

Years 9 – 10 WaterRight Garden Curriculum Ideas

Learning Areas

Science (descriptors detailed in the table below)

For year 9&10 Science Inquiry Skills (**SIS**) and Science as a Human Endeavour (**SHE**) elements can be incorporated into a study of gardens and sustainability using inquiry teaching as the basis to the topic.

Geography

Note: The Geography descriptors listed are based on ideas from the Shaping paper as the curriculum document had not been completed at the time of going to print. This will be updated in due course.

- a study of the human use of landscape, and the ways that it is perceived, portrayed and valued by people
- environmental sustainability - an exploration of the sustainability of an urban biophysical environment
- an investigation of natural and human-induced environmental change
- an examination of the meaning of environmental sustainability
- the geography of human wellbeing

Links to Cross-curricular priorities – Aboriginal and Torres strait Islander histories and cultures, Asia and Australia's engagement with Asia, Sustainability

Links to General capabilities – literacy, numeracy, personal and social competence, critical and creative thinking, intercultural understanding, information and communication technology competence

NOTE: WaterRight is not a course of study but is designed to complement and inspire teachers in their lesson planning around a unit on gardens or water. Ideas are put forward with links to the Australian Curriculum (updates will be needed as more curriculum detail is released) and local South Australian resources and excursions. There is an expectation that teachers would design their own learning schedule and choose activities appropriate for their student cohort and classroom context. Activity suggestions can be used for various *assessment activities* such as elicitation of student knowledge, formative and/or summative assessment.

Further information
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Australian Curriculum Alignment:

Lesson ideas/tasks

Aboriginal and Torres strait Islander histories and cultures

Geography

Science

Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176) yr9

Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189) yr10

Theme: Sustainability

1. Either plan your own garden OR redesign a garden for your parents house OR you could design a garden of the future. Consider making your garden specifically suited to a particular area e.g. fire safe for the Adelaide Hills, drought tolerant for Northern South Australia or salt tolerant for the beach. Use the Adelaide WaterRight Gardens Webtool and the WaterRight Gardens Field Guide to give you ideas on designing your garden <http://waterrightgardens.sawater.com.au/>.
2. Investigate a garden either school garden or home. List the organisms present and non living aspects of the garden too. Use the list of organisms to produce a food chain and a food web if possible. Students can visualise this if they create labels for each organism and place string or ribbon between the organisms. Colour code producers/consumers, predators and prey. Ask students to write a story about change in the garden. What will happen if.....the balance is upset? eg. All insects are killed by pesticides even if these pesticides are being used to kill spiders. Consider the scenario and project ideas in the story.
3. Conduct a survey of your class – what do they grow in their home gardens. Collate this data and develop a method of storing and sharing the information. Investigate the Carbon miles and Water miles for various staple diet items then draw conclusions about the impact on the environment in terms of the ecological footprint. Support you findings with evidence and references. Compare the results obtained when interviewing an elderly relative or friend about their childhood vegetable garden or produce consumption.
4. What are the impacts of garden design and/or management on the sustainability of the house and garden? Try using the SA Water Interactive House and Garden online learning tool at www.sawater.com.au/education. In addition the Education for Sustainability curriculum advocates action planning for students and whole schools, with this in mind the Sustainable and Attainable website is a great resource www.sustainableschools.sa.edu.au/. Students can gain guidance in performing a water audit at home or school from this site or your school could sign up to be an AuSSI-SA School.
5. Do a case study of your own home garden or a community park or garden you can get access to. Consider soil, climate/ location/rainfall, topography, current vegetation type and location, water source

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	<p>and method of watering. Include issues affecting this garden and problem solve to make suggestions useful in the management of this garden. Support your findings with evidence and references. Speculate on the implications for the biodiversity and the consequences for change to ecosystems of a garden under different seasonal conditions - drought, flood, fire, extreme winds etc. How can you make a garden that is able to withstand possible extremes of weather in an area?</p>
<p>Science</p> <p>Science Inquiry Skills yr 9&10</p>	<p><u>Theme: Science investigations in the garden</u></p> <p>Investigation topics include:</p> <ol style="list-style-type: none"> 1. The effect of water on weed growth 2. Case study of a vegetable grower 3. Investigation of seasonal influence on insect populations 4. Water needs of seeds for germination 5. Water needs of monocotyledonous vs. dicotyledonous plants 6. Investigate soil organisms 7. Investigate soil infiltration rates or soil pH etc.
<p>Personal and social competence</p> <p>Critical and creative thinking</p> <p>Science</p> <p>Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE161) yr 9&10</p> <p>Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE158) yr9&10</p>	<p><u>Theme: Creativity in the garden</u></p> <ol style="list-style-type: none"> 1. Investigate the water cycle: use of the internet or SA Water - <i>Water cycle poster</i>. Small groups of students' role play a part of the water cycle to demonstrate their understanding of the science. Students with a partner are given a role to play in the water cycle eg. Rain/precipitation they then decide how to represent <i>their part</i> of the cycle so that others in the class will recognise what it is. Each group can describe to the class their role and their history and future. eg. Rain came from atmospheric water and will fall to the ground due to gravity. 2. Design a tool to improve efficiency in a garden eg. A solar powered robot lawn mower. Critically appraise your design and its shortcomings in terms of function, sustainability etc. 3. Develop a marketing slogan or promotional advertisement/brochure/fact sheet to encourage people to select indigenous plant species or water wise plants http://waterrightgardens.sawater.com.au/.

<p>Science</p> <p>Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE161) yr 9&10</p>	<p><u>Theme: Green Growing Careers</u></p> <ol style="list-style-type: none"> 1. Invite a guest speaker to your class. SA Water Brainwave program has 'Living Loans' available. These speakers can talk about careers in the Water industry or other topics related to water. Brainstorm other occupations that work with gardens and invite these along or have students research what the job description involves and the training needed to follow this career. Have students do background research and devise questions to ask the visiting speakers. After they have visited create stories about 'A day in the life of....' to demonstrate their learning.
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NOTE: Many of the ideas listed in year 7-8 WaterRight documents are suitable for use with this age group with slight modification.

Yr 11/12 Research Project

Many ideas can be found on the SA Water education webpage including a mindmap, list of ideas related to water and an online form to request help or information.

ACARA

Student Work samples PDF format available from the ACARA website.

Year 9 - Ecosystems

RESOURCES

Australian Curriculum Assessment and Reporting Authority ACARA (2010), Welcome to the Australian Curriculum Online. Accessed 24/1/11 at www.australiancurriculum.edu.au/Home

Adelaide WaterRight Gardens Webtool and the WaterRight Gardens Field Guide <http://waterrightgardens.sawater.com.au/>

Living with the Land – Learning resources for teachers relating to the SA Water Mediterranean Garden.
<http://oac.schools.sa.edu.au/outreach/oes/botanic/living.htm>

SA Water Education – Find free resources, a **teacher resource library** and a program of **free** learning activities for R-12 students around water and water related issues.
www.sawater.com.au/education

Sustainable and Attainable Climate change resources.
www.sustainableschools.sa.edu.au/

The SA Water Mediterranean Garden – A brochure to assist in viewing the garden.
[www.environment.sa.gov.au/botanicgardens/Visit/Adelaide Botanic Garden/SA Water Mediterranean Garden](http://www.environment.sa.gov.au/botanicgardens/Visit/Adelaide_Botanic_Garden/SA_Water_Mediterranean_Garden)

Watching Water – A brochure designed to educate on good water use in the home garden and a selection of the fascinating adaptations to lack of water in plants of the Botanic Gardens of Adelaide.
<http://oac.schools.sa.edu.au/outreach/oes/botanic/pdfs/watchingwater.pdf>

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