SCHOOL AND COMMUNITY COOPERATIVE LANDCARE PROJECTS

BEST PRACTICE MANUAL

NATIONAL LANDCARE PROGRAM

PRIMARY INDUSTRIES AND RESOURCES SA

SCHOOL AND COMMUNITY COOPERATIVE LANDCARE PROJECTS

BEST PRACTICE MANUAL

Sustainable Resources Group
Primary Industries and Resources
South Australia

PRIMARY INDUSTRIES AND RESOURCES SA

DEPARTMENT OF EDUCATION TRAINING AND EMPLOYMENT

Natural Heritage Trust
Helping Communities Helping Australia

Sustainable Resources Group
Primary Industries and Resources South Australia
Soil and Water Environs Centre, Gate 4, Hartley Grove, Urrbrae
GPO Box 1671, Adelaide SA 5001
Phone National (08) 8303 9522
International +61 8 8303 9522
Fax National (08) 8303 9555
International +61 8 8303 9555
Web site www.pir.sa.gov.au

Disclaimer

Neither PIRSA Sustainable Resources Group or any of its servants and agents will have any liability in any way arising from information or advice that is contained in this publication. This publication is intended as a guide only.

Bibliographic reference
PIRSA Sustainable Resources Group, 2000. *School and community cooperative landcare projects: best practice manual.* Primary Industries and Resources South Australia.

National Library of Australia Cataloguing-in-Publication entry:
School and community cooperative landcare projects : best practice manual.

Bibliography.
ISBN 0 7308 0286 8.

1. Sustainable agriculture - South Australia - Planning. 2. Sustainable agriculture - South Australia - Citizen participation. 3. Sustainable agriculture - South Australia - Case studies. 4. Land use, Rural - South Australia. I. Primary Industries and Resources SA. Sustainable Resources Group.

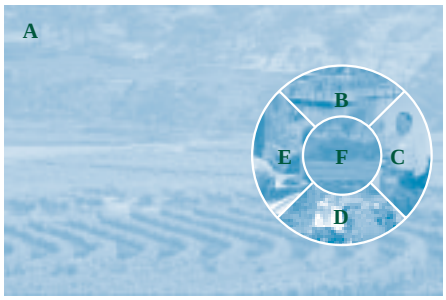
630.2745099423

For copies of this publication please contact:
Customer Services
Primary Industries and Resources South Australia
101 Grenfell Street, Adelaide
GPO Box 1671, Adelaide SA 5001
Phone (08) 8463 3000
Fax (08) 8204 1880

Developed and written by Jacqui Hunter and Deborah Bogenhuber, hunter gatherer designs.

Project management and critique by Rob Wallace and Andrew Johnson, PIRSA.

Edited and designed by Publications and Displays Branch, PIRSA.
Printed by Open Book Publishers, Adelaide.
Printed March 2000.



Cover photos

A,F Grape vines and shelter belt, southeast of Clare. (Courtesy SA Tourist Commission; photo 043547)

B Urrbrae wetland. (Photo 047322)

C Presenting an overview on environmental education. (Photo 047323)

D Students recording environmental data. (Photo 047324)

E Students looking for macro-invertebrates. (Photo 047325)

FOREWORD

Primary Industries and Resources South Australia (PIRSA) and the Department of Education Training and Employment (DETE) have been involved in a number of cooperative Natural Heritage Trust funded programs over the last decade. These have provided complementary outcomes in relation to sustainable land management and environmental protection for PIRSA, and curriculum-based environmental education (EE) programs for DETE.

It is important to involve younger generations in practical, project-based EE programs so that they have a good knowledge of environmental issues and take on ownership of them. Participation in practical projects in people's own environment promotes a greater understanding of the practicality of issues, as well as encouraging an ongoing community and environmental ethic.

This manual outlines a process to help schools and communities to work together on projects. It also provides examples for schools beginning their own programs to see how a number of schools throughout the State have worked successfully with communities over an extended period of time. The benefits of school and community groups working together on, and taking ownership of, environmental issues is important at a local and national level as we work as a nation, towards a sustainable future for all Australians.

We encourage people to use this manual to assist themselves, their school and / or community to come together to tackle locally important land and water management issues.


045907


047321

The Hon. Rob Kerin MP
Deputy Premier
Minister for Primary Industries and Resources
Minister for Regional Development

The Hon. Malcolm Buckby MP
Minister For Education and Children's Services

CONTENTS

CONTENTS

PREFACE

PIRSA and DETE cooperative Natural Heritage Trust funded programs started with the Kids for Landcare Programs which focused on material-based learning. While this approach had initial success it was found that the materials were often misplaced or left on the shelf after a couple of years. After evaluation to ascertain schools' needs, the Landcare in the Classroom Program was trialled. This program worked with key teachers to provide technical land management and curriculum information. The Landcare Focus Schools' Program evolved the process further, working intensively with key teachers and wider staff in schools to facilitate the adoption of landcare as part of their teaching programs. The outcomes were:

- The integration of landcare-based EE programs into schools through professional development sessions that led to the establishment of curriculum-based cross-school programs with a sequence to learning, units of work, documentation of roles and responsibilities, and encouragement to become involved in practical projects.
- *Sustaining environmental education: examples of school based planning* — a process-based manual made available to schools across the State to help them to plan their own programs within schools.
- The formation of the Environment and Landcare Education Network (ELEN) — a networking group of schools across the State with expertise in sustainable land management based EE.

The National Landcare Program, as part of the Natural Heritage Trust, has moved from demonstrating best practice to encouraging widespread on-ground action through practical, community-based projects. Consequently a number of schools have become actively involved with community groups, implementing and managing a wide range of projects. Some of the projects have received State and / or national recognition through State Landcare, Keep Australia Beautiful, Keep South Australia Beautiful (KESAB), Australasian Urban and Regional Information Systems Association and Greening Australia Awards.

A range of cooperative projects are reviewed herein and the relationships between schools and their wider communities are examined. The information is intended to help schools and communities to work successfully together on projects.

ACKNOWLEDGMENTS

This publication contains the contributions of a number of schools, organisations and individuals who have willingly assisted the writers and project managers. Thanks are due to Deidre Knight, Paul Moran (PIRSA), Paul Anderson, Kevin Smith (Bookmark Biosphere Trust), the Australian Association for Environmental Education (SA Chapter) and Jeff Hunter.

We thank the following teachers from participating schools who assisted with the review by coordinating community responses, arranging site visits and sharing their school's journey: Jan Fitzgerald, *Ardtornish Primary School*; Mike Thurston and Graeme Hunt, *Black Forest Primary School*; Sue Keane, *Elliston Area School;* Rob Warnest, *Gladstone High School*; Neil Thelning, *Golden Grove Primary School;* Diana Wiseman and Tim Both, *Kalangadoo Primary School;* Rebecca Holland, Nadine Garrard and Colin Murdoch, *Leigh Creek Area School;* Chris Bayly, *Lucindale Area School*; Ian Walton, *Murray Bridge High School;* Michelle Hawthorne, *Port Vincent Primary School*; Chris Harvey, *Raukkan Aboriginal Primary School;* Tim Hoile, *Star of the Sea Primary School;* Donna Miller, *Stradbroke Primary and Junior Primary School;* Cath Caon and Allin Hodson, *Urrbrae Agricultural High School.* A number of these schools were involved in the Landcare Focus Schools' Program and the Landcare in the Classroom Program.

We would also like to thank the many people who completed questionnaires and / or were interviewed, both on visits and over the phone or by email. These include principals and other school staff, students and members of the community.

Editing was carried out by John Drexel and Jacque Hibburt (PIRSA). The publication was designed and desktop published by Ralph Barnes (PIRSA).

INTRODUCTION

This manual is divided into three sections (Fig. 1):

- Part A is a process-based section on how to plan and establish practical projects in partnership with others.
- Examples of how schools have established and maintained successful ongoing partnerships with their communities are described in the case studies presented in Part B.
- An insight to opportunities, support and resources for schools with an interest in sustainable land management activities is provided in Part C.

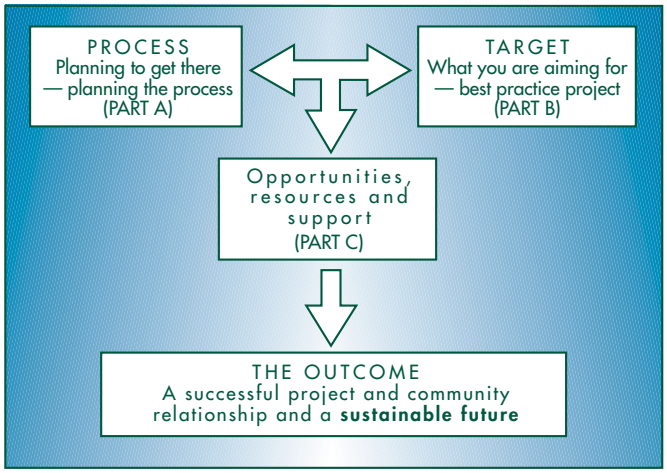


Figure 1 How to use this manual

A strategic approach to cooperative involvement in projects between schools and communities is encouraged in Part A. Processes and techniques are provided to use when planning and implementing successful projects. A vision and outcomes can be set for a project, but they can only be attained through a series of achievable steps. Part A provides a guide to planning and achieving these steps along the way.

Planning for long-term success of projects is also discussed. While the school programs outlined herein are successful, many other schools' programs have succeeded and then faded away. The enthusiasm of individual teachers and principals and their ongoing presence in a school particularly affect the long-term success.

It is worth reviewing the progress of a project periodically and referring back to the manual to refocus and assess whether any changes are needed in the approach.

There is no sure route to success, as many of the teachers involved in the case studies (Part B) can attest. These examples of successful ongoing programs between schools and communities are included to provide detail of what can be achieved and to offer an insight on how various issues can be approached. Through this insight it is hoped schools will be provided with a variety of approaches to solving problems.

> Wind is an issue at the school site...two propagating tunnels have blown away!...all the more reason to get more trees in the ground. (Raukkan Aboriginal Primary School, 1999.)

Many of these best practice examples are the culmination of five to ten years of work by schools and their communities in landcare and other environmental management programs. Schools that are beginning programs should not expect to 'conquer mountains' in the first couple of years, but should work on achievable targets. The manual will help groups to plan to accomplish milestones along the way, so there is a sense of regular achievement and reward.

> Work in the reserve began as the little thing from which BIG things grew (and are still growing). (Ardtornish Primary School, 1999.)

Part C contains a list of opportunities (programs, awards, sources of funding) as well as organisations that provide resources and support for schools with an EE focus.

> Life is real and learning is lifelong. Involving students in their community and undertaking projects that involve reasoning, decision making, cooperation, risk and reward builds the value of self and adds to the spirit of the community. (Murray Bridge High School Philosophy, 1998.)

PART A
PROCESS FOR ACHIEVING SUCCESS

Part A identifies five major stages within a project (Fig. 2). These stages are part of an ever-changing whole, and are dynamic and overlapping. Regardless of how far a project has progressed it is vital to consider all stages. The process begins with identifying where you want to be in the future — your vision. It leads on through identifying a project that fits your vision and is appropriate for your circumstances, the planning and implementation stages, and monitoring and evaluation. By working through this process and focusing on your vision, the long-term goals can be achieved.

Figure 2 The five stages of project management

1 IDENTIFY VISION AND LONG-TERM GOALS

1.1 Identify vision

Your vision is central to your project. It provides a focus for everyone involved and helps people to work together for a common cause.

Creating a new vision represents change. In any process of change it is important that people know:

- what they are changing
- why they want change
- who will be affected by the change
- what they want to change things to.

Involving all key representatives in defining a clear statement of purpose and creating a shared vision will ensure their participation in on-ground projects.

Involve all key representatives

? Who are the various groups involved in the school?

? Who are the various groups who could potentially be involved with the school?

Define a clear statement of purpose

? What is the school's purpose?

? What is the community's purpose?

These statements should reflect, in a few words, what your group formed to do.

Create a shared vision

? How does the group want its local environment to be in 10 years time?

? How does the group want its local environment to be in 50 years time?

Ideas on identifying a vision as a group

When a group forms for a common purpose, it is essential that they also have a common direction. The ideas discussed following are designed to lead a group toward identifying a shared vision. The group may wish to use one of these methods or come up with its own — it is important to choose the method most appropriate for your group and tailor it to suit your situation.

The following story after Savory (1999) illustrates the effectiveness of identifying individual visions for the future and combining these to create a shared vision.

A meeting was called to address a conflict that had been brewing for some time between managers of a wildlife reserve and people from the local community who shared use of the land. The facilitator saw the identification of a shared vision as a possible catalyst for resolving this conflict. Following some initial hostility and unwillingness to participate, people at the meeting agreed to go away for 15 minutes to write down how they wanted their

GUIDED VISUALISATION EXERCISE

This exercise requires a reasonable level of confidence in facilitation and trust within the group.

Step 1. Creative visualisation is a powerful tool to help people expand their current thoughts and ideas about how things could be. It should be conducted somewhere free from distractions. It is useful for the presenter to write a script for the exercise that is relevant to the group. Using local references helps people to visualise.

- Preparation — the presenter asks everyone to sit comfortably, relax and close their eyes. Focus on breathing for a few moments, being aware of breathing in and out. Listen to the sounds around, then focus back on breathing.
- Lead the group carefully on a journey in time to imagine its local area in the future (say 50 years time). What would they see, hear, smell, and feel? Allow time for everyone to create and experience their own images and concepts.
- Gradually lead the group back to the room they are now in, asking everyone to slowly open their eyes and breathe deeply for a few moments.

Step 2.

- Ask people to write their thoughts on small pieces of paper as concise statements.
- Ask each person to share their vision statement one at a time. Keep moving around the group until everyone has finished. This is the time for clarification only, not discussion — all statements are accepted by the group.
- In groups of three to four, work together to combine and group similar individual vision statements. This helps to bring together the many ideas, and highlights similarities and differences.
- Each group then reads its combined statement to the whole group. Once discussed, the combined statements can be formally written as the school's or community's vision statement.

environment to be in 100 years. When they returned, the individual visions were called out and written as a list for all to see. Not too surprisingly you couldn't distinguish the comments of a farmer, or local business owner from those of the reserve staff. They apparently all wanted the same things.

While this story is based around a conflict, it highlights an example of a non-threatening process that could be used by a group in any situation to identify a shared vision.

1.2 Identify goals

? Does being involved in an on-ground project fit in with the school's or community's vision?

? Will involvement in a project lead towards or away from where the school or community wants to be in the future?

Reasons to be involved in an on-ground environmental project

On-ground environmental projects can be a lot of work. Some of the reasons why schools and communities have become involved are outlined below.

Schools

- to improve the quality of education for students
- to improve the local environment
- to enhance their image in the community
- to create rewarding partnerships with the community
- to make EE programs meaningful and relevant
- to 'walk their talk' (modelling environmental best practice).

Major benefits for students include:

- increased learning, skills and confidence
- increased opportunities (e.g. leadership, media contact, decision making)
- a sense of ownership of their local environment
- the school has a greater sense of purpose
- seeing the results of their work.

'Students learn best when they are actively involved and interested. Working and learning in, about and for the environment can enrich educational experiences.'

Major benefits for staff include:

- improvements in student behaviour, attitude and enthusiasm for learning
- improved professional working environment (increased challenges and opportunities).

Communities

- to assist students in their learning
- to promote students' work
- to improve the local environment
- to learn and gain expertise from students, teachers and experts
- to gain kudos for their group or organisation
- to follow personal interest in the environment or in the projects
- to develop friendships.

Students participating in environmental activities: sowing seeds (left), recording data (right) and looking for macro-invertebrates (centre).

2 IDENTIFY A PROJECT

The following steps (2.1–2.3) outline the first stages of planning to identify a project appropriate for your school's or community's situation and achievable within their means. Usually a small group of people will come together with an idea for an environmental project. This group, known as a 'pilot group', can be as small as two people, and may form the basis of the management team (see Stage 3). Ideally the pilot group will undertake the following steps together.

2.1 Pilot group identifies a project(s)

Whether you have chosen a project or 'it has chosen you', it is important that the project is relevant to your group's area and within its capabilities. Ideas for environmental projects often evolve out of recognition of a problem or issue in the local environment that needs to be addressed.

- ? What are the local environmental issues?
- ? What is known about them?
- ? What courses of action can be taken to address them?
- ? Is any action already being taken?

Brainstorming.

Examples of school and community projects

- revegetation or habitat restoration and creation
- reintroduction of native animals
- wetland construction
- propagation, seed collecting
- catchment care
- environmental monitoring (e.g. Wormwatch, Saltwatch, Waterwatch)
- educating others about the environment (e.g. establishing Environmental Learning Centres)
- school grounds development (e.g. linking school grounds to the local environment, 'Learnscaping' school grounds)
- pest animal and plant removal (e.g. European carp, boxthorn)
- ecotourism (e.g. developing signposted walking trails)
- monitoring of habitat.

2.2 Determine if the project is the 'right' one

The decision pathway illustrated in Figure 3 is designed to lead your group through a simple process to identify in the early stages, whether to begin planning the chosen project, or whether it needs more thought and modification. Each part of the pathway is expanded in the text.

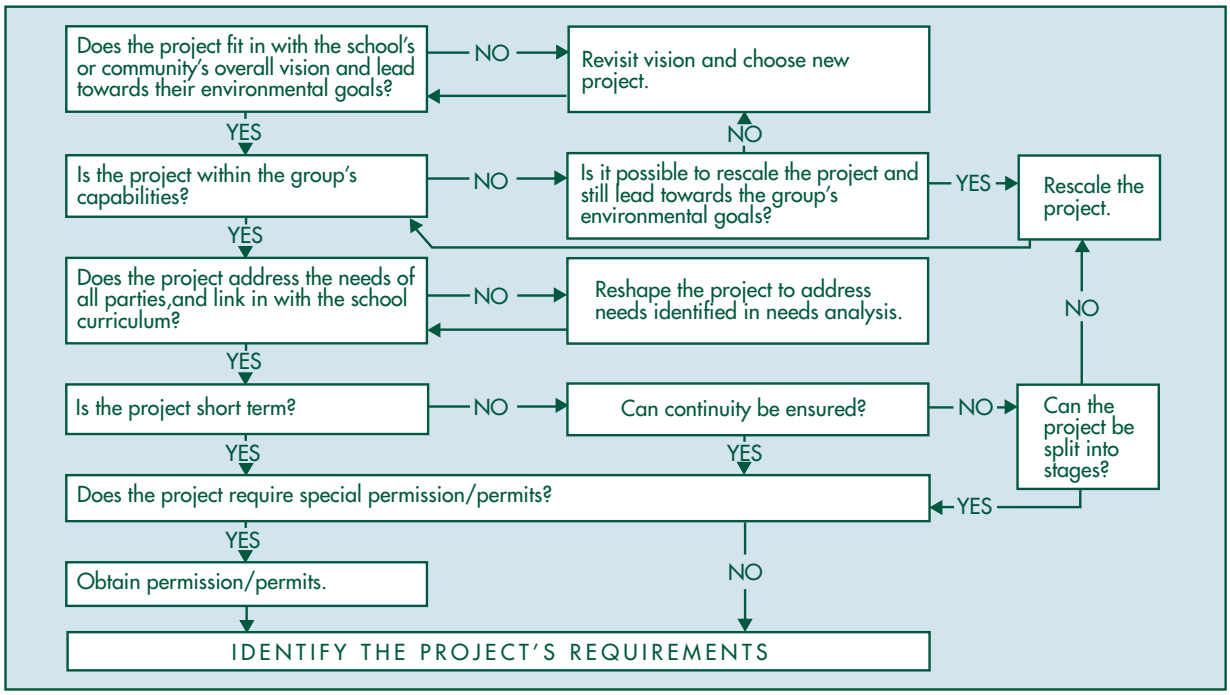


Figure 3 Decision pathway to determine if the project is the 'right' one

Does the project fit in with the school's or community's overall vision and lead towards their environmental goals?

Identify a shared vision (see Stage 1).

? Will the outcomes of the proposed project lead your group towards its environmental goals?

Is the project within the group's capabilities?

Design the scale of the project according to what can be managed. It is better to keep it small and simple to guarantee success, than take on too much and risk it becoming neglected.

Does the project address the needs of all parties, and link in with the school curriculum?

? Who is interested in being involved in the project?

? What are the needs of the groups involved?

? Are there trends in the long-term needs of these groups?

? How does the project address learning objectives?

Conduct a 'needs analysis'. Identify the key groups involved in the project and list their needs (Table 1). Think of specific ways that the needs you have identified can be addressed by the project.

Table 1. Example of a needs analysis of a school or community landcare project

SCHOOL NEEDS		COMMUNITY NEEDS		ENVIRONMENT NEEDS
Staff	**Students**	**Parents**	**Local council**	
Student learning outcomes.	Relevant, meaningful, hands-on work.	Student learning outcomes.	An improved environment.	Birds: • perches to roost • clean water
A positive image.	Caring, understanding teachers who listen.	A positive image of the school.	A positive image in the community.	Plants: • sunlight • clean water • healthy soil
Increased work opportunities for students.	Recognition of achievements and efforts by everyone.	Increased work opportunities for students.	A functioning, healthy local environment.	Soil: • vegetation cover and plant roots for stabilisation
Behaviour management strategies: • opportunity to work alongside students, to understand their point of view.	Social time with other students and adults: • fun and laughter • opportunity to build self-esteem and confidence.	Behaviour management strategies.	An ethos of care and responsibility in the community.	Insects: • food (plants, other insects, debris) • habitat.

HINT

Opt for the simplest, cheapest project that will give the best result for the shortest period of high labour input. This builds momentum and confidence for the rest of the project or future projects.

Is the project short term?

Often schools and communities start off with short-term projects. It is usually better to start small (but think big!). Think about the possible projects that could evolve from your initial project, and whether they will also meet the group's needs. As confidence and expertise develop over time, larger scale projects are more achievable.

Long-term projects can be more effectively managed when divided into distinct stages, e.g. school terms or individual self contained activities.


047328

Trash rack at Urrbrae Agricultural High School.

Does the project require special permission or permits?

? Does the project site belong to someone else?

? Will the project involve collecting seed or animals?

You may need to contact the local council, private landholders, the Department for Environment and Heritage (DEH) Permits section, or other agencies. Find out who is responsible well in advance in case the process takes time.

2.3 Identify the project's requirements

Once you have identified the 'right' project, the level and types of support required to achieve it can be assessed. The decision pathway illustrated in Figure 4 is designed to lead your group through a simple process to give a clear indication in the early stages of whether the group is on the right track. Each part of the pathway is expanded in the text.

Historical ruin, Kids for Landcare Outdoor Classroom, Greenwith.

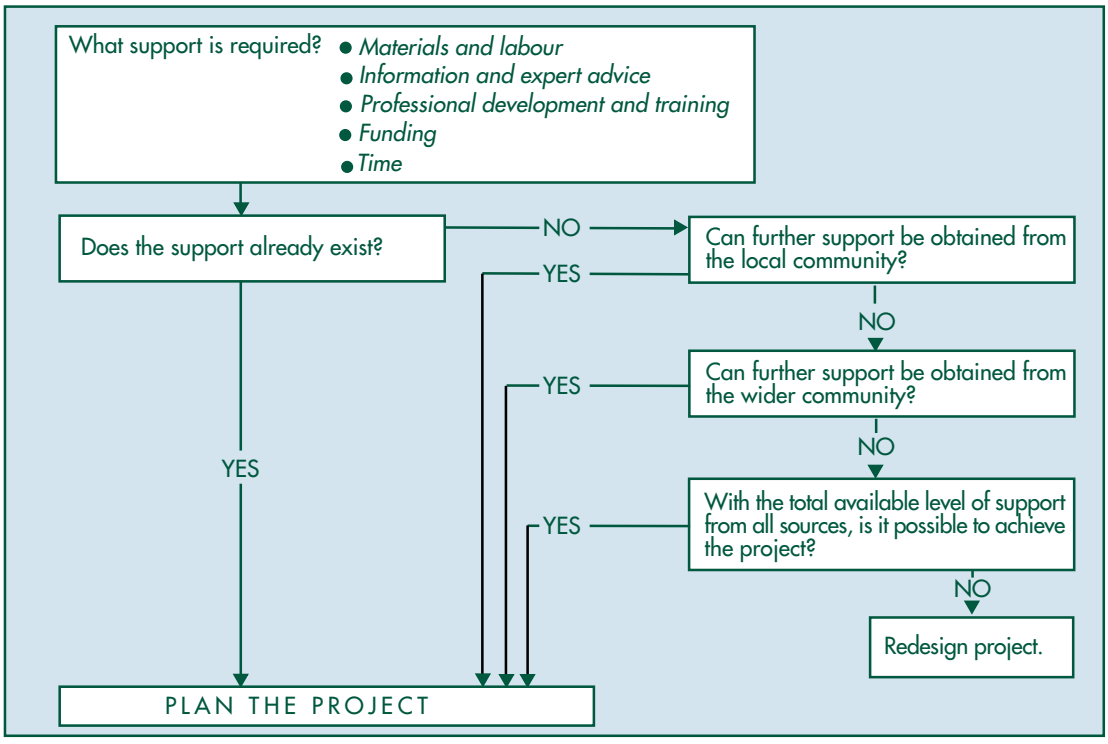


Figure 4 Decision pathway to identify project requirements

What support is required for the project?

Make a check list of the support required and identify:

- what is needed for staff, students and community members and groups
- where support can be obtained
- alternative forms and sources of support.

The following questions provide a starting point for this process.

Materials and labour

- ? Will the project require specialised and / or expensive equipment?
- ? Will the project demand high labour input?
- ? Will the project require skilled labour?

Information and expert advice

- ? Will expert advice be required?
- ? What needs to be found out?
- ? Who can be asked?
- ? What can be offered in return?
- ? Will payment be required?

Professional development and training

- ? What support will teachers, students and community members and groups need?
- ? What knowledge or professional development will teachers need to facilitate student learning outcomes?

Funding

- ? What financial support is required?
- ? Can the project be self-financed or will funding need to be sought?
- ? What possible funding sources are available?

Time

- ? How much time is required to carry out the project?
- ? How much time is available to carry out the project?

Planning a project.

Presentation on implementing an environmental education program.

HINT

Plan the scale of the project to suit the amount of time available. Remember to allow time for the unexpected.

Does the support already exist?

Invite members of the school and community to identify the existing support and resources available for the project.

Can further support be obtained from the local community?

Researching the local community for sources of support will strengthen and expand your group's network. Potential sources include:

- parents and siblings
- local libraries
- museums
- long-term residents
- natural history groups
- historical societies
- government agencies
- councils
- nurseries
- environment groups
- local service clubs.

Can further support be obtained from the wider community?

The wider community includes:

- State Government agencies
- Federal Government agencies
- international organisations
- institutions
- private businesses.

Refer to Part C for further sources.

Key parties involved with schools in the case studies in Part B include:

- Monarto and Adelaide Zoos
- Defence SA
- local government
- The University of Adelaide
- South Australian Cooperative Bulk Handling (SACBH)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Catchment Water Management Boards
- PIRSA

3 PLAN THE PROJECT

A project's planning process must be thorough for implementation to run smoothly. The decision pathway illustrated in Figure 5 includes, at a general level, all aspects of project management. Consideration of these will ensure that you cover all contingencies. Each step is expanded in the text.

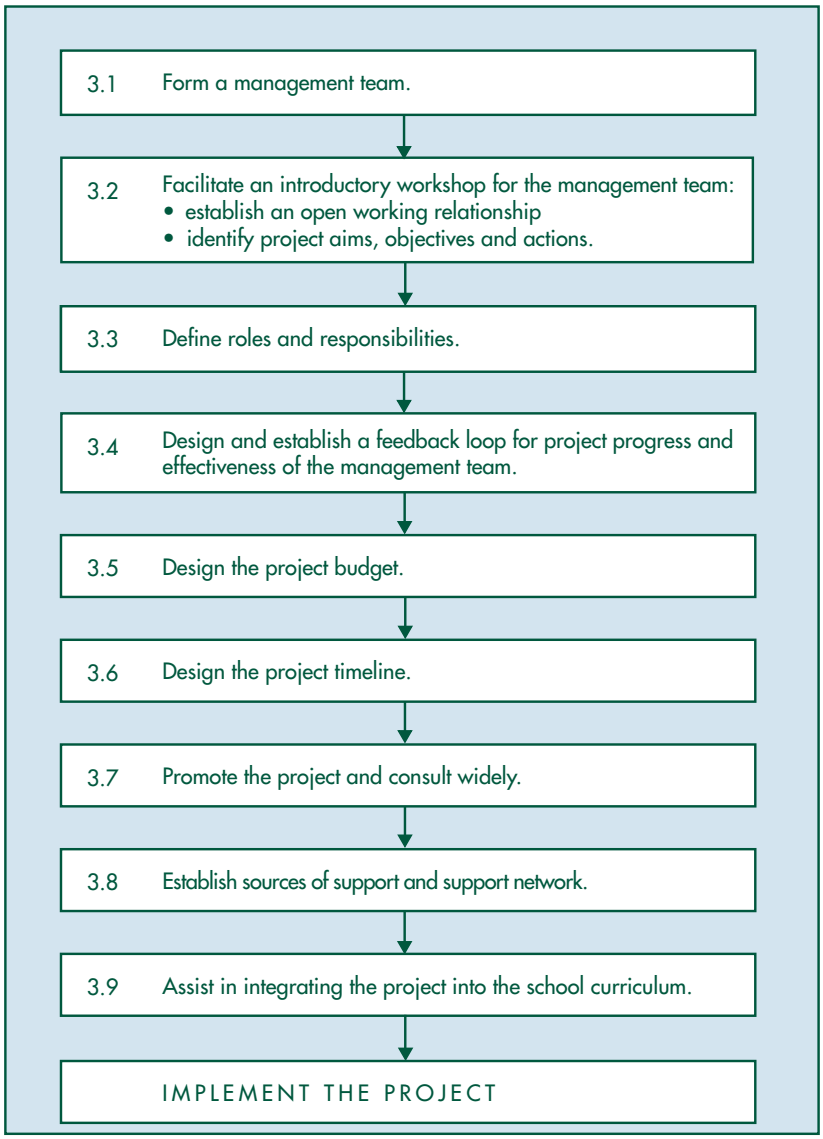


Figure 5 Decision pathway for project management

3.1 Form a management team

Establishing a management team is an effective way of successfully running a project. The team should:

- Consist of representatives from the school and local community who have a range of expertise necessary for your situation (e.g. project management skills, environmental knowledge, business experience).
- Have a clear understanding of the terms of reference (e.g. the team needs to know whether it is operating in an advisory capacity or with delegated powers to make decisions).
- Conduct regular meetings with an agenda and minutes.

Important skills and qualities for a management team are listed below.

Team skills

- conflict resolution
- clear and open communication
- delegation
- negotiation
- problem solving
- decision making.

Personal qualities

- patience
- persistence
- sense of humour
- reliability
- openness to ideas
- flexibility and adaptability
- empathy with children.

3.2 Facilitate an introductory workshop

The aim of an introductory workshop for the management team is twofold:

- to establish an open working relationship
- to identify project aims, objectives and actions.

Establish an open working relationship

Being able to communicate clearly and openly is essential for a functioning group of people. This is an important skill that can always be improved upon. Mackay's (1994) 'Ten laws of human communication' identify the facets of good effective communication:

1. It's not what our message does to the listener, but what the listener does with our message, that determines our success as communicators.
2. Listeners generally interpret messages in ways which make them feel comfortable and secure.
3. When people's attitudes are attacked head-on, they are likely to defend those attitudes and, in the process, to reinforce them.
4. People pay most attention to messages which are relevant to their own circumstances and point of view.
5. People who feel insecure in a relationship are unlikely to be good listeners.
6. People are more likely to listen to us if we also listen to them.
7. People are more likely to change in response to a combination of new experience and communication than in response to communication alone.
8. People are more likely to support a change which affects them if they are consulted before the change is made.
9. The message in what is said will be interpreted in the light of how, when, where and by whom it is said.
10. Lack of self-knowledge and an unwillingness to resolve our own internal conflicts make it harder for us to communicate with other people.

Keeping these laws in mind, develop guidelines for the team on decision making, conflict resolution etc.

> *'SWOT analyses promote discussion, fuel ideas and provide a foundation for common goals'*

Identify project aims, objectives and actions

SWOT analysis

A SWOT analysis — an analysis of strengths, weaknesses, opportunities and threats — is a useful tool for both the management team and the project itself (Fig. 6). Such identification, of internal strengths and weaknesses and existing or potential external influences, clarifies areas within a team or within a project that need to be focused on. It promotes discussion, fuels ideas and provides a foundation for common goals. Examples of questions relevant to a SWOT analysis are presented in Figure 7.

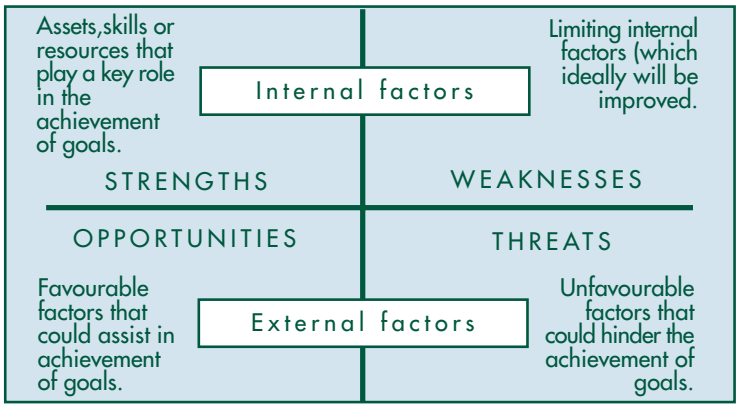


Figure 6 SWOT analysis

Figure 7 Example of a SWOT analysis

Action plan

The information gained from your SWOT analysis forms the basis for a project action plan. The plan needs to identify aims, objectives and actions. Use your group's vision statement as an overarching guide in determining these. Actions and objectives should be measurable (see Stage 5). Monitoring and evaluation processes also need to be considered at this point.

Aims. Project aims are broad and usually not directly measurable, representing concepts rather than on-ground actions.

Objectives. The objectives address aims and are measurable.

Actions. Actions are specific tasks derived from the objectives.

On-site signage acknowledging project partnerships.

EXAMPLE OF A PROJECT'S AIMS, OBJECTIVES AND ACTIONS

Aims:
- to build relationships between the school and its community
- to enhance the local environment.

Objectives to achieve the first aim are:
- to work together on the project on a regular basis
- to facilitate interactions between school students and community members.

Actions to fulfil objectives for the first aim are:
- identify a liaison officer to regularly communicate between the school and community
- organise one day a month for school staff and students, and community members to work on-ground together
- organise guest speakers from the community to talk to school students in class
- arrange regular presentation days for the school and community to attend (one per term)
- work with school staff to assign students the task of giving presentations on these days.

Principles to consider when designing projects

Embrace diversity within the project, e.g.:
- establish partnerships with a diverse range of individuals and groups
- establish diversity within the management team
- include a range of activities for students to cater for many learning styles
- design projects to enhance nature's biodiversity.

Design projects to:
- fulfil many functions thereby creating greater success and stability
- be dynamic to maintain interest, enthusiasm and learning levels for students
- be flexible and responsive to circumstances as they arise.

Workshop outcomes

- produce a clear statement relating the project to the school's and community's vision
- prepare an outline of the project's action plan
- define a process for group decision making and conflict resolution.

3.3 Define roles and responsibilities

Possible roles and responsibilities for the management team are:

- designing the project budget
- designing the project timeline
- coordinating the logistics and monitoring
- addressing occupational health and safety issues
- setting up a monitoring system for the management team
- setting up a monitoring system for the project
- investigating insurance requirements
- promoting the project and consulting widely
- consulting with and involving students of all ages
- establishing a support network
- creating value for supporters first by identifying and then addressing their needs
- acknowledging input from volunteers, school staff (including grounds persons and School Services Officers) and all other supporters
- inviting supporters to celebrations
- assisting in integrating the project with the school curriculum
- identifying sources of funding and sponsorship
- applying for funding and sponsorship.

3.4 Establish a feedback loop

Design and establish a feedback loop for project progress and the effectiveness of the management team (Fig. 8). Tailor it to suit your group's situation:

- ? What will be monitored?
- ? How will it be monitored?
- ? How will the monitoring results indicate whether the project is 'on the right track'?
- ? Who needs to be kept informed of the monitoring results?
- ? How will the results of the evaluation be used?

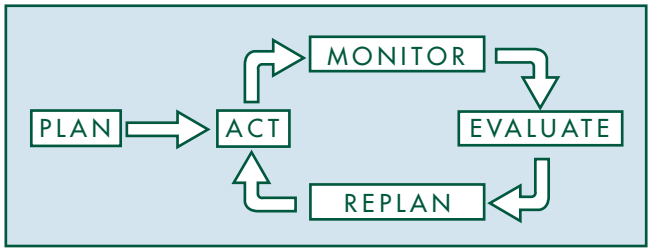


Figure 8 Setting up a feedback loop

Savory (1999) noted that

'A plan, no matter how sound, serves little purpose unless its implementation is monitored and deviations are controlled.'

Monitoring tool

A monitoring tool is described by the Urban Forest Biodiversity Program South Australia (1998):

A 'Caboodle' is a portable resource kit established by a school/community to store information and records of the environment being cared for. It could include photographs, simple equipment, identification books and results of monitoring. Over a period of time it will become an invaluable resource, for comparisons and historical reference.

3.5 Design the project budget

Establish a person (or subcommittee) with financial responsibilities to:

- identify existing budget areas from which money can be used
- establish, monitor and manage the project budget.

Examples of budget lines

- promotion
- celebration and volunteer thankyous
- resources
- training
- transport
- monitoring and recording equipment
- open days
- insurance.

3.6 Design the project timeline

- Break the project into stages (include milestones) and 'work bits'.
- Set up a project diary.
- Plan for a celebration at the successful completion of each milestone.
- Take into account factors likely to affect progress (e.g. school holidays, climate, nature's cycles, financial arrangements, requirements of government authorities).
- Allocate time for regular reviews of project progress and functioning of the management team.

An example of a school and community project to revegetate a degraded block of land is shown in Figure 9 below.

HINT

Breaking the project into stages and then 'work bits' allows the project to continue during changes in school staff.

HINT

Reintroduce the project (or part of it) each year to educate new generations of students and community, and to inspire and challenge existing participants.

WORK BITS	STAGES								
	Year one				Summer Break	Year two			
	Term 1	Term 2	Term 3	Term 4		Term1	Term 2	Term 3	Term 4
• project planning (see steps 3.1 to 3.9 herein)									
• set up photopoints • map site features • collect seed from local native plants									
• photopoint monitoring • weed control • propagation of seeds collected									
• photopoint monitoring • planting by students and community									
• watering of plants by community									
• photopoint monitoring • propagation • design and build nest boxes									
• photopoint monitoring • propagation • erect nest boxes									
• photopoint monitoring • nest box monitoring • planting									
• photopoint monitoring • nest box monitoring • planting									
• celebrations • milestones									
• management team meetings									
• open days									
• management team reviews									

Figure 9 Example of a project timeline

3.7 Promote the project and consult widely

Promotion of your project and consultation with a wide range of people is important to gain credibility, to raise awareness, to maintain momentum and to ensure long-term support. Designation of a public liaison officer helps to ensure consistency in communication.

Student contribution should not be underestimated. Training and involving them is important for the long-term environmental outcomes of your project and provides an opportunity for the students to develop additional skills. Involve students in aspects other than just the practical implementation (e.g. planning, promotion). A buddy system (where young students are tutored by older students) or skill sharing of teachers, community members and experts are appropriate ways.

? How would staff, students and the community like to be involved in planning and implementation?

? What groups and organisations could have an interest in the project?

? How could the project be promoted to the school and wider community?

Groups who may be interested in environmental on-ground projects

Community groups:

- Landcare and Coastcare groups
- senior citizens organisations
- environment groups
- youth organisations
- heritage organisations and historical societies
- progress associations
- ethnic groups and cultural associations
- Local Action Planning groups
- Aboriginal and Torres Strait Islander organisations
- community development and service organisations.

HINT

Rehearsing public presentations helps to ensure delivery of a clear and consistent message about your project.

Private sector:

- eco-tourism and environment businesses
- local media.

Other organisations:

- local government
- Catchment Water Management Boards.

Ideas for promoting a project

- make presentations at school assemblies and at meetings of other groups and organisations (e.g. local council, service groups)
- write articles and press releases
- survey project participants and distribute results
- set up a World Wide Web site
- organise open days and working bees
- keep a photographic record in a prominent part of the school or local community
- erect on-site signage.


047333

Reef mural, Port Vincent Primary School.

3.8 Establish sources of support and support network

Identifying sources of support and drawing on existing networks is the responsibility of the whole management team. In this stage your team should:

- be clear on the project's needs
- let the local community know of your project's needs
- obtain commitment from the community in the forms of skills, labour and materials
- seek expert advice
- explore opportunities for raising funds (e.g. apply for grants, enter awards)
- be innovative (e.g. investigate the private sector)
- offer something in return
- ensure when arranging support that each party is capable of fulfilling its obligations
- ensure that sponsors are appropriate for the project and do not have conflicting ethics
- explore DETE initiatives (e.g. Enterprise Education (see Part C)).

Gaining sponsorship from local businesses

- strengthens the community
- gives businesses a sense of purpose and pride
- provides promotion and advertising for sponsors (e.g. including sponsor's names/ logos on newsletters and project signage, acknowledging sponsors in speeches).

HINT

Ensure staff understand the potential for use of on-ground projects in their teaching. Hold an informal barbecue for staff at the proposed site to inspire new ideas.

3.9 Assist in integrating the project into the school curriculum

Integrating environmental projects into the whole-school curriculum is a powerful way of ensuring positive outcomes for all parties involved in a project.

- Ask school staff how they would like to use on-ground projects in their teaching.
- Plan for long-term relationships between the curriculum and the project(s).

School garden, Black Forest Primary School.

4 IMPLEMENT THE PROJECT

To successfully implement your project:

- instil a sense of ownership in others
- maintain open and ongoing communication
- value contributions
- maintain enthusiasm and flexibility
- celebrate!

4.1 Instil ownership in others

Instilling a sense of ownership in all individuals and groups involved in the project ensures that the project will remain stable if some people leave. This can be done through:

- educating and training participants
- involving participants in the decision making process
- sharing trust and responsibility.

4.2 Maintain open and ongoing communication

Keep everyone informed on:

- why things are happening
- what is happening
- when help is needed
- the agenda for each management team meeting
- actions that are decided (inform via minutes).

‘There can never be too much sponsor acknowledgment!’

HINT

The most effective form of communication is face to face: take the opportunity to talk to people when passing in the street or across the school yard!

4.3 Value contributions

Valuing the contributions of all project supporters is important for the long-term success of your project. It should be a shared responsibility of the management team, and include students as much as possible.

Ideas for acknowledging contributions

- include the volunteers in training
- acknowledge sponsors on newsletters and on-site signs
- hold special thankyou events for supporters
- provide incentives such as food and drink.

Tips for working with volunteers

- Ensure that tasks are appropriate for volunteers — match the scale of work to the capabilities of the group or individuals.
- Make activities fun — if people enjoy themselves they’ll keep coming back.
- Ensure that volunteers understand what is required of them.
- Ensure that volunteers have access to first aid and water during outdoor activities.
- Know when to stop — don’t overwork people!

Adelaide Plains revegetation excursion at Kilkenny Primary School.

4.4 Maintain enthusiasm and flexibility

- Establish school staff and student EE groups to maintain momentum and generate new ideas. The enthusiasm of students feeds this process.
- Focus on the benefits and outcomes and deal with the hurdles as they arise.
- Make your management team meetings fun.

PNI Analysis

Often when people make decisions they think only about the positive and negative aspects. Edward de Bono's (1991) PNI analysis is an alternative process that takes into account another aspect — the interesting — and may result in a different decision being made. Clayfield and Skye (1995) recommend it (Fig. 10):

> After spending a lot of time and energy developing a plan for your project or your team, it can be difficult during project implementation to be open to new ideas. It is important however to be flexible in the execution of your plan, particularly when opportunities arise. A useful decision making tool to help in such instances is the Positive Negative Interesting (PNI) Analysis. This was developed by Edward de Bono to encourage lateral thinking.
>
> When deciding upon a course of action this analysis requires you to record the Positive, Negative and 'Interesting' elements. Identifying the 'Interesting' elements allows you to be creative and diverse in your thinking, and can stimulate and challenge your project.

Figure 10 PNI analysis
(after Clayfield and Sky,1995)

'Marine Discovery Centre Steering Committee meetings are renowned for their breakfasts of croissants and good coffee!'

Understanding dynamic equilibrium

Understanding the cycle of projects and the place of people within them is important. Low points, when the project is not moving quickly enough, are a part of the cycle of a dynamic equilibrium (Fig. 11). Investment of time and energy by your group (the 'pioneer group') provides the foundation for continuing cycles.

'The sowing of seeds for others often means you need to be patient. Everything has its time and place'

(Ian Walton, Murray Bridge High School).

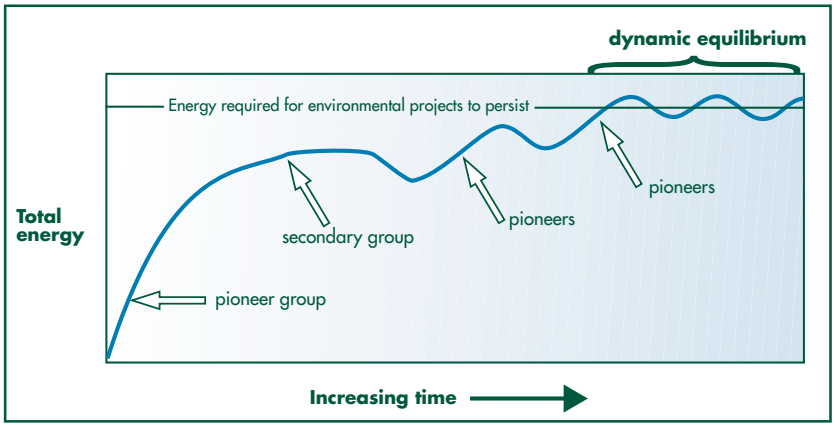


Figure 11 The dynamic equilibrium model (after Begon, Harper and Townsend,1996)

4.5 Celebrate

Celebrating projects should be an ongoing process — at the beginning, at milestones, at working bees and at the end.

Ideas for celebrating a project

- school and community combined dinner
- school and / or community dance
- presentation of certificates to students
- concert.

5 MONITOR AND EVALUATE THE PROJECT

Monitoring and evaluation are essential components of the project that are often undervalued or overlooked. Monitoring is the collecting and recording of information, both in the long and short term. Evaluation is the assessment of information to determine if the outcomes have achieved the objectives. The identification of what was successful, what failed, and what could be improved aids the planning of future projects.

Monitoring and evaluation should be built into your action plan. The actions and objectives identified in the plan therefore need to be measurable. Each action must have clear indicators that are measured on a regular and ongoing basis. There are two distinct areas to monitor and evaluate — the project and the process. Examples are provided in Table 2.

? How will the group know when it has achieved an objective?

? What will the group do with the monitoring information?

? How will the group know if its long-term goals have been addressed?

Monitoring.

Monitoring and evaluating regularly throughout project implementation enables determination of whether the objectives have been achieved. Conduct major review meetings focusing on the shared vision statement and broad aims identified for the project. The management team could also assess the effectiveness of the processes it used.

Table 2 Example of monitoring and evaluation techniques for landcare projects

PROJECT	PROCESS
Monitoring	
• monitor mosquito populations at a wetland to compare with a nearby residential area • monitor visitor numbers • using photo points, monitor sites undergoing rehabilitation • conduct regular water testing.	Provide project participants with questionnaires or surveys to assess: • project outcomes (ascertain how well aims, objectives and actions were addressed) • the effectiveness of teaching methods • the effectiveness of the organisational structure • the effectiveness of decision making processes • problem areas (causes and solutions) • areas of success and the reasons they succeeded • the actual and estimated completion times for the stages of the project.
Evaluating	
• graph visitor numbers over time • assess photos taken at photo points throughout the project's duration (e.g. glue them onto a long piece of cardboard in chronological order).	Analyse results of questionnaires or surveys of project participants and write an evaluation report for funding/management bodies.
Evaluations can then be used for: • writing submissions for awards • teaching others (e.g. by producing manuals, CDs, designing and implementing training workshops)	The results of the evaluation should be readily available to all participants and feed into replanning to guide the next stages of project implementation.

PART B
CASE STUDIES

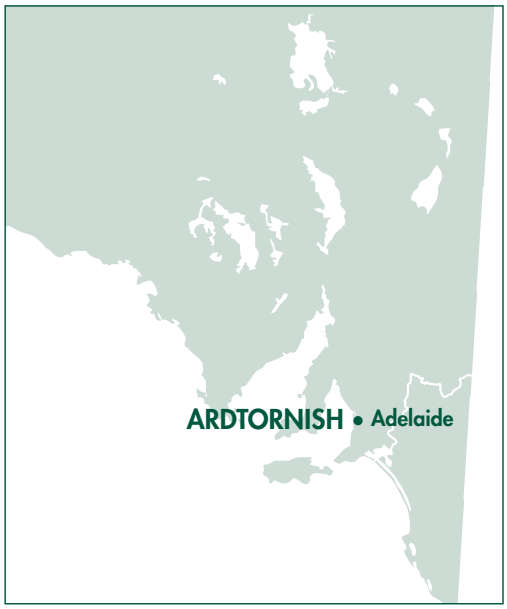
ARDTORNISH PRIMARY SCHOOL

From little things big things grow

An urban school of 600 students

Ardtornish Primary School is a large school located close to a creek reserve, which became the focus for many of the school's EE programs. Work in the reserve began as the 'little thing' from which 'big things grew' (and are still growing).

Site visit, Gifford Reserve.



Background

Ardtornish Primary School (APS) began as an Environmental School of Excellence at the beginning of the Decade of Landcare (1990). From the outset, the school established frameworks that have been essential to the outstanding success of its EE policy. These essential elements are:

- an effective management structure which includes students in decision making
- a whole school EE curriculum.

Management structure

The APS management structure consists of the following:

- The Management Group comprising the Principal, Deputy Principal, a parent, a representative from the Students Representative Council (SRC), a Junior Primary teacher and a Primary teacher. This group meets once a week during class time (usually for one hour) to discuss appropriate issues.
- Four Major Reference Groups, of which EE is one. All staff members must be in one Major Reference Group. Roles and responsibilities are defined for project areas (e.g. adopt an area, recycling plan, Environment Club).
- A number of Minor Reference Groups deal with other management issues in the school.

A whole school EE curriculum

The EE curriculum at APS is supported by the following:

- EE Coordinator Jan Fitzgerald spends four days per week taking classes for an EE lesson (during the class teachers' non-contact time) and the fifth day is set aside for coordinating the school's hefty EE program.
- Fully equipped EE room which includes a video microscope, aquaria and monitoring equipment.
- Plant nursery and garden area established to support the school's many revegetation programs.

Student involvement

Student leadership and decision making are an integral part of the culture of APS. By recognising the abilities and creativity students can bring to a project, the school environment is enriched and the students are empowered to do more as they feel valued and important. Student environment groups at APS include:

- 'ACE' (Ardtornish Club for the Environment)
- The Action Group
- KCCC (Kids Congress for Catchment Care).

'ACE'. 'ACE' meets on Tuesday afternoons, a time devoted to interest groups or clubs throughout the school. While other students may be learning a musical instrument or computing, the ACE students could be gardening, conducting environmental surveys or investigating and identifying issues related to their local environment.

The Action Group. This is for Years 5–7 students who are eligible to apply for membership at the beginning of each year. This group's role includes managing the plant propagation area, assisting other classes with their gardens, and participating in the Landlink camps. Participation in this group brings with it a sense of responsibility and rewards, e.g. time out of school, going on camps.

KCCC. A Year 6 class adopts KCCC for the year, and elects four students to be the class delegates (further details of KCCC are provided below).

KCCC

The beginning

APS's involvement in on-ground projects with the community began in 1993 when the school was approached by Tea Tree Gully Council to pilot a program to construct wetlands. This was the precursor to the now hugely successful KCCC. The wetland construction project with the council included trialling different types of wetlands (using different reed-bed systems), collecting data and installing trash racks.

Students were involved from the first stages. A Year 7 class at the time took on the project and was named the 'Contributaries' Class. Council representatives including an engineer spoke to the class about reed-bed filter systems. The class then designed rehabilitation plans for Gifford Reserve, which were submitted to council. A Development Committee for the Contributaries Class was set up with council and school representatives. The first meeting was organised and hosted by students. Students wrote letters and did letter drops to promote the meeting, put up displays, provided and made tea and coffee, greeted guests, and took minutes. Attendees included APS's Principal, a consultant engineer from the council, the Manager of Operations from the council, students and community members. Approximately 40–50 people attended the first meeting. The Development Committee now meets on a needs basis, with students organising and hosting meetings.

During this first year, students at APS established a stormwater management and monitoring program with the council, conducted water testing, collected data, established a recording method, and commenced 'caring' for the site at Gifford Reserve. They played a dual role of developers and watchdogs. 'Community in Action' weekends were organised and hosted by students for the local community as part of the wetland construction. Sausage sizzles were provided, and revegetation and construction work carried out by students, community members and council workers.

Rippling out — development of KCCC

In 1994, 12 schools in the council area picked up on APS's program through their EE hub group. Water monitoring began in these schools with support from the council's technical officer and APS. Several rehabilitation projects also commenced on these sites.

The next step took place in 1995 when APS invited other schools in the Dry Creek catchment to each 'adopt' a section to monitor, take action and share their information. This was the birth of the KCCC, with 20 schools, both public and private, taking up the challenge. APS supported these schools, with an in-service session held for staff and student representatives.

KCCC involves four student delegates from each participating school who take part in activities and events throughout the year, such as workshops, field trips and leadership development activities. Knowledge and experiences gained from this involvement is then shared with other students. The long-term goal of the KCCC is to develop skills and understanding in students, and to empower them to take action in improving their environment.

KCCC provides regular in-servicing and resources to staff members coordinating each school to assist them in integrating their Catchment Care program with the curriculum.

In 1996, the KCCC program extended to schools in the Torrens and Patawalonga Catchments that expressed interest in becoming involved. Sixty schools (20 in each catchment) took part, with a briefing session to the Principal and teachers at each school. Public meetings were also held at two schools (one for each of the joining catchments).

In 1997, APS organised a National Kids' Congress to coincide with National Water Week in October, with the theme 'Ripples on the Water'. The National Congress was held at the University of Adelaide, with around 550 delegates attending. At the event, students compiled a 'charter' in response to the challenge of caring for their catchments. The charter includes the KCCC's shared beliefs, the actions to improve their knowledge, understanding and attitude towards the environment, and their visions for the future to involve other parties in their actions.

The following year saw the KCCC program expand further. Schools from two more catchments (Broughton and Onkaparinga) joined in. The two-day Catchment Crawl was initiated, the game 'EcoMission…Possible!' was introduced, and the Festival of Water was held to promote and display what schools had been doing.

Catchment Crawl

The two-day Catchment Crawl begins standing on top of a ridge overlooking the 'starting point' of the River Torrens, to comprehend the meaning of a catchment. The Crawl then tracks the catchment from the source to the sea. The route is interspersed with activities and workshops along the way, with walks and bike rides along sections of the catchment.

EcoMission…Possible!

KCCC is integrated into schools' curricula via the 'EcoMission…Possible!' game. KCCC designed the game to act as the vehicle through which KCCC schools could carry out their catchment activities.

The game follows four steps:

1. investigate the catchment
2. identify environmental issues
3. take action (work with the community)
4. tell the world (spread the environmental message).

The first two steps lead to an action plan. Students then make contact with people and groups who can help them fulfil actions they identified (e.g. local council, Our Patch). Step 4 is carried out by putting up displays, inviting people for open days, etc.

Support

KCCC has had numerous sponsors and donors over the years, providing both funds and in-kind materials and labour. Along with the Tea Tree Gully Council mentioned previously, support has come from many sources including Cleanaway, Santos, the Catchment Water Management Boards (Onkaparinga, Patawalonga, Torrens, Broughton, and Northern Adelaide Plains and Barossa), Commonwealth Bank of Australia, University of Adelaide, and TransAdelaide to name a few.

Future vision

The vision for the KCCC has no limits, with an International Kids' Congress to be held in Adelaide during 3–6 October 2000, hosted by the University of Adelaide. For further information about the congress, visit the APS website: www.ardtornish.sa.edu.au.

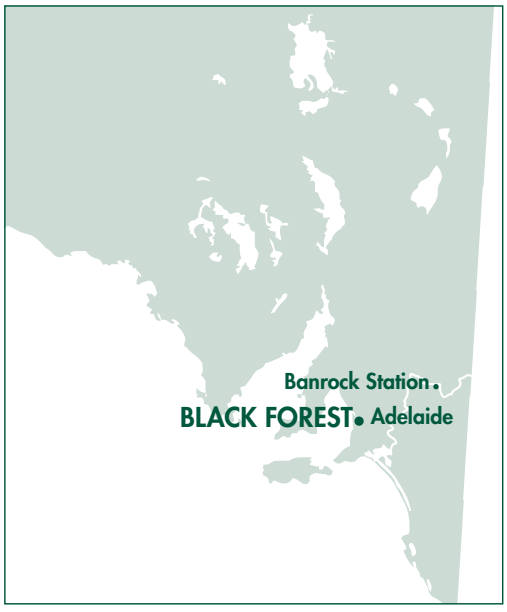
BLACK FOREST PRIMARY SCHOOL

Creating a wetland in the Riverland

An urban school of 580 students

Black Forest Primary School has a long reputation of active involvement in the environment. The school was built on an old orchard and olive grove, and olive oil extracted from the remaining trees is bottled by students and sold to parents. The school's well-established and productive garden has provided an important source of learning for all year levels. Its current revegetation project in South Australia's Riverland aims to produce long-term benefits for the environment.

Inspecting wetland, Banrock Station.



Background

Black Forest Primary School (BFPS) has worked on a number of hands-on environmental projects over the past decade, including the successful Garden Club, participation in the annual frog census, and involvement in a Dune Care project. A great deal of progress in project development was achieved during the two years that BFPS had an EE coordinating key teacher.

Landlink

BFPS gained much of its hands-on experience from its eight-year involvement in the Landlink program. Landlink began with a partnership between the Farmers Federation, DETE and PIRSA. The Farmers Federation adopted the school exchange idea from a similar program in the USA. Its motivation was to break the myth, long held by city folk, that farmers are responsible for ruining the land.

Each year the program was run between BFPS and a country school and involved a one-week billeted camp at each school community.

BFPS exchanged with Parndana, Naracoorte and, more recently, Lucindale Area School. The outcomes of the exchanges for students were very high as they began to understand the differing lifestyles and environmental issues of rural areas, with some students maintaining contact with their host family for many years. Whilst the exchanges were very successful, they were also a lot of work for teachers to organise and BFPS has decided not to continue running them.

School structure

The school structure facilitates the flow of projects, from initiation through implementation and monitoring. Issues and ideas are discussed at School Council, SRC, and / or the whole staff meetings, depending on who is affected. Decisions are usually made by small discussion groups (management groups, subcommittees, etc.) which then come together and make a final decision.

Strategies

BFPS has several key strategies to promote chances of achieving a successful environmental project:

- Students are regarded as the key to getting community involved in projects.
- Efforts are made to motivate students and give them responsibilities, including taking on more decision making (within their capabilities).
- Involving school staff — this is encouraged by holding training sessions for teachers at staff meetings and linking environmental projects into the curriculum.

Banrock Station wetland rehabilitation

Motivation

The latest major environment project with the community is rehabilitation of Banrock Station Wetlands in the Riverland. The idea for this project came from existing connections between staff at BFPS and staff of Banrock Station. Mutual benefits from forming a partnership were recognised by both parties, resulting in commencement of the rehabilitation project in 1998.

Banrock Station found it attractive to be involved with BFPS as the school had many years of experience in on-ground environment work and a well-established nursery.

BFPS saw this project as an opportunity to educate its students about rural environments by working actively in the environment. It also requires less organisational input from the school than the former Landlink exchange program.

Preparation

The initial planning for BFPS's involvement in the project was conducted by the Principal, Groundsman and School Services Officer. Liaison with Banrock during these early stages was between the existing contacts at the school and Banrock.

Prior to BFPS's visit to Banrock Station Wetlands, students propagated 2000 Black Box (*Eucalyptus largiflorens*) trees in their propagating facilities with assistance from the school community (i.e. students' families). The seed for these trees was supplied by Banrock, and Banrock paid BFPS $1 per seedling to cover the cost of potting material and tubes. The first visit to Banrock Station Wetlands, for one day, was made in 1999 by 15 interested students and parents from the Garden Club. The group planted the Black Box seedlings the school had grown, bringing along existing gardening tools. Banrock identified and allocated a site specifically for rehabilitation, prepared the site for the visit by breaking up the ground, and later watered the seedlings in.

The future

This project is in its infancy and results are expected to be significant for both the Banrock Station Wetlands and for BFPS. BFPS hopes to utilise this project in teaching students about soils. Support

from Banrock Station so far has been high, both in moral and in kind. Its payment to BFPS for propagating tube stock covers the school's costs, increasing the chances for the project continuing in the future. Banrock believes the best approach for the long term is for BFPS to adopt and 'own' the site chosen for them so that the students can gain an appreciation of their efforts over time.

Future plans for BFPS are to:

- forge stronger links with Banrock Station
- establish a 10-year relationship with Banrock Station with the possibility of visits for Year 6–7 classes, using the backpackers lodge
- conduct a series of photo points over the years to monitor plant growth
- monitor salinity.

Future plans for Banrock Station Wetlands are to:

- incorporate more endemic plant species, including understorey species
- monitor the planting area with photo points
- continue to develop relationships with BFPS.

Outcomes

For BFPS this project has the potential to be long term, providing the opportunity to monitor the rehabilitation of a unique area which the school 'owns'. It provides students with an understanding of the rural landscape, and an appreciation for water resources and their vital link to the land. There is also potential for diverse studies to be conducted at the wetlands, some of which are listed above.

For Banrock Station, an area of wetlands is being rehabilitated for minimal cost. The station has the satisfaction of providing young people with a greater appreciation of the environment and with an educational experience.

The outcomes *for the environment* will be great as the plants become established, with decreased salinity levels, increased habitat and increased biodiversity.

ELLISTON AREA SCHOOL

Plant specialists of the wild west

A rural school of 86 students

Elliston Area School is situated in the harsh coastal environment of western Eyre Peninsula. The school has used these conditions to advantage by establishing itself as the sole supplier of plants endemic to the region, propagated on school grounds and able to flourish in the local environment.

Planting seeds along the Nature Trail, Elliston Area School.

Background

Elliston is a small town on the west coast of Eyre Peninsula, with significant fishing and summer tourism industries, surrounded by farmland. The coastal conditions are harsh, with prevailing salty winds, low rainfall and thin soil covering limestone.

Elliston Area School (EAS) has been involved intermittently in environmental projects for about 15 years, with a focus over the last seven years. Together with the local community and committed teaching and grounds staff, EAS has established a name for itself as a leader in propagating local native plants. Even though the school is relatively small (86 students, with 10 students in Years 8–10), its efforts over the years have been significant. This was acknowledged in 1998 when the school's environmental activities on school grounds and in the community won the State Landcare Award.

The Nature Trail

EAS has a nursery on the school grounds which was initially established with support from Keep South Australia Beautiful (KESAB). The use of the nursery declined in the late 1980s but was revived a few years later when teacher Jeff Hunter developed the vision to establish a Nature Trail on

school grounds as a place for outdoor study. The aims of the Nature Trail were:

- to educate students about the plants:
  - plant identification (getting to know the local species)
  - flower types (flora studies, aesthetics, gardening)
  - birds and insects of the west coast (fauna studies)
  - edible plants (survival skills, Aboriginal knowledge)
  - drought tolerance (biological adaptation)
- to demonstrate which plants could be grown successfully in the area
- to select plants that would attract native birds.

The initial goal of the nursery was to propagate 5000 tubes in the first few months of the school year, to be ready for the winter plantings. The local Landcare group supplied seed to EAS, which was propagated in the school nursery with assistance of groundsman Wayne Bellingham, a qualified horticulturist.

The first major planting of the Nature Trail was on a bare hill adjacent to the school buildings. Students carted stones from a central pile to create edges for the trail. The community prepared the site by digging holes. Planting was carried out *en masse* by students, school staff, parents and other community members. The initial planting day was celebrated with a barbeque supplied by the school for all helpers, and a half-day holiday for the students. Name plates were later made by the students to assist with plant identification.

Students of all ages were involved in early planning of the Nature Trail and nursery propagation. An added incentive for students to be involved in propagating was to improve the quality of their end of year camp with money raised from tube stock sales. The school worked closely with the council in this project and had full support from the community. Local farmers and parents were all extremely enthusiastic about the project, and keen to involve students and help them learn about their environment.

Sprouting seeds

From the success of tubestock production at EAS's nursery, it was possible for the school to participate in many revegetation projects. EAS propagates up to 3000 tubestock per year, mostly in the last two months of the school year to be ready for sale in the autumn planting period. Wayne Bellingham organised revegetation of the front dune at the beach by applying for a Coastcare grant. The students, led by Wayne, grew 600 plants, planted them on the front dune, then the Coastcare group built boardwalks and undertook 'dune form fencing' to further stabilise the dune. Some of the plant species they grew had not been propagated before.

Revegetation projects have also been carried out by the school at the local golf club, at nearby Talia Caves, and at Elliston's old dump site. A large-scale planting with Streaky Bay School is planned to begin in 2000 with Bushcare. This is part of a three-year revegetation project at a conservation park at Venus Bay to revegetate a strip along the beach and link it to existing vegetation to form corridors. Wayne plans to take a bus load of students from EAS and donate the school's plants. EAS also donates plants grown at the school for local plantings (including council plantings). This support given to the community is a positive strategy for the school as support from the community is returned. The local council has provided enormous amounts of support over the years in the forms of labour, in-kind materials, and use of equipment.

Curriculum

EAS linked its environmental projects into the school curriculum through Studies of Society and the Environment. Staff worked together to integrate environmental activities into teaching topics, which allowed for events such as plantings to take place at the right time.

Anchored roots

Today, nursery propagation is offered as one of the electives. Students work with Wayne and learn about the characteristics of local native plants, their role in the environment, and propagating techniques. Money from plant sales now goes back into operating the nursery, and supplies all the money for the grounds budget.

The school sells seedlings to the local Landcare and Coastcare groups, farmers and other local community members. Its success in selling tubestock is due to specialisation in growing endemic species, including species that have not been propagated before. Community members had previously purchased native plants grown in the Adelaide Hills but these had a poor survival rate in the coastal environment. As there is no supplier of local native plants, EAS has become the supplier, and people come to the school seeking advice on what to plant where.

Ideas for projects come from parents, school staff and the Students Representative Council; these are implemented during lesson time and / or class meetings. The strength of the school nursery promotes the generation of ideas for new projects within the community and the school.

The integral parties who contribute to the success of on-ground projects in Elliston, and therefore improvement of the local environment, are EAS, Elliston Council, Elliston Landcare and Coastcare groups, parents and local farmers.

In bloom

EAS's involvement with the community in on-ground projects has resulted in increased students' confidence in nursery work and tubestock planting, and increased confidence in working as part of a team.

The partnership between the school and community in on-ground projects is both necessary and beneficial to all partners — the school propagates and provides plants and a planting force; the community provides the labour and equipment necessary for construction tasks.

The school grounds have become a mini arboretum, providing examples of salt and wind-tolerant species, mature specimens to aid garden design, and an on-site seed bank. The town takes pride in its environmental achievements and everyone closely watches the progress of revegetation projects.

GLADSTONE HIGH SCHOOL

Creating classrooms in the creek

A rural school of 170 students

Gladstone High School, situated in a farming community, draws students from a wide area. They have been involved for many years in environmental activities such as propagation and revegetation. The current plans to rehabilitate a nearby section of degraded creek takes a step further in its environmental program, by recognising and taking action at the ecosystem level.

Identifying macro-invertebrates, Pisant Creek.

Background

Gladstone, in the Mid-North of South Australia, is a small farming community steeped in history. It has played a number of important roles for the State over many years, as a strategic rail link and home to one of the State's early gaols. Gladstone High School (GHS) continues in this tradition by playing a significant role as an education provider, drawing students from nine schools over a large area. GHS is expanding its positive influence beyond the school grounds, working with the community on revegetation projects.

Environmental program

Over the past four years, students from GHS have propagated plants in partnership with the local SACBH. SACBH is adjacent to the school and has supported the school in its environmental projects by setting up a propagation shed and providing the appropriate facilities and materials. Revegetation work by students has taken place around the school, at the local golf course and with farmers on their properties. GHS has also participated in monitoring activities of Waterwatch and the Global Learning and Observations to Benefit the Environment (GLOBE) program.

GHS has recently embarked on a large-scale, long-term environmental project that draws on skills and knowledge developed from previous planting and monitoring activities. The nearest watercourse, Pisant Creek, is a man-made channel created years ago to redirect floodwaters around the town. The school's vision is to rehabilitate a one kilometre section of the creek. The undertaking of this project demonstrates the school's willingness to advance its students' understanding of the environment and the interactions and processes within an ecosystem.

The Pisant Creek Project

The Pisant Creek Project began in 1996 following a Landcare Focus Schools Program workshop attended by several school staff and the local Waterwatch coordinator. The site had already been identified as a water-monitoring site by the previous Waterwatch coordinator, as it is the closest water source to the school. With the school's growing knowledge of environmental issues and familiarity with the site, it provided the perfect opportunity to extend the monitoring to care for the site and improve its degraded condition.

The vision for the school's Pisant Creek site evolved with informal discussions between Sarah Bonney (Waterwatch coordinator) and Rob Warnest (Key Teacher). The vision for the creek rehabilitation is three-fold:

1. as a resource for the school
2. as a resource for the community
3. as a model of best practice in rehabilitation.

After the school's philosophical 'adoption' of the site, GHS made contact with Transport SA which owns the one kilometre stretch of land along the creek and drew up a legal agreement to manage it. The lease agreement states that GHS will manage this portion of the creek for perpetuity, and does not need permission for its activities, provided that the activities are 'for' the environment.

The next crucial step was to fence the one kilometre stretch of land. GHS corresponded with the Northern Areas Council, in particular with the Environmental Officer. The council approved the fencing and provided support by supplying fencing materials. Sarah Bonney, on behalf of GHS, addressed a Northern Areas Council meeting on the project's latest developments and plans. Fencing of the creek began in 1998. The farmer who was grazing stock along the creek built the fence with assistance of students. After some lengthy delays, fencing is now complete and rehabilitation of the creek will begin in 2000.

Eight sections of the creek have been identified and divided as separate learning zones, which will assist teachers to divide their classes along the creek and provide a variety of learning opportunities for students. Eight photo points have been established along the creek and the first set of photos taken as baseline data.

Water monitoring

Water monitoring is currently the main environmental fieldwork undertaken by students at Pisant Creek. Monthly water monitoring for Waterwatch takes place, as well as monitoring after major events (heavy rainfall). In the future, the hydrology aspect of the GLOBE program (monitoring dissolved oxygen) will be integrated into creek rehabilitation.

Through its monitoring activities, GHS has become 'quasi watchdogs' of the local waterways. For example, if after heavy rainfall high readings of phosphate are taken in the creek, the school can trace it back to the source and inform those responsible of the findings. Results of Waterwatch are published such that farmers can monitor the impact their practices are having on the waterways. To date, water quality has always been acceptable after heavy rains. This encourages farmers and informs them that their current practices are not negatively impacting waterways.

Creek rehabilitation

Creek rehabilitation has three main parts:

1. An environmental monitoring program:
   - Waterwatch (this currently fits into Year 8 science)
   - FrogWatch
   - GLOBE.
2. A modelling exercise:
   - trialling different methods of weed control
   - trialling different methods of planting (e.g. direct seeding, tube stock planting)
   - trialling different plant types to find out which are more suited or tolerant to irrigation from the slightly salty creek water — the results from this would be valuable data and a source of information which could be used to give advice to others, e.g. farmers who want to stabilise creek banks where the creek is slightly salty
   - grassland planting, possibly using the site as a translocation site for a very rare grass species found in only one location.
3. Establishing a signposted walk:
   - this could link with a town walk, e.g. taking in the historic gaol
   - other schools could use the creek as an educational resource.

Curriculum links

The Pisant Creek site offers many possible links with other curriculum areas. A survey of all teaching staff at GHS was recently undertaken to plan further integration of environmental activities into the curriculum. The survey was designed to:

- assess the confidence and competence of staff in teaching EE
- identify what was currently being taught
- identify where staff saw the future of EE at GHS.

Results from this survey led to a trial of a number of units of work at the school. For example, students were assessed on their fencing work, which was counted as a Vocational Educational Training unit, as part of a Technical And Further Education (TAFE) 'Farm Training' module.

Other possible curriculum links to the Pisant Creek rehabilitation that provide relevant and meaningful work for students include making seats for the site in Technical Studies lessons, setting up insect traps, conducting bird counts, art and photography.

Ensuring success

Rob Warnest believes that promotion and publicity of the school's environmental projects has led to increased credibility, giving the school a positive reputation. GHS recently gave a presentation at the Rural Watch Annual General Meeting about its current environmental activities and plans for rehabilitation of Pisant Creek. The school received a very positive response from the meeting, indicating the interest from the wider community in the school's on-ground works.

Rob sees the next important steps as empowering students and school staff to fully utilise their watery resource. Giving class groups responsibility for particular learning zones along the creek will enable students to more readily gain ownership of the creek. A staff barbeque is planned at the creek to facilitate appreciation and inspiration for the potential of the creek as a unique learning environment.

Students are extremely enthusiastic about the monitoring activities they have carried out at Pisant Creek. The Year 8 class involved with water monitoring often ask their teacher 'are we going to the creek today?' Rehabilitation of the creek and the opportunity to 'own' a section of it offers responsibility and relevance to environmental studies.

GOLDEN GROVE PRIMARY SCHOOL

If the 'KLOC' slows down, wind it up!

An urban school of 660 students

Golden Grove is a relatively new suburb situated in undulating hills northeast of Adelaide. Golden Grove Primary School reflects this development with its modern school buildings and large grounds to accommodate the growing population of this area. Eighteen months ago, the school took on the significant role of coordinating the use of the Kids for Landcare Outdoor Classroom, providing a new direction and bringing new energy.

Planting trees and shrubs, Kids for Landcare Outdoor Classroom, Greenwith.

Background

Golden Grove Primary School (GGPS) has developed its school grounds over the past eight years from a bare site next to a dump, to well cared for native garden areas. Excess water from the oval flows into an ephemeral wetland, which is planted with reeds and provides habitat for frogs, birds and macro-invertebrates. It also serves as a learning area for GGPS students.

GGPS recently took on a supportive role for the 'Kids for Landcare Outdoor Classroom' (KLOC), a unique outdoor learning venue approximately two kilometres from the school. The KLOC is located on a 5.8 hectare multi-purpose site, used for flood mitigation, recreation, preservation of the area's early settler history, and environmental studies.

History of the KLOC

The South Australian Landcare Committee (SALC) established the KLOC in 1993 as an educational site to demonstrate ecologically sustainable land management practices of country areas within an urban community area. The site had been developed as a water management and flood mitigation area by the land developers, who had also landscaped the area. This was further developed by SALC to feature demonstration areas of mallee habitat, wetlands and bogs, and a mini catchment.

The heritage aspect of the KLOC arose from efforts of the Carter family to preserve the ruins of their forebears' original cottage. The ruins were discovered during the tracing of the Carter family tree, which brought the family together to explore the possibility of salvaging some of their heritage. To their delight, the current land owners, Tea Tree Gully Council, agreed to allow the ruins to remain on site as a heritage feature. Fund raising and working bees followed to ensure conservation of the ruins, including capping the tops of the walls and addressing safety issues.

During site development over the past seven years, some of the original plans and designs have been modified or discarded. For example, one of the features planned for the site was demonstration sheep farming, involving the construction of a shearing shed and introduction of live sheep. Whilst the sheep were never brought on site, the shearing shed was built and remains as the classroom.

Establishment and support

The KLOC has received a wide range of support. Initial support, both in-kind and financial, came from over 80 sources including government departments, schools, environmental groups and non-government organisations.

Tea Tree Gully Council has an ongoing supporting role as the land owner and is responsible for maintenance and repair of structures on the site. A Joint Use Management Agreement has been drawn up, specifying cooperation between DETE, the KLOC Management Committee and Tea Tree Gully Council. The agreement is for five years, with the understanding that it will be signed for a further five years. The specific roles and responsibilities of parties are not included in this agreement.

The KLOC Management Committee meets bi-monthly and consists of representatives from all key organisations associated with the KLOC, including:

- a representative from PIRSA who offers expert advice and keeps the committee up to date with the latest Landcare issues and policies
- a teacher from GGPS representing DETE
- two Tea Tree Gully Council members (a councillor and one representative appointed by council)
- three community representatives.

Non-committee members also regularly attend meetings. A council representative takes minutes and organises administration, and the groundsman employed by DETE reports regularly to the committee.

Friends of the Outdoor Classroom was formed by local residents and members of the Carter family to set up a cottage garden around the ruin. An original grant was received to establish this garden. The friends group is now involved in maintenance of the garden and tree planting, among other activities. It has been very successful in achieving its goals.

Forms of support from the community and visiting schools include:

- tree planting
- water monitoring
- native vegetation regeneration
- Aboriginal food trail construction
- site maintenance and improvement
- monitoring the effects of salinity on native vegetation.

Involvement of GGPS

GGPS was asked as DETE's representative to take on coordination of the KLOC by the Management Committee. Both the school and the committee are anticipating mutual gains from this new partnership, formed in early 1998. GGPS is interested in land care issues and saw the opportunity to be involved in this unique learning venture as a positive step in its educational program. For the Management Committee, GGPS is helping to create a new direction and bring new energy to the KLOC.

GGPS students already have a strong sense of ownership of the site, and frequently visit with their families on weekends. They are encouraged to be involved in the KLOC and their ideas are often passed onto the Management Committee via Neil Thelning, the school representative on the committee. Neil involves his Year 3–4 class in many environmental aspects, e.g. frog census, awareness of different seasons, and awareness of snakes.

School visits

Visits to the KLOC by other schools arranged through Neil could include the study of:

- soil stabilisation, erosion and its prevention
- ground water levels
- the roles of vegetation found in different environments
- land use by Aboriginal and non-Aboriginal groups
- biodiversity: habitats, bird study, macro-invertebrates.

Educational trails have been developed for primary students, with work sheets for each trail designed for different year levels. These have been designed by GGPS with assistance from David Larritt, Field Study Centres Coordinator for DETE.

GGPS support teachers with training and development in EE, with workshops planned for 2000. Peer work ('big buddies') is used to help train and empower students.

New directions

A major reassessment of the KLOC has recently been undertaken, addressing issues of creating a new vision for the KLOC, and ensuring the effectiveness of the committee to make decisions and to act upon them. The outcomes of this wide-ranging assessment and recommendations for the committee are in the process of being documented and will be available from GGPS in the near future.

KALANGADOO PRIMARY SCHOOL

From worms to wetlands

A rural school of 74 students

Kalangadoo is a small town supported by a diverse range of local industries, 400 kilometres south of Adelaide in the South-East of South Australia. Kalangadoo Primary School has been involved in many environmental projects for most of this decade, some of which have earned international recognition.

047342

Worm watchers, Kalangadoo.

Background

Landcare became a priority focus in Kalangadoo Primary School's (KPS) curriculum in 1992 and had three main aims:

- to rehabilitate a boggy, unused area in the school grounds and develop it as a wetland for use as an outdoor classroom
- to collect and propagate local native seed for use at school and in the community
- to undertake a scientific study relevant to the Kalangadoo area.

Wormwatch

KPS's aim to undertake a scientific study was addressed in 1992. The school initiated a local Wormwatch program, focusing on the potato growing industry. The aim for the KPS Wormwatch project was 'to ascertain the effect of potato growing on worm populations'. EE key teacher, Diana Wiseman, was instrumental in establishing the successful process undertaken by the school. Little did Diana or the rest of the school community know that this project was to put their small country school on the world map.

Diana approached four local potato growers who were part of the school community to use their farms for Wormwatch. KPS gained the farmers' support in being able to monitor worm populations in their potato fields, using adjacent fallow fields as the 'control' group.

The equipment required was simple and cheap, and included spades, ice cream containers, simple recording sheets, clipboards, a one-metre ruler and old clothes.

Support and expertise was forthcoming to the project after KPS wrote to the CSIRO requesting clarification on the project's methodology to ensure that it was scientifically correct. CSIRO was interested in Kalangadoo's Wormwatch program because it went further than simple observations of worm populations, by asking the question, 'why'. This type of work had not been done before and the question that KPS was asking was important for Australia's (and in particular South Australia's) potato industry. The Potato Growers Association was also interested in the project and offered its support. KPS worked in conjunction with Dr John Buckerfield, a CSIRO worm scientist, to gain results that could be beneficial to all parties involved.

The community's enthusiasm in the project was evident right from the start. Within the first week of Wormwatch, farmers whose properties were being monitored were boasting about who had the biggest and the best worms! For some it was the first time they were even aware of worms in their soil, let alone understanding their value.

The CSIRO advised KPS on sampling methods, which were closely followed to ensure scientific credibility. Accurate recordings were taken and experimental situations were set up in the field in accordance with CSIRO standards. The students' roles were to dig up worms at each of the properties, and send these to Dr Buckerfield in Adelaide to be counted, weighed and identified. The CSIRO provided the appropriate containers for storing and transporting worms.

Students played an important role in the Wormwatch project from the very beginning. They were involved in planning in the form of library research, digging up and studying worms on school grounds, and science experiments studying light, smell, movement, food and soil mixing ability. Throughout the project, which ran from 1992 to 1994, students carried out fieldwork to scientific standards, analysed results using graphing and averaging techniques, and drew conclusions. They learnt about scientific method and process.

For practical tasks, KPS combined upper Primary and Junior Primary classes to enable older students to help younger students.

The 'worm woman' from Kalamazoo witnesses wormania in Kalangadoo!

The involvement of the CSIRO in KPS's Wormwatch project was of great benefit to the school. Dr Buckerfield spoke of the project at an earthworm conference in the USA. This gained interest, particularly with a biologist from Kalamazoo in the United States known as the 'Worm Woman'. The Worm Woman, Dr Mary Appelhoff, visited KPS for a day, which she spent with students collecting samples of earthworms and answering students' and parents' questions. Dr Appelhoff videoed a wormwatch to show school children in the USA because they do not involve such young children in this type of research.

Outcomes

The outcomes for students were not only in increased academic skills, they also benefited from improved confidence and the ability to communicate effectively. Hands-on activities proved to be a useful behaviour management strategy and many other integrated subject areas were made more meaningful and therefore easier to learn, e.g. graphing worm counts in maths.

At the end of a day in the field, KPS encouraged students to discuss what they have done during the day. Students were generally extremely excited and enthusiastic and eager to discuss their activities and achievements. This 'celebration' at the end of a day in the field empowered students and instilled in them a sense of ownership of the project.

Wormwatch enabled staff, local farmers and children to establish links with the scientific community. Students learnt to conduct a scientific experiment with accuracy. The CSIRO's involvement resulted in a paper co-written by Dr John Buckerfield and Diana Wiseman, which was published in a national scientific journal.

Wormwatch was documented through articles in Landcare and CSIRO publications. It was also closely monitored with a photo history which is now displayed in the school's foyer. This fantastic display promotes the student's work and demonstrates the school's pride in its students.

The success of this project is not solely attributable to the involvement of CSIRO. The project considered the needs and interests of the school, the community and the students. Many other areas of learning were integrated with the project, increasing student learning opportunities. A local farming industry was chosen which was therefore relevant to the lives of the local community. The project was simple but exciting and appealed to the inquisitive minds of young students. It also used simple, cheap and readily available resources. Wormwatch served to increase the school and wider community's awareness of environmental issues, and increased the enthusiasm and level of participation in other school land care projects.

Worms, wetlands, the world!

KPS has been involved in many other significant environmental activities with the community, including the transformation of a boggy, 'out-of-bounds' corner of its oval into a magnificent wetland which now serves as a model to other schools. KPS's successful environmental program is due to partnerships between the school, local community and outside experts. It proves to the world that a small, isolated school with limited funds and resources can make a significant positive impact on the lives of its students, its community, and on the environment.

LEIGH CREEK AREA SCHOOL

Friends of the Yellow-footed Rock Wallaby

A rural school of 200 students

Leigh Creek is in the arid zone of northern South Australia, based around one of the largest open-cut coal mining operations in Australia. The town is now opening up to new enterprises, of which eco-tourism is becoming increasingly significant. Leigh Creek Area School is playing an active role in development of the town's tourism potential through its environmental projects with the local community.

047343

Carrying in an automatic tracking system for the Andu, Aroona Dam region.

Background

Recently, an area of more than 40 square kilometres around Aroona Dam, Leigh Creek's man-made water supply, was declared a sanctuary. The aim of Aroona Sanctuary is to create a perpetual habitat for local native plants and wildlife. This area is managed for pest animals, and has undergone massive regeneration of native vegetation. Flinders Power (formerly ETSA) is instrumental in managing the sanctuary and employs specialist officers to advise on conservation and management of water resources and rehabilitation of degraded lands.

Leigh Creek Area School (LCAS) assisted Adelaide Zoo with the reintroduction of the Yellow-footed Rock Wallaby (or 'Andu', the Adnyamathanha name) to Aroona Sanctuary in late 1996. The school's continued involvement with this project has led to results that far exceed the Zoo's original expectations of the reintroduction program.

Release of the Andu — why it happened

The release of the Andu at Aroona Sanctuary eventuated due to two factors:

- Adelaide Zoo was breeding Andu with such success that it was fast running out of room to keep them.
- A large revegetation program around Aroona Dam was instigated several years earlier to stabilise the soil and prevent the dam from silting up. This provided suitable, established habitat for native animals.

The successful Andu breeding program at Adelaide Zoo and the revegetation and rehabilitation of Aroona Dam were married in 1996 with the release of Andu at Aroona Sanctuary.

Project goals

The Andu project goals are:

- to create a model for native animal reintroductions
- to establish and maintain a fenceless sanctuary to house Andu.

The first bounces

Ten Andu (eight females, all pregnant and with a joey, and two males) were originally released in Aroona Sanctuary. Two of these died within a few months of release, and were later replaced by two more from zoo stock. The population is now larger than the original number of animals released.

School involvement

Adelaide Zoo initially contacted Colin Murdoch, a teacher at LCAS, and welcomed the involvement of the school in promotion of the Andu release. Adelaide Zoo wanted to inform the local community of its project in order to gain interest and support. When LCAS took on this role, Colin believed that the school itself needed to establish credibility in the community.

Motivating students to raise local awareness of the project was believed to be the most effective way of gaining credibility and community support, so students were involved in the Andu release from the very beginning. The school considers it important to involve students in decision making, and it was their decision to use the Aboriginal name ‘Andu’ for the Yellow-footed Rock Wallaby.

Student involvement

Many zoo staff and scientists were in the vicinity of Leigh Creek at the time of the release. The school took advantage of this influx of experts and coerced them into the classroom to talk to students. The enthusiasm of these experts rubbed off onto the students, whose interest in the release was extremely high. Many students took on the role of promoting the Andu release in the local community. Several students compiled and edited a newsletter, which was distributed nationally. Due to the high quality and perceived value of this newsletter, its production is ongoing. They were also involved in public speaking about the project. These students gained confidence in public speaking, and communicated with a diverse range of people. One of these students was the first school student to speak at an Annual General Meeting of the Royal Zoological Society of South Australia (in 112 years!).

Students also organised a community dinner sponsored by Flinders Power and the zoo to celebrate the release of the Andu into the sanctuary. They prepared and sent invitations, and organised the venue, catering, and seating arrangements. This event acted as the catalyst for community interest and changed their attitude from one of ‘it won’t work’ to one where the Andu’s movements and health were closely watched in hope that ‘it will work’!

Other students have become involved on ground with the Andu release and subsequent monitoring. These activities include:

- talking to visitors and the media (local, State, national and international)
- pest animal control
- baiting and setting traps to capture Andu to monitor their health
- radio tracking Andu
- assisting with installation of radio tracking infrastructure.

Leaps and bounds

The school's involvement helped reset the direction for the Andu project through its initiation in applying for a STEP (School's Technology Education Program) grant. This grant was for the development of a first of its kind automatic tracking system for the Andu. LCAS was successful in its application and the tracking system was developed by Biotelemetry Australia and installed by the school and community.

Some students assist Steve Lapidge, a PhD student from Sydney University, who is studying the release. Every three months, Steve visits Leigh Creek to monitor the Andu population and native vegetation. LCAS students help in trapping the Andu, tagging them, administering shots, inserting microchips, fixing radio collars, taking blood samples etc., as well as carrying out vegetation surveys. They also prepare the three-monthly monitoring sessions by maintaining food supply in traps which are not set. This virtually continual monitoring by LCAS students made possible the regular health monitoring program, expanding the release to the next stage.

The original area within the sanctuary which was being baited and controlled for pest animals has now extended to the surrounding landholders' properties, creating a large buffer zone around the sanctuary. These landholders are assisted by students. They are committed to baiting and will continue their involvement independent of the school's future involvement.

By showing that they had real skills and resources to offer, LCAS formed successful partnerships with its community. As a result of student involvement, commitment and high levels of interest and enthusiasm in the reintroduction, the community of Leigh Creek now owns the Andu project.

School philosophy and curriculum integration

LCAS's finance committee redirected a portion of the school's budget for costs associated with the Andu project, e.g. to enable production of the Andu newsletter. The Principals (past and present) have been extremely supportive, and have encouraged curriculum integration. An action plan was developed after the Andu release to integrate the project into the curriculum and develop appropriate curriculum activities.

LCAS exploits its small school size by individualising the curriculum, that is, writing courses tailored to individual students. Students with strong interests in project areas are interviewed to decide what they want to do. Projects are then designed by teachers and coordinators to fulfil learning units and submitted to DETE for approval. Cross-class work is also carried out by some teachers, e.g. Year 8s studying a Year 11 subject such as Technical Studies. This is almost a university model, and a strength of LCAS which it recognises and sees the need to build.

LCAS teaching staff guide students into projects which bring in a range of community involvement and require students to interact with the community. This acts to enhance the community's role in the Andu project.

Rewards for the school

LCAS has received a wide range of in-kind support, particularly from Adelaide Zoo, in return for its efforts in the Andu reintroduction program. The zoo's veterinarians have visited many classes, and the zoo offers work experience for students, bypassing its long waiting list. Flinders Power has also supported the reintroduction with in-kind materials and equipment.

The school has retained students who may have left to study elsewhere, choosing instead to continue their studies at LCAS to participate in environmental projects. Colin Davies, now in Year 12, was South Australia's Environmental Student of the Year (1998) due to his role in the Andu reintroduction program. He decided to finish his studies at LCAS even after his family moved to another region.

Students have gained group skills, and experience in collaboration and cooperation within a team situation. The respect they have for one another is evident when speaking with them. They have the opportunity to work with a diverse range of professionals and be part of a cutting-edge native animal rehabilitation program.

LCAS utilises peer work, cross-age tutoring, and community skill sharing in its involvement in on-ground projects. This has resulted in improved learning for students, sharing of knowledge, development of positive working relationships among students, improved student behaviour, and the learning of new skills. This strategy has led to involvement in other curriculum areas, such as the Visitor Information Centre.

LUCINDALE AREA SCHOOL

About, in and for the environment

A rural school of 285 students

Lucindale is a small town in the South-East of South Australia, surrounded by farming land. Lucindale Area School is an agriculturally focused school, with 98% of its students coming from the land. Its strong environmental philosophy is reflected in the large amount of hands-on environmental activities carried out by students. The development of a community run, school-owned farm has provided the school and community with a valuable resource that models and teaches ecologically sustainable development.

Yabby tank, LAS aquaculture farm.

School philosophy and structure

Lucindale Area School (LAS) has a strong environmental philosophy, with EE being taught across the whole school curriculum since 1992. Its environmental policy was finalised in 1994, and a key teacher in EE employed in 1995 further strengthened its program. The implementation of LAS's EE program is described below:

> At Lucindale we develop an understanding ABOUT the environment through the extensive Reception to Year 12 environment program.

We, as far as practical, teach IN the environment with classes visiting different sites, working in gardens, on the farm and in the community.

Most importantly, we work together FOR the environment, through encouraging positive social actions, such as – raising funds, writing letters, recycling, propagating and planting trees, developing posters and handy hints, promoting sustainable farming and attending environmental forums to name a few. In a recent survey the school community gave Lucindale Area School an 80% approval rating for our support for Environmental Education. (from Lucindale Area School submission to KESAB awards, 1998)

LAS has an Environment Committee consisting of teachers interested in the school's EE program. The committee plans hands-on environmental activities involving all areas of the curriculum.

The Farm

Planning for the long term

Property owned by the Department of Road Transport was purchased by DETE for use by LAS as a school farm in the early 1990s. The farm began with an organic philosophy in 1994. It now has only a couple of organic paddocks, and is dedicated to low-input sustainable techniques. Development of the farm was researched in depth, and large support networks were set up. It was funded by a Landcare grant through the National Landcare Program for the first three years, which provided for a consultant on sustainable systems to guide the development of a 10-year vision for the farm. The vision facilitates the demonstration, trial, recording and publishing of skills in farm diversification and ecologically sustainable development. Through the consultant, a farm plan was also established which resulted in fences being realigned with soil types, and a planting program developed for each paddock.

The aims of LAS's sustainable agriculture farm are to:

- establish a practical working farm as an educational resource
- manage the farm so that it demonstrates ecologically sustainable and economically viable farming systems that are relevant to farms in the bioregion
- establish community cooperative ventures in alternative agriculture which will revitalise the local economy and retain people in the district.

The farm planning process involved students, teachers, local farmers and residents, and included field days managed by the Lands Department (Soils and Planning). A Farm Committee was then established to coordinate and plan farm activities. This committee consists of people from the local farming community, and is a subcommittee of the school council. Their efforts are supported by LAS teachers and students. The Farm Committee makes all decisions about the farm and is always trialling different crops and techniques. Each member of the Farm Committee accepts a lead role in the planning and management of a cropping program. This clear definition of roles and responsibilities ensures maximum success. The Farm Committee is now empowered to carry on the farm development. Through its work:

- skills in farm diversification are taught
- the concept of a balance between development and ecological sustainability is fostered
- alternative cropping is demonstrated, trialled, recorded and published.

Current crops

The 40 hectare farm grows onion for seed, grape vines, organic crops, and runs some sheep and cattle. Viticulture is planned to become a key farm enterprise with options for students to study viticulture as part of a school and TAFE program. The vineyard development was completed in 1998

and is expected to yield quality grapes within the next few years. Money is currently earned from various crops, with large amounts coming in from onion seed.

Feeding the farm

In-kind support for the farm has been received from local business, parents and community, through the provision of labour, student supervision, expertise, technology, hardware, and fencing materials.

Aquaculture

LAS has developed an enterprising aquaculture farm. It comprises a hatchery, three circulatory tanks and three large lagoons, with a focus on the production of rainbow trout and yabbies. Rainbow trout and Atlantic salmon are hatched and sold at several weeks of age (as 'fingerlings') to another aquaculture farm which rears them, and to local farmers; older trout are sold to local restaurants.

The aquaculture program was developed by the school to demonstrate to the community an intensive farming project that enables farmers to diversify and provide additional income potential. From this initiative, the school hopes to provide a model for the creation of partnerships between farmers and the fishing industry so they can work together to enhance both rural and fishing industries.

An 'Introduction to Aquaculture' course was held at LAS during 1995 by the Fishing Industry Training Council as a result of a joint application to the Federal Government for funding an institute-based pilot training program for local farmers and agriculture students. This application was submitted jointly by representatives from Government training providers, the Fishing Industry Training Council and local growers.

Support in the form of funding was gained from PIRSA to facilitate an additional aspect of sustainability to the aquaculture project. Recycling of water from the aquaculture facility through the school's irrigation network was set up to irrigate paddocks and school grounds during summer. This was accomplished with support from parent and community workers, in-kind equipment loaned from the District Council of Naracoorte and Lucindale, and materials donated by Vinidex Tubemakers.

LAS has developed partnerships with local aquaculture farmers to ensure that students have contact with industry through which they can gain cutting-edge information and skills.

Yields

The school and community farm and aquaculture facilities are now well established with full student involvement. They are expected to record an income in the order of $60 000 in the next two years from aquaculture, viticulture, seeds and pasture. This will enable the farm to be self sustaining, with excess funds put into non-enterprise environmental projects such as revegetation, and other parts of the school budget. The school recognises that if it wants to continue running a farm as an educational facility in the future, it needs to earn a return. Financial incentives are a critical factor for success.

The interest shown by students in their schooling is displayed by the low number of early school leavers — it is rare for LAS to lose one student per year. Many students come from farms and therefore already have a strong connection with the land and a love of working outdoors.

By working with the community (the school's motto is: 'school and community working together') as a team, there is a sense of both the school and the community educating students.

LAS is not only teaching its students about sustainable agriculture, but is investigating new crops and techniques, serving as an experimental base for expanding the existing agricultural climate. Students are changing farmers' attitudes by what they learn. The school is leading the community's vision. LAS will produce graduates who will be kinder to the land than their ancestors have been; looking to new, diverse and alternative crops.

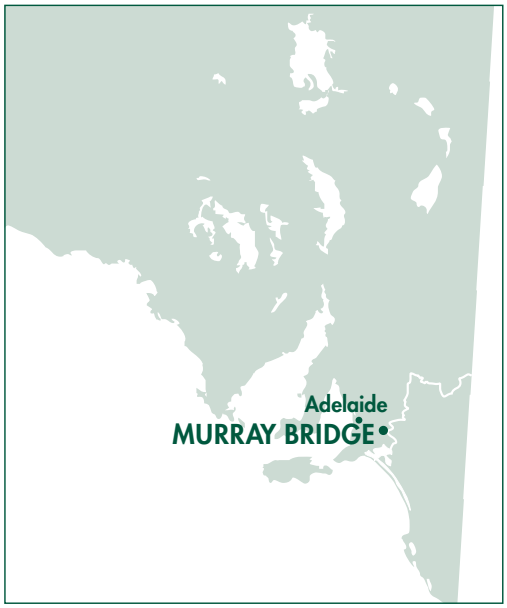
MURRAY BRIDGE HIGH SCHOOL

Wetland and Zoo Crew

A rural school of 850 students

Murray Bridge, situated on the Murray River, has a population of about 13 000. For the past five years, Murray Bridge High School has coordinated environmental projects with the wider community to give students a reason to stay at school. They are involved in numerous large-scale projects that provide significant benefits to the local environment.

Zoo Crew, Monarto Zoo.



Background

Murray Bridge High School's (MBHS) involvement in environmental projects was initiated by its student counsellor, Ian Walton. Ian's motivation for this involvement was primarily to improve student learning. He believed that hands-on environmental projects with the wider community would act as a catalyst to stimulate and maintain student interest in learning, and teach them valuable skills for the work place.

MBHS's philosophy facilitates and necessitates working in conjunction with its community:

> Life is real and learning is lifelong. Involving students in their community and undertaking projects that involve reasoning, decision making, cooperation, risk and reward builds the value of self and adds to the spirit of the community. (from Murray Bridge High School submission for KESAB awards, 1998)

Building credibility within the community

Ian's position as student counsellor provides him with more flexibility than most teachers. He uses this time to plan and prepare environmental projects, and to establish and maintain strategic relationships with community groups and institutions. These relationships have proven to be extremely rewarding for all

concerned. By taking the time to listen to the issues and needs of the groups, Ian becomes aware of ideas for cooperative projects for MBHS students to become involved with. The development of trust has been fostered among all players and the school has gained credibility for its efforts.

Staff involvement

A goal for MBHS is to maintain cooperative environmental projects in the long term. A strategy to achieve this is to encourage enthusiasm in and involvement of all school staff, by conducting an informal 'teach the teacher' program. Teachers participate in sessions where they are shown how MBHS's environmental projects are planned and managed. Training teachers in this way helps to develop their own projects and maintains the stability of environmental projects within the school. MBHS now has a base of teachers who are the key 'drivers' of environmental activities with the community.

Curriculum links

EE is embedded into MBHS's curriculum, mainly through Studies of Society and the Environment, although a range of other faculties have also become involved in environmental on-ground projects, e.g. technology studies (constructing bird boxes) and business studies (Waterwatch magazine production).

Seizing opportunities

Support has been received from a wide variety of sources, both in kind and direct funding. This has provided an opportunity for MBHS to develop and strengthen its environment program by:

- developing an environment focus room
- exploring and developing projects outside school grounds
- linking with community bodies
- acquiring necessary resources
- accessing expert advice
- fostering links with resource personnel and agencies.

The projects

MBHS is undertaking several large-scale environmental projects in cooperation with the wider community. Two that are particularly effective for both students and the local environment are the 'Zoo Crew' project at Monarto Zoological Park (MZP), and rehabilitation of a wetland on Defence SA's army range lands.

The goals of these projects are to:

- involve students in the local area
- develop students' practical and social skills
- develop long-term partnerships between MBHS and community organisations.

The Zoo Crew

This project was initiated by Ian Walton who is a voluntary guide at MZP. Although initially cautious, MZP agreed to become involved with MBHS.

The Zoo Crew has involved 90 students over the past five years. Students from Years 8 to 12, usually in groups of about 12, spend one day per week at MZP, carrying out a diverse range of activities including:

- fencing, track maintenance and seat construction
- revegetation, seed collecting and weeding
- (if they are lucky) feeding the animals!

Students are valued for their efforts at MZP and celebrations are held to demonstrate this appreciation. After students have completed 30 hours at MZP they are presented with an enamel Monarto Zoological Park badge. This is followed, on completion of a term's work, with a certificate acknowledging their efforts.

The students' donated labour to MZP is returned by their enriched experiences in a wide range of activities such as those listed above. Students have earned respect with zoo staff. Initial constant supervision by MZP staff has been replaced with trust in and responsibility placed with students, and invitations to MBHS to extend existing projects.

Evaluation

Evaluation is conducted by informal discussions between MBHS and MZP, and between staff and students at MBHS. Students are assessed at the end of a term of work in the Zoo Crew and reports are provided for each student.

Army range lands wetland development

Ian approached Defence SA to negotiate the school's involvement in the wetland project. The aim of the project is to develop a functioning wetland that processes Murray Bridge's treated effluent. Defence SA saw mutual benefits from involving MBHS students in the project and a partnership was formed.

The wetland consists of a series of three ponds constructed to efficiently dispose of the treated effluent. MBHS has been involved with the site since early construction stages, with increasing activity over the past two years. This project has brought together a diverse range of people, working together to achieve the common goal of developing a functional wetland and as a habitat for native plants and animals to flourish in. The parties involved are MBHS, Defence SA (the army), and professionals from South Australia Research and Development Institute (SARDI) and SA Water.

The stages of the project are:

1. Ponds constructed through a joint project involving State Government, SA Water and Defence SA.
2. Students mapped the wetland site, setting up a grid system to allow future monitoring of plant growth.
3. Preparation for planting the wetland: identifying sources and collecting plants and seed from local bushland and wetlands.
4. Propagating seed and planting out the wetland with appropriate species of reeds and sedges.
5. Establishing habitat for native animals. Students constructed a number of floating islands for birds to perch on, and built bird boxes to promote nesting at the site. A bird hide was also constructed by students and school staff to allow views of the wetland's bird life.

Students are in the process of further developing habitat for native fish in the wetland, under the guidance of SARDI. SARDI has stocked native fish in the wetland, with the potential for using it as a source nursery for reintroduction of these species into other areas.

Monitoring and evaluation

Monitoring of this project is done by a number of processes:

- ongoing monitoring of plant growth rates using the grid systems initially set up
- ongoing photographic record of the project starting at construction and development phases
- observation and recording of fauna present in the wetland.

Linking the Zoo Crew with the army wetland

MZP has an abundance of dead wood created by the original Monarto Commission planting of fast growing Western Australian native trees. This has provided ideal habitat for rabbits and needs to be removed. The army wetland site needs habitat for birds and native fish. MBHS saw the opportunity to fulfil both the army's and zoo's needs and its own, by providing training in chain saw operation for interested students as part of a Vocational Education Training program. MBHS is acting as the mediator, and will coordinate students to assist with the relocation of the sawn timber from MZP to the army wetland site.

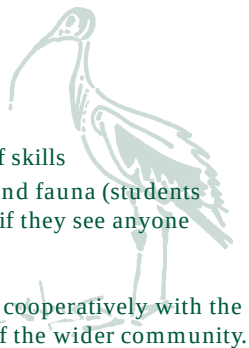
Outcomes

The outcomes of MBHS's environmental program have been enormous and continue to grow. The two projects yield benefits for everyone involved:

- MZP is provided with a willing and enthusiastic labour force that carries out necessary weekly maintenance
- the wetland development project provides Defence SA with assistance on a valuable and essential project for the community of Murray Bridge
- the professionals involved from SARDI and SA Water receive unique information
- the entire local community benefits from development of the wetland through removal of the town's treated effluent, and in being able to share an important and special resource.

Both the wetland rehabilitation and Zoo Crew are ongoing projects, where students involved are continually learning and building on their knowledge and confidence. Student benefits from involvement in environmental projects with the community are many. Direct learning outcomes are increased and new practical skills are attained in many areas which have value in the work place. These include:

- plant knowledge: identification, propagation, seed collection
- research and monitoring skills: data collection, written reports
- experience in the use of a geographical positioning system (GPS)
- increased social skills and ability to work as part of a team
- opportunity to work with adults, including professionals with a variety of skills
- greater respect and empathy for their local environment, including flora and fauna (students interviewed at MBHS said they used to kill animals, but are now angered if they see anyone killing native animals or trampling native plants).



MBHS provides evidence that EE in the form of hands-on projects undertaken cooperatively with the community is a vehicle for changing the behaviour of students and attitudes of the wider community.

PORT VINCENT PRIMARY SCHOOL

'Well...what can one kid do?'

A rural school of 28 students

Port Vincent is a small seaside town on the east coast of Yorke Peninsula. Port Vincent Primary School has been involved in environmental projects for many years and has achieved significant outcomes since its focus changed to 'action in the environment' in 1993. The school's environmental ethos is reflected in the Learnscaped school grounds.

Monitoring marine life, Port Vincent.

Background

Port Vincent Primary School's (PVPS) environmental program changed direction in response to a child's question: 'Well…what can one kid do?' The need to answer this question resulted in PVPS empowering the students to take action, and in forging links with the community. EE has been on the school priority plan for the past three years, and the school has an allocated EE afternoon once a week. Students choose a topic to concentrate on every term, including recycling, marine studies, and land care.

Riding the community wave

PVPS's first stages of environmental action were initiated by the town's Tidy Towns group. Port Vincent Tidy Towns was formed by local volunteers in the late 1980s. The partnership formed between PVPS and Tidy Towns from a mutual interest in undertaking environmental on-ground projects, and a knowledge of what each group was doing. Together, the school and Tidy Towns group received funding for environmental projects around the town.

Students became involved once a week in all hands-on aspects of these projects, including building boardwalks and trails, building steps, and revegetation works.

The partnership between PVPS and Tidy Towns was strengthened through the participation of a school representative in monthly Tidy Towns committee meetings, and their position on the committee. The founding members of the Port Vincent Tidy Towns group value the input students have had on projects, and have a lot of pride in them. They share the same goals as the school, resulting in a successful and productive partnership.

Learnscapes

PVPS established the roots of its environmental program by connecting hands-on work outside the school with 'Learnscaping' the school grounds. The goals of PVPS's Learnscaping are to:

- link school learning with on-ground community projects
- extend the concept of a classroom with no walls.

The inspiration for Learnscaping at PVPS was triggered by a one-day Eco-Schools workshop run by the Australian Association for Environmental Education (AAEE) at Minlaton District School in 1998, and also by a visit to Ardtornish Primary School as part of the initial Landcare Focus Schools Program. Developing the school grounds brought everything together for PVPS and resulted in an atmosphere of care for the environment, which is evident when entering the school grounds.

PVPS has an Environment Committee made up of students from Reception through to Year 7. This committee has the ideas, motivation, and a lot of the knowledge and skills for environmental projects. There is ongoing pride in the results achieved by PVPS's students.

PVPS follows the 'MISA' approach used in NSW: motivating–investigating–sorting–action to teach its EE program. Due to the small size of the school, each teacher teaches the same students for three or more years; having a diverse and evolving environmental program is therefore important to maintain high student motivation.

Students are involved in all Learnscape projects from the very beginning, from writing their vision statements through construction stages to monitoring and evaluation. The students are the organisers, the motivators and the doers. Learnscaping has been the birth of many more projects at PVPS. By investigating links, the school's environmental program 'just keeps going'. There are three Learnscapes on the school grounds which are designed to link in with the major on-ground projects outside the school.

The Reef Learnscape

The most obvious feature when walking into the school is the Reef Learnscape or 'hitting wall', a large wall painted with a mural of the reef. The mural was designed and painted by students with the assistance of resident artist Mark Short, who was employed for the project through a South Australian Arts Council grant. Mark is also an instructor at the Aquatic Centre, co-sited at the school. The strong partnership between the Aquatic Centre and PVPS was consolidated through attendance at the Landcare Focus Schools workshops by both Bill Travis, an aquatic instructor and PVPS teacher Michelle Hawthorne.

The Reef Learnscape links the school grounds to the community research project 'ReefWatch' and the Marine Studies Centre located within the school resource centre. The ReefWatch program is run by the South Australian Conservation Council and is conducted monthly at Port Vincent's rocky reef by several students and an aquatic instructor. The hitting wall was completed in 1998 and celebrated with a twilight concert. It is a source of pride for the staff and students alike.

The Sand Dune Learnscape

At the entrance to the school is the Sand Dune Learnscape, linking to its dune revegetation on the back beach of Port Vincent. This Learnscape was planned by students, the process beginning with a meeting to decide on the steps to be taken. Students mapped the sand dune, researched and identified appropriate species to plant, then planted the dune. PVPS applied to the local employment program for a trainee groundsperson who excavated and prepared the sand dune site. The Sand Dune Learnscape has now evolved into a mini-nursery, supplying seed and seedlings for revegetation of dunes on the beach.

The Thicket Learnscape

The Thicket Learnscape is the school's link to the many on-ground revegetation works it has carried out around the town, and is currently carrying out on a nearby farm. It was originally planted in 1993 using native species growing along the 'walking trail' (a trail constructed cooperatively by the school and Port Vincent Tidy Towns). The thicket now has walking trails, edged by stones, and signs for plant identification. It has become a centre of learning, a quiet place for English and Art activities, and a microcosm of the local scrub. It is a focus for preparing students for off-site revegetation projects, e.g. by identification of plant species and participation in the GLOBE project.

Raising awareness

PVPS keeps the community informed of its environmental activities. The school holds an annual community meeting to raise awareness. Its projects are thoroughly documented and monitored by teachers and students. Students maintain 'logs' to document their involvement in projects and reflect on their personal feelings and achievements. A calendar of important events and achievements of PVPS's environmental projects is updated weekly by the Environment Committee. Students often write letters and distribute leaflets and flyers to local residents who may be affected by any on-ground activities, e.g. their rehabilitation of the sand dunes on the 'back beach' involved removal of weeds. The students informed all residents who lived behind the dunes of their intentions. Some residents expressed concern as they had grown quite attached to some of these weeds, so the students agreed to leave those particular ones.

Outcomes

Learnscaping the school grounds has the added spinoff of being an attraction for the wider community. PVPS has developed a buddy system where students take tour groups (such as other schools, community, parents, kindergartens) through their school grounds and unique Marine Studies Centre. This boosts confidence of students and motivates learning. A lot of community skill sharing and peer and cross-age tutoring occurs every EE session. These lessons allow students to plan, explore, pose questions and seek answers, to consolidate their learnings and, for community members, to model 'good practice' in many ways.

PVPS has received State and national recognition for its various environmental projects. The students are very confident and extremely good speakers as a result of their involvement in on-ground projects, the level of responsibility placed upon them, and the huge amount of trust and pride in them and their work. The community accept the students as 'partners in learning', and the community learns from the school. They recognise the learning accomplished by students' involvement in environmental on-ground projects and accept that learning doesn't just come from books. Teachers at PVPS consider their students as partners who inspire them to look further.

The teachers see the use of the environment in their curriculum as an excellent way of keeping the program dynamic. It also acknowledges and raises awareness of their unique and special environment, in the students and the rest of the community.

RAUKKAN ABORIGINAL PRIMARY SCHOOL

High winds won't stop them!

A rural school of 42 students

Raukkan (formerly Point McLeay) is an Aboriginal community situated on the wind-swept but beautiful Lake Alexandrina in South Australia's South-East. Raukkan Aboriginal Primary School was established as part of the Point McLeay Mission in 1859. From the many trees planted around the school, the chickens and vegetable garden, to the large bright mural painted by students, it appears evident that the school cares for the environment and its people.

Students with chickens, Raukkan Aboriginal Primary School.

Background

Raukkan Aboriginal Primary School (RAPS) has been actively involved in environmental projects for the past few years and, in particular, with significant revegetation projects throughout the local community. Its long-term goal is to restore the local environment to its former 'natural' state. An objective for RAPS to fulfil this long-term goal is to foster enthusiasm and excitement in its students about land care while they are young, and thereby plant the seeds for caring for the land later in life.

RAPS also conducts ongoing seed collection from local native species and propagation activities, which take place on school grounds. Wind is an issue at the school site which has created difficulties in propagating (two propagating tunnels have blown away!) and is all the more reason to get more trees in the ground.

Raukkan is managed by a community council which functions like a district council, with elections held to appoint council members. The council owns a dairy and mixed farm covering 6000 hectares, which

employs 10 people and provides a source of income for the town. Students from RAPS have visited the farm on several occasions.

Support

Support has been received from the Aboriginal Lands Trust, both as direct funding and in-kind support, e.g. donated plants and expert advice. The Raukkan Community Council has also provided a range of in-kind support, e.g. machinery and equipment from the community farm for revegetation projects.

This year a school council has re-formed after a few years absence. There is potential for this group to accelerate student involvement in community based environmental projects, and to offer support in planning and implementation of projects.

Projects

Raukkan Community Council carries out planning and decision making for the town. The community revegetation projects resulted from discussions initiated by the community council with RAPS in an effort to improve the local environment and involve children in the community.

RAPS carries out revegetation works in accordance with the community council's priorities and has completed many significant plantings in important areas. These have included revegetating an old dump site on the lake front and planting a sand hill which was threatening to engulf the cemetery. More recently, the area surrounding a burial site was revegetated.

Philip Kartinyeri, the groundsman at RAPS, is exposed to new revegetation techniques in his work with the Aboriginal Lands Trust. He trials these new ideas at the school in an attempt to improve the revegetation process. Examples of these are:

- direct seeding
- hydro-mulching (a technique where seed is combined with paper mulch and spread over a large area with machinery).

RAPS's revegetation projects are promoted by photographic displays at the council office. This is an effective form of communicating project achievements to the rest of the community.

Recent developments

A project still in its infancy but gathering momentum in Raukkan is European Carp removal from the local lagoon. The idea was initiated by students on a visit to the lagoon. Carp are destroying the habitat for the long-necked tortoises and native fish that live in the lagoon.

The carp caught by students are weighed, measured and the sex identified, before they are eventually eaten by pelicans and other birds. At this stage, the catching takes place on weekends with very basic equipment, with the results recorded on a computer at the school.

Students have also undertaken monitoring of the long-necked tortoises from the lagoon. They weigh, measure, mark and photograph the tortoises before returning them to the lagoon. One student is working on a Powerpoint presentation (on computer) of this research. Students have written an action plan for the Carp Project.

Coastcare has expressed interest in the project development, and the school has also discovered that local fishermen are prepared to pay $1.50 kg for carp for crayfish bait!

Outcomes

The outcomes of RAPS's involvement with its community in environmental projects are primarily for the students. These include:

- an increased sense of pride in the community
- a desire to keep the community clean
- an eagerness to carry out environmental hands-on projects
- rewards in watching the trees they planted grow
- a greater awareness of, and knowledge about, the local environment, e.g. identifying birds as they drive along the lake to a soccer game
- an interest in environmental hands-on activities continued in high school.

Outcomes for the school and the community are:

- improved student behaviour
- reduced levels of vandalism, particularly on trees students have planted
- an opportunity to change the focus of RAPS's groundsperson from a 'mower of lawns' to a planner, motivator and 'doer' in a range of environmental on-ground projects with students
- increased student enjoyment in their learning.

High winds are certainly not stopping the progress on environmental projects at Raukkan, and the recent installation of a new propagating greenhouse will undoubtedly result in many more trees to slow the wind down!

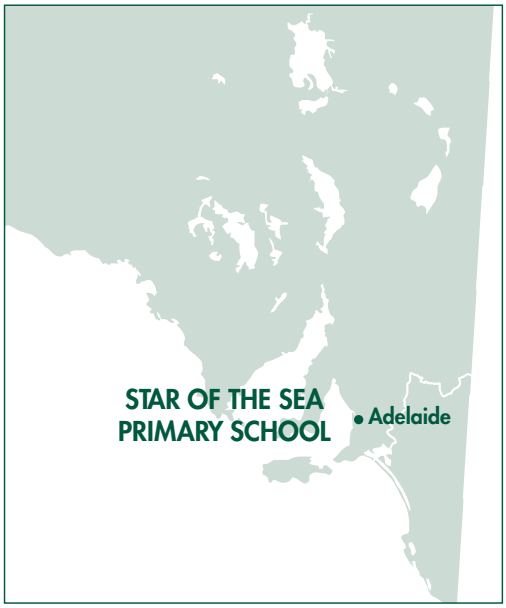
STAR OF THE SEA PRIMARY SCHOOL

Seaside studies

An urban school of 450 students

Star of the Sea is a Catholic Primary School situated in Henley Beach, a seaside suburb of western Adelaide. The school has established a Marine Discovery Centre which is accessed by students, both from Star of the Sea and other schools, and also the general public. The large aquaria featured in the centre contain a stunning collection of marine species, including Port Jackson sharks, a parrot fish and southern fiddler ray.

Exploring the marine environment, Henley Beach.



Background

Star of the Sea (SOS) has a strong interest in the marine environment due to its close proximity to Henley Beach. The school's location and desire to know more about its local environment was the inspiration for embarking on the ambitious project to establish an onsite 'Marine Discovery Centre' (MDC).

The parish purchased a house adjacent to the school for the express purpose of conversion to a marine study centre. The principal of SOS, Sister Enid, was instrumental in this purchase. The interior of the house was refitted for the centre and an extension built at the back. These structural changes were coordinated by a parent on the school council who operates a building and construction business, and therefore had the appropriate expertise.

Enormous effort went into the preparation of the MDC, with funds from many sources including grants from Coastcare and the Catchment Water Management

Boards (Torrens, Patawalonga, Onkaparinga, Northern Adelaide Plains and Barossa), in-kind support and advice from Fish Protection Services and from the wider community. As a result of this support, the MDC opened in 1998, celebrated by 200 guests and a 'Catchment Dance'.

The MDC

The steering committee

A steering committee was formed in the early planning stages of the MDC. It consists of Tim Hoile, (MDC coordinator and SOS teacher), and representatives from the local council, DEH, school Parents and Friends group, Catholic Education Office, SARDI, Coastcare, and the Fisheries Department. Tim drew in many 'expert' members of the steering committee through his involvement in related committees.

The steering committee holds quarterly meetings in the SOS school staffroom. These well-attended (and well-catered!) breakfast meetings focus on the current running of the MDC (reports, visitor numbers, budget, etc.) and planning for the future (including obtaining funds). There is an expert on the committee for everything necessary, i.e. a builder, media representative and marine science experts. Being able to tap into these people through existing networks (e.g. the builder is also the school board chairperson) is a huge advantage for the school.

The program

All students from SOS have one 45-minute class lesson per week in the MDC. Activities include hands-on experiences with flora and fauna from the aquaria, scientific studies and observation, research, and writing exercises. They also participate in outdoor activities linked to the MDC, i.e. beachcombing and water testing.

Visiting schools and the general community make bookings for the MDC, and pay a small entrance fee. Visiting students generally spend a whole day at the centre, participating in activities inside and at the beach.

The MDC covers all aspects of the marine environment, including:

- marine fauna (fish, sea dragons, sea urchins, molluscs, etc.), many of which can be found in the aquaria
- marine flora (seaweed, algae)
- coastal issues (e.g. beach erosion)
- whole catchment issues
- water quality.

Information on the above aspects, including how to identify marine flora and fauna, is displayed throughout the MDC in the form of dried or preserved specimens, live creatures, books, videos, posters, pictures and models.

Models

Models are used in the MDC to provide an alternative way of teaching students. For example, a model of two houses, one a 'water saver' and the other a 'water waster' demonstrates the effects of different life styles on the whole catchment.

A model of the catchment was recently completed which allows visitors to track water from the top of the catchment to the sea.

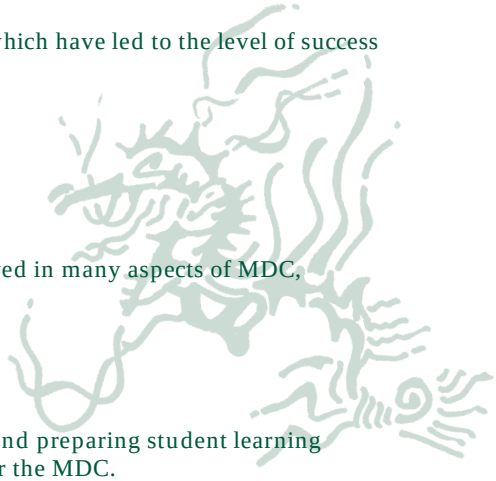
Student activities and themes

A new theme is introduced at the MDC in each term. This maintains diversity in the teaching program, and is the basis for the term's student activities. New activities are also developed on a regular basis for all age groups; these range from alphabet games and puzzles for young students through to activities on the computer, and scientific observation and recording exercises for older students.

Support

The MDC receives, and has received, many sources of support which have led to the level of success it now enjoys. Sources include:

- parents
- the Principal
- government and non-government organisations
- the wider community.



Parents' support has been consistent and strong. They are involved in many aspects of MDC, including:

- cleaning and maintenance of the building and equipment
- secretarial duties
- donation of funds
- educational support, which involves supervising, teaching and preparing student learning activities and preparing information and picture displays for the MDC.

Contributions made by volunteers are highly valued, with much effort made to ensure that they enjoy their experience at the MDC. Many volunteers attend on a fortnightly rotational basis, which does not place too many expectations on their time.

New volunteers are trained in an ongoing process to ensure sustainability of the MDC.

Parents who are involved in the MDC share the school's vision and hope for the Centre's future. This solid partnership between the school and parents will ensure that the MDC dream is carried into the future.

Outcomes

The outcomes of the MDC continue to be high for all involved. Students, staff and parents are more environmentally aware, particularly of their local marine environment. There is increased awareness of endangered species and ecosystems (including the leafy sea dragon and changes in seagrass ecosystems). There is a mutual respect for all involved and a high regard for Sister Enid and Tim Hoile.

Certainly no-one can resist the fascination of the aquaria and its many unusual sea creatures as they walk in the door!

STRADBROKE PRIMARY AND JUNIOR PRIMARY SCHOOL

Fourth Creek restoration

An urban school of 750 students

Stradbroke Primary and Junior Primary School is nestled in the foothills of Adelaide. The school grounds boast large gum trees, many native gardens and a tributary of the River Torrens running alongside the boundary fence. For the past eight years the school has been rehabilitating Fourth Creek, restoring it to a 'natural' healthy system.

Watering seedlings, Stradbroke Primary and Junior Primary School.

Background and motivation

The original goal for Stradbroke Primary and Junior Primary School's (SPS) EE program was to improve the school grounds. Plants that flower at different times were chosen to attract native birds and fauna and to create colourful school grounds all year round. Parents helped students with the plantings around the school.

The enthusiasm generated from this initial environmental focus expanded to Fourth Creek in an attempt to address environmental problems identified there. Fourth Creek had extensive tracts of exotic plants (e.g. Ash, olive, kikuyu, couch grass), and bare patches from excessive shading. SPS decided to restore the stretch of Fourth Creek along its boundary to its former 'natural' state. The school's motivation for taking on such a challenge was to:

- create a safe corridor for fauna between the school and nearby Morialta Conservation Park
- gain a sense of ownership of the local area
- educate children to act locally
- network with people and develop mutual relationships
- gain satisfaction in seeing positive changes in the local environment.

The land proposed for the restoration belonged to the school so they didn't require special permission to commence work.

The project

SPS approached the local Campbelltown City Council to express its interest in revegetating Fourth Creek and found that the council also had plans for restoring the creek. Both parties saw this as an opportunity to establish a unified approach, with the joint aim of creating a fauna corridor between the school and the adjacent Morialta Conservation Park.

SPS held meetings with local council employee, Chris Raines, Manager of the Open Space Strategy, during planning stages for the restoration of Fourth Creek. A partnership was formed with the school, with the council assisting throughout the restoration process, including removing exotic weeds, and providing plants and structures (e.g. building stepping stones across the creek).

As the school was only planning to work on its side of the creek, the council organised a letter drop to residents on the opposite side, informing them of the plans for restoration. The response to the letter drop was mixed; some residents were upset about the removal of trees they had become attached to. In hindsight, the council recognised that a more effective communication method would have been a face-to-face meeting with the residents concerned.

All classes were allocated their own patch of the creek to restore. SPS ensured that every student planted at least one tree in the early stages of restoration. Buddy class systems were used throughout the school when working at the creek.

The need for a part-time groundsperson to work on this project was identified and funded through the school budget. Mary Laslett, a long-time volunteer and parent, was employed to support classes in rehabilitating their patch of creek. Mary assists by seed collecting, creek plantings, caring for the school's native gardens and running the propagation area established on school grounds.

Activities

- The creek bank was very densely planted with the aim of recreating thick bush. When the plants are mature, it is envisaged that they will provide a seed bank for future revegetation projects.
- A walking trail was established along the creek, upgraded from an existing pathway.
- Plant identification signs were erected along the trail, cemented in place by Mary. The identification labels were made by a local engineering firm and attached by students using pop rivets. Unfortunately these signs have not been as vandal-proof as the school would have liked. New signs will be erected in the future, based on those used in National Parks — a length of permapine cemented into the ground with the top angled to enable the attachment of identification labels.

Monitoring

Ongoing monitoring of the project is carried out in the form of photos, vegetation records, water quality monitoring and invertebrate studies to test water quality. It is planned to extend monitoring in the future to include fauna. Today, about two-thirds of the school's classes maintain a stretch of the creek by monitoring and weeding.

The future

The vision for restoration of Fourth Creek started small and gradually grew — as more was achieved, it was realised that even more could be achieved. The project has now been extended to continue revegetation further up the creek.

The school's EE vision has also expanded to:

- develop a culture of action and care within the school
- raise awareness of catchment issues in a broader section of the community
- encourage the wider community to take action in improving the health of catchments.

Support

Restoration of Fourth Creek has been mostly self-funded by SPS and the council. SPS has been highly successful at tapping into existing networks and local resources as indicated below.

Government organisations. A radio advertisement for the Our Patch program prompted a teacher from SPS to contact the local Our Patch project officer. Since then, Our Patch has been a valued source of support, providing advice, funds for equipment and resources (e.g. plant identification books), and support with submission writing.

Landcare has supported the project with funds and release time for teachers.

Non-government organisations. KESAB has provided education officers who have run training workshops for teachers and students, and the Australian Trust for Conservation Volunteers (ATCV) has also supported the project.

Local expert advice. Local botanist and plant specialist, Kieren Brewer, has provided a wealth of knowledge about local plant species and some training for teachers.

Local business. Gravel for propagation was supplied by a local quarry.

School structure

The creek has developed as a curriculum focus in the school. Class activities and input into the creek restoration are undertaken as part of an integrated curriculum.

Learning teams

In 1998, SPS staff were involved in learning teams, based on school priorities. Small groups met three to four times per term to work on their chosen area, and progress and issues were discussed during staff meeting time. The Environment Focus Group produced identification booklets about the local plants and animals for other teachers at SPS.

The Environment Club

Two teachers run the Environment Club for students from Year 3 to 7 during lunch breaks. The Environment Club is involved in many environmental activities on the school grounds, including the planning and implementing of ideas for the school gardens and creek rehabilitation.

Resources

A special area is set aside in the school's Resource Centre for resources of the local area, including identification books of local plants compiled by teachers. The school is well resourced with gardening equipment for classes, with appropriate ('child sized') tools, stored and controlled by an enthusiastic teacher.

Celebrating achievements

Participation in restoration of Fourth Creek has earned SPS major environmental awards from KESAB and Watercare. The school has celebrated its success with special morning teas, and articles in its newsletter and the newspaper.

Large, framed photographs of students working in the environment are placed in strategic positions around the school. These professionally presented images highlight the work the students are involved in and convey a positive message to visitors and parents.

Outcomes

The environment has benefited enormously from work carried out by SPS, council and the wider community. The area selected for restoration is completely vegetated with local native flora.

The council has gained kudos from its involvement with the school, and has also benefited from SPS's involvement in terms of improving the council area. The council has been congratulated for its work on restoring the creek by many local residents, and is quick to acknowledge the school's major contributions to this work. The council sees the restoration of Fourth Creek as a forerunner in creek-side rehabilitation, and holds this project up as a model for others to follow.

Students have a very real and strong sense of ownership of Fourth Creek. In one instance, council staff inadvertently damaged a section of their creek, and a special assembly had to be held to calm the students down! Students have also gained:

- a heightened awareness of the interactions between, and interdependence of, vegetation and fauna
- increased skills in propagating and planting.

SPS now uses the revegetated creek bank for many classes including fitness and poetry. It is also a popular walking path used by the community. There have been many positive comments from local residents walking through the school's section of the creek, including how nice it is to see children planting trees.

Specific outcomes for *SPS* from its involvement in restoration of Fourth Creek are:

- the development of enthusiasm and awareness in staff
- highly motivated students who love working in the environment
- a positive image in the community
- an excellent working relationship with the local council
- teaching people to recognise indigenous flora
- increasing people's understanding of the harshness of our environment.

URRBRAE AGRICULTURAL HIGH SCHOOL

Storing stormwater for a sunny day

An urban school of 850 students

Urrbrae Agricultural High School is at the base of the Adelaide foothills on land bequeathed by the late Peter Waite and held in perpetuity for the school to use and share with the community. Students choose to attend this unique school because of their connection to, or interest in, the land, environment or animals. Urrbrae Agricultural High School has a strong environmental focus that provides the foundation for its many successful environmental projects.

Effluent ponds from piggery and dairy, Urrbrae Agricultural High School.

Background

Over the past seven years, Urrbrae Agricultural High School's (UAHS) strong agricultural focus has evolved to embrace sustainable land management practices and care for the environment. The school hosts countless environmental projects, both short and long term, of which many have been highly successful and very significant within the local community.

Support for the school's environmental focus has come from the Environment Committee and the EE coordinator, Di Coady, whose role is to oversee the many projects and assist with their smooth running. The Environment Committee consists of parents, school staff and students who meet twice a term to foster an environmental focus across the curriculum.

UAHS covers both rural and urban issues, for example:

- educating urban residents about rural issues through open days
- teaching ecologically sustainable land management practices (e.g. the use of native plants for shelter belts on farms)
- teaching about farm diversification and value adding to create alternative forms of income (e.g. bush food)
- demonstrating practices to reduce impacts on the environment in urban areas (e.g. construction of wetlands on school grounds).

UAHS has built a strong, supportive and diverse school community, which includes the Urrbrae Foundation, Old Scholars, and the Parents and Friends Club. Urrbrae is the venue for many club and society meetings, often with a teacher from the school involved.

UAHS has cooperative arrangements with a number of government and non-government research organisations to develop enterprises on the school farm, including lucerne breeding, farm waste management, aquaculture and the wetlands.

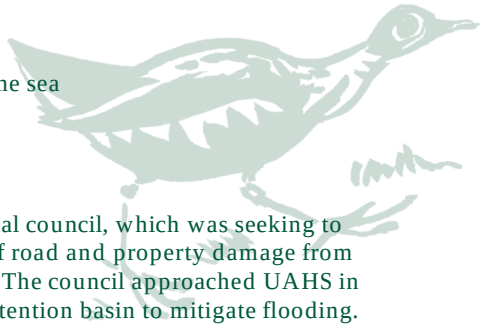
UAHS has been successful in winning a number of grants to demonstrate biodiversity and ecological sustainability on the school farm.

The school's involvement with the local community has been an important focus — from the community composting program where local residents were invited to drop off their lawn clippings, to the Urrbrae trails program, where visitors are escorted by Year 10 students to view the school's many features.

A case study of one aspect of UAH's environmental focus — the wetland

The Urrbrae Wetland is located in the northwestern corner of the school on 4.6 hectares of land. The original goals of constructing the wetland were:

- for flood mitigation
- to reduce pollution into the Patawalonga catchment and the sea
- to establish a wetland educational facility.



How it began

The initial idea for constructing the wetland came from the local council, which was seeking to improve drainage on the adjacent major road. The incidence of road and property damage from flooding was high, as was the potential for burst water mains. The council approached UAHS in 1993 with a proposal to use the corner site of the school as a retention basin to mitigate flooding. Ensuing negotiations between the council and UAHS resulted in the decision to develop a wetland for stormwater detention, with a teaching facility on site.

In 1995, the council and UAHS approached the Patawalonga Catchment Water Management Board (PCWMB) to assist with funding the wetland project. The PCWMB had recently been formed to improve water quality within the catchment and therefore reduce the amount of pollution reaching the sea. Part of its strategy to achieve this was to create a series of wetlands along the catchment. Hence, the proposal for wetland construction at UAHS met the needs of the PCWMB.

Negotiation into the following year with the PCWMB and Department of Transport (through its Drainage Subsidy Scheme) resulted in funding from both sources. Together with funds from the council and UAHS, enough monies and resources were available to complete construction of the wetland and employ a part-time wetland coordinator. This position was funded full-time in 1998 by DETE, and is an UAHS position.

Wetland development

Construction of the wetland began in July 1996 and it was officially opened by the Premier of South Australia in April 1997. A massive planting program commenced soon afterwards, involving many local primary schools and a number of other schools keen to participate. Extra support for planting in the hard clay soil was received from Skillshare (a program for unemployed people).

The centre piece of the site is the Wetland Learning Centre, a spacious log construction with large windows overlooking the wetland, boardwalks and jetties. The centre is well resourced, including a video microscope and water testing equipment. An education program has been developed by wetland coordinator, Dr Allin Hodson, and teaching staff at UAHS, to cover all curriculum areas and all year levels.

Support

Support for the wetland project has been substantial since its inception in 1993, from sources including:

- Mitcham Council (funding, advice, materials, plants, labour, maintenance)
- PCWMB (funding, advice, Catchment Education Officer)
- UAHS (funding, advice, student planting force)
- teachers and students of UAHS (curriculum initiatives)
- local Rotary group (established a 'Friends' group)
- primary school students (planting force)
- Skillshare employment program (planting force)
- CSIRO (water monitoring)
- Department of Transport through the Drainage Subsidy Scheme (funding)
- KESAB (provided workshop facilitators to assist Dr Hodson with primary school groups at the wetland and also provided support with Patawalonga Catchment excursions).

The Friends group

A 'Friends' group was developed for the wetland through the local Rotary group, which was initially contacted by the council. The Friends of the Urrbrae Wetland have contributed largely to revegetation of the wetland and continue to meet regularly to maintain it. They also run guided tours of the wetland, for visiting schools and the general public, charging $2 per person. Monies from this source are directed into buying educational equipment for the Wetland Learning Centre.

Monitoring

Monitoring of the wetland is carried out by:

- photo points
- water table monitoring by the CSIRO
- water monitoring by students
- surveys of wetland usage to show how and by whom the wetland is used
- mosquito trapping prior to and during wetland setup to compare mosquito populations between nearby residential areas and the wetland
- biodiversity monitoring by students of fauna and flora.

Strategies

Planning ahead

Planning ahead includes:

- developing clear timelines for actions
- clearly defining personnel responsible for actions
- training volunteers in cooperation with the catchment board
- developing a structure for teachers' professional development on wetland education to enable them to be prepared when they bring students to the wetland, to assist the coordinator, and to facilitate greater student learning.

Even though thorough planning is considered essential by UAHS, the school ensures that flexibility is retained to accommodate last minute changes.

Other strategies include:

- accessing local knowledge
- treating locals as experts and deferring to their expertise
- encouraging locals to address, help, and model practices to students
- involving experts
- engaging clear communication
- maintaining an open process
- involving students in the planning process and using their initiative
- giving students areas of responsibility.

Ownership

The school feels that projects achieve best results if input is provided by community groups, associations and students. UAHS attempts to foster in community groups and students a sense of ownership of the school site and of the processes. This leads to a feeling of responsibility for project outcomes.

Successful partnerships

Establishment of the wetland represented an opportunity for UAHS to work in partnership with many organisations to achieve a common goal, and provide a unique educational facility for its students and the people of South Australia. UAHS already had a wide network with both private and public sectors, so participating in a project of this size was achievable. The knowledge and experience of UAHS staff, including Dr Hodson, was a major factor in the school's ability to undertake such a venture.

Lessons learnt from the project

The wetland is the first generation of its kind in South Australia. It has consequently experienced design problems. Trash racks were installed at entry points to the wetland to intercept litter carried in stormwater. Unfortunately, the volume of water flowing into the wetland during high rainfall events was underestimated and in these circumstances the trash racks were incapable of stopping the majority of litter. The current system requires major alterations to remedy this problem. Possibilities include altering the design of the trash racks, or slowing the velocity of incoming water by creating meandering reed ponds along the inlet streams. These options are currently being assessed.

Outcomes

All initial goals were achieved:

- flood mitigation
- establishment of a wetland educational facility (since opening in April 1997, the Wetland Learning Centre has received over 8000 visitors)
- reduced pollution carried to the sea.

While the initial reason for the wetland development was flood mitigation, there have been multiple 'spin offs' for the school, the environment, and community members and groups. For example, the centre is used by professional groups such as the Hydrological Society of SA and the Aquifer Storage and Recovery (ASR) School of CSIRO.

An ASR system has been installed which allows excess water filtered by the wetland during the rainy season to 'recharge' the aquifer. This stormwater can then be recovered from the aquifer during the dry season and reused. UAHS and nearby Unley High School benefit from the ASR by being able to pump water out over summer to irrigate the school grounds, resulting in reduced water bills.

Stormwater that previously flowed out to sea via the Patawalonga River is now filtered in the wetland, hence the marine environment is saved from degradation from this source.

A beneficial partnership between UAHS and Mitcham Council has formed.

Where to next?

Recent studies have highlighted the seriousness of salinity and siltation in the Murray River. The recently released Draft State Water Plan suggests that wetlands must become an integral tool in the State's water management system. In the driest State in the driest continent, the community cannot afford to waste stormwater. Through education and modification of the existing wetland design, Dr Hodson hopes that the Urrbrae Wetland will model one positive step towards reducing the State's dependence and lessening community impact on the Murray River.

PART C
OPPORTUNITIES AND SOURCES OF SUPPORT

OPPORTUNITIES

School exchanges

MurrayLink Program

MurrayLink is a primary school program that provides the opportunity for country schools in the Murray–Darling Basin to link with schools in the urban-users region. The urban-users region includes areas outside of the Murray–Darling Basin that are supplied with Murray River water, including metropolitan Adelaide. The program is designed to build awareness of Murray River issues in both regions.

There are three links and each can involve a variety of activities:

- students learning about the Murray River and water issues
- students making personal contact with students from the link school via letters, emails etc.
- each school visiting its link school to learn about Murray River issues from a different perspective and being involved in hands-on activities.

MurrayLink is funded by the Natural Heritage Trust and managed by the River Murray Urban Users Local Action Planning Committee and the Murray Darling Association. Funding is available for schools to subsidise costs such as bus travel, Temporary Relief Teaching time and catering costs. A resource guide will be available from April 2000 to assist teachers with program organisation.

For further information contact:

Project Officer
River Murray Urban Users Committee
PO Box 3165, Rundle Mall SA 5000
Phone (08) 8204 9100
Fax (08) 8204 9144
Web site www.murrayusers.sa.gov.au

Bookmark Biosphere Reserve

Rotary Environmental Education Program

The Rotary Environmental Education Program (Rotenved) is a joint program between Rotary International and Bookmark Biosphere Reserve for primary schools to experience the Riverland conservation area known as Bookmark Biosphere Reserve. Classes camp in the shearer's quarters for two nights and take part in many educational activities.

Environmental Debt Recovery Weekend

The Environmental Debt Recovery Weekend, a similar program to Rotenved, caters for high school students aged 14 to 15 years. It is also organised by Rotary International and the Bookmark Biosphere Reserve. There are two weekend events per year at Bookmark Biosphere Reserve and activities include 'Why waste?', 'Creeks and critters', and 'Weeds away'.

For further information contact:

Rotenved Program Coordinator
Bookmark Biosphere Reserve
PO Box 955, Renmark SA 5341
Phone (08) 8595 7359
Fax (08) 8595 7630
Email bbrmcqui@mailbox.sa.ozland.net.au

New education initiatives

Vocational Education and Training

The Vocational Education in Schools Strategy 1999–00 to 2001–02 is a new system of approach to Vocational Education and is still in the early stages of delivery. A number of schools have been accessing training sessions to operate in this system.

The key principles include:

- Improving young people's transition to work to encompass a lifelong learning perspective.
- Promoting the concept of Vocational Education as a shared responsibility in the community, which fosters collaboration between local education, business, Government and community interests.

For further information contact:
Vocational Education Team
Department of Education, Training and Employment
6th Floor, Education Centre
31 Flinders Street, Adelaide SA 5000
Phone (08) 8226 4295
Fax (08) 8359 3001
Web site www.nexus.edu.au

Enterprise Education

The Department of Education Training and Youth Affairs' Enterprise Education Reference Group define Enterprise Education — 'Enterprise Education is directed toward achieving a learning culture which will result in greater numbers of students enthused and equipped to identify, create, initiate and successfully manage personal, business, work and community opportunities' — and this definition is accepted by DETE.

Enterprise Education programs include students' involvement in:

- planning and facilitation of their own learning
- exploring their relationship with the community, and potential roles for themselves
- making use of community resources for their learning
- taking increasing responsibility for initiating aspects of their learning, to be creative and take risks.

For further information contact:
Vocational Education Team
Programs and Curriculum
Department of Education, Training and Employment
6th Floor, Education Centre
31 Flinders Street, Adelaide SA 5000
Phone (08) 8226 4347
Web site www.nexus.edu.au

Funding

Possible sources of funding for school and community environmental projects include:

- Catchment Water Management Boards
- Natural Heritage Trust
  - Bushcare[1]
  - Coast and Clean Seas (ph. (08) 8224 2046)
  - Coastcare (ph. (08) 8224 2047)
  - Fishcare (ph. (08) 84633194)
  - Landcare[1]
  - Waterwatch[1]
- Urban Forest Biodiversity Program SA (UFBP)[1]

1 discussed elsewhere in Part C

Awards

Keep South Australia Beautiful Inc.

Keep South Australia Beautiful (KESAB) is an incorporated body whose aim is to inspire the South Australian community to reduce litter and restore the natural environment.

KESAB Tidy Towns Awards

These annual awards for non-metropolitan areas offer encouragement and recognition to towns, schools, and organisations maintaining efforts to restore, preserve and improve their local area.

KESAB Metropolitan Environment Awards

A range of awards are also available to metropolitan councils, schools, businesses and community groups.

For further information contact:

Keep South Australia Beautiful Inc.
395 Glen Osmond Road, Glen Osmond SA 5064
Phone (08) 8338 1855
Fax (08) 8338 2215
Web site www.kesab.asn.au

Bushcare Awards

The Bushcare Awards are for metropolitan community groups conducting environmental on-ground projects. They are coordinated by UBFP (discussed below).

For further information contact:

State Tree Centre
5 Fitzgerald Road, Pasadena SA 5042
Phone (08) 8372 0180
Fax (08) 8372 0199

Landcare Awards

Landcare Awards are available to individuals, groups and organisations involved in caring for the land. There are a range of them including awareness raising of landcare through education, catchment care, and a community group award.

For further information contact:

Decade of Landcare Coordinator
Sustainable Resources Group
Primary Industries and Resources South Australia
GPO Box 1671, Adelaide SA 5001
Phone (08) 8303 9336
Fax (08) 8303 9320
Web site www.landcareaustralia.com.au

Readers Digest Environment Awards

The Readers Digest Environment Awards are for schools working with community groups on environmental on-ground projects.

For further information contact:

Readers Digest Environment Awards
PO Box 352, Summer Hill NSW 2130
Phone (02) 9797 1983
Fax (02) 9797 0227
Web site www.readersdigest.com.au

SOURCES OF SUPPORT

Australian Association for Environmental Education (SA Chapter)

The Australian Association for Environmental Education (SA Chapter) (AAEE) is a professional association which brings together a diverse range of environmental educators. It runs conferences and seminars and publishes a quarterly newsletter *Ozeenews*.

For further information contact:

Neil and Kathy Thelning
Phone (08) 8264 1778
Fax (08) 8395 7778
Email nkthel@senet.com.au
Web site www.chariot.net.au/~aaee

Australian Trust for Conservation Volunteers

The Australian Trust for Conservation Volunteers (ATCV) provides supervision and organises activities for schools, individual students and other community members wishing to undertake landcare and conservation projects. Projects include tree planting and seed collection; erosion and salinity control; construction and maintenance of walking tracks; endangered flora and fauna surveys; weed control; habitat restoration; and heritage restoration.

ATCV welcomes schools to join on special programs (Students for Conservation) or on selected non-residential projects if accompanied by an adult.

For further information contact:

Australian Trust for Conservation Volunteers
PO Box 419, Campbelltown SA 5074
Phone (08) 8207 8747
Fax (08) 8207 8755
Email adelaide@atcv.com.au
Web site www.atcv.com.au

Bushcare

Bushcare provides funding support to assist community groups with implementation of on-ground projects. It is funded by the National Heritage Trust. For more information contact UFBP (see below).

Cluster Schools Program for Regional On-ground Projects

The Cluster Schools Program for Regional On-ground Projects aims to encourage schools to actively participate within broader communities to implement regional on-ground works outside of schools, establish a network of clusters of schools which can learn from each other about the best and most accepted practices in relation to ecologically sustainable land management, and to establish links between country and city school clusters and their communities. The program is coordinated by PIRSA, with input from AAEE, DETE and other organisations.

For further information contact:

Education Officer
Sustainable Resources Group
Primary Industries and Resources South Australia
GPO Box 1671, Adelaide SA 5001
Phone (08) 8303 9523
Fax (08) 8303 9320
Email wallace.robert@saugov.sa.gov.au

Community Action for the Rural Environment

Community Action for the Rural Environment (CARE) is a program involving local communities and Government working together to sustain the natural resources in the Murray–Darling Basin in South Australia.

For further information contact:

South Australian CARE Committee
PO Box 2056, Murray Bridge SA 5253
Phone (08) 8535 1432
Fax (08) 8532 5300

Conservation Council of South Australia

The Conservation Council of South Australia provides information on conservation of natural and built heritage. It operates a reference library and bookshop and produces *Environment South Australia*, a quarterly South Australian focused environment magazine.

For further information contact:

Conservation Council of South Australia
120 Wakefield Street, Adelaide SA 5000
Phone (08) 8223 5155
Fax (08) 8232 4782
Web site www.ccsa.asn.au

Environment and Landcare Education Network

The Environment and Landcare Education Network (ELEN) is a network of schools in South Australia that are involved in a wide range of environmental on-ground activities. ELEN produces a newsletter and organises networking days. It is supported by Landcare, PIRSA and AAEE.

For further information contact:

Education Officer
Sustainable Resources
Primary Industries and Resources South Australia
GPO Box 1671, Adelaide SA 5001
Phone (08) 8303 9523
Fax (08) 8303 9320
Email wallace.robert@saugov.sa.gov.au

Global Education Centre (SA)

The Global Education Centre (SA) is a resource centre to support teaching and learning about environmental issues, especially with a global perspective. Videos, posters and teacher resources are available for loan and sale.

For further information contact:

Global Education Centre (SA)
1st Floor, Torrens Building
220 Victoria Square, Adelaide SA 5000
Phone (08) 8221 6744
Fax (08) 8221 6755
Web site globaled.ausaid.gov.au

GLOBE Program

Global Learning and Observations to Benefit the Environment (GLOBE), an international science and education program, is supported in South Australia by DEH and DETE. It creates partnerships between students, teachers and the scientific research community that actively involve students in data collection and observation. Students make a core set of environmental observations at or near their school (e.g. atmospheric, hydrological, biological, geological parameters), enter their data on the Internet and study global images created from worldwide GLOBE school data. GLOBE is an initiative of the US Government and includes over 230 schools in Australia.

For further information contact:

Web site globe.fsl.noaa.gov

Gould League of South Australia

The Gould League produces a wide range of books, videos and posters covering many areas of EE. Their shop is open Saturday mornings.

For further information contact:

The Gould League
Shop Ingle Farm Primary School
2 Belalie Road, Ingle Farm
PO Box 56, Modbury North SA 5092
Phone / fax (08) 8277 2851
Web site www.gould.edu.au

Greening Australia

Greening Australia provides support for project development, resources and implementation involving native vegetation management and establishment.

For further information contact:

5 Fitzgerald Road, Pasadena SA 5042
Phone (08) 8372 0120
Fax (08) 8372 0199

Landcare

Landcare, funded by the Natural Heritage Trust, provides money to assist community groups with implementation of sustainable land management.

For further information contact:

Decade of Landcare Coordinator
Sustainable Resources Group
Primary Industries and Resources South Australia
GPO Box 1671, Adelaide SA 5001
Phone (08) 8303 9336
Fax (08) 8303 9320
Web site www.landcaresa.org.au

Learnscapes

The Learnscapes Trust in New South Wales is a non-profit organisation dedicated to assisting with the development of school grounds. It produces a quarterly newsletter providing information on the Trust's ongoing projects as well as information and ideas for those interested in developing their school grounds for learning.

The Hands on Learnscapes Inc. *School Learnscapes Trust* brochure states:

> Learnscapes are places where a learning program has been designed to permit users to interact with an environment. They may be natural or built, interior or exterior and may be located in schools, near schools or beyond schools, may relate to any one or many key learning areas and must be safe and accessible.

For further information contact:

The School Learnscapes Trust
PO Box 40, Maclean NSW 2463
Fax (02) 6645 4439
Email helent@nor.com.au

Local Agenda 21

A Local Agenda 21 (LA21) program involves a council working jointly with its community to make sure that local social and economic needs are met and the local environment is protected. Councils and communities involved in LA21 programs are supported via the South Australian Partnership for Local Agenda 21 established in 1995 by DEHAA and the Local Government Association.

LA21 actions have included increasing local biodiversity (e.g. revegetating with local species to create vegetation corridors between parks and along watercourses, streets and the coast) and reducing greenhouse gas emissions (e.g. giving people and local industry incentives to increase the energy efficiency of their homes and businesses).

Schools, young people and LA21

An important part of LA21 programs is making sure that young people are involved in all levels of decision making. This may mean joining committees and groups that are deciding what is to happen in a LA21 program, or linking a school's activities with the council's LA21 program.

For further information contact:

Local Agenda 21 Coordinator
Department for Environment and Heritage
GPO Box 1047, Adelaide SA 5001
Phone (08) 8204 9284 (DEH) *or* (08) 8224 2000 (Office of Local Government)
Web site www.dehaa.sa.gov.au /

Marine Discovery Centre

The Marine Discovery Centre (MDC) offers a specialist teacher and facilities to assist students in gaining a better understanding and appreciation of marine and coastal environments.

For booking and further information contact:

Marine Studies Project Officer
Marine Discovery Centre
333 Military Road, Henley Beach SA 5022
Phone (08) 8235 1833
Fax (08) 8235 1835
Email mcentre@staroshb.adl.catholic.edu.au
Web site www.staroshb.adl.catholic.edu.au

Nature Education Centre

The Nature Education Centre provides biological and earth science resources (including live animals) to member schools. It also offers presentations which emphasise the conservation of endangered species and native wildlife in general, and allow children to touch and hold native animals at close quarters.

For further information contact:

Nature Education Centre
30 Osmond Terrace, Norwood SA 5067
Phone (08) 8363 0238
Fax (08) 8362 0102

Our Patch

Our Patch Programs encourage and support community groups in adopting sections of the catchment and caring for them. They are supported by Catchment Water Management Boards, local councils and Rotary Clubs.

For further information contact:

Our Patch
4 Greenhill Road, Wayville SA 5034
Phone (08) 8271 9190
Fax (08) 8271 9589
Web site www.cwmb.sa.gov.au/programs/ourpatch

Oz Green

Oz Green (The Global Rivers Environmental Education Network (Australia) Inc.) is a non-government, non-profit organisation dedicated to addressing critical water resource issues through informed community participation. Oz Green and the Murray–Darling Basin Commission operate the Our Place Project.

Our Place Project

The Our Place Project provides groups from diverse parts of the world the opportunity to share stories and learn what others are doing to address the global water crisis. It began in 1997, initially linking 10 groups from the Murray–Darling River to 10 groups in other countries, and has since expanded to many other countries creating a global network of groups committed to their waterways.

Schools pay a fee to join the program, which provides resources and links with schools via interactive World Wide Web sites.

For further information contact:

Oz Green
PO Box 1378, Dee Why NSW 2099
Phone (02) 9971 4098
Fax (02) 9981 4956
Email ozgreen@peg.apc.org
Web site www.mdbc.gov.au/NRM

River Exhibition

The 'River Exhibition' is a 28 metre long, colourful, freestanding silk collage that is owned by the River Murray Urban Users Local Action Planning Committee. It can be used in an interactive manner, through visual story telling (and sometimes an interpretive performance), to raise awareness and educate about caring for the environment and the Murray River. It also provides an opportunity for self-learning and discovery through browsing. The exhibition is available for hire for a nominal sum and resource material is available.

For further information contact:

Project Officer
River Murray Urban Users Committee
PO Box 3165, Rundle Mall SA 5000
Phone 8204 9100
Fax 8204 9144
Web site www.murrayusers.sa.gov.au

South Australian Research and Development Institute

PIRSA's South Australian Research and Development Institute (SARDI) operates in four strategic research areas — Aquatic Sciences, Crops, Horticulture and Livestock Systems. SARDI's South Australian Aquatic Sciences Centre supports research into the aquaculture, marine and freshwater industries; aquatic biodiversity and biotechnology, and marine conservation — guided tours are available. SARDI also hosts other open days.

For further information contact:

South Australian Aquatic Sciences Centre
2 Hamra Avenue, West Beach SA 5024
Phone (08) 8200 2400
Fax (08) 8200 2481

South Australian Research and Development Institute
GPO Box 1671, Adelaide SA 5001
Plant Research Centre, Gate 2B, Hartley Grove, Urrbrae
Phone (08) 8303 9401
Fax (08) 8303 9403
Web site www.pir.sa.gov.au

Urban Forest Biodiversity Program SA

The Urban Forest Biodiversity Program SA (UFBP) is an action-based program for flora and fauna throughout the greater Adelaide region that links and coordinates revegetation and biodiversity enhancement projects with local, State and Federal Government agencies, community groups, schools and service clubs. Education initiatives are developed with a hands-on cross curriculum focus. UFBP offers financial and other support for community-driven projects.

For further information contact:

State Tree Centre
5 Fitzgerald Road, Pasadena SA 5042
Phone (08) 8372 0180
Fax (08) 8372 0199

Urrbrae Wetland

A professional development program has been created to assist teachers with excursions to the Urrbrae Wetland. Four themes are offered and there is a fee of $2 per student.

For more information contact:

Urrbrae Agricultural High School
505 Fullarton Road, Netherby SA 5062
Phone (08) 8272 6955
Fax (08) 8373 3043
Web site www.cwmb.sa.gov.au / wetlands / urrbrae.htm

Volunteer centres

There are several volunteer centres in the Adelaide region, each with a registry of volunteers for specific tasks.

For further information contact:

Volunteering SA Inc.
1st Floor, Torrens Building
220 Victoria Square, Adelaide SA 5000
Phone (08) 8221 7177
Fax (08) 8221 7188
Email sasvm@camtech.net.au
Web site www.adelaide.net.au/~sasvm

Northern Volunteering SA Inc. (Salisbury)
21a John, Salisbury SA 5108
Phone (08) 8250 1582
Fax (08) 8281 0410
Web site www.nvsa.asn.au

Volunteer Resource Centre (Noarlunga)
Phone (08) 8384 9202

Waterwatch

Waterwatch is a national community water quality monitoring program that seeks to raise awareness, increase knowledge and encourage ownership of the water environment and catchments. Regional coordinators provide training in water monitoring, education and awareness raising.

For further information contact:

Waterwatch Project Officer
Environmental Protection Agency
GPO Box 2607, Adelaide SA 5001
Phone (08) 8204 9115
Fax (08) 8204 2107
Web site www.sa.waterwatch.org.au

ABBREVIATIONS

AAEE	Australian Association for Environmental Education (SA Chapter)
ACE	Ardtornish Club for the Environment
APS	Ardtornish Primary School
ASR	aquifer storage and recovery
ATCV	Australian Trust for Conservation Volunteers
BFPS	Black Forest Primary School
CARE	Community Action for the Rural Environment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEH	Department for Environment and Heritage
DETE	Department of Education Training and Employment
EAS	Elliston Area School
EE	environmental education
ELEN	Environment and Landcare Education Network
ETSA	Electricity Trust of South Australia
GGPS	Golden Grove Primary School
GHS	Gladstone High School
GLOBE	Global Learning and Observations to Benefit the Environment
GPS	geographical positioning system
KCCC	Kids Congress for Catchment Care
KESAB	Keep South Australia Beautiful
KLOC	Kids for Landcare Outdoor Classroom
KPS	Kalangadoo Primary School
LA21	Local Agenda 21
LAS	Lucindale Area School
LCAS	Leigh Creek Area School
MBHS	Murray Bridge High School
MDC	Marine Discovery Centre
MISA	motivating–investigating–sorting –action
MZP	Monarto Zoological Park
PCWMB	Patawalonga Catchment Water Management Board
PIRSA	Primary Industries and Resources South Australia
PNI	positive negative interesting [analysis]
PVPS	Port Vincent Primary School
RAPS	Raukkan Aboriginal Primary School
Rotenved	Rotary Environmental Education Program
SACBH	South Australian Cooperative Bulk Handling
SALC	South Australian Landcare Committee
SARDI	South Australian Research and Development Institute
SOS	Star of the Sea [Primary School]
SPS	Stradbroke Primary and Junior Primary Schools
SRC	Students Representative Council
SWOT	strengths, weaknesses, opportunities and threats [analysis]
TAFE	Technical and Further Education
UAHS	Urrbrae Agricultural High School
UFBP	Urban Forest Biodiversity Program

GLOSSARY

Andu. The Adnyamathanha name for the Yellow-footed Rock Wallaby

community. In this publication it is a general term which includes parents, community individuals, members of community groups, and representatives of government and non-government organisations.

Landcare. Landcare is about community and Government working together, to reduce land and water degradation and to develop sustainable land use.

Learnscapes. Refer to Part C.

Local Action Planning Groups. Groups within the Community Action for the Rural Environment (CARE) Program (see Part C), focusing on smaller areas along the River Murray.

Natural Heritage Trust. A Federal Government program designed to enhance Australia's natural environment for the benefit of current and future generations.

on-ground. The term applied to any hands-on practical work in the environment.

parents. A general term which includes caregivers in this publication.

photo points. Fixed points established to monitor changes over time by photograph.

PNI analysis. Positive negative interesting analysis. It was developed by Edward de Bono to encourage lateral thinking.

project. In this publication it refers to environmental on-ground projects, implemented by schools and communities.

school exchange. Two schools that visit and mutually engage one another in learning.

SWOT analysis Strengths, weaknesses, opportunities and threats analysis. Planning analysis for projects to evaluate these four areas.

Waterwatch. Community-based government-funded water quality monitoring program that assists community groups such as schools and Landcare groups.

BIBLIOGRAPHY

The following list provides not only complete citation of references given in the text, but also a selection of additional books and papers relevant to successful achievement of landcare projects (see asterisk *).

*Alexandra, J., Haffenden, S., and White, T. 1996. *Listening to the land: a directory of community environmental monitoring groups in Australia.* Australian Conservation Foundation, Victoria.

Begon, M., Harper, J.L. and Townsend, C.R., 1996. *Ecology: individuals, populations and communities.* Blackwell Science, Victoria.

*Buzan, T. and Buzan, B., 1993. *The mind map book.* BBC World Publishing, London.

Clayfield, R. and Skye, 1995. *The manual for teaching permaculture creatively.* Earthcare Education Publication, Maleny, Queensland.

*Day, J., 1995. *Learning through Landscapes Trust & Pictorial Charts Educational Trust (PCET), UK.*

de Bono, E., 1991. *Handbook for the positive revolution.* Viking Penguin.

*de Bono, E., 1992. *Serious creativity.* Harper Collins, UK.

*Department of Education Training and Employment, 1998. *Sustaining environmental education: examples of school based planning.* Adelaide, South Australia.

*DPI Forest Service, 1994. *Learning through landcare.* Brisbane.

*Fritz, R., 1989. *The path of least resistance: learning to become the creative force in your own life.* Fawcett Columbine, USA.

Mackay, H., 1994. *Why don't people listen? Solving the communication problem.* Pan Macmillan Publishers, Australia.

*Mattingley, C. and Hampton, D. (Eds), 1988. *Survival in our own land, 'Aboriginal' experiences in 'South Australia' since 1836, told by Nungas and others.* Aboriginal Literature Development Assistance Association Inc.

*National Landcare Program, 1997. *Setting up for success — a guide for designing, managing and evaluating projects.* National Landcare Program.

*Owl Books Publication, 1999. *Beyond 4 walls in SA: excursions, camps & community projects.* Port Adelaide, South Australia.

Savory, A., 1999. *Holistic management: a new framework for decision making.* Island Press, California.

Urban Forest Biodiversity Program South Australia, 1998. *Biowhat? The starter kit for primary schools to conserve and promote biodiversity in their school community.* Adelaide.

Government
of South Australia

200244 March 2000