

LESSON PLANS

Educational Unit For Teachers

To take advantage of all the activities, you will need a Can-O-Worms and a supply of Compost worms.

Using Composting Worms to minimise waste.

Lesson Planning

Integration Overview

Unit Overview

Unit Tasks

Extension Activities

Integration Overview

Oral: Convince your parents to recycle food waste

Debate: That all worms should be squashed

Presentation: Speak for 1 minute (don't stop) on worms, recycling, waste, worm farms. The audience must listen without speaking

Genre Writing: Procedure; Setting up the Can-O-Worms

Recount: A day in the life of a worm

Discussion: The value of waste minimisation

Explanation: How worms reduce waste

Poem Writing: Writing worm poems

Reading: Information skills for research project

Factual Texts: 'Earthworms' by Henwood, C. 'Infomazing' by Drew, D.

Human Society and Its Environment

Invent a new slogan to reduce waste. Invite speakers to school who work in the waste management area

Write to the local newspaper about the community's need to improve waste management

Participate in a Clean Up campaign in the community and at school

Visit a waste management system or view a video on recycling

Predict future needs of the school and community in regard to waste management needs

Creative and Practical Arts

Clay: make worms

Textures: make models out of various recycled materials

Colours: the use of brown

Environmental: spaghetti worms

Art: sketch movements of worms; design a poster for waste minimisation; design a poster advertising worms for sale.

Personal Development, Health and Physical Education (PDHPE)

Cleanliness, hygiene, care of worms

Discuss the rules for operating the Can-O-Worms

Feelings about touching worms

Interview parents, class members about how they can help minimise waste.

Maths

Record worm growth

Measure amount of waste disposed of

Weigh 1 worm, 10 worms, 100 worms

Estimate weight of 1000 worms

Guesstimate weight of 1000 worms

Trade with 1s, 10s, 100s, 1000s or worms

Graph types of waste disposed of

Weigh waste over a period of one week.

Unit Overview

Designing and Making

Students design and make a new product that will minimise waste.

Investigating

Students investigate:

Natural and made environments

Biology and ecology of worms

The workings of the Tumbleweed Can-O-Worms

Using Technology

Students will use:

pH kit

Microscope

Magnifying glass

Tumbleweed Can-O-Worms

Resources

Resources required for this unit:

Reference books

Can-O-Worms

Organic waste

Recycled materials

Content Strands

Content Strands used in this unit:

Built Environments

Information and Communication

Living Things

Physical Phenomena

Products and Services

Earth and its Surroundings

Links with other K.L.A.s

English

Creative & Practical Arts

Human Society and its Environments

P.D. / Health / P.E.

Mathematics

Evaluation

Teachers' evaluation of this unit:

Did all the children actively participate?

Did all the activities produce more investigations?

Unit Tasks

Task 1: To Establish a Working Can-O-Worms

Task Outcomes:

KNOWLEDGE AND UNDERSTANDING OF CONTENT

Students will know and understand that:

Products are designed and made for particular markets

People try to control the conditions in the environments they build.

OF PROCESS

Students will:

Investigate reliable understandings of the natural and made environments.

SKILLS

Students will:

Devise fair tests

Identify data that supports a particular prediction.

VALUES AND ATTITUDES

Students will:

Exhibit self-direction in their own learning.

ACTIVITIES

Locate, by walking around your school, a suitable environment to keep the TUMBLEWEED Can-O-Worms

List all possible sites

Discuss the attributes for each nominated site

View video of establishing Can-O-Worms (found at www.youareearthmatters.com)

Discuss role of each part of Can-O-Worms

Test various bedding materials to find best product (eg. manure, peat moss) to use

Discover pH level of materials (use pH kit).

Observe worm eggs/worms through microscope magnifying glass

Use reference materials to label parts of a worm

Follow instructions to place bedding and worms in TUMBLEWEED Can-O-Worms

Write procedure for establishment of worm farm.

Reference: Instruction Manual: Tumbleweed Range of Worm Farms, website: www.youareearthmatters.com



Task 2: Build an Information Bank about Worms

Task Outcomes:

KNOWLEDGE AND UNDERSTANDING OF CONTENT

Students will know and understand that:

All living things are different

Living things are interdependent in the ecosystem

OF PROCESS

Students will:

Undertake research individually

Identify investigations

SKILLS

Students will:

Present a report on worms

Seek information from outside sources

Observe using all senses

VALUES AND ATTITUDES

Students will:

Be curious

Appreciate the value of worms.

ACTIVITIES

Investigate: worms as living creatures

Develop research/information skills using non-fiction resources

Develop a Worm Map.

Environment - Life Cycle - Reproduction

Food Source - Biology - Interdependence

Discuss meaning of terms

Observe worms' reaction to heat, smell, light, touch (the senses).

Develop experiments to measure reactions.

Record information

Observe worms over a long period

Keep a diary to record changes

Graph length, food eaten, mass

Monitor mass of food eaten

Report findings to class

Present research project to class.

Task 3: To Adopt Procedures which Minimise Waste

Task Outcomes:

KNOWLEDGE AND UNDERSTANDING OF CONTENT

Students will know and understand that:

Activities of people can change their environment

The consequences for/against waste minimisation.

OF PROCESS

Students will:

Make detailed observations

Examine and evaluate waste systems

Explain how waste can be minimised.

SKILLS

Students will:

Devise ways to minimise the waste in schools.

VALUES AND ATTITUDES

Students will:

Demonstrate a commitment to waste minimization.

ACTIVITIES

Brainstorm the idea of waste

Categorise waste items

Students devise their categories: eg. plastic-paper & household-school-community

Focus on school waste

Trace where waste goes

Develop a flow chart of waste products

Interview a cleaner, gardener, and / or council workers for their opinions on minimising waste

Discuss: How can we reduce our waste products?

Discuss group waste products, what can be recycled?

Discuss the term recycling

Measure the culmination of one waste product over a week; How much? How often?

Record findings.

Devise ways to collect, store, and recycle. What can we do with it?

Graph types of waste

Monitor waste over a period of a month. Has it decreased? Why/why not? Propose theory.

Reference: Waste Matters - Gould League of Victoria (1993)



Task 4: To Design and Make a New Product that will Minimise Waste

Task Outcomes:

KNOWLEDGE AND UNDERSTANDING OF CONTENT

Students will know and understand that:

There are environmental consequences of production and consumption
Systems are designed for specific purposes.

OF PROCESS

Students will:

Produce a brief and plan choices
Justify materials and equipment used.

SKILLS

Students will:

Develop a design
Produce a model
Use appropriate equipment and tools.

VALUES AND ATTITUDES

Students will:

Demonstrate confidence in themselves to attack problems
Demonstrate confidence to seek help.

ACTIVITIES

Evaluate the effectiveness of current disposal units, (eg. recycling bin, compost bin)

Outline advantages/disadvantages of each system

Discuss: What else could be recycled?

Follow design process for Creative Problem Solving:

Define Task - what waste product have you chosen?

Explore Ideas - what will it be made of?

Develop Ideas - draw, design, model

Selection Solutions - refine model

Using resources - test various materials

Evaluate outcome - problems associated? Positive aspects? Is it possible to make it at production level?

Present product to class or assembly

Invite an expert to give a professional opinion on construction, ideas and material

Find out more about recycled plastics and products.

Reference: Waste Matters - Gould League of Victoria (1993)



Extension Activities

Elect monitors to find students who are Environment Friends. Give awards in assembly
Tally and record the number of earthworms brought to school by students
Link up with other schools to discover how they use their worms
Visit a City Farm / Council operated composting and recycling centre and go on the Worm Walk
Make a list of other animals that are hermaphrodites
Find out more about soil and soil conservation
Discover worms' natural predators
Have a worm race
Construct a Worm and Ladder game
Arrange an excursion to a Worm Farm (see list of worm growers in Can-O-Worms instruction manual).
Complete the Activities on the Tumbleweed Kids Studd page ie colouring in, find a word, worm search. . .

References:

Appelhof, M. 1982. Worms Eat My Garbage. Flower Press, Michigan.
Armstrong P. / Laffin J. 1993. Waste Matters. Gould League of Victoria.
Board of Studies, 1991. N.S.W. Science and Technology Syllabus, K-6.
C.S.I.R.O. 1978. Earthworms for Gardeners and Fishermen. CSIRO East Melbourne.
Douglas, D.E. / Gaddie. 1977. Earthworms for Ecology and Profit. Vol II Bookworm, California.
Lambert, D. 1983. Earthworm Breeding for Profit. Weston & Co. Kiama.
S.A. Dept. of Education, 1991. Environment.
S.A. Dept. of Education, 1992. Kids for Landcare, Wormwatch.
Sosnowski, J. 1982. Earthworms. The Big Fat Worm Farm, Valla.