



Teesdale Primary School

Sustainability: Moving towards a whole school program



**Sustainability program developed by
staff at Teesdale Primary School**

**Case study
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Sustainability: a whole school approach

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Disclaimer

This report provides details of the sustainability program implemented by staff at Teesdale Primary School with the support of local community members and consultants. The report was developed through interviews with key staff and through the provision of staff-documented programs. While every effort has been made to ensure the accuracy of this report, any judgements as to the suitability of information for the client's purposes are the client's own responsibility. Transcend-Ability PTY LTD extends no warranties and assumes no responsibility as to the suitability of this information or for the consequences of its use.

Sustainability: a whole school approach

Introduction

The intention of this case study is to document elements of a whole school approach to sustainability. It describes recent developments to the school sustainability program and reflects on the school's achievements to-date.

It also provides a means of documenting the existing ideas and resources into one document.

Overview

One of the first things you notice about Teesdale Primary School, when you look around the school, is the setting. There has been significant planning and work planting out different areas of the school and not just for the purpose of beautification. The bird-attracting garden and the functional well designed vegetable garden, which covers an area more than the average family house block, is quite impressive.

A further look around the classrooms provides evidence of student action with student-designed signs to remind us to turn off lights, buckets in rooms to collect food scraps and a model of a solar powered car on display at the office entry.

What has the school achieved so far in its journey towards being sustainable and how was it achieved?

Funding

The *sustainability* program developed at Teesdale Primary School was partly funded through the Australian School Innovation in Science, Technology and Mathematics ASISTM project <http://www.asistm.edu.au/>

ASISTM funding was used for professional learning workshops, planning days and purchase of resources and equipment for student activities used in particular programs 'Tooled-up' and 'The dig it program'.

Teesdale Primary School is one of six schools participating as You Yangs Community Cluster in the ASISTM project coordinated by Meg Parker, at the time, the You Yangs Cluster Educator. Meg has provided valuable support and guidance to the teachers involved in this ASISTM cluster project.

Sustainability: a whole school approach

In late 2006 Teesdale Primary School was supported by Centre for Education and Research in Environmental Strategies (CERES), through ASISTM funding to develop a whole school approach to sustainability. An important part of the way forward was to recognise what was already occurring in the school and to build on these achievements, developing targets and associated actions in a strategic approach.

Anthony Mangelsdorf, CERES Regional Facilitator Sustainability Projects who worked with Teasdale staff, explained that a whole school approach was presented to curriculum development, with sustainability as a foundation. The approach is enquiry based, multi-sensory and VELs specific with targeted actions.

Central to the sustainability focus is the fundamental aim for students to connect with the natural environment through regular meaningful experiences in the outdoors doing a variety of tasks and learning activities across all subject areas. Usually the local environment provides the most meaningful and assessable setting.

Teachers planned to incorporate water as a key theme in developing their sustainability focussed curriculum. Later units of work would incorporate energy, waste and biodiversity. This case study briefly describes some of the activity that has led to the school being at this point in its journey towards being more sustainable.

The three main elements of the sustainability program that will be described in this case study include:

- sustainable garden and the dig it program
- tooled-up program
- water unit.

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Commencing the sustainable garden ...

There was a general school community feeling action was needed to redevelop the grounds. In past years the school had an operational vegetable garden however over time that deteriorated into a mere bare patch of ground.

Before major works began, survey data from the parent opinion survey indicated a decline in their level of satisfaction of the school grounds (from 88th percentile to 40th percentile).

To help guide the development of the school gardens and incorporate gardening into the school curriculum, an experienced horticulturist, Polly Musgrove was employed on a part-time basis, equivalent to a day per week.

To enable the project to achieve the vision, Polly created a garden design incorporating a bird attracting garden, the school vegetable garden and redevelopment of the sports field.

The principal promoted and marketed the vision referring to the design through a range of strategies which involved organised cooked breakfasts for parents, information sessions and through articles in the highly professional, school newsletter printed in colour. A local community bus was used to take interested parents to the Stephanie Alexander garden in Collingwood to inspire parents and help spread the word.

The school was also involved in community conservation projects and helped revegetate areas of the local creek which was in desperate need of attention. This voluntary work helped forge a relationship with the local Lions Club who in turn donated trees to plant in the school garden project. Every student planted at least one tree through this part of the project.

Initial works were made possible through a voluntary levy of \$20 per family and a range of successful funding submissions that included \$1,500 Healthy Schools grant and a local shire grant of \$1,500. While not large sums of money it provided sufficient funds to purchase mulch, plants and other equipment/materials to get particular sections of the plan started.

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According to Brent and Polly the first major working bee for the project was critical to any future success. The guiding principles for a successful working bee included:

- choose a significant area which is highly visible so school community immediately sees the results of the working bee (in this case the bird attracting garden at the front of the school was planted out)
- be realistic in what you are attempting and ensure it doesn't cost too much
- have everything organised to occur smoothly, mulch ready, equipment and plants available, bob cat to move the majority of the mulch thus not too demanding a workload
- organise for children of parents involved in the working bee to be supervised at school involved in appropriate activity such as art and craft
- provide hot food in this case a spit roast (donated by a local community member)
- promote the significance of the works in terms of the overall plan and the valued efforts of the parents and other local community members who were involved.

The first working bee was a success and more followed to maintain momentum, with particular works being targeted on a regular basis.

A computer drip system was installed to ensure the plants survived the first year of planting particularly given the drought conditions.

A parent's group was formed called the Garden Gurus who work in the garden completing general maintenance and working under Polly's guidance.

The Garden Gurus visit the nursery with Polly to purchase plants for the school at wholesale prices and in return for their labour, purchase their own plants for their own gardens. This helps extend the knowledge about increasing biodiversity in the local community.

Sustainability: a whole school approach

More recently a 20,000 litre rainwater storage tank was purchased by the school and installed by parents during a working bee, making use of a local parent who is a plumber. The water tank will provide sufficient water to the produce garden ensuring that the 'paddock to plate' program can be implemented.



Sustainability: a whole school approach

Tooled up ...

The 'Tooled up program' was an engineering type program where students learned to use appropriate tool in the design and production of products in response to a design brief.

A major achievement of students in the program was the participation in the 2006 Solar Boat Challenge competition held in Sydney. Students learned about circuits and the use of solar panels to generate electricity which linked in with the sustainability focus.

Two models were built by the students. Students used a shareware CAD program to mill the hull made from polystyrene. A local spray painter tested paints to ensure the correct type of paint was used on the hull that would not react to the polystyrene.

Students had to decide which four students would travel to Sydney and represent the school. \$1000 had to be raised to cover costs. The class raised the funds through local community fundraising.

A major part of the competition involved an oral presentation describing about how the model worked, how it was designed and built. Students were awarded a silver medal for their efforts.

The challenge has become an ongoing part of the curriculum with students being involved in the 2007 challenge.



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Dig it program ...



The *Dig it* program was the initial student program that involved student in gardening types activities. The program started as purely a gardening club during lunchtimes where students spent time tending to an area of garden. Over time it has evolved into a 45 minute a week, ongoing gardening program.

The *Dig it* program aimed to:

- Promote healthy eating through access to different varieties of student-grown fruit and vegetables
- Promote physical activity through gardening
- Develop an understanding of living things and how to grow and nature plants.



In the beginning of the program Polly was keen to show students the seasonal nature of planting crops; for example in summer snow peas and tomatoes are grown and in winter different vegetables are grown.

Before students were allowed to use any tools in the gardening program they had to gain their licence to use each of the tools by demonstrating safety knowledge and how to properly use the tool.

Students experienced observing a variety of seed types, planting seeds and watching them grow into seedlings and with care into plants that provided food to harvest.

Polly reflected that in the early days of the program students would often pick and taste the produce resulting in not a huge harvest at the end of the growing season.

The gardening experience tuned students into the drought as having limited water reduced the range of vegetables able to be grown. Students were involved in strategies to collect and reuse water for the plants in their care.

An outcome of the *Dig it* program is that Year 5-6 students coordinate and maintain the school composting and wormery program. They collect food scraps from each classroom and ensure the correct materials are added to the compost heap and wormery.

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Students involved in the composting program have direct involvement in reducing waste sent to landfill and using the by-products of compost and the liquid fertiliser (worm wee) to help grow vegetable plants and fruit trees. In turn any scraps from the produce end up in the compost heap and later return as compost to improve the soil condition. They begin to understand how the system operates.



As part of the vision for a sustainable school, a 45 minute-hour per week gardening program for each class was taken by Polly with the teacher also involved. Polly explained that it needed to be more than just spending an hour gardening. Students needed to be involved in gardening-related activities to extend their knowledge.



The types of activities included:

- Testing soil samples making a ribbon, ball to determine soil types such as clay, loam or sandy soils and compare with typical soil samples in the school grounds
- Scientific soil tests on dry soils that have become water repellent (hydrophobic). This testing can be student designed and include investigating the addition of compost, wetting agent or manually breaking up the soil. Students can compare seeds grown in the different soils to measure the effect on growth.
- Understand how plants are named and use the correct nomenclature (the formal scientific system of naming specific species)
- Setting the design problem where seedlings in punnets often get damaged when teasing apart and planting. The task was set to design paper-planting pots to propagate and plant seedlings.
- Students were shown seed planting techniques for example using a sand line to align the row of seedling. Discussing depth and spacing to ensure the seeds were planted at an appropriate depth and suitable spacing was followed.
- Students grew seedlings for the garden and with left overs sold to the community through seedling sales at the school with funds raised used to support the program.

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- Learning about living with insects which are often referred to as pests. Learning the value of invertebrates such as worms and other insects. Developing an understanding of biodiversity through the vegetable patch. Who eats who or what?
- Learning about increasing bio-diversity through the use of heritage seeds and fruit trees. Promote to community and provide seedlings for community sale to continue the diversity.
- Students being involved in designing their own garden beds selecting the types of seedlings and how to plant them out.



Through these activities students developed their scientific literacy and literacy specifically related to gardening. There is potential to further link to curriculum within the classroom to carry out further research and communicate/report on their experiences.

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Polly identified several challenges with which she had to contend:

- Planning gardening activities in times of drought added to the level of difficulty in what was feasible
- Polly originally planned different activities for each of the year levels however this became resource intensive and difficult to organise. Polly decided to run similar activities with each class and adjusted to suit the level
- Polly was a trained in adult learning, working with children presented its own challenges of getting the level and complexity of tasks appropriate.
- Successfully working in with teacher plans to embed the gardening program with other areas of the curriculum.

Ideas for future activities:

Use of a digital microscope

- The digital microscope could be used to augment the program and provide students with a closer, magnified view of plants and the small invertebrates that are found in and around the gardens.
- The digital microscope can be used as a teaching tool, showing an extreme close up of an object or animal eg an aphid and asking students to guess what it is, then zooming to a reduced magnification to view the object or animal.
- It enables students to capture an image/video of the item and use it in some form of literacy product.

For further information refer to the websites:

http://digiblue.com/digital_blue/gx5.html

www.microscopy-uk.org.uk/mag/artdec04/dwqx5.html

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Water unit planner

The following planner is a guide to the activities and tasks associated with the Year 5-6 *water unit* conducted over two terms. The planner is a guide only and it is expected that learning experiences will be modified as a result of student needs and interests, time constraints and other resourcing issues that may arise.

Victorian Essential Learning Standards

A multi-domain approach to curriculum planning was used, to develop the *water unit*. The *water unit* incorporates the following strands and domains:

Physical, Personal and Social Learning

- Personal Learning
- Civics and Citizenship

Discipline-based learning

- English
- Science
- Mathematics
- The Humanities/Geography

Interdisciplinary Learning

- Communication
- Thinking Processes
- Information and Communications Technology (ICT)

Term 1

Weeks 1-3	<p>Critical questions: Pose critical questions to introduce the unit and guide class discussion.</p> <ul style="list-style-type: none"> ○ How can weather affect my health and safety? ○ Look at our changing landscape—What are the effects of land clearing? <p>What do we do when we don't have access to water? Turn off the water at school (without telling students). What is their reaction? How are they affected? Generate solutions to the problem of not having water.</p> <p>Create a mind map related to 'Drought'.</p> <p>Students view teacher-developed video introducing the problem of the dry local creek bed. Brainstorm ideas and list student's solutions. Visit local creek.</p> <p>Adopt a tree/bush to monitor.</p>
Weeks 4-6	<p>Continue discussions of super-hero video related to dry creek bed issue.</p> <p>Develop a shared story 'Tiddalik' at creek.</p> <p>Generate solutions to water storage for action at school and at home. How can we reduce our water usage and reuse the water for other purposes.</p> <p>Implement water testing at creek—salinity, turbidity, temperature</p>

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	<p>Discuss water quality, solutions and repercussions.</p> <p>Conduct habitat surveys at the creek.</p>
Weeks 7-9	<p>Local family volunteered to fly over local creek from source to where it joined the Barwon river at Inverleigh and took many digital photographs.</p> <p>View the images using a data projector as a whole class discussion. Pose questions such as:</p> <p>Where does our creek get water from?</p> <p>Where does this water go? How is this important?</p> <p>What is the state of our creek's health? Does the creek health mirror our own health?</p> <p>Refer to maps of our catchment area. Where does Teesdale's water collect initially? Why?</p> <p>Compare our catchment area to Victoria's other major catchments. Discuss storage levels, shortages etc</p> <p>Introduce research activity.</p>

Term 2

Weeks 1-3	<p>Major focus: River project include global perspective and the importance of rivers.</p> <p>Water cycle</p> <p>Create a mind map related to 'Drought'.</p> <p>'Get connected' brainstorm the ways we use water. Just how vital is water?</p> <p>What content of our bodies is water?</p>
Weeks 4-5	<p>Pie graph Look at our domestic consumption. View water bills brought from home. Pictographs of water usage by individual families. Discuss economies to be made.</p> <p>River project to be completed.</p> <p>Excursion: Trace Native Hut creek to Barwon. Test water at various points</p>
Weeks 6-8	<p>Discuss Government approaches to issues concerning water such as desalination and recycling. Investigate a specific strategy in detail. Prepare a debate ie Should we have a desalination plant?</p> <p>Continue visits to Native Hut creek.</p> <p>Which parts of society use the most water? Why?</p> <p>What is the Government approach to them? Are they affected by restrictions?</p> <p>Discuss and investigate innovative solutions ie Toowoomba referendum</p>
Weeks 9-11	<p>Students produce a PowerPoint presentation showing two sides of the debate.</p> <p>Investigate current issues eg Murray Darling. Compare to other river systems globally. Use river projects for the global perspective. Who has access to fresh water? Is this a problem? Can we do anything about this?</p> <p>Will changes we make have global consequences?</p>

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Links to PoLT

The *water unit* has direct links the Department's Principles of Learning and Teaching (PoLT).

1. The learning environment is supportive and productive.
2. The learning environment promotes independence, interdependence and self-motivation.
3. Students' needs, backgrounds, perspectives and interests are reflected in the learning program.
4. Students are challenged and supported to develop deep levels of thinking and application.
5. Assessment practices are an integral part of learning and teaching.
6. Learning connects strongly with communities and practice beyond the classroom.

Program successes

Beyond the classroom (links to PoLT Principle 6)

An integral part of the *water unit* was to involve students in experiences beyond the classroom. This was achieved through:

- excursions to local environment supported by experts
- visits by experts and parents to share their expertise
- connect their learning with their home environment
- promoting their learning beyond their classroom to other school students, the principal, staff, parents and the broader community through school newsletter.

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Opportunities

Local creek offered an authentic context for learning about local environmental issues and how these issues relate to students' own actions in relation to water use.

The school garden developed provided a focus for community. The outcome could not have been achieved without the support and generosity of parents and local community.

The school produce garden provides significant opportunity to provide authentic learning experiences that are followed up in the classroom.

Conclusion

Teesdale has a fully operational produce garden and their students are involved in a weekly gardening program. The staff has been supported by CERES to embed sustainability as part of their curriculum with water being a key theme covered to-date.

The *'Dig it'* program is evidence that starting small and being realistic has its benefits. The program was useful in developing a level of enthusiasm within students and providing them with knowledge related to not only gardening but their own health and well being.

It enabled the school to begin to develop the required gardening infrastructure over a manageable period of time, this included fully operational garden beds, an area for propagation, composting and wormery and water tanks.

As a result the school was in a position to be able to successfully apply for funding through the Stephanie Alexander Kitchen Garden Foundation.

In 2008 Teesdale will be preparing the produce into meals using a purpose built kitchen area as part of the Stephanie Alexander Kitchen Garden program.