

Case Study: Permaculture Project in Australia

PROJECT PROPOSAL:

Redesign a school herb and vegetable garden to meet the needs of students and the school community by incorporating permaculture design principles.



Image 1: Permaculture Teaching Garden.

PROJECT BACKGROUND:

The school featured in this case study is a year 7 to 12 government school with about 1000 student. Students come from a range of backgrounds, with the majority speaking English as their only language at home. Students mostly come from households with a medium to high family income, and most have houses with backyards. The school offers Agriculture as an elective subject, and about 200 students a year are enrolled in this program. The school has about 1 acre of land for agricultural use; this space is spread around the school. The current Agricultural program offers students to opportunity to develop skills in plant and animal production, including vegetable production, hydroponics, poultry keeping for eggs, meat bird production, sheep husbandry, worm farming, honey production, pig and goat husbandry.

PROJECT JUSTIFICATION:

The school's agriculture program offers many topics that equip students with skills in producing food and other agricultural products; however, these topics are often stand-alone subjects with little focus on the connections between these food production systems. Permaculture is an agricultural design system that creates sustainable living environments that are more in tune with people and nature and that demonstrate the connections between the different food product systems addressed at this school. The school traditionally offered very little teaching of the principles and ethics of permaculture and good garden design.

The school has a permanent herb and vegetable plot that is maintained by a part-time farmhand. However, because of the initial design of the garden and poor time constraints this section had become very overgrown with weed species and little food production was taking place. The redesign of this herb and vegetable garden was seen as an opportunity to improve the productivity of the garden, improve appearance of agricultural plot, decrease maintenance and provide a showcase garden for permaculture design principles.

NOTES

NEEDS ASSESSMENT:

An assessment was taken of the existing herb and vegetable garden, and the following needs were identified through a combination of observation, surveys and interviews with students and staff at the school:

- Little food production happening in showcase garden.
- Use of the space by students during lesson time restricted due to poor access through unsafe old fencing.
- Unattractive appearance of garden with large weed problem, excess fencing and use of carpet as weed matting.
- Staff have little time to maintain current garden and redesign new garden.
- Limited composting and worm farming occurring despite students needing to learn such skills in year 8 vegetable production topic.
- Herb garden in condition and unsuitable for teaching students about plant production and uses in the year 9 herb topic.
- Existing youth-adult partnerships in the form of mentorships with local community group looking for projects to complete at the school.
- Poor funding to buy materials and redesign the garden.
- Need for a showcase garden displaying good vegetable/herb production and soil building to inspire students when they come to design their own gardens, either for yr 8 vegetable topic or in their own home.
- Knowledge of permaculture principles and skills lacking in school agriculture program.

STRATEGY:

In response to these needs the decision was made to redesign the showcase garden using permaculture design principles. The garden would display good permaculture design in a small space equivalent to many backyards in the area. Vegetable and herb production would feature prominently in the space, and a small food forest with perennial fruit trees would also be planted. The garden would also showcase good soil building techniques including worm farming and composting.

There was little funding for redesigning and recreating the garden, and most of this was spent on new irrigation and fencing. In order to be successful, the new design needed to make use of existing recycled materials. These were sourced on the school grounds as well as others found in local council clean ups. Other materials were purchased second-hand or donated by members of the school community.

The schools' science/agriculture teacher had extensive knowledge of permaculture design and principles and was able to complete the concept design for the new garden. The school farmhand and other teachers provided assistance with the initial deconstruction of the original garden, while the build of the new garden was completed with the assistance of students in years 8 and 9 during lessons. Certain features of the garden, such as bath tub worm farms were created with the assistance of mentorship programs offered by local community groups. These were constructed off site and delivered to the school. The school farm hand and gardener are responsible for maintaining the garden out of work hours in exchange for using half of the space for the production of food for their own homes.

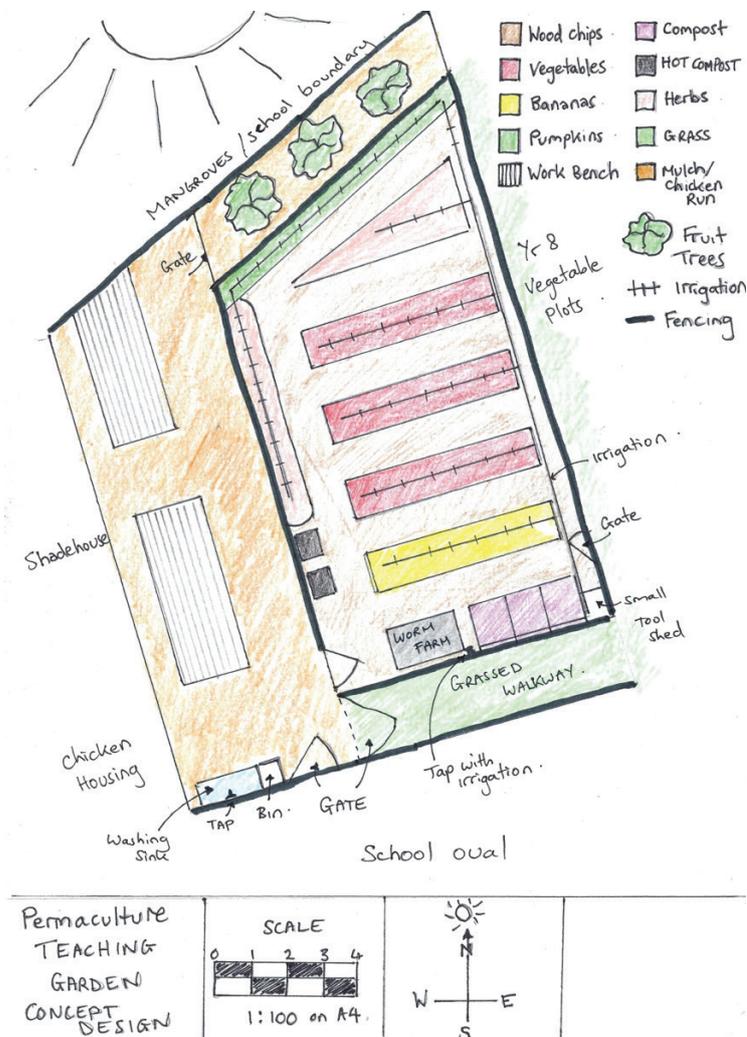


Image 2: Permaculture Teaching Garden using recycled materials such as old hardwood timber, compost bins and wheel burrows (2 months into build).



Image 3: Recycled Bath Tub Worm Farm.

Outcome	Criteria for success
<p>Immediate</p> <p>Students in the year 8 vegetable production unit would be given the practical opportunity to learn new skills in permaculture principles, garden design and soil production.</p>	<p>Students become motivated and inspired to construct their group vegetable garden using permaculture principles and techniques.</p>
<p>Short Term</p> <p>Students in year 9 would have access to perennial herbs in which to take cuttings and learn about medicinal uses for the herb topic. Increase in the pace of compost production to improve the health of plants in the area.</p>	<p>Access to a range of healthy perennial herbs for students to take cuttings off and learn about during lessons. Time taken to composting plant waste materials will be decreased.</p>
<p>Mid Term</p> <p>Student knowledge in good soil management, permaculture principles and garden design will increase. Plants will thrive in the garden due to improved soil productivity. Increase in food produced in area to be used by School during cooking lessons and by school canteen.</p>	<p>More links to permaculture principles incorporated into existing agricultural program with real examples being displayed. Produce can be sold to the school canteen. Proceeds can be used to fund future agricultural projects.</p>
<p>Long Term</p> <p>Community knowledge in good soil management, permaculture principles and backyard vegetable production will increase as students take skills home with them. Teachers with knowledge of good garden design and permaculture principles will increase.</p>	<p>Links between the school and local community groups established. Increased awareness of school agricultural program through the running of farm stalls. Teacher development days hosted at the school.</p>



MAIN BENEFACTORS:

Students:

- Year 8 students gained valuable hands on experience building a garden from scratch.
- Students had a permanent garden in which to gain inspiration for their own vegetable garden designs.
- Less weeding of students' own garden due to less weed species growing in old showcase plot.
- Students gain valuable skills in soil production and worm farming. Large bath tub work breeders can supply students own worm farms with extra worms when needed.
- Year 9 students had opportunities to gain hands on skills in working with propagating and producing herb plants including the production of cavendish bananas.
- Agricultural students have working example of good companion planting in which to guide them in other agricultural projects they are completing.
- Year 10 students have opportunity to get inspiration in the production of potatoes based on showcase garden.
- Science students in year 10 can get real world example of how plants use cloning by investigating the production of bananas in showcase garden.

Teachers:

- Agricultural Teachers have a permanent working example of a vegetable and herb garden in which to refer to during lessons.
- A selection of herbs and plants are grown in which to collect seeds and cuttings for lessons.
- A selection of good quality compost is available for the using during lessons.
- Science staff can use resources in garden for the teaching of the nitrogen cycle, cloning, biological control and the lifecycle of worms.
- School has a working example of a permaculture garden in which to teach skills in permaculture principles to teachers.
- School TAS teachers have access to fresh excess vegetables to use in cooking classes.

School Farm Hand/Gardener:

- Access to half of the garden to produce their own food and display good quality vegetable production in exchange for extra hours of garden maintenance.
- Easier area to manage and keep weed species under control.
- Increased productivity of food due to increased soil production.

School Community:

- School canteen has access to fresh quality herbs and excess vegetables.
- Increased appearance of school agriculture plot when being showcased during open nights and Lighthouse school agriculture workshops.
- Increased awareness of school agricultural program during display of produce at local show.

School Plants and Animals:

- Increased health of plants due to improved soil conditions.
- Increased productivity of fruit.
- Decreased incidence of weed plants and pest bugs due to companion planting techniques.
- Access by chickens to mini food forest to control weeds. Supplement food in the form of excess compost worms.



Image 5: Limited plants in beds due to school holidays. Large banana plot producing huge amounts of fruit and shading compost and worm farming area from hot afternoon sun. New fencing in place resulting in no access to by sheep or chickens.

What worked	What did not work
<p>Immediate</p> <p>Use of recycled materials kept initial cost of build to \$200. Reduction of weeds and ease of use of space enabled with the removal of old fencing. Use of space used in teaching of lessons on vegetable production and permaculture principles.</p>	<p>More time needed in initial construction due to sourcing of materials and removing nails from old timber. Teachers put more time into the build after school hours due to limited time in class, restricted to 50 min lessons.</p>
<p>Short Term</p> <p>Students in year 9 involved in planting of the bananas. Quick growth of food plants due to optimal growing conditions. Garden maintenance easier for staff. Year 8 students using garden for inspiration for own vegetable gardens.</p>	<p>Time taken for worm farm to arrive took longer than expected. Issue with funding for acquiring new fencing on time. Chickens and sheep gained access and destroyed seedlings.</p>
<p>Mid Term</p> <p>Increase in food production with two types of soil pH in beds. Increased soil production in the space. School canteen using excess produce. Produce displayed at local agriculture show.</p>	<p>Limited use of the produce. Limited use of space by teachers (other than the science/agriculture teacher) due lack of confidence in teaching permaculture principles.</p>
<p>Long Term</p> <p>Garden tours. New fencing ensures chickens keep weeds down around fencing but have no access to garden. Reduced weeds results in significantly reduced garden maintenance.</p>	<p>Garden starts to look messy when school farm hand is on leave. Limited use of space by teachers.</p>