Curriculum Resource

FOR TECHNOLOGIES, SCIENCE AND GEOGRAPHY

Junior Landcare

I'd like to make that!

How to build a frog pond

ACKNOWLEDGEMENTS

This Junior Landcare educational resource has been developed by teachers with support from Landcare Australia and the Primary Industries Education Foundation (PIEF).

The resource is designed to introduce young people to the ways Gordonvale State School used their school grounds to cultivate not only plants and attract animals, but also develop the academic, personal and interpersonal skills of the students who envisioned investigations, assessed what was needed, stated a case for change, defined a scope for action, defined a proposal of the action, implemented it and reflected on the results.

The materials in this educational resource have been provided by Angela Colliver of Angela Colliver Consulting Services Pty Ltd, and Sandra Charlton and Helen Underwood from Gordonvale State School in North Queensland.

Gordonvale State School won the Junior Landcare Team category in the 2013 Queensland Landcare Awards and was Highly Commended in the 2014 National Landcare Awards. Details are at landcareonline.com.au/wp-content/uploads/2014/06/QLD-Gordonvale-State-School-FINAL.pdf

Resource Description

YEAR LEVEL: YEARS 5 AND 6

THIS IS A UNIT OF WORK FOR TECHNOLOGIES, SCIENCE AND GEOGRAPHY.

This is a unit with five inquiry teaching sequences about involving the whole school community in the process of understanding, documenting and improving your school's outdoor areas to get the best outcome for all.

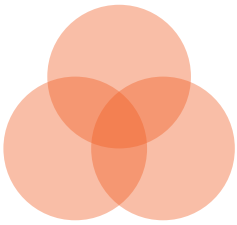
- It includes sections on how to make a native habitat pond as part of an overall school permaculture initiative.
- The unit encourages students to raise questions, gather and process data, make conclusions and take action.
- A feature of the unit of work is that it involves students in a variety of learning areas or subjects as they work through their sustainability investigation action process.
- By nature, the process of the sustainability action process involves students in continuous reflection of their learning. As the students move through the sustainability action process, they revisit questions asked, statements made, opinions asserted. Students will find that their ideas may shift as they work through activities and that the ideas they began with may be challenged or refined.

Step One
Engage with the topic

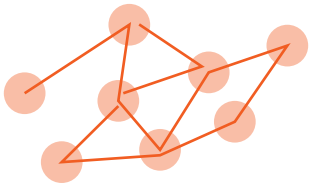
Objective: To identify and explore the issues in and around the school grounds.

At Gordonvale State School, students were set the task to understand and identify issues in and around their school grounds. To engage the students, they were initially asked

What do you think needs to change in our school grounds and why?

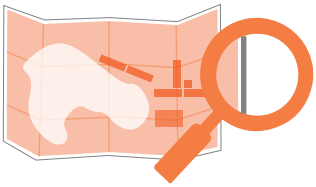


1. Sort the responses using a Venn diagram to show how one response may belong in one or more category.



2. Develop a future's wheel and/or concept map to unearth topics and threats related to improving the school's outdoor areas.

3. Brainstorm issues related to the improving the school's outdoor areas.



4. Determine sources of information students have access to and are realistically likely to need, e.g. a map of the school grounds, main features and school zones, out-of-bounds areas; sun angles for summer and winter; prevailing wind direction for summer and winter; flow of water run-off from roofs and hard surfaces; sources of external pollution; aspects of visual landscapes that could be enhanced or excluded.

5. Express ideas with a Council educator/ school groundsperson/ teacher, playing the role of "devil's advocate" and taking different poles on issues to expose a range of views and possible starting points.

SOME OF THE ISSUES EXPLORED INCLUDED...

- creating wind breaks to reduce cold winds using deciduous trees and vines to shade seating and windows in summer
- using rainwater harvesting, stormwater retention and erosion controls
- creating productive fruit, vegetable and herb gardens establishing native habitat ponds in the school.

Using class discussions, SRC meetings and searching local papers and media for ideas, the students sketched proposals and their notions of what could be improved in the school along the way.

Source:

See students' ideas at http://www.gordonvass.eq.edu.au/articles.asp?id=17

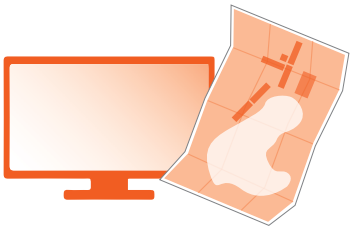
Step Two
Explore the topic

Objective: To frame questions and actions and to collect information.

Students are encouraged to refine their questions and clarify how their investigations will be conducted.

1. Individually or in groups, formulate possible lines of inquiry into increasing the diversity of plants, animals and other organisms in the school grounds.

2. As a class, investigate innovative ways other schools within Australia have improved their environmental surrounds. Encourage students to research and describe the various projects and initiatives in use within one or more of these schools that encourage schools to increase the diversity of plants, animals and other organisms in the school.



3. Then, ask the students to report on how the projects and initiatives work and their impact or effect on the school and its community.

4. FORMULATING AN ACTION PLAN

Subsequently, ask groups or the class as a whole to prepare an action plan that defines how the class and each student can personally increase the diversity of plants, animals and other organisms in the school. Ask them to prepare a table to collate information relating to the project. Include the names of those responsible for the project and detail where they will seek the information and how it will be gathered.

Display these details as an ongoing reference for students to use and brainstorm to decide where relevant information may be found.

How?	What?	When?
Who and what is needed?	How will we know if it worked?	

Some areas that the student action plans should include:

- Problem areas identified.
- Strategies and timeframes.
- Nominate who is responsible.
- Resources needed.
- Indicators of success.

In developing the action plan, the class should also consider:

- What might limit their actions?
- Who might be available to help them?
- What finances or resources are available for the improvement or action?

5. RESEARCH & INVESTIGATION

Discuss how valuable information may be gathered and encourage students to:

- Search the 'world wide web' for relevant sites and explore links to other sites;.
- Conduct interviews with staff from the local Council and government agencies such as the Queensland EPA and the DNRM;
- Identify people who are knowledgeable about increasing the diversity of plants, animals and other organisms in areas;
- Document known information;
- Develop contacts in the broader community for relevant information;
- Write or email letters to groups involved with the design of innovative technologies. They may be industry groups, government agencies, research institutions and/or organisations.

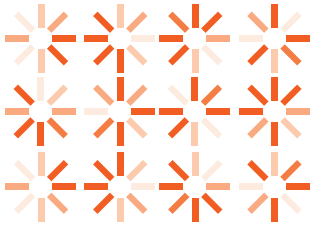
*Source – adapted from model developed by Angela Colliver Consulting Services

Step Three
Action the topic

Objective: Students interpret the information and communicate a project proposal.

Students to explain how to increase the diversity of plants, animals and organisms in the school grounds.

1. INTERPRET IT



ENCOURAGE THE STUDENTS TO:

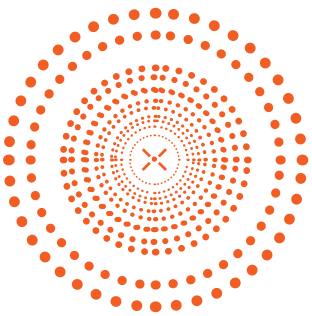
- Tabulate the findings from their investigations;
- Check one person's interpretation against another and compare their results;
- Identify any inconsistencies;
- Evaluate information which presents contrasting opinions;
- Determine the features needed in any project that might be used in increasing the biodiversity of the school grounds;
- Examine the appropriateness of processes used;
- Identify the key functional, aesthetic and environmental features of the ideas and practices used to increase the diversity of plants, animals and organisms;
- Select ideas for action.

2. CONSOLIDATE IT

PLAN TO COMMUNICATE THE PROPOSAL

- Identify students to be involved in communicating the proposal.
- Determine the objectives and outcomes, i.e. What do you want to achieve?
- Design your approach. How might the class want to present their proposal?
- Create a plan including an intended timeline, including tasks that need to be attended to during specific times and implement it. Specify who, what, when, where and how this will be achieved.
- Practice, practice, practice.
- Identify which of the school's stakeholders with whom do we need to share our proposal

3. COMMUNICATE IT



As a class or a group, encourage the students to brainstorm on how they can improve the awareness of their school community of their researched proposal while receiving feedback on the school community's level of awareness of biodiversity issues within the school and local areas.

ENCOURAGE THE STUDENTS TO:

- Speak to other classes about their research and share their proposal.
- Mount a project display inviting others to share their viewpoints and ideas.
- Use the school newsletter, website, etc. to communicate ideas.
- Invite parents to a preview of their proposal for increasing biodiversity and their sustainability action plan.
- Coordinate a meeting with the school Principal, Leadership team or P&C group and share their proposal.

Step Four
Elaborate on concepts and Ideas

Objective: Students set their biodiversity goals into action.

Students activate their action plans. To put a proposal into action, the students would will need to follow sequential steps, monitor progress and collect data to help measure success.

Encourage students to get involved and actively change things at school, to improve the biodiversity at of their school school grounds.

Consider activities such as assisting students to make a frog pond or any type of native habitat pond – quick and easy How to Guides including "Creating a frog pond" are available for download via Landcare Australia's dedicated webpage juniorlandcare.com.au/curriculumresources

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Step Five
Evaluate

Objective: Look back and evaluate the process and the effectiveness of the sustainability plan to increase the biodiversity in the school grounds.

USE THE FOLLOWING QUESTIONS AS A GUIDE

- How have my/ our feelings about the school's biodiversity changed as a result of my learning?
- How well did I/we participate in any group/team learning activities?
- How can I/we make similar changes and improvements in other sustainability areas?
- How will you know if the native habitat pond has been successful in increasing the school's diversity of plants, animals and other organisms?
- How will the class use feedback to improve the native habitat pond?

1. Return to the original goal of the proposal to improve the diversity of plants, animals and organisms in the school grounds and review whether the students achieved their goal.
2. Reflect on whether the native habitat pond has changed or improved the number of plants, animals and organisms now seen in the school grounds.
3. Discuss ways the class might communicate its success and engage others to try the ideas that worked.
4. Brainstorm any actions that could have been done differently to get a better result.
5. Ask the students to complete a self-assessment activity in their journal.

Australian Curriculum
Content Descriptions

CROSS CURRICULUM PRIORITIES: SUSTAINABILITY

OI.2 All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

OI.3: Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

OI.7: Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

OI.8: Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in October 2014.

REFERENCES

Australian Academy of Science (2005) Primary Connections. Canberra, ACT.

WEBSITES

Landcare Australia's guide "Creating a frog pond – it's fun and easy"
juniorlandcare.com.au/wp-content/uploads/2014/10/Creating-a-frog-pond-12.9-LR.pdf

Australian Curriculum, Assessment and Reporting Authority
http://www.australiancurriculum.edu.au

Gordonvale State School
http://www.gordonvass.eq.edu.au/articles.asp?id=17

TECHNOLOGIES

STRAND: Design and Technologies knowledge and understanding

ENTRY: Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use ACTDEK023

SCIENCE

STRAND: Science Understanding: Biological sciences

ENTRY: The growth and survival of living things are affected by the physical conditions of their environment ACSSU094

STRAND: Science as a Human Endeavour: Use and influence of science

ENTRY: Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives ACSHE100

GEOGRAPHY

STRAND: Geographical Inquiry and Skills: Collecting, recording, evaluating and representing

ENTRY: Collect and record relevant geographical data and information, using ethical protocols, from primary and secondary sources, for example, people, maps, plans, photographs, satellite images, statistical sources and reports ACHGS034

STRAND: Geographical Inquiry and Skills: Interpreting, analysing and concluding

ENTRY: Interpret geographical data and other information, using digital and spatial technologies as appropriate, and identify spatial distributions, patterns and trends, and infer relationships to draw conclusions ACHGS037

STRAND: Geographical Inquiry and Skills: Communicating

ENTRY: Present findings and ideas in a range of communication forms, for example, written, oral, graphic, tabular, visual and maps; using geographical terminology and digital technologies as appropriate ACHGS038

This Junior Landcare resource is proudly supported by Landcare Australia, PIEF, and through funding from the Australian Government's National Landcare Programme

Australian Government | National Landcare Programme

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Primary Industries Education Foundation