Let nature be your teacher

Connecting to nature in your school yard to facilitate student learning
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Introduction

“Come forth into the light of things, let nature be your teacher”

William Wordsworth (1770-1850)

Increasingly we are becoming aware of the importance of ensuring that young people grow up experiencing and learning about the natural world around them.

Learning about nature, how it works, what it provides and how we impact upon it, is essential knowledge that all young people should have.

Unfortunately not every school has access to a wild or bushland area to connect their students to nature. The number of schools that have both the available space and finances to create a natural area or nature play space is also limited.

Luckily nearly all schools have specialised areas in their yard that can provide opportunities to connect their students to nature. Frog ponds, native gardens, nest boxes, vegie patches, worm farms, and more are valuable and engaging spaces for students.

This resource will help you see the possibilities that may already exist in your school that will enable you to open your students’ eyes and minds to the wonders of nature whilst connecting hands on learning to the Australian Curriculum.
Learning

There are many learning opportunities for students who spend time in nature. Learning outdoors is not only a fun way to meet the Australian Curriculum, students also develop social capability and critical and creative thinking in preparation for their career and independent lives.

Benefits of learning outdoors

As a teacher you may have noticed how much students enjoy working outside of the classroom.

Experiences in natural environments can ignite a sense of awe and wonder and a child’s desire to learn more about the natural world.

Taking learning outside the classroom enables students to make connections with their local environment and local issues and actions which makes their education more meaningful.

Over time, students become familiar with their local area, developing a respect for and understanding of our Australian landscape.

Other benefits include;

- hands on learning
- building skills and capacity to undertake projects individually or in groups
- students developing an understanding of their world and environment
- an appreciation of the complexity and interconnectedness of our environment, and between humans and our environment
- the head, heart and hands concept; students contribute to protecting and enhancing our environment whilst learning
- students learning life-long skills such as growing food
- a strong connection with Aboriginal and Torres Strait Islander perspectives
- incorporating a best practice model for teaching.
Learning, loving, caring

Learning outdoors provides opportunities for students to understand lifecycles and how ecosystems work, the needs of living things, the positive and negative impacts we can collectively have through our behaviour, and to practice simply seeing what is in front of us.

Understanding and appreciating the natural world is important in developing a caring, empathetic and respectful connection to our environment. This includes exploring what equity and fairness for all species means; that all living things have rights and needs (food, water and shelter).

This is an opportunity to discuss what our responsibilities are towards others including the environment.

Sustainable lifestyles are about recognising that we live within natural systems and we need to live within their limits.

The lessons in the school yard and gardens can help students look at what they can do locally to address sustainability issues globally. It is important that young people have the skills, understanding and belief that they can do something to protect, preserve and enhance their local environment.

**Australian Curriculum**

Sustainability is not just a good idea; it is a cross-curriculum priority within the Australian Curriculum. Students learn through hands-on experiences how all life forms, including humans, are connected through ecosystems on which they depend for their wellbeing and survival. Students are encouraged to
use their gained understanding, skills and values of caring and respect to take actions designed to protect and improve our local environments.

Of the seven general capabilities, NRM Education resources particularly assist students to develop their numeracy, ICT capability, critical and creative thinking and ethical understanding.

Other learning areas NRM Education resources can be linked to are: Digital Technologies; English; Civics and Citizenship; and Visual Arts.

NRM Education encourages students to...

Think like a scientist:
- develop an understand of how living things, including plants and animals, depend on each other and the environment to survive
- develop a deeper understanding of living things; their life cycles, structured features and adaptations, and requirements for survival
- pose questions that can be tested scientifically
- predict what the results might be
- suggest how to improve the method to get more accurate results
- safely use tools and equipment to take measurements
- represent data in many ways
- identify patterns and trends.

Think like a geographer:
- explore the connections between the environment and people
- notice the differences in local environments
- pose questions, investigate and plan an inquiry
- collect data from primary and secondary sources
- record, represent and interpret data including maps
- draw conclusions based on evidence, information and data
- explore options of what we (individually and collectively) could do to improve and protect our local environments
- take action in response to what students learn.

Think like a mathematician:
- take measurements
- make calculations using common metric units
- interpret information in maps
- collect data and construct suitable data displays
- understand how different data methods can more clearly show patterns or trends more than others.
Linking sustainability actions with the Australian Curriculum

At All Saints Catholic Primary School, each year level is responsible for a sustainability project which is incorporated into learning. The school has mapped out how school projects link to Science, Geography, Maths and Religious Education for all year levels. For example, the Year 7s look after the chickens and incorporate the learning in maths and small business. Year 4 focuses on the frog pond, Year 3 and 6 worm farms and composting.

Every year level is provided with opportunities to engage with nature. Students are now generating ideas and learning opportunities and are the ones who drive the projects forward. This is a really great sign that what they are doing is working.

NRM Education resources

NRM Education has developed a suite of resources linked to the Australian Curriculum including teacher information packs, units of work, identification charts, fact sheets and more. These resources will be of particular interest to educators who want to integrate learning across subjects, learning areas and year levels. All the resources can be accessed at:

Role of the teacher

As a teacher you can help students tune in to their local environment. Often students need things to be pointed out to them for the first time; you can’t always see what you do not know. For example, what your feet might be stepping on.

Teachers can explicitly teach students habits when in a natural environment to increase their safety. Students then understand appropriate behaviour in a natural space and how this may differ from the playground.

A teacher will also ask more questions than give answers and is not an expert; but a co-learner.

Our natural environment lends itself to rich inquiry learning.
Sustainability

Sustainability is not just about doing the ‘green thing’, it is really about doing things in a way that can be sustained and considers the **economic**, **social** and **environmental** benefits of any decision we make. Being truly sustainably is very much about thinking and seeing all our actions through a filter that considers the wider consequences of our actions.

At the same time, there are some very tangible benefits of embracing sustainability in a school. Schools can **save money** through conserving water, selling produce and reducing the number of landfill bin pick-ups. Creating a beautiful natural outdoor environment to learn in is also a **social asset**. Many schools have developed **strong partnerships** with local businesses and community organisations by developing biodiversity spaces within the school grounds.

**Working together**

*If you want to go fast, go alone. If you want to go far, go together.*

African proverb

Creating a natural outdoor environment for learning is an ongoing process. NRM Education strongly encourages schools to consider creating a working group with representatives from staff, students, families and the community. This group can then share tasks, contribute diverse ideas and tap into networks.

Some ways you can involve families and communities are by:

- inviting them to be a part of a working group
- asking for their ideas in person or through a survey
- contributing information and photos to a sustainability vision
- asking for volunteers
- sharing their knowledge with classes on biodiversity
- fundraising
- seeking donations from your wish list
- inviting them to celebration events
- providing information about how they can do a similar sustainability project at home.

Supporting students to be involved in decision making, planning and taking action is a rich learning experience. It helps students become responsible citizens who are resilient and have the skills to recognise and solve local problems.
Some ways you can involve students:

- ask classes for their ideas
- participation in a working group
- contribution to the vision for the space
- researching the project e.g. frog pond
- making phone calls and finding out who can help
- constructing and planting
- creating artwork for the space
- organising a celebration event
- sharing what they learnt.

Involving students, family and community from the very beginning strengthens relationships and creates a culture of inclusivity.

**Strength of community support**

Sheidow Park School’s Sensory Nature Trail brought the play group, school and community together and developed a sense of co-ownership. In the school holidays a builder moved the bigger rocks and conducted excavations. Everything else was done by volunteers. The space was constructed in two weeks, with thirty odd volunteers attending working bees.

The group learnt new skills whilst constructing the space. “The success of the development of the space can largely be attributed to community links,” said Principal Jenny Engelhardt.

Play Group parent Debra Bradley said, “We had some really big dreams and initially thought that we couldn’t do it with a small budget but then we fortunately received donations and people volunteered their time. We were blown away by all that we actually did.”
NRM Education support

Sites receive support from NRM Education by registering online with the Australian Sustainable Schools Initiative SA (AuSSI-SA); it is free of charge. Join over 400 schools/preschools across the Adelaide and Mount Lofty Ranges.

Sign up today! To register with AuSSI-SA or for more information on NRM Education visit www.naturalresources.sa.gov.au/adelaidemtloftyranges/education/for-educators

NRM Education encourages schools to use a planning tool called a Site Environment Management Plan which can assist your site in:

- maintaining momentum with your project
- sharing tasks
- keeping a record of what you have already achieved
- sharing the value of these natural assets with others in the school and wider community.

NRM Education staff can also assist your site by providing:

- units of work and educational resources linked to your sustainability learning topics
- technical advice on setting up and maintaining on-ground sustainability initiatives
- support in selecting appropriate local native plants for your area
- local species ID charts
- loan equipment (e.g. nest box cameras, water bug nets and viewers, water testing kits)
- case studies on how other schools are working towards sustainability.

NRM School Action Grants of up to $2000 are available every year. Grant writing workshops are run to support you in writing your application.

NRM Education has a weekly e-newsletter that promotes new resources, community and school events, grants and school case studies. You can subscribe to ‘The weekly Digest’ here:

Outdoor learning spaces

Be inspired to create or more frequently utilise outdoor environments for teaching. NRM Education has specific resources to help you. Find out how other schools are already doing this by searching our case study database. Discover some great learning ideas you could use with your class this week.

Food gardens

Food gardens relate to many aspects of sustainability including local and global issues. Food gardens have particularly strong links to culture, wellbeing, science and sustainability. Plenty of links to learning!

NRM Education can assist your site develop a learning plan for your food garden so that food doesn’t go to waste, interest is maintained long term and all students get an opportunity to learn in the garden. Other resources include a fruit trees for schools guide, school food gardens fact sheet and a unit of work called Food for thought – A Year 7 investigation into how we can shop and eat more sustainably.

Learning ideas

English
- poetry
- picture books
- reading recipes and food labels
- language used in advertising of food
- guest speakers and interviews
- information reports on vegetables
- review a recipe

Geography
- seasonal and local produce
- weather
- who has access to food, who doesn’t and why
- food origins and history
- fair trade products
- cultural and historical practices for planting food e.g. moon planting
- how do natural disasters impact food production?

Arts
- mandalas
- weaving

Maths
- measuring and compare growth; counting, height and weighing
- selling produce
- cost versus value
- carbon footprint of food
- sorting and graphing
- planting space area and perimeter

Science
- pollination
- predators and pests
- predict how plants will grow in different conditions e.g. different soil, less or more water, less or more sunlight
Favourite place to be - the food garden

St Michael’s College dedicates time for students to be in the food garden, named Chol’s garden. Every Friday afternoon two year levels (buddy classes) are rostered to work in the garden. Students learn how to propagate seeds, plant seedlings, control pests organically, compost, harvest and cook.
Composting

Compost bins are a great way for students to learn first-hand about how organic matter changes and is recycled. Composting nourishes the garden and reduces the amount of waste going to landfill (which results in financial savings). Students take responsibility for where their waste goes. Schools use bokashi bins, worm farms, composting and chickens to recycle food scraps. Having chickens at the school has the added advantage of eggs, children learning to care for animals, and animals having a calming influence on people.

NRM Education has a fact sheet on different types of composting systems: composting, worm farms and bokashi.

Learning ideas

**English**
- writing stories
- recycling related words e.g. reuse, reduce, recycle
- debate why people should compost their scraps?

**Science**
- recycling
- changing matter
- cycling of resources
- experiments with temperature variance or pH levels

**Maths**
- creating graphs
- monitoring decomposition
**Butterfly gardens**

Butterflies enjoy the nectar of many flowering plants, however caterpillars only eat the leaves of specific plants. These plants are called host plants for the caterpillars.

NRM Education encourages schools to develop butterfly gardens by providing assistance in selecting local native plants and developing a Site Environment Management Plan - Action Plan.

The Action Plan sets out all the tasks involved, ways of connecting the project with student learning and how to involve the community. NRM Education also has a [butterfly ID chart](#), and when printed to A3 the butterflies are life size.

![Image of a person holding butterfly booklets surrounded by flowers]

**Learning ideas**

**English**
- research and write about butterflies
- write letters seeking support for the project

**Geography**
- migration
- photo point monitoring

**Arts**
- painting

**Maths**
- symmetry

**Science**
- host plants
- life cycles
- ecosystems
Frog ponds

Frogs are a good example of a bio-indicator. A bio-indicator is a living thing that show us if the environment is healthy or not. If the waterway is too polluted frogs are one of the first animals to leave. NRM Education has a Frog information pack, ID chart and a Frog pond taking action module to get your class started.

Learning ideas

English
- Compare how stories from different cultures represent or view frogs.
- Interpretive signage

Arts
- Mural
- Photography

Geography
- How can humans negatively and positively impact frogs
- Importance of waterways for people in the past

Science
- Bio indicators
- Life cycles
- What do frogs need?
- How have frogs evolved? How have frogs adapted to their environment?
Nature play spaces

There is growing evidence of the benefits of children spending time in nature, including unstructured play. Why not use the space during class time too?

NRM Education can provide tools for your school to develop a strong vision and purpose for a nature play space. We have tools for involving students, families and community throughout the development of a nature play space.

Nature space for all

Good Shepherd Lutheran School at Angaston is creating an exciting new nature space and walking trail out of what was formerly an unused oval.

NRM Education staff has run a staff and parent/caregiver workshop to brainstorm ideas for the space and will facilitate staff planning sessions looking at how to incorporate the nature space into curriculum. The school is using a Site Environment Management Plan to document progress and share roles and responsibilities.

The school is planning to create class Action Teams that will be involved in ongoing maintenance of the space. All these initiatives will ensure that the space becomes a valued place for community, learning, play and habitat for many years to come.

Learning ideas

English
- reading
- persuasive text
- oral presentation

Geography
- local history
- introduction of weed species and how they came to be in this country e.g. gorse, olives

Maths
- find patterns in nature e.g. spider webs, flower petals
- sort natural objects by weight or length
- collect data and graph results of number of living things
- look for shapes in nature
- measure time by shadows or sun dial
- observe angles in tree branches

Science
- how have plants adapted to their local environment?
- explore with clipboards, binoculars and magnifying glasses

Arts
- find natural objects that make noises and record them
- leaf and bark rubbings
- make ‘paint’ from natural objects e.g. crushing flowers
- sketching
- use nature as still life
- role playing
Nest boxes

Approximately one third of Australia’s terrestrial (land) mammals (like possums, dunnarts and quolls) use natural hollows. Hollows typically form in living trees that are more than 80 years. Many schools would be lucky to have one or two trees this old. Fortunately many animals are also happy to live in nest boxes.

NRM Education has two teaching resources that could be used with a class: Nest boxes and hollow habitat assessment packs and Looking at habitat biodiversity through birds learning sequence. NRM Education also loans out nest box cameras to schools within the Adelaide and Mount Lofty Ranges region.

Learning ideas

Geography
- observe changes in wildlife before and after nest boxes are installed
- map where nest boxes are located
- significance of cardinal direction

Science
- habitat
- predict how many nest boxes will be inhabited
- are similar Australian mammals e.g. possums found in other countries? Why do you think that is?

Maths
- measure wood when building nest boxes
Only two weeks for animals to settle in!

Seacliff Primary School students have been installing nest boxes within their school grounds and throughout the local community as part of an initiative between the Department of Planning, Transport and Infrastructure, the City of Holdfast Bay, FauNature, Natural Resources Adelaide and Mount Lofty Ranges and the school.

The aim of this Community Wildlife Project is to offset the loss of wildlife habitat caused by the removal of vegetation for the delivery of the Seaford Rail Revitalisation program.

Late in 2013 the students used NRM Education’s ‘Nest boxes and hollows habitat’ assessment pack to help them undertake vegetation surveys of their school grounds to determine which trees would be suitable for nesting boxes and what types of animals might use them.

The students then built and decorated 12 nest boxes to provide habitat for a wide variety of animals, including parrots, pardalotes, kookaburras and microbats. The boxes were installed in trees within the school grounds and surrounding streets, in close proximity to the rail corridor.

Within two weeks of installation rosellas had taken up residence in one of the boxes! Since that time many more birds are nesting in the boxes, including a pair of Rainbow Lorikeets that have hatched a clutch of eggs which the students continue to monitor.

To see this action live, the students borrowed one of NRM Education’s nest box cameras. These cameras allow the students to see inside the boxes in real time, and take photographs or videos without disturbing the animals too much.
Aboriginal traditional-use gardens

Many indigenous cultures have vast knowledge about how to use plants for food, weaving, tools, medicine and other cultural purposes.

An Aboriginal traditional-use garden is a great way to teach the cross-curriculum priority of Aboriginal and Torres Strait Islander histories and cultures.

NRM Education can assist your site with local native plant selection and recommend quality teaching resources.

Learning ideas

Science - indigenous people observe the change of seasons based on changes in plants
- parts of plants can be used for food, fibre and/or medicine
- select the best plant material for a certain function e.g. carrying water, making rope
- land management practices of indigenous people can help inform sustainable management of the environment

Geography - Aboriginal Dreamings that include native plants
- names and meanings given to native plants by indigenous people
- consider how indigenous people sustainably use resources such as plants
- compare and contrast how indigenous people can gather food with agricultural food production
- investigate the possibility of farming local native plants

Maths - use of fractions and sharing as a way of managing Country e.g. taking no more than half the eggs from a nest to protect future bird population
- collect data on production rates of bush foods e.g. how many quandongs are collected per tree

Art - mural inspired by indigenous art
- weaving
- carving
Sustain our scrub

Kilkenny Primary School has a bush area within the school called The Scrub. The Sustain Our Scrub student group has had working bees to reshape the paths, plant new seedlings and organised rocks around the wetland area. They identified habitats for wildlife within the space and talked to other students about what types of plants are important for sustaining The Scrub.

As a result of their observations and research, half of the space has been dedicated as a conservation area. Classes and the student group have researched native plants for a bush tucker garden. The year 5/6 and 6/7 classes researched the soil type and shared their plans with the student group. It was discovered that the plants the students had prior knowledge of were not always local or going to grow in the soil within The Scrub. As a result, the bush tucker garden beds have been incorporated into the existing food garden space so they get enough sunlight and the appropriate soil.

Students visited Provenance Nursery at Salisbury with the grounds person to select bush tucker species, and learn how to plant, weed and care for the new plants. Garden and Environmental Science lessons have been a great opportunity to explore insect life and plant needs, as well as growing and cooking bush tucker.

The Scrub continues to be used as a learning space for Maths, History, Geography and the Arts.

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