7. Sustainable Food

Background Information:

Does your school have a kitchen garden? The Coal Loader Community Garden is a wonderful resource for any school wanting to know more about growing food and getting students involved in the learning opportunities that a garden allows.

Originally a carpark for workers at the Coal Loader until 1992 and then caretaker's courtyard garden between 1992 and 2006, this beautiful area is now a community garden.

Established in 2007, and planned and built by local residents, the Garden is operated on organic principles and is irrigated using rainwater captured from the roof of the adjacent building. The garden is open to all within the community.

The garden uses several forms of composting including compost heaps, compost bins and worm farms. Composting and worm farming are one the best ways to utilise green kitchen waste and makes great organic fertiliser.

The community garden at the Coal Loader is designed using permaculture principles. Permaculture is a garden design philosophy that encourages zonation around the home – herbs and vegetables closest, livestock further away and food trees further away in the orchard. It has evolved from farmers in the 1920's who coined the phrase permanent agriculture. Many gardeners today use permaculture as a way to become more self-reliant through the design and development of productive and sustainable gardens and farms.

Growing your own food is not only good for your health, it is good for the environment and a good way to get involved locally.

Organic, home-grown fruit, vegetables and herbs are fresher, more nutritious and more delicious than conventionally farmed fruit, vegetables and herbs. You are eating in the right season and you know where your food has come from.

Freshly eaten home-grown food produces no greenhouse emissions. Your home-grown food travels metres instead of hundreds or thousands of kilometres. Reducing your food miles is a great way to reduce our ecological footprint.

The Coal Loader Community Garden offers an excellent opportunity to demonstrate how to grow food and keep chickens to students and teachers alike. Like all community gardens, it has its roots in motivated local residents coming together around a common need and goal to produce local fruit, vegetables and eggs sustainably in a community space.

Curriculum links:

✓ Stage 3 Mathematics and Science
✓ Stage 4 Mathematics, Science and English
✓ Stage 5 English and History

See the Curriculum Matrix (Appendix 1) for more detail.

Further Information:

Watch the Coal Loader Grow your Own Food three minute video ▶ which will give your class an overview of what you will find at the Coal Loader.

For help with setting up your school garden see the "Tips for Creating a School Garden" in the Coal Loader Garden Project teachers guide developed by North Sydney Council and Northern Sydney Area Health Service. *www. nsccahs.health.nsw.gov.au/healthpromotion/publications/ documents/CoalLoaderGardenProjectResource.pdf*

Kitchen gardens website *www.kitchengardens.det.nsw.edu.au*

Visit *www.northsydney.nsw.gov.au/communitygardens* for more details.

For keeping chickens at school see *www.poultryhub.org*

For more information about using permaculture designs in your school gardens visit *www.permaculturenorth.org.au*

North Sydney Council thanks the Coal Loader Community Garden Group for providing advice and information on this chapter.

Activity 1 – Keeping Chooks

Activity Summary:

Students will participate in a pre-excursion class discussion with their teacher using the Information provided. This will be followed by an excursion to the site where the students will complete an Activity Sheet focussing on Keeping Chickens, standards for free range chickens, and health considerations for keeping poultry. Students will be extended to develop a chicken program at their school using the knowledge gained from observing the chickens at the Coal Loader.

Aim:

To increase knowledge and awareness of keeping chickens in the school or backyard.

To utilise mathematical skills to understand the production rate of the chickens at the Coal Loader site, and the management issues around keeping chickens.

Materials Needed:

- Each student will need a clipboard and writing equipment.
- Each student will also need their own copy of the Student Worksheet.

Preparation:

Teachers are asked to hold a pre-excursion class discussion using the Information provided below.

Outcomes:

- Understand how guidelines and law on keeping chickens are implemented.
- Using the background information on chicken production and observations at the Coal Loader, students will be given confidence to develop a chicken program back at school.

Background Information:

The benefits of keeping chickens include providing regular supply of fresh eggs, recycling food waste, making excellent pets, helping aerate garden soil, managing insect pests, and providing the garden with fertiliser.

Raising and keeping chickens provides a great way to teach us about responsibility and how to care for living things. They also provide an experience in small animal farming and egg hatching if eggs are fertile.

Chickens can be fed food scraps, including waste that cannot be composted such as the remains of dishes that incorporate meat, pasta, rice and bread. Hens need to have a secure, warm, and safe environment in which to lay their eggs. If their environment is conducive to production, one hen can lay an egg a day in the laying season which is defined by daylight length, but on average they lay five eggs a week.

The chickens at the Coal Loader are maintained by volunteers from the Community Garden group who are rewarded daily with fresh eggs. The high fence is effective in keeping foxes away from the chickens, and as an extra precaution the chickens are always closed in the coop at night. As egg production is the outcome at the Coal Loader, roosters are not needed in the management process, so crowing is not an issue. In fact North Sydney Council has a Rooster Policy which forbids the keeping of roosters in the municipality.

The Coal Loader chickens are housed in what was once an old shed, so even the chicken coop at the Coal Loader follows adaptive reuse principles!

North Sydney Council has guidelines to assist in keeping chickens in the backyard or school — *www.northsydney.nsw.gov.au/*

Facts and figures about keeping chooks in NSW

Keeping chooks in your backyard is legal. In NSW, the legislation that covers the keeping of chickens is the Local Government (General) Regulation 2005 and State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 which are administered by local councils.

- The house
  - must not be more than 3.5 m above ground
  - must not be more than 15 square metres in floor area
  - must be located in the rear yard
  - must not house more than ten fowls or poultry
  - must be constructed so that roofwater is disposed of without causing a nuisance to adjoining owners
- Poultry must not be kept under such conditions as to create a nuisance or to be dangerous or injurious to health.
- Poultry yards must at all times must be kept clean and free from offensive odours.
- Chickens and guinea fowls must not be kept within 4.5 metres of a dwelling, public hall, school or premises used for the manufacture, preparation, sale or storage of food.
- Poultry, other than chickens and guinea fowls, must not be kept within thirty (30) metres of any dwelling, school or premises used for the manufacture, preparation, sale or storage of food.
- The floors of poultry houses must be paved with concrete or mineral asphalt underneath the roosts or perches. However, this subclause does not apply to poultry houses:
  - That are not within 15.2 metres of a dwelling, public hall or school; or
  - They are situated on clean sand.
- Poultry yards must be so enclosed as to prevent the escape of poultry.
- There must be no more than 1 development per lot.

Activity:

To be free or not to be free. That is the question!

Eggs in Australia can be labelled organic, free range, organic free range, green, or eco, which can be confusing for us as consumers. This is because there is no single standard in Australia for organic or free-range products and anyone can use those terms. The RSPCA standards for free range are:

✓ Hens are housed in sheds and can go outside by choice.

✓ Within a shed there are a maximum of nine hens per square metre.

✓ Outside there are a maximum of 1500 hens per hectare.

1. Are the Coal Loader chickens 'free range' according to the RSPCA standards? Yes / No (circle answer). Why?

_____

_____

Be a Council Environmental Health Inspector for a day:

Every local government has a team of environmental health officers who oversee certain policies, rules and regulations including keeping chickens.

2. Does the chicken enclosure at the Coal Loader meet North Sydney Council requirements?
    Yes / No   (circle answer) Why?

_____

_____

3. What is one management intervention that you can see has been done by the community gardeners to ensure the well-being of the chickens?

_____

_____

Chicken management at the Coal Loader:

Having chickens at school is a great way to learn about where our food comes from, and the school canteen can benefit as well. Make some observations to take back to your school about the chicken program at the Coal Loader.

4. Sit and observe the chickens for five minutes:

   a. What did they eat?

_____

   b. What sounds did they make?

_____

   c. Was there a bossy chook?

_____

   d. What is their main activity?

_____

5. On the Poultry System diagram below, list the following:

    a. What are the inputs to ensure the chickens are well managed?

    b. What are the outputs that occur with running chickens at the Coal Loader?

    c. What are the management jobs that the community gardeners need to do daily?

Poultry System diagram

Inputs-list

Daily Management – Jobs

Outputs – list
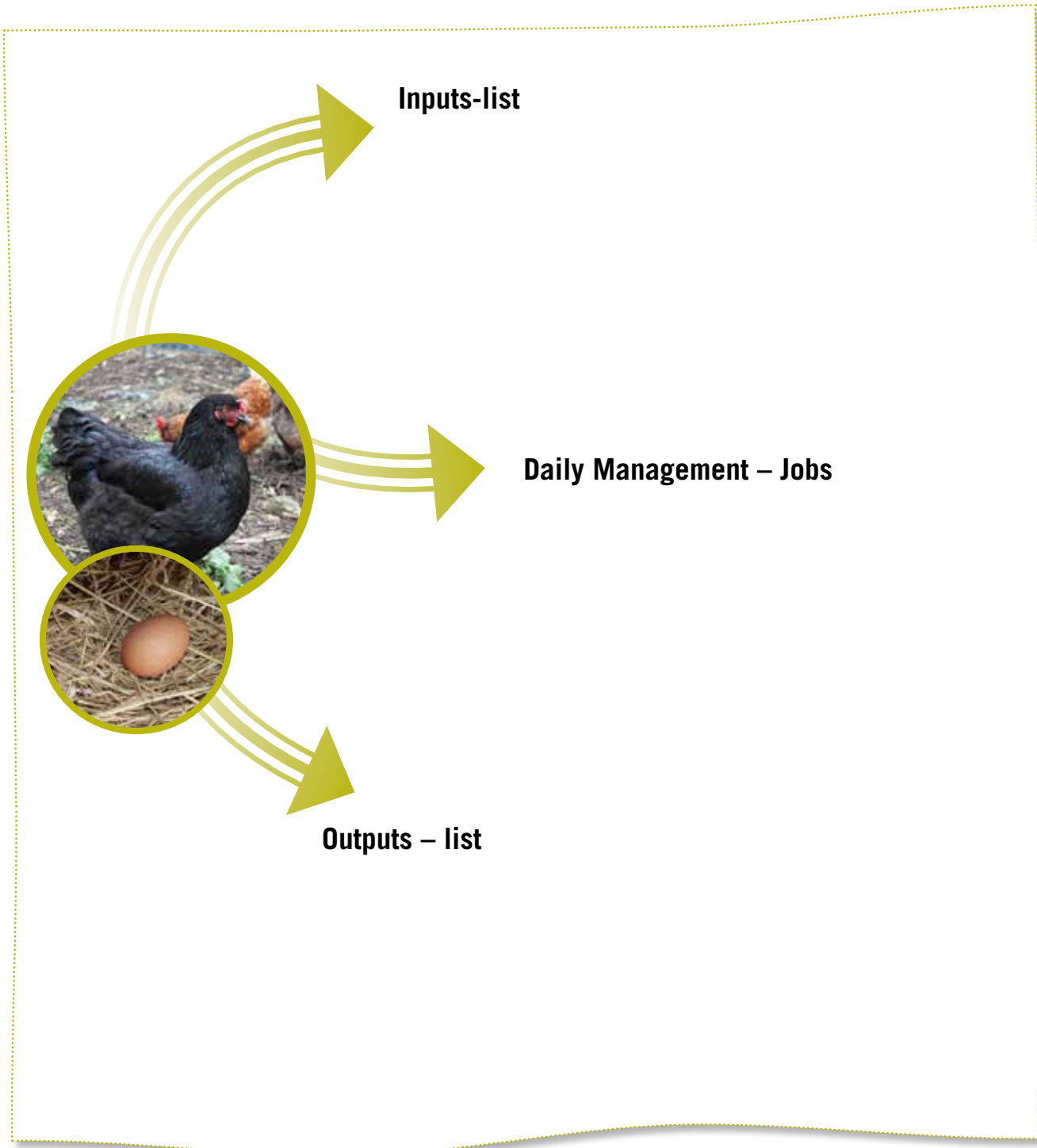
Chicken Production at the Coal Loader:

6.   If each chicken laid an egg a day what would be the weekly production?

7.   What would be the yearly production?

8.   Hens don't lay an egg every day of the year. What is one reason for this?

Extension Activity:

9.   The eggs at the Coal Loader are collected by the community gardeners who look after them, but let's imagine that Council has all these eggs ready to sell, they need your help to develop a marketing plan.

Form small groups and create a marketing plan that could be used by the community gardeners. You may want to include a business name, cost to sell, an advertising plan, a distribution plan. What else?

Marketing Plan

Further extension:

10. Using the 'Facts and figures about keeping chooks in NSW' information, plan where a chicken coop could be set up in your school. Is your space close to water? Does it have some shade and enough room to store food? List what you need to make a chicken program a success at your school.

11. Write a letter to the school environment group, or your school Principal, suggesting a school chicken program. Include information on how and why it would work at your school.

Activity 2 – Community Gardens

Activity Summary:

Students will participate in a pre-excursion class discussion with their teacher using the Information provided. This will be followed by an excursion to the site where the students will complete an Activity Sheet focussing on Community Gardens and what is needed to establish a kitchen garden at school.

Students will be extended to develop a garden program at their school using the knowledge gained from observing the community garden at the Coal Loader.

Aim:

To increase knowledge and awareness of community gardens using the Coal Loader Community Garden for comparison, and gain an understanding of growing food in small places.

Materials Needed:

- Each student will need a clipboard and writing equipment.
- Each student will also need their own copy of the Student Worksheet.
- The optional activity in the extension list is the Compost Gin card game that will be provided by the Coal Loader Centre for Sustainability.

Preparation:

Discuss in class some of the benefits of having a community garden. Include in the discussion how the community benefits, how council benefits. What are other ways students have seen community and councils work together?

Outcomes:

- Increased confidence to create a school kitchen garden.
- Encourage students to get involved locally, learning to live sustainably.
- Learn about turning green kitchen waste into fertiliser.

By using the garden as a classroom, students:
- Gain knowledge and understanding of the environment and the challenges facing the planet
- Foster cooperation through teamwork, develop leadership skills, gain resilience
- Achieve a heightened understanding of where their food comes from
- Learn about food preparation, develop practical cooking skills utilising ingredients they have produced
- Learn about sharing space, food, knowledge and ideas
- Learn what is truly local food
- Find out what's in season, and why eating foods that are in seasons is good for us and the environment

Further resources:

- *www.outdoorclassrooms.com.au*
- *www.edibleschoolgardens.com.au*
- *www.growingcommunities.org.au*
- *www.northeystreetcityfarm.org.au*
- *www.cultivatingcommunity.org.au*
- *www.kitchengardenfoundation.org.au*

Student Worksheet – Community Gardens

Introduction:

The Coal Loader Community Garden is a wonderful tool to showcase what it means to live a sustainable life, to learn how to care for the earth, to learn how to work with others in the garden and finding ways to share the harvest.

In the community garden general activities include planting, watering, weeding, fertilising, mulching, seed saving, tending to the worm farm, composting, pest management and harvesting. The Coal Loader Community Garden Group meets every Wednesday between 10am and 12pm. The Group also look after the Coal Loader chooks, who provide fresh eggs daily.

Plans are underway to develop a food forest on the Coal Loader platform in the future. A food forest uses permaculture principals and is where the gardener creates a forest-like garden where all the plants are productive.

Activity:

1. Below is a list of activities undertaken in the Community Garden. Why are they important for the running of the garden?

Gardening Job	Why this is important
Planting	
Crop rotation	
Watering	
Weeding	
Fertilising	
Mulching	
Seed saving	
Worm farm maintenance	
Composting	
Pest management	
Harvesting	

2. List the plants that are ready for harvest at the moment.

3. Find three different gardening styles at the Centre

Garden style	Features	How is it sustainable?
Raised bed		
Vertical Garden		
Keyhole Garden		
Pots		

4. How many different ways can scraps be composted at the Coal Loader?

5. Do you have any of these compost systems at school?

Extension

1. Plan what would go in one of the raised beds at the Coal Loader if your school was in charge of looking after it.
2. Take some photos of the plants at the Coal Loader that are attractive to you and back at school make a collage around a theme of your choice, e.g. living sustainably.
3. Can you plan your own community garden? What rules would you need to set up a garden in your school? Identify who you would need to help. Where would you get money? Help with planning a garden can be found at www.communitygarden.org.au.

Further extension

1. Research how a vertical garden or a hydroponic system works. Sketch your own system.
2. Play the compost gin game.
3. Watch the "Harvest" DVD and take the challenge to start a 1 sq metre veggie bed at home. Take photos of your challenge or write a journal of your gardening endeavours, and send your photos to Council to place on the Facebook page.

Activity 3 – Calculating Food Footprints

Take away activity – for home or back at school

Activity Summary:

Students will participate in a pre-excursion class discussion with their teacher using the information provided. After undertaking Activities 1 and 2, students will complete the food footprints activity. They will be extended to think about their food miles and that of food in the school canteen.

Aim:

To take back to school what has been learnt from the community garden at the Coal Loader, and to encourage students to take ownership of their food footprint and as a class or school green group set up a school kitchen garden.

Materials Needed:

• Each student will need a copy of the Student Worksheet.

Preparation:

Students are advised to first undertake the Growing Food activities at the Coal Loader to gain an understanding of community gardens. Undertaking an ecological footprint either on-line or a Worksheet provided by the Coal Loader is a crucial part of this activity.

Outcomes:

• Understanding of a student's ecological footprint and ways it can be reduced through looking at food.

Further Information:

• Ecological footprint calculator *www.epa.vic.gov.au/ecologicalfootprint/calculators/default.asp*
• *The Powerhouse Museum Eco'Tude website http://ecotude.powerhousemuseum.com/*
• *Love Food Hate Waste www.lovefoodhatewaste.nsw.gov.au/*
• Sustainable Seafood *www.sustainableseafood.org.au/*
• Food Diary *www.healthyfoodguide.com.au/resources/weekly-food-diary*

Introduction

Living sustainably means we all work towards reducing our ecological footprint.

By measuring our ecological footprint, we can each get a measure of the impact we are having on the Earth. Every human activity consumes resources from the planet and produces waste that the planet must then deal with. The Earth has a finite amount of resources and if we are living sustainably we are living within the limits of the Earth's resources. There are different footprint calculators that measure different impacts for example water, carbon and food.

Reducing your food footprint

Tips for reducing your food footprint:

❶ Grow your own food... ❷ Buy food in season... ❸ Eat less processed or packaged food... ❹ Review the transport needed for each food item... ❺ Don't buy too much food... ❻ Compost or use left-over food when cooking...

❼ Eat meat grown on farms that are sustainable... ❽ Use the sustainable fish guide when buying fish... ❾ Avoid bottled water...

❿ Find a local growers market and get to know the farmers.

Activity:

1. Calculate your ecological footprint by using this easy tool
   www.epa.vic.gov.au/ecologicalfootprint/calculators/default.asp

2. As a class, conduct a Food Footprint mind map around the ways you can reduce it, using the tips provided and any others tips you may research to think of ways you can reduce your food footprint.

3. As a class take on the challenge to see who can reduce their food footprint the most.

Step 1 – Undertake a food diary for one week. Here's an example but you can make it a journal.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast							
Snack							
Lunch							
Snack							
Dinner							
Snack							
Exercise (time & type)							
Cups (250ml) of water							

Step 2 – With the results of your food diary, categorise the foods you eat:

- What is the percentage of fresh, organic and processed?

  _____

  _____

  _____

- What other food footprint tips can you incorporate into your food diary to reduce your footprint?

  _____

  _____

  _____

Step 3 – As a class:

- Decide who has the smallest food footprint and congratulate them.

  _____

  _____

  _____

- Calculate who has the largest food footprint and as a class find ways to help implement the tips that would help them to reduce their footprint.

  _____

  _____

  _____

Extension

1. Take three items of food in your diary and research the food miles. This could be done by reading the labels of various food items and finding out where they have come from.
2. A history of the future. Imagine a sustainable future and then describe the changes that would allow this sustainable future to occur. Use these changes to demonstrate all the steps that need to occur in the school community to reach a sustainable future.

Further extension

1. What is the food footprint of one item of food in your canteen?
2. Work with your canteen to look at ways to reduce the overall food footprint of the canteen. Consider issues such as the unsustainable palm oil content of products sold.