Australian Curriculum References for Stream Scene

Year 7 Science - Content Descriptions

Science Understandings

Biological Sciences
- There are differences within and between groups of organisms; classification helps organise this diversity (ACSSU111)
- Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions (ACSSU112)

Earth and Space Sciences
- Some of Earth’s resources are renewable, but others are non-renewable (ACSSU116)
- Water is an important resource that cycles through the environment (ACSSU222)

Science as a Human Endeavour

Use and Influence of Science
- Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE121)

Science Inquiry Skills

Evaluating
- Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS131)
- Use scientific knowledge and findings from investigations to evaluate claims (ACSIS132)

Cross Curriculum Priority Link: Sustainability addresses the ongoing capacity of Earth to maintain life.

Systems OI.1 The biosphere is a dynamic system providing conditions that sustain life on Earth.

Systems OI.2 All life forms, including human life, are connected through ecosystems on which they depend for their well-being and survival.

Systems OI.3 Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

Futures OI.7 Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

Futures OI.9 Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments.

By investigating the relationships between systems and system components and how systems respond to change, students develop an appreciation for the interconnectedness of Earth’s biosphere, geosphere, hydrosphere and atmosphere. Relationships including cycles and cause and effect are explored, and students develop observation and analysis skills to examine these relationships in the world around them.

In this learning area, students appreciate that science provides the basis for decision making in many areas of society and that these decisions can impact on the Earth system. They understand the importance of using science to predict possible effects of human and other activity and to develop management plans or alternative technologies that minimise these effects.

Cross Curriculum Priority Link: Aboriginal and Torres Strait Islander histories and cultures

Country/Place OI.3 Aboriginal and Torres Strait Islander Peoples have unique belief systems and are spiritually connected to the land, sea, sky and waterways.

Culture OI.5 Aboriginal and Torres Strait Islander Peoples’ ways of life are uniquely expressed through ways of being, knowing, thinking and doing.
Science Year 7

Stream Scene

Focus: Maintaining healthy waterways  Student Role: Catchment Carers or Limnologists in Training

Program Overview: Information for Teachers

This environmental investigation program is designed to assist teachers to implement Science and address the Australian Curriculum’s Cross-Curriculum Priorities of Sustainability and Aboriginal and Torres Strait Islander histories and cultures.

Stream Scene is conducted in Toowoomba area waterways and can cater for up to two class groups at a time. Content covered from the Australian Curriculum is listed on page 4 of this overview. Pages 2 and 3 show the link between this content — including some elements of the Year 7 C2C Units 1 & 2 (‘Water - Waste Not, Want Not’) and activities undertaken by Amaroo teachers. Suggestions are made for elements/activities that could be covered by the visiting teacher in the school before and/or after the excursion. Pedagogical elements and tools from the Amaroo EEC Pedagogical Framework are also listed against each field activity.

Synopsis of Program/Unit Outline:

- Students test water quality by pond scooping for macro-invertebrates and by using scientific equipment to measure temperature, turbidity, salinity and pH levels. Factors affecting water quality are discussed.

- The availability and significance of good quality fresh water are illustrated & discussed. The overall hydrology of the Toowoomba area and links to the broader Murray-Darling Basin are explored using maps and aerial photos.

- Indigenous use of and practices regarding water (locating water, water use, finding food) are discussed and demonstrated.

- Students use binoculars and charts to identify local bird species; they explore the idea of food chains and webs and ways in which human activities and water quality can affect the interaction of organisms.

Location:

The morning session of Stream Scene is normally conducted at the Murray Clewett Wetlands (on Spring St) followed by lunch and afternoon session at the Waterbird Habitat (on Mackenzie St), though the program is adaptable to other local sites.
Pedagogical Key: Based on Amaroo EECs Pedagogical Framework

The Amaroo EEC teachers deliver this program utilising a variety of Pedagogical Strategies which are based on the four dimensions of Productive Pedagogies plus the 5th Pedagogy. Each pedagogy is abbreviated in [ ] according to this key.

**Pedagogy and Place – Learning Beyond the Classroom:** Adventure & Challenge [A&C]; Learning by Doing [LbD]; Exploring Issues in Local Contexts [EILC]; Being in the Natural Environment [BNE]

**Connectedness:** Background Knowledge [BK]; Connectedness to the world [CtW]

**Recognition of Difference:** Cultural Knowledge [CK]

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Lessons for this Science unit have been developed by Amaroo Environmental Education Centre to incorporate additional support and resources that are available through the Centre.

Elements of the Year 7 C2C Units ‘Water - Waste Not Want Not’ are covered in this program as well as content from the Australian Curriculum in Yr 7 Science and in the Cross-Curriculum Priorities of Sustainability and Aboriginal & Torres Strait Islander Histories & Cultures.

**N.B. Relevant Curriculum Activity Risk Assessments are available upon request and on the Amaroo website.**

The lessons in the teaching sequence have been colour coded as follows:

- Lessons in these boxes should be taught/facilitated by the class teacher in the school setting.
- Lessons in these boxes will be taught by the Amaroo teacher as part of your program. NB Pedagogical elements and tools.
- It is suggested that pre/post work may be conducted on these objectives.

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### Teaching Sequence

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<th>Topic</th>
<th>Curriculum Content and C2C Unit Links</th>
<th>Stream Scene Lessons - outline</th>
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</table>
| **Before the excursion** (Pre-engagement or ‘The Hook’ letter from Dr Lim Nologist) | Yr 7 Science C2C Unit 1 Water Lesson 2 (review the water cycle; perform water cycle experiments)  
**ACSSU111** Differences within and between groups of organisms (investigate common types of water bugs)  
Freshwater Ecologist Training Manual | Students are oriented to the Murray Clewett Wetland site. The place of this wetland in the local Toowoomba (Gowrie Creek) and broader Murray-Darling Basin (Condamine River and beyond) creek/river system is briefly discussed. |
| **Exploring the water cycle** | Yr 7 Science C2C Unit 1 Water Lesson 2 (identify water as a renewable resource); Unit 2 Water Treatment Lesson 1 (demonstrate a local river story).  
**ACSSU116** Some of Earth’s resources are renewable, but others are non-renewable.  
**ACSSU222** Water is an important resource that cycles through the environment. | The idea of water quality testing and why it is necessary is discussed. The use of surveying pond creatures (predominantly macro-invertebrates) in such testing is introduced. Students are shown illustrations of some of the main macro-invertebrates they may encounter; they then proceed with scooping and identifying organisms they catch. Students use a scoring sheet to rate the water quality based on what they have found. |
| **Exploring water use and evaluating water quality** | Yr 7 Science C2C Unit 1 Water Lesson 2 (investigate human elements of the water cycle); Unit 1 Water Lesson 4 (perform tests for water quality).  
**ACSSU111** There are differences within and between groups of organisms; classification helps organise this diversity.  
**ACSSU112** Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions.  
**ACSIS132** Use scientific knowledge and findings from investigations to evaluate claims.  
**Sustainability:** Systems OI 1 - 3 (dynamic biosphere, connection through ecosystems, reliance on interdependence of healthy systems). | |
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| **Exploring water use and evaluating water quality**  | **Yr 7 Science C2C** Unit 1 Water Lesson 2 (investigate human elements of the water cycle); Unit 1 Water Lesson 4 (perform tests for water quality).  
**ACSH121** Science understanding influences the development of practices in areas of human activity. | Students use scientific equipment to test water at the Murray Clewett Wetlands for temperature, salinity, pH and turbidity.  
Human-caused and natural factors affecting water quality are discussed; also the influence of water quality on human and natural activities (e.g. industry, agriculture, breeding grounds). |
| **Sustainability**  | **[AE; EILC]**  |  |
| **Exploring water as a resource**  | **Yr 7 Science C2C** Unit 1 Water Lesson 2 (demonstrate the amount of fresh water on Earth; discuss the importance of water; identify water as a renewable resource).  
**ACSSU222** Water is an important resource that cycles through the environment. | A simple demonstration and charts are used to show how precious fresh water is; our need to manage it as a resource is emphasised. |
| **Sustainability**  | **[EILC]**  |  |
| **Indigenous use of and practices regarding water**  | **Yr 7 Science C2C** Unit 2 Water Treatment Lesson 1 (demonstrate a local river story).  
**[CK]**  |  
| **Sustainability**  |  |  |
| **Science enquiry — evaluating**  | **[BNE]**  |  |
| **Water usage**  | **Yr 7 Science C2C** Unit 2 Water Usage Lessons 1-3 (incl. comparing water access and usage across countries, evaluating the real cost of water in our lifestyles) |  
| **Assessment Summary:**  |  |  |
| *Singly or in groups, students prepare a report (written/multimedia) on the environmental health of the sites visited during the excursion.*  |  |  |
| *Yr 7 Science C2C** Unit 2 Water Use Lessons 1-4 (research, plan and construct a persuasive argument on a water issue)*  |  |  |

**Please note:** Information relating to Adopting and Adapting C2C materials can be found in C2C Fact Sheet Version 6: February 2013 at [https://learningplace.eq.edu.au/cx/resources/file/ae679001-5de4-e7cb-b7ae-004ef896cfc1/docs/c2c-factsheet3.pdf](https://learningplace.eq.edu.au/cx/resources/file/ae679001-5de4-e7cb-b7ae-004ef896cfc1/docs/c2c-factsheet3.pdf)