

## Years 7 – 8 WaterRight Curriculum Ideas

### Learning Areas

#### **Science** (descriptors detailed in the table below)

For year 7&8 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.*

- weather and water
- the hydrologic cycle
- water resource management
- climate
- biodiversity, soil and food production
- study of suburban gardens

**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

1300 650 950

[www.sawater.com.au](http://www.sawater.com.au)

customerservice @sawater.com.au

<b>Australian Curriculum Alignment:</b>	<b>Lesson ideas/tasks</b>
<p>Geography</p> <p>Asia and Australia’s engagement with Asia</p> <p>Aboriginal and Torres Strait Islander histories and cultures</p> <p>Science</p> <p>Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions (ACSSU112) yr7</p> <p>Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE223) yr7&amp;8</p> <p>Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) yr7&amp;8</p>	<p><u>Theme: What is a garden?</u></p> <ol style="list-style-type: none"> <li>1. Have students brainstorm what makes a collection of living plants a garden? Or why would you want to have a garden? Use a mind map to discover ideas about the uses that gardens can have for us. Consider endemic plants, human impact issues, aesthetics and design.</li> <li>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? E.g. All insects are killed by pesticides used to kill spiders. Consider the scenario and project ideas in the story.</li> <li>3. Compare and contrast gardens from different cultures. Asian or Japanese gardens, European gardens, Mediterranean gardens – see SA Water Mediterranean garden resources from the Botanic Gardens website. Use the Adelaide WaterRight Gardens Webtool and the WaterRight Gardens Field Guide to give you ideas about garden design <a href="http://waterrightgardens.sawater.com.au/">http://waterrightgardens.sawater.com.au/</a>.</li> <li>4. Weeds in the garden. What is a weed? Establish criteria and classify plants and or animals into native, domestic and feral. Investigate introduced plants that have become problems in their new environment e.g. Salvation Jane. Needs vs. wants – should gardens only be used for survival? Should we have fire safe gardens in the Adelaide Hills? How can gardens keep us healthy? Connect this idea to the Museums/ABC magpie watch and feral animal watch programs which are regularly run via internet.</li> <li>5. Suggest a timeline for the history of your garden. Propose a possible sequence of events that may have occurred in your backyard over time. Start before European invasion. Who where the traditional landowners/cultural group in your local area. How were their gardening practices different/similar? (History &amp; numeracy links)</li> </ol>

	<p>6. Geography - Demographics of garden size over Adelaide or other country regions. Use Google maps to interrogate your local area. What are the reasons for various garden sizes? Look at differences within council areas. Often different requirements along main roads etc.</p> <p>7. Make a scientific observation of a local area by developing lists of animal and plant biodiversity and collecting data on populations. Develop a method of storing and sharing this information.</p>
<p>Geography</p> <p>Sustainability</p> <p>Science</p> <p>Science and technology contribute to finding solutions to a range of contemporary issues (ACSHE120) Yr7&amp;8</p> <p>People use understanding and skills from across the disciplines of science in their occupations (ACSHE224) yr7&amp;8</p> <p>Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) yr7&amp;8</p>	<p><u>Theme: Microclimates and gardens</u></p> <ol style="list-style-type: none"> <li>1. Brainstorm the various microclimates within a garden. In collaborative groups choose a microclimate to investigate and produce a fact sheet about organisms that live in that microclimate. Use the fact sheets available on the WaterRight Webtool site as a resource <a href="http://waterrightgardens.sawater.com.au/">http://waterrightgardens.sawater.com.au/</a>.</li> <li>2. Culture microbes or go on a microbe hunt in the garden. Some form fungal masses that can be seen with the naked eye. Consider the idea of garden rooms or even smaller spaces within a garden that make small pockets with specific environmental factors perfect for some microbes or insects to flourish. Do an insect audit, aphids and hover flies are often easy to spot.</li> <li>3. Gather interesting objects from under rocks and bark to view under the light microscope. Be sure to consider safety with this activity as some spiders or other insects can be harmful. Also discuss the ethics of dissecting objects that might be alive.</li> <li>4. Create a terrarium in a bottle or aquarium. How is this different and similar to the microclimate in a garden? Make a concept diagram or mind map to display all of the functions or uses of microbes in the natural and managed environment. Use Resource based learning to investigate one of the uses further eg. yeast for use in bread making.</li> </ol>
<p>Geography</p> <p>Sustainability</p> <p>Personal and social competence</p> <p>Critical and creative thinking</p>	<p><u>Theme: Where does the water come from?</u></p> <ol style="list-style-type: none"> <li>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</li> </ol>

<p>Science</p> <p>Water is an important resource that cycles through the environment (ACSSU222) yr7</p> <p>Science and technology contribute to finding solutions to a range of contemporary issues (ACSHE120) yr7&amp;8</p> <p>Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) yr7&amp;8</p>	<p>ground due to gravity.</p> <ol style="list-style-type: none"> <li>2. Relate this general water cycle to where we get our water in SA. Using the SA Water website locate your nearest reservoir. SA Water Brainwave program <i>SOAKED!</i> is a great way to get students thinking about the water cycle. Create a terrarium in a bottle.</li> <li>3. Debate issues around the source of water – introduce desalination by reading <i>Captain Plop the desalination adventure</i>. This is also a novel way to introduce the water cycle.</li> <li>4. Trace your local tap water to its source. Does any of it come from the Murray River? Does any of it come from the Desalination plant? Does any of it come from recycled water in purple pipes? Are you totally reliant on rain water? What are the issues around using rain water? SA Water Brainwave programs, <i>Follow that Drop!</i> and <i>The Water Show</i>, are a great way to start students thinking about water sources and water treatment.</li> <li>5. Investigate the cost of water. Use an SA Water bill which lists a comparison of water usage for different households with and without gardens. Discuss the real cost of a garden.</li> <li>6. Map the different rules governing water use over South Australia this information can be accessed from the SA Water website. What are the rules for damming water using bore water or collecting rainwater – is there a limit to how much you can take? Should there be a limit? Conduct a debate to consider: Is using bore water in times of water restrictions fair?</li> </ol>
<p>Geography</p> <p>Sustainability</p> <p>Personal and social competence Critical and creative thinking</p> <p>Science</p> <p>Water is an important resource that cycles through the environment (ACSSU222) yr7</p> <p>Science and technology contribute to</p>	<p><u>Theme: Where does the water go?</u></p> <ol style="list-style-type: none"> <li>1. Consider when water moves through the soil to become groundwater. Soil studies: these include investigations about water holding capacity, water infiltration, pH testing of soils, soil formation and composting, soil texture and soil profile digging.</li> <li>2. Create a class worm farm to use up the lunchtime scraps and spread nutrients to the school garden. Run mini experiments to find out what the favourite food scraps are for your worms.</li> <li>3. Investigate the underground water of your area, local aquifers. Debate the issue around who owns the water? Is bore water a free resource? Should it be? What about rain water? Water quality and water treatment.</li> </ol>

<p>finding solutions to a range of contemporary issues (ACSHE120) yr7&amp;8</p> <p>Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) yr7&amp;8</p>	<ol style="list-style-type: none"> <li>Investigate your local catchment or the catchment in the Piccadilly Valley Adelaide Hills. SA Water has improved the wetland in the Woodhouse Scout area – Cox Creek such that the water quality from this catchment has also greatly improved. This is a great excursion with teacher notes available.</li> <li>Design your own garden water saving slogan.</li> </ol>
<p>Geography</p> <p>Personal and social competence</p> <p>Critical and creative thinking</p> <p>Information and communication technology competence</p> <p>Science</p> <p>Science and technology contribute to finding solutions to a range of contemporary issues (ACSHE120) yr7&amp;8</p> <p>Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) yr7&amp;8</p>	<p><u>Theme: Design your own garden</u></p> <ol style="list-style-type: none"> <li>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 <a href="http://waterrightgardens.sawater.com.au/">http://waterrightgardens.sawater.com.au/</a>.</li> <li>After designing your own garden hold an ‘open garden day’ or ‘garden expo’ where you judge other students garden design. Students design the judging criteria to include water wise technology and planning. Invite a guest judge or parents to view your ideas.</li> <li>Develop a marketing slogan or promotional advert/brochure/fact sheet to encourage people to select indigenous plant species or water wise plant species.</li> <li>Hold a debate where half the class is pro vegetable gardens and the other half is pro ornamental gardens.</li> </ol>
<p>Geography</p> <p>Sustainability</p>	<p><u>Theme: Plant choices</u></p> <ol style="list-style-type: none"> <li>Design your own plants with water saving features and water wasting features. Give them some crazy names – present your plant to the class and explain what it is about them that make them suit their</li> </ol>

<p>Critical and creative thinking</p>	<p>environment. Use the Adelaide WaterRight Gardens Webtool and the WaterRight Gardens Field Guide to give you ideas on plant structures and suitability <a href="http://waterrightgardens.sawater.com.au/">http://waterrightgardens.sawater.com.au/</a>.</p> <p>2. Investigate the water in plants – predict which fruits and vegetables will be the most hydrated, then using a food juicer or food dehydrator remove the moisture. Weigh before and after to get an idea of the percentage moisture. Graph the results for different fruits and vegetables. Make suggestions about how this might relate to water requirements of plants.</p>
<p>Science</p> <p>People use understanding and skills from across the disciplines of science in their occupations (ACSHE224) yr7&amp;8</p>	<p><u>Theme: Green Growing Careers</u></p> <p>1. Invite a guest speaker to your class. SA Water Brainwave program has <i>'Living Loans'</i> 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.</p>

**NOTE:** Many of the ideas listed in year 3-6 and in year 9-10 WaterRight documents are suitable for use with this age group with slight modification.

**ACARA**

Student Work samples PDF format available from the ACARA website.

Year 7 – Water cycle

## 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](http://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](http://www.sawater.com.au/education)

Sustainable and Attainable Climate change resources  
[www.sustainableschools.sa.edu.au/](http://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>

Further information  
1300 650 950  
[www.sawater.com.au](http://www.sawater.com.au)  
customerservice @sawater.com.au