BIODIVERSITY PROJECT AND COMMUNITY PARTNERSHIP TOOLKIT FOR AUSTRALIAN SCHOOL TEACHERS

EARTHWATCH INSTITUTE

BushBlitz

This toolkit was developed by Earthwatch Australia as a guideline for teachers who wish to implement biodiversity projects at their schools, and particularly how to form partnerships with their local community.

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1.0 Introduction

This toolkit was developed by Earthwatch Australia in conjunction with their partnership in the Bush Blitz program, for Australian teachers who wish to develop a biodiversity project within their school, or a partnership with local council or environmental community groups.

Bush Blitz is Australia's largest nature discovery project, and aims to increase community awareness about Australia's biodiversity, but also aims to motivate and inspire the community to better improve and protect Australia's biodiversity.

Australia is such a large continent. Forty-five percent of our land and over 90 per cent of our marine area has never been comprehensively surveyed by scientists. It is estimated that 580,000-680,000 species in Australia (three quarters of Australia's biodiversity) is yet to be discovered.

Unfortunately, Australia's biodiversity is under threat. Habitat fragmentation, burning, invasive species, farming and climate change have all had negative effects on our biodiversity; and the pressure on biodiversity is ever increasing.

The science gives us these statistics, however it is local land managers and the Australian community who have the power to help protect and improve biodiversity.

This toolkit lists ideas for practical projects and citizen science initiatives, both which have positive contributions towards biodiversity. However, sustainable ongoing projects are best achieved through partnerships.

The main purpose of this toolkit is to provide the relevant information for Australian schools and teachers looking to partner with local councils or community groups, particularly in effort to monitory, protect or improve local biodiversity.

Your project or partnership may require a lot of planning, communications and organisation. However, the benefits will be worth it.

2.0 Practical Project Ideas

Below are some practical ideas for school projects that aim to improve or protect your local biodiversity:

- Plant indigenous grasses in school garden bed display
- Plant shrubs which will attract local wildlife and suppress weeds
- Plant trees for long-term impacts such as habitat-creation
- Add organic litter and compost to garden beds
- Add logs and rocks to provide habitat for small creatures
- Build nesting boxes for sugar gliders, possums and native birds
- Build a bee hotel to encourage native bees and insects
- Add fresh water and native plants to encourage wildlife such as frogs, bees, butterflies, birds and mammals
- Introduce activities to reduce litter - as litter clogs waterways
- Build or improve a wetland area - learn the importance and significance of wetlands
- Build a rain garden
- Monitor your local biodiversity using a citizen science application (page 5-7), or partner with your local council or community groups (pages 9-12)
- Research some other school case studies for inspiration! https://sustainabilityinschools.edu.au/case-studies

3.0 Citizen Science Initiatives

Citizen science has become increasingly popular in recent years, particularly due to modern technology. Mobile devices have the capacity to link time, date and location data with high quality photographs; and information can be directly uploaded to databases. Make your contribution to a real scientific project with your class using one of these initiatives!

Bioblitz (https://citizenscience.org.au/the-australian-bioblitz-hub/)

A BioBlitz is a concerted effort to discover and record as many living things as possible within a set location over a limited time period (usually 24 to 36 hours). If planned carefully, your BioBlitz will be an effective way to showcase, explore and raise awareness of the diversity of life in a particular area, launch projects or partnerships, spread your message to a wide audience, recruit new members and develop networks of shared interest. BioBlitz events are also a lot of fun. Extensive guidelines have been developed here, however, you can tailor the survey to match your level of resources.

FrogID (www.frogid.net.au/)

Launched by the Australian Museum in partnership with other museums across Australia, FrogID will enable students and other citizen scientists to record and share their observations of frogs throughout Australia, using a 'call matching' tool which will help you to identify frogs based on the sounds they make, and have your observations checked by frog call experts. The verified observations will form a database that researchers can use to investigate the impacts of threats to our frog populations, such as pollution, habitat loss, disease, introduced species and climate change.

River Detectives program (victoria) (https://www.riverdetectives.net.au/)

River Detectives is a program being offered in some regions across the state to support educators to explore local waterways and catchments with students with hands on activities and resources to support them. Being in the River Detectives program allows schools access to:

- A water monitoring kit– to measure temperature, EC, turbidity, pH and reactive phosphate
- Access to an interactive portal to record and explore data
- Training sessions
- Activities and resources

Questagame (https://questagame.com) and **RangerVision** (www.ranger.vision/)

These apps are well loved and used by Australian teachers as a fun and educational game for students to photograph and identify fauna, flora, and fungi. Sightings are verified by experts and gain points for players.

iNaturalist (www.inaturalist.org)

iNaturalist is a very powerful global citizen science portal which allows users to submit their own photos and details of their what they saw, and also to comment on other people's observations. You don't need to be a scientist yourself to participate; just submit your photo(s) and the experts will take it from there!

There is a very good introductory video at https://www.youtube.com/watch?v=yJS63hdWGvs, which will lead you through the process of signing up to the project and submitting your observations.

3.1 ClimateWatch

ClimateWatch was developed by Earthwatch Australia to understand the effects climate change is having on our earth's natural processes. Created as a citizen science project, it allows every Australian to be involved in collecting and recording data that will increase our understanding of climate change impacts. ClimateWatch is important for understanding changes and declines in biodiversity as species adapt to new climates.

Essentially, ClimateWatch monitors **phenology.**.. phenolo-what you ask?

Phenology is the study of periodic plant and animal life cycle events and how these are influenced by seasonal and inter annual variations in climate. Examples include bird nesting, insect hatching, plant flowering and fruit ripening.

By becoming a ClimateWatch citizen scientist and monitoring your local environment, you will be filling in the gaps of information that are largely lacking in our region of the world and are vital for informing climate change management strategies and solutions.

ClimateWatch provides real-world learning opportunities for students, from data collection out in the field to data analysis and interpretation back in the classroom. By actually making science, not just reading about it, students are engaged and motivated to learn, and feel like they're making a difference by contributing to Australia's climate change response. Secondary, tertiary and other education institutions across the country have been integrating ClimateWatch into the curriculum. It's easy to get involved, get out in nature and make a difference!

Free curriculum resources are also available, to accompany use of ClimateWatch into the classroom. These are available through Cool Australia for various year levels and subjects. You can access the free lessons and learn more at: **http://www.climatewatch.org.au/for-educators**

Testimonials

"Using real data was both more interesting and intense than using fabricated data. It was really cool that the data was an accurate representation of the world, and thus had actual real world applications"

-Jess (student) describes using ClimateWatch data for her year 11 Computational Science project

"Working with the Climatewatch data was an incredible opportunity for my students. To work on something real, make new discoveries, and do something that matters are an extraordinary source of motivation, and the kids could see the impact and true worth of the tech and data skills they were learning."

- Dr. Linda McIver - Director, Australian Data Science Education Institute

ClimateWatch
an initiative of Earthwatch Institute

4.0 Partnership benefits (outcomes)

Sustainable on-ground action to protect local biodiversity is best achieved through ongoing projects and partnerships. By forming partnerships with local environmental groups, students can assist with ongoing data collection (i.e. biodiversity monitoring) or project implementation, while experiential learning and increasing their scientific literacy.

4.1 OUTCOMES FOR TEACHERS AND STUDENTS

1. RESPECT AND CONNECTION

Students experience a sense of ownership, will be less likely to vandalise, and develop a desire to spend more time outdoors.

2. PROFESSIONAL DEVELOPMENT

Teachers gain access to more diverse expertise and information sources, increasing the engagement levels and relevance of the curriculum.

3. FINANCIAL

Potential access to funding for new projects through the pooling of school and local council resources and expertise, or access to funding bodies that aren't usually available to them

4. SKILL DEVELOPMENT

Students learn important skills such as leadership and communication, problem solving, project management, teamwork and resilience (e.g. through dealing with maintenance or vandalism issues).

5. ATTITUDE AND BEHAVIOUR CHANGE

Students may feel motivated to continue environmental and sustainability practices and/or projects in a broader capacity, and later in life.

6. IMPROVED WELLBEING

Studies have shown that spending more time in nature is good for improved health and wellbeing. It has positive effects on our ability to concentrate, learn, solve problems and be creative.

7. FUN!

Outdoor and hands-on learning is fun and engaging! Students often don't realise they are learning, and will want to tell friends and family members about their project.

8. KNOWLEDGE

An understanding of how to reduce their environmental impact, including how to grow plants and encourage and protect biodiversity.

4.2 OUTCOMES FOR SCHOOLS

1. COMMUNITY RELATIONSHIPS

A greater sense of community and local reputation through relationships built during the project.

2. BETTER INTERNAL RELATIONSHIPS

Creates a social environment (particularly during working bees) between teachers and/or parents as well as an increased morale and satisfaction.

3. STUDENT ATTENDANCE

Students attendance and behaviour may improve with interest in the project. Students who are not so academic may show high performance in the practical tasks giving them confidence.

4. REPUTATION

School may receive awards, attract student enrolments, be approached by partners and gain media coverage; therefore strengthening the school reputation

5. FINANCIAL

Shared installation and maintenance costs. Potential for reduced water, energy and waste bills. Increased capacity for receiving grants

6. CHANGE OF PRACTICES

Students may begin to apply sustainable practices and measures to help biodiversity at home and spread to others in their community.

5.0 Partnership Process

If you wish to form a local partnership between an evironmental group and your school, the suggestions below may help guide you with the process:

Step 1: Gain support from school management and the principal for your biodiversity project. Communicate to them the benefits of biodiversity programs, and from partnering with the community. Their support will be crucial to the success of the project.

Step 2: Research and Understand the local biodiversity and scope for partnerships. Talk to your local council, or other schools in the area to investigate and learn from any similar programs. Look up TENs (Teacher Environment Networks) in your area for support. Look up 'Friends-Of' groups or 'Landcare' Groups, and meet to understand how they work to protect biodiversity.

Step 3. Consider conducting a biodiversity audit of the school (see links in section 10.0) to identify your geographical location and bioregion, the vegetation structure, local wildlife and threats such as weeds, pests and pollution.

Step 4. Identify opportunities for improving or protecting biodiversity. Think about where you can have the most impact! But also, think about simple activities that can make significant impact over time. Find out who else may be interested in helping, such as: other teachers, parent groups or community groups.

Step 5. Continue research and Confirm a reliable partner in a community group or business. Communicate how working together to improve and protect biodiversity will benefit them too.

Step 6. Write a Project Plan using the templates provided. By defining clear roles, responsibilities, goals and time line makes the

Step 7. Link Plan to the curriculum so you can deliver the important learning outcomes while improving and protecting biodiversity

Step 8. Put your plan into ACTION!

Step 9. Measure the outcomes - is it meeting your goals? Have you seen improvement in biodiversity? Communicate measures of success with the school and community.

Step 10. Celebrate! Offer prizes, mention at assemblies, newsletters, enter school project into a competition, and share stories with the broader community and partners.

6.0 Who to partner with

If you wish to form a partnership between your school and a environmental group, it will require some initial research and communication. You will need to be proactive and organised. Writing a project plan will significantly help - especially with larger projects. Also, consider partnering with multiple organisations for larger projects - (i.e. Businesses might provide plants/ materials, volunteers can help with labour, council or government can help with implementation and design, philanthropy can help with grants)

STATE GOVERNMENT	E.g. Sustainability Victoria, Environmental Protection Authority, Catchment Management Authorities
SERVICE PROVIDERS	E.g. Energy, Water, CERES, waste services
COMMUNITY GROUPS	E.g. 'Friends-of' groups, Landcare, Scouts, Rotary
NOT-FOR PROFIT ORGANISATIONS	E.g. Community Garden organisations, Greening Australia or philanthropic foundations etc.
LOCAL BUSINESSES	E.g. Nurseries, hardware stores, quarries, restaurants, cafes, environmental consultants
PARKS OR GARDENS	E.g. Local botanic gardens, Parks Vic, Parks NSW etc.

7.0 Secrets for success

Ensure school RECOGNITION

Action will be much easier with school recognition, as it shows support and excitement for the project.

Action requires A CHAMPION TEACHER

Projects and partnerships require hard work and commitment. You can be a champion with the right support and motivation!

Partnership projects have FUNDING

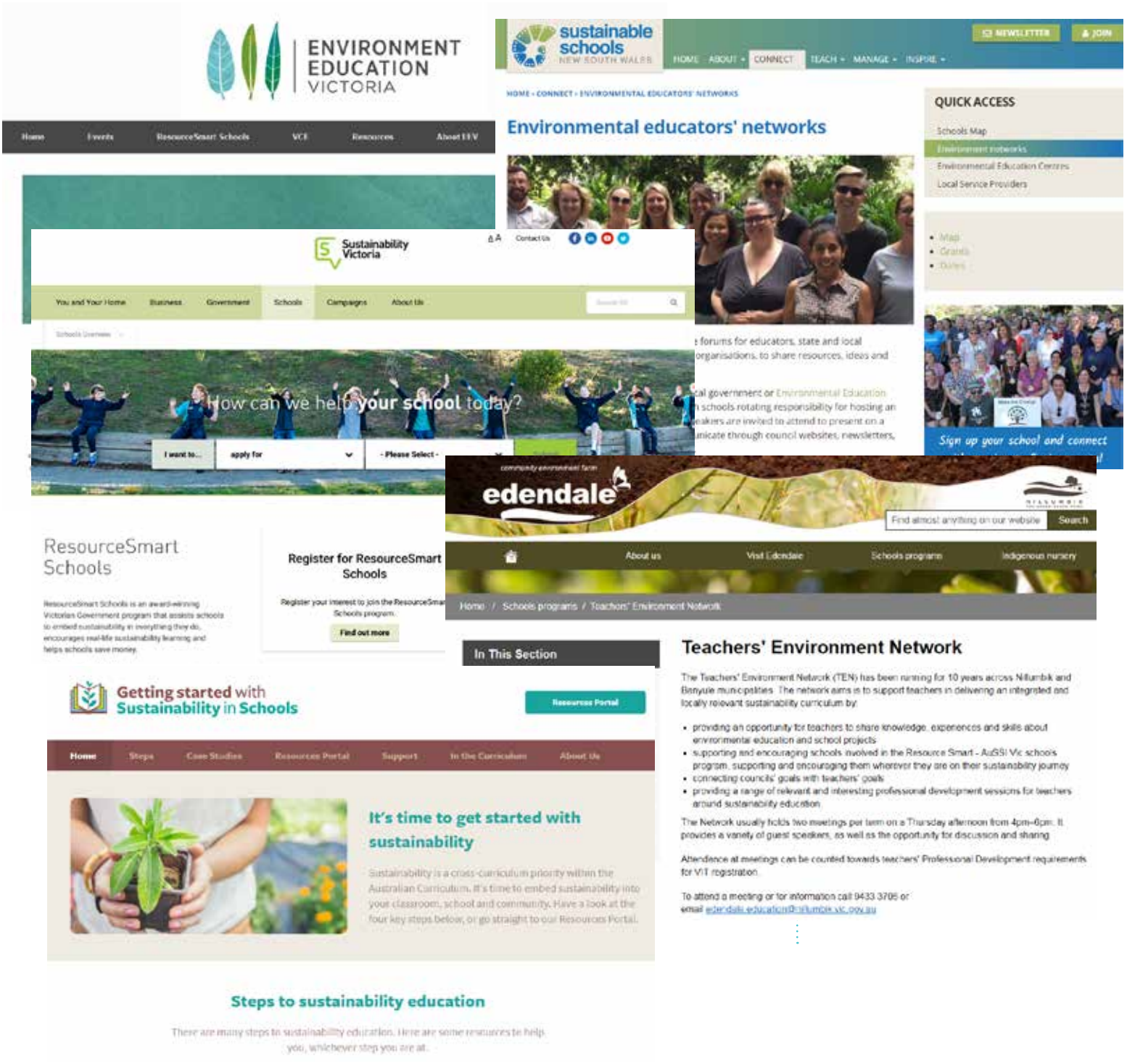
Grants for teachers and schools are available to apply for too. Research online.

Seek out SUPPORT

Partnerships are much easier with support and guidance. Seek out TENs (Teacher Environmental Networks), or talk to your local council.

8.0 Research online

There are many websites and groups with lots of information out there. Spend some time researching Teacher environmental Networks in your area, or download teaching resources from sites such as Sustainability in Schools, or Cool Australia



9.0 DESIGN YOUR PROJECT!

Use the templates provided over the following pages to help guide you with your project planning.

PROJECT PLAN (EXAMPLE)

Title: i.e. School composting

OUTLINE GOALS

i.e. All classes have compost in place

* Collection of compost each day by monitors
* Compost bin placed next to vegetable gardens and fed to chickens
* Minimal rubbish going to landfill

TARGET GROUPS

i.e. Teachers, Students, Parents

WHO DO YOU NEED TO CONSULT?

Approval needed from principal team, Staff, Students

COMMUNICATION (HOW WILL YOU GET PEOPLE INVOLVED?

* Whole staff PD during apart of staff meeting - outline project, get small working team together
* Working bee to set up vegetable gardens/compost bin - advertise on fb, newsletter etc.
* Each senior class to nominate two "green team" monitors for collection.

WHAT DO WE NEED/HAVE?

* Signage for each classroom (colour coded, students create)
* Small lidded bins (x20)
* Large compost bin/s - (council, bunnings)
* Cleaning procedure/products
* PD - how to compost - use council, or CERES etc.

PROPOSED TIME FRAME

*Organise equipment, project team and discuss with staff new arrangements (Term 4, 2018)

* Implement composting system (Term 1, 2019)

PROJECT PLAN (BLANK)

Title:

OUTLINE GOALS

TARGET GROUPS

WHO DO YOU NEED TO CONSULT?

COMMUNICATION (HOW WILL YOU GET PEOPLE INVOLVED?

WHAT DO WE NEED/HAVE?

PROPOSED TIME FRAME

TIMELINE PLAN (EXAMPLE)

TASK/INITIATIVE	PROPOSED TIMEFRAME	LOGISTICS
i.e Introduction and creating awareness	*i.e. End of term 2*	• Staff meeting to introduce project • Student competition (creating signs for classrooms for composting, recycling and rubbish facts)
i.e. Composting and paper recycling	Start of term 3	• First week assembly presentation from 'green team' • Staff meeting presentation (by green team) • Compost bins and recycling box to be placed in each class room • Student monitors collect Wednesday and Friday afternoons • Presentation at weekly assembly for best class
i.e. Celebration of recycling, composting	Term 4	• Prize for class who has demonstrated great commitment to cause • Report success in newsletter etc
i.e. Going to nude lunches	End of term 4, term 1 following year	• Introduce next phase to reduce school waste by assembly presentation, in newsletter and staff meeting • Recap with students and start • Prizes for class who produce the least amount of waste

TIMELINE PLAN (BLANK)

TASK/INITIATIVE	PROPOSED TIMEFRAME	LOGISTICS

PROJECT CHECKLIST

CHECKLIST	COMPLETE (YES OR NO?) COMMENTS
PROJECT PLAN COMPLETE?	
PROJECT TEAM IN PLACE?	
WHOLE STAFF CONSULTATION/ ENGAGEMENT OCCURRED?	
APPROVAL FROM LEADERSHIP TEAM?	
FOLLOWED ALL SCHOOL SPECIFIC RULES?	
CLEAR EXPLANATION GIVEN TO ALL STAKEHOLDERS (EG. IN STAFF MEETING, ASSEMBLY, NEWSLETTER ETC.	
ACHIEVABLE IMPLEMENTATION READY TO ENACT!?	
OTHER?	

10.0 REFERENCES AND RESOURCES

Biodiversity Checklist (from Sustainability Victoria)
http://www.sustainability.vic.gov.au/-/media/SV/Publications/Schools/Modules/Biodiversity/RSS-biodiversity-checklist-PDF-version.pdf

https://sustainabilityinschools.edu.au/school - Australia-wide website

Biodiversity Audit templates:
www.greenhub.org.au/wp-content/uploads/2013/06/ Greening-Australia-Biodiversity-Audit-Pack.pdf

https://www.sustainability.vic.gov.au/-/media/SV/Publications/Schools/Modules/Biodiversity/Cool-Australias-ResourceSmart-Biodiversity-Audit-Upper-Primary-PDF.pdf

Conversations on school-community learning partnerships for sustainability (a guidebook)
http://mams.rmit.edu.au/3pu9xfcpbyug.pdf
http://mams.rmit.edu.au/ti2kyrr9g67k1.pdf (powerpoint presentation)

CERES (Melbourne) Professional Learning Workshops for Educators (includes a biodiversity workshop)
https://sustainability.ceres.org.au/education-resources/workshops-for-educators/

Fun education resources (includes biodiversity)
https://sustainability.ceres.org.au/education-resources/curriculum-activities/
https://sustainabilityinschools.edu.au/resources

Grants:
https://sustainability.ceres.org.au/education-resources/grants-comps-awards/

https://www.actsmart.act.gov.au/__data/assets/pdf_file/0019/1161703/Green-Grants-2018.pdf#Green%20Events

School fact sheet on local government partnerships
https://www.education.vic.gov.au/Documents/school/principals/community/localgovpartnerships.pdf

Environmental Education Victoria
http://www.eev.vic.edu.au/

Sustainability Victoria - Resource Smart Schools
https://www.sustainability.vic.gov.au/school?la=en