

## I'd like to make that!

### How to build a worm farm



#### 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 Girraween Primary School use a worm farm to reduce waste and to help fertilise garden beds.

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The materials in this educational resource have been provided by Sarah McNeill and Robyn Hyland from Girraween Primary School, Darwin in the Northern Territory.

Girraween Primary beat other Junior Landcare Teams in the NT Landcare Awards in 2013 and therefore represented the Territory in the 2014 National Landcare Awards. For details go to <http://www.landcareonline.com.au/wp-content/uploads/2014/06/NT-Girraween-Primary-School-FINAL.pdf>

## Resource Description

YEAR LEVEL: YEAR 1

### THIS IS A UNIT OF WORK FOR SCIENCE AND ENGLISH.

This is a unit with five inquiry teaching sequences about involving students in the process of understanding, documenting and implementing a worm farm to improve your school's effort to reduce waste and fertilise garden beds.

- It includes sections on teaching children about what worms do, preparing the worm farm for worms, harvesting worm castings and using the Worm Whizz as fertiliser.
- 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: Identify and explore the benefits of worm farming.*



At Girraween Primary School, students were set the task to create a "Fairy Garden" with potted plants and flowers. The aim of this task is to show the children that plants need food to survive and for them to identify what is a good fertiliser. The students will also explore the use of "Worm Whizz" and worm castings to enhance the growth of their plants and flowers.

*Students were initially introduced to worms to engage them. What do worms look like and how do they move?*

*This activity involves using informational texts such as "Worm" by Jill Bailey.*

### SOME TACTICS TO EXPLORE THE TOPIC INCLUDED...

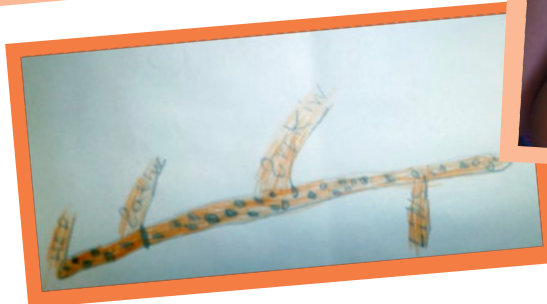
Working in small groups, each group is given a pot of soil that contains earthworms. In a dimly lit space, children can use a magnifying glass to examine the worms, being careful not to touch them too often. Ask the children to make observations on the way the worms move and to compare different sized worms.

Draw a "Bug Map" to document their findings. Discuss how big worms can grow and use a unifix cube to make a unifix worm to show how big they can grow. To see different ways in which unifix cubes can be

utilised, follow the link

[www.google.com.au/?gws\\_rd=ssl#q=unifix+cubes](http://www.google.com.au/?gws_rd=ssl#q=unifix+cubes)

By completing this exercise, the curriculum specification *Living things have a variety of external features* **ACSSU017** is demonstrated and satisfied.



# Step Two

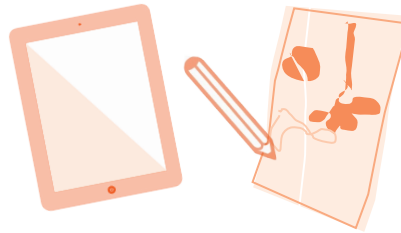
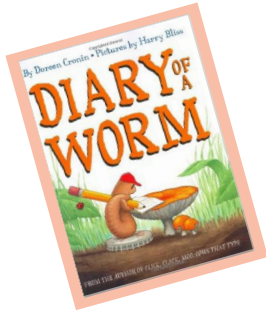
## Explore the topic

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



The next step is to introduce the children to deeper understandings.

At Girraween, the students were encouraged to research what worms need to survive.



1. The students were asked to read the book "Diary of a Worm" by Doreen Cronin and to explore various QR codes and websites with their iPads to further their research.
2. Individually or in groups, ask the students to create posters and use their iPads to create an "Explain Everything" document about worms to show their deeper understanding of the topic.

By completing this exercise, the curriculum specification Living things live in different places where their needs are met (ACSSU211) is demonstrated and satisfied.

### A CASE STUDY OF OBSERVATIONAL OUTPUT...

Girraween Public School students created the following table of observations about what worms can and cannot eat.

Follow the following link to learn the enriching qualities of creating a healthy and lively worm farm  
<http://www.environment.nsw.gov.au/households/worm-farms.htm>

Do feed them...	Don't feed them...
vegetable and fruit peelings (no citrus) pulp from the juicer tea bags crushed egg shells bread small amounts of soiled paper and cardboard (such as shredded egg cartons) smaller scraps, which are easier and quicker to digest blend your scraps with a little water before feeding your worms.	dairy products, butter and cheese meat, fish, fat and bones very oily foods acidic food, such as citrus, onion and garlic.

# Step Three

## Action the topic

*Objective: Explain, prepare and action how the students are to build the worm farm.*

Quick and easy How To Guides including "Building a worm farm" are available for download via Landcare Australia's dedicated webpage at [juniorlandcare.com.au/curriculumresources](http://juniorlandcare.com.au/curriculumresources).



Girraween Primary School building the Worm Farm, stage by stage from left to right.

# Step Four

## Elaborate on concepts and Ideas

*Objective: Have students monitor changes within the worm farm.*

As a class, encourage the students to make their observations of the worm farm after two days

### USE THE FOLLOWING QUESTIONS AS A GUIDE...

Where have the worms gone?

The worms should have spread into the bottom layer of the bath tub – undo the lid and take a very quick look at the top layer.

Children to draw posters of the worm farm and show where they think the worms are.

Why have the worms spread out?

How can our class maintain the worm farm?

Set up a class roster of two children per week who must water the worm farm three times per week and feed them with blended scraps. (Note: the worm farm should not become too wet because the worms do not like this. To maintain a good environment, add shredded paper or cardboard along with the food scraps).



# Step Five

## Evaluate

*Objective: Look back and evaluate the process that the students took to build the worm farm.*



Monitoring the worm farm daily and relating its' development back to Mathematics and Science programs in the school curriculum.



*Measure and compare the lengths and capacities of pairs of objects using uniform informal units (ACMMG019).*

*Living things have a variety of external features (ACSSU017).*

Taking photographic evidence of the development of the plants in the Fairy Garden for class discussion and use across the curriculum areas.



Growth stages of Girraween Primary School's 'Fairy Garden'.

# Australian Curriculum Content Descriptions

## CROSS CURRICULUM PRIORITIES: SUSTAINABILITY

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.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum 12 September 2014.

## REFERENCES

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

Bailey, Jill (2006) *Worm*, Heinemann Library. Can be sourced online <http://books.google.com.au/books/about/Worm.html?id=7oVZAAAACAAJ>

Cronin, Doreen (2003) *Diary of a Worm*, Doreen Cronin, HarperCollins.

## WEBSITES

Landcare Australia's guide *Building a Worm Farm* [juniorlandcare.com.au/wp-content/uploads/2014/10/Building-a-worm-farm-12.9-LR](http://juniorlandcare.com.au/wp-content/uploads/2014/10/Building-a-worm-farm-12.9-LR)

Australian Government Department of Agriculture <http://www.daff.gov.au>

NSW Government Environment and Heritage <http://www.environment.nsw.gov.au/households/worm-farms.htm>

Australian Curriculum, Assessment and Reporting Authority (ACARA) <http://www.australiancurriculum.edu.au/>

## SCIENCE - BIOLOGICAL STUDIES

**STRAND:** Collecting, Recording Evaluating and Representing.

**ENTRY:** Represent data and the location of places and their features by constructing tables, plans and labelled maps **ACHGS009**

**ENTRY:** Living things have a variety of external features **ACSSU017**

**ENTRY:** Living things live in different places where their needs are met **ACSSU211**

## SCIENCE AS HUMAN ENDEAVOUR

**STRAND:** Nature and Development of Science

**ENTRY:** Science involves asking questions about, and describing changes in, objects and events

## SCIENCE INQUIRY SKILLS

**STRAND:** Questioning and Predicting

**ENTRY:** Respond to and pose questions, and make predictions about familiar objects and events.

**STRAND:** Planning & Conducting

**ENTRY:** Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources **AC SIS025**

**STRAND:** Communicating

**ENTRY:** Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play

## ENGLISH

Create short texts to explore, record and report ideas and events using familiar words and beginning writing knowledge **ACELY1651**

Understand the use of vocabulary in familiar contexts related to everyday experiences, personal interests and topics taught at school **ACELA1437**

Listen to and respond orally to texts and to the communication of others in informal and structured classroom situations **ACELY1646**

Use interaction skills including listening while others speak, using appropriate voice levels, articulation and body language, gestures and eye contact **ACELY1784**

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