Year 5
Lesson 5
Being a Watersaver at school
Unit 2

www.logan.qld.gov.au

Learning objectives

Students will be able to:

- Understand the needs of plants.
- Identify plants that conserve water or reduce moisture loss.
- Understand how water can be conserved in a garden.

Learning outcomes

Subject	Strand & content descriptors
Science	Science understanding: • Living things have structural features and adaptations that help them to survive in their environment. (ACSSU043) Science as a human endeavour • Scientific knowledge is used to inform personal and community decisions. (ACSHE217) Science inquiry skills • With guidance, select appropriate investigation methods to answer questions or solve problems. (ACSIS086)
Geography	Geographical knowledge & understanding • Environment: There are a variety of climates and each climate results in a distinctive type of natural vegetation and use by people. Geographical skills & understanding • Planning, collecting and evaluating: Identify a variety of information sources that will be used for inquiry, considering their validity. • Planning, collecting and evaluating: Identify and create appropriate materials, geographical tools or equipment to collect data or observations, using formal measurements and digital and spatial.

Important questions

- For what functions do plants use water?
- How are some plants adapted to save water?
- What is mulch and why is it important for a Watersaver garden?

Background information – Watersaver garden

Plants, like humans, need water to survive. They take in water through their roots that moves to the rest of the plant through the stem. Photosynthesis, or, making food using the sun's energy, carbon dioxide and water, takes place mainly in the leaves. Tiny pores or stomata open and close to allow the exchange of water and gas where most water is lost in plants. Evaporation from the leaves is called transpiration.

Some plants in Australia, where rainfall is unreliable, have adapted to reduce water loss. Some plants have a waxy covering or cuticle on their leaves to reduce evaporation while others can close their stomata during the hottest parts of the day.

Preparing garden beds and soil can reduce evaporation. Using mulch, a layer of organic material such as grass clippings, straw or shredded newspaper, can retain water. Increasing the organic content of the soil by digging in compost will also help to retain water.

Watering plants sensibly is important. Water sprayed on the leaves evaporates quickly and can damage plants on hot days. Watering the roots using a drip system or watering can is best – and remember, a good soaking once or twice a week is better than spraying every day.

Remember to check permanent water conservation measures before you water your garden.

Lesson plan – Watersaver garden

This lesson provides background knowledge to assist students in selecting, propagating and caring for plants as part of a Watersaver garden.

Why do plants need water? Is it used for the same functions humans use water? Gauge student understanding of the use of water by plants and its movement through the plant. Discuss the role of water in photosynthesis, delivery of nutrients and plant structure.

Students suggest adaptations that may assist a plant in using water more efficiently or reducing water loss. Considering familiar plants in local gardens may be useful – what type of plants require regular watering; what are some of the physical characteristics of these plants?
Through group discussion a number of potential adaptations are listed and discussed.

Note: plants have a number of common adaptations to conserve water including:

- Small, needle like or rounded to reduce leaf surface area and water loss through the stomata (plant pores).
- Hairy leaves: Hairs cover the pores and reduce moisture loss.
- Light leaf colours: Watersaver plants are more likely to have light green, grey green coloured foliage.
- Water storage: Some plants can store water in the trunk, leaves or root system.
- Deep root systems: Ability to search for water.

Students are instructed that they will undertake an assessment of plants in the school grounds (or local area). To prepare, students should identify criteria for a data collection sheet that will enable them to undertake further research on plants in the classroom and produce the data sheet. Criteria for the data sheet could include: collectors, name and date of collection, common and scientific names, location, associated vegetation and habit (shape, size and general appearance of full plant).

In the classroom students undertake further research to identify plants and clarify water saving and other adaptations. Using appropriate technologies students develop a report on a selected plant clearly explaining its adaptations in relation to climate and habitat.

Using the information collected and additional research select a suitable site for a garden. Identify preparation requirements such as site preparation, composting and mulching. Ideally a combination of plants for immediate planting and stock to be raised from seed, cuttings or tube stock should be used. The latter provides good opportunity to record life cycles associated with growth, fruiting or flowering (plants such as rosemary and agaves will grow from cuttings; acacias will grow from seed).

Adaptations for water conservation can be assessed in the garden by regulating watering to specific zones and recording appearance, overall health, soil moisture etc.

Additional activities

Using a plant press preserve a specimen of the plant discussed in the final report.

Research what plants grew near the school before European settlement. Is the environment around the school still the same? You can plant your garden with these species.