the intensity of teaching by adjusting the group size
- the duration needed to complete tasks and assessment.

For guided and/or independent practice tasks:
- student groupings will offer tasks with a range of complexities to cater for individual learning needs
- rotational groupings allow for more or less scaffolding of student learning.

Feedback to students
Establish active feedback partnerships between students, teachers and parents to find out:
- what each student already knows and can do
- how each student is going
- where each student needs to go next.

Ensure feedback is timely, ongoing, instructive and purposeful.

Feedback may relate to misunderstandings and common alternative conceptions. In this unit this may include:
- Students may think that soil in purely an abiotic factor. Explain to students that soil contains biotic components such as decomposers and microorganisms.
- Students may think that dead material is still biotic. Explain to students that once something dies it becomes abiotic.
- Students may think that ecosystems have specific and regular inputs and outputs. Explain to students that ecosystems are open systems and so flows will change depending on the surrounding environments.
- Students may think that population sizes are consistent over time. Explain to students that populations change and fluctuate depending on the interrelationships that exist within their ecosystem and surrounding ecosystems.

Use feedback to inform future teaching and learning.
**Reflection on the unit plan**
Identify what worked well during and at the end of the unit for future planning. Reflection may include:
- activities that worked well and why
- activities that could be improved and how
- monitoring and assessment that worked well and why
- monitoring and assessment that could be improved and how
- common student misconceptions that need, or needed, to be clarified
- differentiation and future student learning needs.

**Assessment**
What do my students understand and can do? How well do they know and do it?
Assessment is the purposeful, systematic and ongoing collection of information as evidence for use in making judgments about student learning.
Principals, teachers and students use assessment information to support improving student learning. Feedback from evaluation of assessment data helps to determine strengths and weaknesses in students' understanding.

**Assessment**
**Monitoring student learning**
Student learning should be monitored throughout the teaching and learning process to determine student progress and learning needs.
Each lesson provides opportunities to gather evidence about how students are progressing and what they need to learn next.
Specific monitoring opportunities in this unit may include:

**Student response to activity - Analysing field data**
Check student responses to gauge their capacity to:
- collate and analyse biotic and abiotic data collected in the field (either first-hand or second-hand data)
- make links between ecosystem biotic and abiotic factors
- interpret and make conclusion about focus ecosystems based on field data.

**Student response to activity - Population models**
Check student responses to gauge their capacity to:
- identify, link and explain factors that may affect populations over time
- use appropriate scientific language conventions related to feeding relationships
- predict changes to populations as a result of changes to interrelationships in ecosystems.

**Assessing student learning**
**Assessment - Scientific Research Investigation: Responding to change**
Students identify, develop, research, evaluate and report on an investigation into the impact of change on an ecosystem.

This assessment provides opportunities to gather evidence of student learning in:

**Science Understanding**

**Biological sciences**
- Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems

**Science Inquiry Skills**

**Questioning and predicting**
- Formulate questions or hypotheses that can be investigated scientifically

**Processing and analysing data and information**
- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence

**Communicating**
- Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations

The Australian Curriculum: Science for Prep (F)-10 Version 1.2
www.australiancurriculum.edu.au/Science/Curriculum/F-10
[accessed on 16 October 2011]
Sequencing teaching and learning
What do my students already know and can do? What do my students need to learn? How do I teach it? The relationship between what is taught and how it is taught is critical in maximising student learning.

Start with what your students already know and set goals for the next steps for learning. Decide how to provide multiple opportunities for all students to explore and consolidate ideas, skills and concepts by considering how students learn best and by using a variety of teaching strategies.

<table>
<thead>
<tr>
<th>Teaching strategies and learning experiences</th>
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<tbody>
<tr>
<td>A suggested teaching and learning sequence is outlined below. For further information about learning focuses and teaching strategies, refer to the lesson overview and lesson plans.</td>
</tr>
</tbody>
</table>

Exploring ecosystems
- Exploring the schoolyard
- Understanding flow through an ecosystem
- Examining the schoolyard
- Analysing population dynamics

Demonstrating unit concepts
- Researching and investigating the impacts on an Australian ecosystem

Assessing environmental management
- Examining environmental situations
Making judgments

How do I know how well my students have learned?

Teachers and students use standards to judge the quality of learning based on the available evidence. The process of judging and evaluating the quality of performance and depth of learning is important to promoting learning.

Teachers identify the task-specific assessable elements to make judgments against specified standards on evidence.

Achievement standard

In this unit, assessment of student learning aligns to the following components of the Achievement standard.

By the end of Year 9, students use their knowledge to pose different types of questions that can be investigated using a range of inquiry skills. They apply their knowledge of science to explain phenomena in the environment and their own lives and describe how knowledge has developed through the work of scientists. They plan experimental procedures which include the accurate control and measurement of variables. They identify inconsistencies in results and suggest reasons for uncertainty in data. They use scientific language and representations when communicating their results and ideas. Students use knowledge of body systems to explain how complex organisms respond to external changes. They use knowledge of interrelationships to describe how changes affect ecosystems. They explain geological features and events in terms of geological processes and timescales. They describe the structure of atoms and explain chemical changes in terms of the behaviour of atoms. They describe a range of chemical reactions and explain their importance. They compare, in qualitative terms, how two different forms of energy can be transferred. They describe interrelationships between science and technology and give examples of developments in science that have affected society.

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Student ICT Expectations

**Ethics, Issues and ICT**

By the end of Year 9 students:

*Use ethical, safe and responsible practices when working with ICT*

- comply with school expectations and protocols when using ICT

**Inquiring with ICT**

By the end of Year 9 students:

*Use ICT in processes of inquiry and research.*

- locate information relevant to an inquiry by conducting an effective search using selected ICT resources
- critically evaluate data, information and sources for usefulness, credibility, relevance, accuracy, currency and reliability

**Operating ICT**

By the end of Year 9 students:

*Navigate in software and in virtual environments*

- independently select and use navigation features within learning objects, software programs and websites
### Teaching Sequence

<table>
<thead>
<tr>
<th>Curriculum Plan Topics</th>
<th>Duration</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Exploring ecosystems</td>
<td>6 Lessons</td>
<td></td>
</tr>
<tr>
<td>Demonstrating unit concepts</td>
<td>6 Lessons</td>
<td></td>
</tr>
<tr>
<td>Assessing environmental management</td>
<td>3 Lessons</td>
<td></td>
</tr>
<tr>
<td>Total Unit</td>
<td>15 Lessons</td>
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</tbody>
</table>

#### Exploring ecosystems (Topic Duration: 6 Lessons)

**Overview**

Students will develop an overview of the dynamics and interrelationships that govern the functioning of an ecosystem.

**Teaching and Learning Sequence**

- **Exploring the schoolyard (1 of 6)**
  - Define ecosystems
  - Identify biotic and abiotic factors in the school environment
  - Utilise data collection methods to assess abiotic conditions of the school environment

**Resources**

- Sheet - [The schoolyard ecosystem](#)
- Sheet - [Teacher notes Lesson 1](#)
- Sheet - [Task 3 Class master copy](#)
- [Materials and equipment list](#)

**Helpful information**

- Website - [Abiotic components](#) (The University of the Western Cape)
- Website - [Abiotic factors](#) (Encyclopedia of Earth)
- Website - [Wild backyards](#) (Queensland Museum)

(Open the Backyard explorer user's guide pdf and look at pages 22 to 24.)

**Attachments**

- [Lesson Plan](#)
**Exploring ecosystems**

**Overview**
Students will develop an overview of the dynamics and interrelationships that govern the functioning of an ecosystem.

### Lessons

<table>
<thead>
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<th>Lessons 2-3 Understanding the flow through an ecosystem (2 and 3 of 6)</th>
<th>Teaching and Learning Sequence</th>
</tr>
</thead>
</table>
| **Understanding the flow through an ecosystem (2 and 3 of 6)** | Identify the inputs and outputs of an ecosystem  
Discuss the role of photosynthesis and respiration in energy flow  
Examine the interrelationships between populations in relation to matter and energy flow |

### Resources

**Digital**
- Website: [Relaxing nature scene: rainforest stream in ferny National Park scene](https://example.com) (TheFamilyguy421)
- Website: [Relaxing nature scene: waves breaking on rock pools at Catherine Hill Bay](https://example.com) (TheFamilyguy421)
- Website: [Food webs: Australian grasslands](https://example.com) (The Gould League)

**Find and prepare**
- Sheet: [Matter and energy in an ecosystem](https://example.com)
- Sheet: [Feeding relationship cards](https://example.com)
- Sheet: [Interactions between species](https://example.com)
- Sheet: [Species interaction cards](https://example.com)
- Sheet: [Teacher notes Lesson 2](https://example.com)
- [Materials and equipment list](https://example.com)

### Helpful information

- Website: [Food chains](https://example.com) (BrainPOP)
- Website: [Science: energy in biomass](https://example.com) (BBC)
- Website: [Model ecosystems](https://example.com) (Virtual Lab)
- Video: [Living landscape - an Australian Ecosystem Series](https://example.com) (Gulliver Media Australia)

### Attachments

- [Lesson Plan](https://example.com)

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**Unit Plan**

**Year:** 9  
**Learning Areas:** SCIENCE  
**Status:** Master  
**Duration:** 5 Weeks

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OneSchool Education Business Support

**Plan Name:** Unit 6 - Science Year 9 (V1.1)

**Year:** 9  
**Status:** Master  
**Duration:** 5 Weeks

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**Overview**
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### Attachments

- [Lesson Plan](https://example.com)
# Exploring ecosystems

### Topic Overview
Students will develop an overview of the dynamics and interrelationships that govern the functioning of an ecosystem.

### Lessons 4-5: Examining the schoolyard (4 and 5 of 6)

- **Teaching and Learning Sequence**
  - Utilise field-based, data collection methods
  - Compile and analyse collected or second-hand data
  - Discuss interrelationships between the abiotic and biotic factors, and make links to changes in populations.

- **Resources**
  - **Digital**
    - Website: [Indigenous language map](https://abc.net.au)
  - **Find and prepare**
    - Sheet: [Teacher notes Lesson 4](#)
    - Sheet: [Collecting data from the schoolyard](#)
    - Sheet: [Simple guide to quadrat sampling](#)
    - Sheet: [Analysing field data](#)
    - Sheet: [Affect of abiotic factors](#)
    - Materials and equipment list
  - **Helpful information**
    - Website: [Environmental field project: frog pond habitat](#)
    - Website: [Wild backyards](https://www.queenslandmuseum.net.au) (Queensland Museum)
    - Sheet: [How to conduct quadrat sampling in the classroom](#)

### Attachments
- Lesson Plan
## Overview

Students will develop an overview of the dynamics and interrelationships that govern the functioning of an ecosystem.

## Lessons

<table>
<thead>
<tr>
<th>Lesson 6</th>
<th>Analysing population dynamics (6 of 6)</th>
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<tr>
<td></td>
<td>• Identify factors that may change populations over time</td>
</tr>
<tr>
<td></td>
<td>• Examine and model the affect on population numbers (e.g. introduced species, urbanisation, natural disasters) of environmental changes to an ecosystem.</td>
</tr>
</tbody>
</table>

### Digital

- Website - [Experiment with ecosystems](Concord Consortium) (Concord Consortium)
- Website - [Life returns to the blast zone](PBS Online) (PBS Online)

### Find and prepare

- Slideshow - [Koala populations](koala populations)
- Sheet - [Mt St Helens](Mt St Helens)
- Sheet - [Teacher notes Lesson 6](Teacher notes Lesson 6)
- Computers with internet access

### Attachments

- [Lesson Plan](Lesson Plan)
### Teaching Sequence

<table>
<thead>
<tr>
<th>Topic</th>
<th>Demonstrating unit concepts</th>
<th>Topic Duration: 6 Lessons</th>
</tr>
</thead>
</table>

#### Overview

Students will research and evaluate the impact of change on a local ecosystem and use the findings to generate a presentation of recommendations for its future management.

#### Lessons

<table>
<thead>
<tr>
<th>Lessons 7-12</th>
<th>Teaching and Learning Sequence</th>
<th>Resources</th>
<th>Differentiation</th>
</tr>
</thead>
</table>
| Researching and investigating the impacts on an Australian ecosystem (1, 2, 3, 4, 5 and 6 of 6) | **Find and prepare**  
- Assessments - Responding to change  
- Sheet - [Student investigation guide](#)  
- Computers with internet access  
- Sheet - [Assessment teacher notes](#)  

**Helpful information**  
- Website - [Virtual wetland field trip](#) (Great Barrier Reef Marine Park Authority)  
- Website - [Ecosystem balance: choose your ecosystem](#)  
- Website - [Regional ecosystem descriptions](#) (Queensland Government. Environment and Resource Management)  
- Website - [Generate a species list for a selected area](#) (Queensland Government. Environment and Resource Management)  

**Attachments**  
- Lesson Plan | | | |
| | | | |
Teaching Sequence

<table>
<thead>
<tr>
<th>Topic</th>
<th>Assessing environmental management</th>
<th>Topic Duration: 3 Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>Students will look at environmental management and sustainability through the analysis and comparison of altered ecosystems.</td>
<td></td>
</tr>
</tbody>
</table>

Lessons | Teaching and Learning Sequence | Resources | Differentiation |
|---------|---------------------------------|------------|-----------------|
| Lessons 13-15 | **Examining environmental situations (1, 2 and 3 of 3)**  
- Examine cultural environmental perspectives on sustainability and management through a comparison of local and international environmental case studies  
- Evaluate the impact of technology on the management of ecosystems; assess their effectiveness compared to local/first hand knowledge  
- Explain the role of scientists in the study and sustainable management of identified ecosystems | **Digital**  
- Website - [Google Maps](#)  
- Video - [Impact of the Saemangeum Project on the Locals](#) (5 min Media)  
- Video - [Protesting Against the Saemangeum Project](#) (5 min Media)  
- Video - [Saemangeum Seawall Project](#) (5 min Media)  
- Website - MalakMalak and Matngala plant knowledge (CSIRO)  
- Website - [Captain Cook landing](#)  
- Website - [Indigenous engagement](#) (TRaCK)  
- Website - [Catchment: Mitchell River](#) (TRaCK)  
- Website - [Kowanyama Aboriginal Land & Natural Resource Management Office](#) (Kowanyama Aboriginal Shire Council)  
- Website - [Remote sensing captures animal impacts on waterholes](#) (TRaCK)  
- Website - [Working on Country funded projects](#) (Department of Sustainability, Environment, Water, Population and Communities) | **Find and prepare**  
- Sheet - [Teacher notes Lesson 13](#)  
- Sheet - [Individuals of influence](#)  
- Slideshow - [Saemungeum seawall](#)  
- Sheet - [Australian Indigenous perspectives of the land](#)  
- Sheet - [Two-way approach to 'country' management](#)  
- Computers with internet access |
# Unit Plan

**Plan Name:** Unit 6 - Science Year 9 (V1.1)

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<thead>
<tr>
<th>Year: 9</th>
<th>Status: Master</th>
<th>Duration: 5 Weeks</th>
</tr>
</thead>
</table>

**Learning Areas:** SCIENCE

## Helpful Information
- Website - [Job guide](#) (Department of Education, Employment and Workplace Relations)
- Website - [List of careers](#) (Evolve-IT)
- Video - [Impact of the Saemangeum Dike on nature](#) (EarthReport)
- Website - [This week's tips: reading success with expository texts](#) (The McGraw-Hill Companies)
- Website - [Meaning of land to Aboriginal people](#) (Creative Spirits)

## Attachments
- Lesson Plan

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# Unit Plan

**Plan Name:** Unit 6 - Science Year 9 (V1.1)

**Year:** 9  
**Status:** Master  
**Duration:** 5 Weeks  
**Learning Areas:** SCIENCE

## Resources

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<tr>
<td><strong>Sequence - Exploring ecosystems</strong></td>
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<td>Assessing environmental management: Slideshow - Saemungeum seawall</td>
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<td>Assessing environmental management: Student computer access</td>
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<td>Assessing environmental management: Website - <em>Captain Cook landing</em> (TRaCK)</td>
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<td>Assessing environmental management: Website - <em>Google Maps</em></td>
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<td>Assessing environmental management: Website - <em>Kowanyama Aboriginal Land &amp; Natural Resource Management Office</em> (Kowanyama Aboriginal Shire Council)</td>
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## Unit Plan

**Plan Name:** Unit 6 - Science Year 9 (V1.1)

**Year:** 9  
**Status:** Master  
**Duration:** 5 Weeks

**Learning Areas:** SCIENCE

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<td>Assessing environmental management: Website - <a href="#">Meaning of land to Aboriginal people</a> (Creative Spirits)</td>
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<td>Assessing environmental management: Website - <a href="#">This week's tips: reading success with expository texts</a> (The McGraw-Hill Companies)</td>
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<td>Demonstrating unit concepts: Assessment - Responding to Change</td>
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### Unit Plan

**Plan Name**: Unit 6 - Science Year 9 (V1.1)

**Year**: 9  
**Learning Areas**: SCIENCE

**Status**: Master  
**Duration**: 5 Weeks

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<td>Demonstrating unit concepts: Website - Ecosystem balance: choose your ecosystem</td>
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<td>Demonstrating unit concepts: Website - Generate a species list for a selected area (Queensland Government. Environment and Resource Management)</td>
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<td>Demonstrating unit concepts: Website - Regional ecosystem descriptions (Queensland Government. Environment and Resource Management)</td>
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<td>Demonstrating unit concepts: Website - Virtual wetland field trip (Great Barrier Reef Marine Park Authority)</td>
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<td>Exploring ecosystems: Computers with internet access</td>
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<tr>
<td>Exploring ecosystems: Materials and equipment list</td>
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<tr>
<td>Exploring ecosystems: Materials and equipment list</td>
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<td>Exploring ecosystems: Sheet - Affect of abiotic factors</td>
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<td>Exploring ecosystems: Sheet - Analysing field data</td>
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<tr>
<td>Exploring ecosystems: Sheet - Collecting data from the schoolyard</td>
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<tr>
<td>Exploring ecosystems: Sheet - Feeding relationship cards</td>
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</table>
## Exploring ecosystems: Sheet - How to conduct quadrat sampling in the classroom

## Exploring ecosystems: Sheet - Interactions between species

## Exploring ecosystems: Sheet - Matter and energy in an ecosystem

## Exploring ecosystems: Sheet - Mt St Helens

## Exploring ecosystems: Sheet - Simple guide to quadrat sampling

## Exploring ecosystems: Sheet - Species interaction cards

## Exploring ecosystems: Sheet - Task 3 Class master copy

## Exploring ecosystems: Sheet - Teacher notes Lesson 1

## Exploring ecosystems: Sheet - Teacher notes Lesson 2

## Exploring ecosystems: Sheet - Teacher notes Lesson 4

## Exploring ecosystems: Sheet - Teacher notes Lesson 6

## Exploring ecosystems: Sheet - The schoolyard ecosystem
### Exploring ecosystems

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<tbody>
<tr>
<td>Slideshow - Koala populations</td>
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<td>Video - Living landscape - an Australian Ecosystem Series (Gulliver Media Australia)</td>
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<td>Website - Abiotic components (The University of the Western Cape)</td>
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<td>Website - Abiotic factors (Encyclopedia of Earth)</td>
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<td>Website - Environmental field project: frog pond habitat</td>
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<td>Website - Experiment with ecosystems (Concord Consortium)</td>
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<td>Website - Food chains (BrainPOP)</td>
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<td>Website - Food webs: Australian grasslands (The Gould League)</td>
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<td>Website - Indigenous language map (ABC)</td>
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<td>Website - Life returns to the blast zone (PBS Online)</td>
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<td>Website - Model ecosystems (Virtual Lab)</td>
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### Unit Plan

**Learning Areas:** SCIENCE

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<tr>
<td>Exploring ecosystems: Website -</td>
<td>Relaxing nature scene: rainforest stream in ferny National Park scene (TheFamilyguy421)</td>
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<tr>
<td>Exploring ecosystems: Website -</td>
<td>Relaxing nature scene: waves breaking on rock pools at Catherine Hill Bay (The Familyguy421)</td>
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<td>Exploring ecosystems: Website -</td>
<td>Science: energy in biomass (BBC)</td>
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<td>Exploring ecosystems: Website -</td>
<td>Wild backyards (Queensland Museum) (Open the Backyard explorer user's guide pdf and look at pages 22 to 24.)</td>
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<td>Assessment Planner - Responding to</td>
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* Attachments are available in the relevant Unit Plan Section directory in the downloaded zip file.
### Assessment

<table>
<thead>
<tr>
<th>Assessment Task Summary</th>
<th>Type</th>
<th>Learning Areas</th>
<th>Status</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Analysing field data (Yr 09)</td>
<td>Monitoring</td>
<td>SCIENCE</td>
<td>Unscheduled</td>
<td>TBA</td>
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<tr>
<td>Students analyse data collected from an ecosystem to make conclusions about interrelationships between biotic and abiotic factors.</td>
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<tr>
<td>Population models (Yr 09)</td>
<td>Monitoring</td>
<td>SCIENCE</td>
<td>Unscheduled</td>
<td>TBA</td>
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<tr>
<td>Students utilise models to explain population variations due to changes in biotic and abiotic factors.</td>
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<tr>
<td>Responding to change (Yr 09)</td>
<td>Assignment/Project</td>
<td>SCIENCE</td>
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<td>Students identify, develop, research, evaluate and report on an investigation into the impact of change on an ecosystem.</td>
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Assessment Task Name: Responding to change (Yr 09)  

Type: Assignment/Project  
Date: TBA

Description: Students identify, develop, research, evaluate and report on an investigation into the impact of change on an ecosystem.

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<th>Criteria</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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<td><strong>Knowledge and understanding</strong></td>
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<tr>
<td>Science Understanding - Describes interrelationships within an ecosystem and the impact of change</td>
<td>Explains the impact of change on interrelationships and the future of the ecosystems</td>
<td>Discusses the impact of change on the interrelationships in an ecosystem</td>
<td>Identifies and describes relevant interrelationships within an ecosystem and an impact of a change</td>
<td>Describes an ecosystem and states a relationship between components</td>
<td>States information about an ecosystem</td>
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<tr>
<td><strong>Investigating</strong></td>
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<tr>
<td>Poses questions that can be investigated</td>
<td>Generates a logical sequence of researchable questions to gather key data</td>
<td>Analyses data and identifies patterns</td>
<td>Poses different types of questions that can be investigated</td>
<td>Communicates using scientific language</td>
<td>States a question related to an ecosystem</td>
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<tr>
<td>Analyses data and develops related recommendations</td>
<td>Analyses data and infers trends to generate recommendations linked to these trends</td>
<td></td>
<td>Analyses data and develops a related recommendation</td>
<td></td>
<td>States a recommendation</td>
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<tr>
<td>Discusses the effectiveness of the investigation using scientific language and representations</td>
<td>Purposefully selects and uses scientific language and representations</td>
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<td>Communicates recommendations meaningfully using scientific language and representations</td>
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No Curriculum Tracking information found that was applicable to this curriculum plan and specified criteria.

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