Year 4
Lesson 4
Being a watersaver at school
Unit 2

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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 life cycles. (ACSSU072) • Living things including plants and animals, depend on each other and the environment to survive. (ACSSU073) Science as a human endeavour • Science knowledge helps people to understand the effect of their actions. (ACSHE062) Science inquiry skills • Planning and conducting: Suggest ways to plan and conduct investigations to find answers to questions. (ACSIS065)
Geography	Geographical skills & understanding • Pose questions about place, space or environment and make some predictions about their answer. • Sort information and data and look for relationships or patterns, using maps and spatial technologies as appropriate.

Important questions

- Why is it important to save water?
- How are some plants adapted to save water?
- How do mulch and compost help to save water in a 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 the permanent water conservation measures before you water your garden.

Aspect: Aspect refers to the position of plants in relation to the sun and how much light plants will receive and at what time of the day. It is important that you know how much sun your garden receives (students can observe and record this data) and select your plants accordingly. Make sure your Watersaver plants are suitable for the aspect of your garden. Many Watersaver plants can tolerate long periods of sunlight; however exposure to strong afternoon light may not be suitable for all plants.

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.

Discuss how plants collect water and how it is transported throughout the plant. (Refer background information)

Ask the students to identify plants that are water efficient – why do they think these plants are watersavers?

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.

Investigate the plants in the school grounds, noting the type and number of water conservation adaptions if evident.

Also note or plot on a map where the plant is growing; what plants are growing nearby and, the aspect of the location using a map or compass.

Plants exhibiting watersaver adaptations should be identified; collecting leaf and seed samples will allow students to use handbooks or ICT tools to identify and record species.

Alternatively: if the school grounds have limited vegetation or is dominated by water hungry plants students should research local plants suitable for a watersaver garden.

Using the information collected and additional research, select a suitable site for a garden. Identify preparation requirements such as soil 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 provide 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).

Resource requirements

- Gardening tools
- Compass
- Blotting paper and materials for plant press

Additional activities

Make a plant press to preserve specimens; accompanying information 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).

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.