

## Classroom Activity

# Worm Vocabulary

**AERATION** – exposure to air which allows the exchange of gases.

**BACTERIA** – simple one-celled organisms which have no nucleus or other organelles.

**BURROW** – a tunnel formed when an earthworm eats its way through soil or pushes soil aside to form a place to live.

**CASTINGS** – worm manure or worm “poop.”

**COMPACTION** – compression of the soil; the soil is pressed so firmly that air and water cannot penetrate.

**DECOMPOSE** – to rot.

**DETRITIVORE** – organism that eats dead and rotting matter.

**HABITAT** – the environment and specific conditions in which an organism needs to live.

**HUMUS** – nutrient-rich organic matter in soil.

**INVERTEBRATE** – an animal without a backbone.

**MINERALS** – naturally occurring substances found on earth which are neither animal nor plant. Minerals can be found in the parent material or rocks. They are an important part of good plant nutrition.

**NUTRIENTS** – elements like nitrogen and phosphorus that are necessary for plant growth. Compost contains many nutrients needed by plants.

**ORGANIC LAYER** – is made of decomposing leaves, garden residue and other rotting materials that eventually turn into humus.

**SUBSOIL** – soil that is weathered or broken down plant material. It is made up of clay, sand, and/or small rocks.

**TOPSOIL** – soil that contains minerals from the subsoil and humus from the organic layer. It is the layer of soil where most plant and animal life can be found.

**VERMICOMPOST** – compost made from worms.

### Background Information:

#### Earthworms

Earthworms are invertebrates. They are extremely important ecologically. They burrow through the soil, increasing its porosity and allowing air and water to penetrate it more easily. At the same time the soil is enriched as the earthworms carry surface materials into deep layers. Earthworms are also food for many birds, mammals and reptiles.

The earthworm's body is made up of many segments that appear as rings. It may have as many as 100 – 200 segments. Older worms have more segments than younger worms. The segment that is specialized for reproduction is larger and lighter-colored than the rest of the segments and is located about a third of the way from the front of the

worm. The head is the thicker of the two end segments located on the end closest to the reproductive segment. Although the head has no eyes or ears, it contains a mouth and a very sensitive nose for smelling decaying organic material that is the worm's food source. Worms have very sensitive skin that responds to temperature, touch and light. To eat, the worm takes in soil, separating the nutrients from the non-organic material. This material is separated from the soil in the worm's stomach. The worm then passes the soil, which has been ground down in the gizzard, through its body and back into the ground in the form of worm casts. These worm casts act as fertilizer and enrich the soil. Worms are hermaphrodites, which means that they carry both eggs and sperm and can play the role of either male or female in mating and reproduction.

# Classroom Activity

## Wormery

### Standards

Science (K-3): Science as Inquiry 1, 2, 3, 4; 6 Characteristics of Living Things; 6 Requirements for Survival.

Language Arts: 1, 3

Math: 5, 9

Social Studies: Economics I

### Purpose

The students will make a wormery following the directions.

The students will make daily observations on the behaviors of the worms and record their data.

The students will make graphs showing the results of their data.

The students will raise the worms to be used in other science activities.

### Background

Wormery is adapted from a Keith Pigdon and Marilyn Woolley book called Earthworms. This can be read to the class before or after the activity. The Wormery is an ongoing project that the students will maintain daily. They can record their observations in the science log. The worms can be used later in the year for other experiences and dissections.

### What you need:

Large empty jar	2 – 3 earthworms
Damp soil	Some leaves
Sand	Black paper
Spade	Sticky tape

### What You Do

Put a layer of damp soil in the jar.

Add a layer of sand.

Fill the jar with damp soil.

Add earthworms and leaves.

Wrap black paper around the jar with tape and leave a few days.

After a few days remove the paper. Observe how worms have mixed the leaves into the soil.

Record your observations.

Add small amounts of water if needed to keep soil moist.

### Assessment

The students can maintain a daily log of the worms' actions. With the information they obtain they can make different graphs and charts to show their results.

### Extensions

Students can write poems about earthworms using some of the characteristics of the worms.

Students can measure the growth of the worms and plot them on a graph.

Students can learn the organs in their digestion system by decorating a cake with the different parts.



## Classroom Activity

# Composting – Worm Activity

### Extension

I Science as Inquiry 1, 2, 3, 4; 2 Changes in Materials, Material Technology 1, 2; 3 Characteristics of Living Things; 7 Evolution 1, 2; 8 Interactions Within the World Around Us 1, 2, 3; Technology and Its Influence on the Environment 1, 2

Language Arts: 1, 3

Social Studies: Civics 3

### Skills

Following directions, observing, classifying, predicting, gathering and recording data, interpreting data, applying and generalizing.

### Integrated Subjects

Language Arts; math.

### Background

Tiny creatures called organisms love to eat garbage in a compost pile. But even they won't eat some things. In this activity the children will predict and discover which types of trash can be placed into a compost pile. They will observe and record data to prove their findings. They will get to see what these creatures can do!

### Objective

The students will learn which objects can be effectively managed in a compost pile. They will observe the decay process and the microorganisms that are beneficial to the composting process.

### What you need:

Four flower pots (transparent plastic containers); natural garbage (apple cores, potato peels, vegetable scraps); unnatural garbage such as plastic, Styrofoam chips, labels for the pots, finished compost from your pile, or a garden store source of soil with tiny garbage eating creatures added (snails, beetle, insects, red worms, bacteria, fungus and molds) sterile potting soil, perculite, or vermiculite from a garden store (soil with no tiny garbage eating creatures).

### What you do:

Fill two pots or containers with compost. Label them "compost."

Fill the other two halfway with sterile soil. Label them "sterile."

Put an apple core in a "compost" pot. Write apple core on the label. Put a plastic bag or Styrofoam chips in the other compost pile. Label the pile. Then fill each pot to the top with compost.

Repeat step 3 with "sterile" pots, and fill to the top with sterile soil.

Add water to the pot so they are damp but not too wet. Check the pots every few days to make sure they are still damp.

After a week, uncover the garbage in each pot. Record your observations.

Check the garbage every week for five or six weeks. Record your observations.

### Assessment

Prepare a report on your findings. Explain what happened in each pot. What was the rate of decay comparing the results in each pot? Write an informative paragraph explaining your findings. What conclusions have you made? Is there another test you would like to make? Explain why.

## Classroom Activity

# RECYCLING VOCABULARY

**CHEMICAL PROPERTIES** – the ability of a substance to go through a change that alters what the material is.

**COMPACTED** – closely and firmly united or packed together.

**CONTAMINATED** – to make impure or unclean by contact or mixture.

**CULLET** – small pieces of glass prepared for melting to form products.

**FIBERS** – a threadlike object or structure.

**MAGNETIC ATTRACTION** – attraction of a substance to a magnet; most commonly iron.

**MANUFACTURE** – to make or process a raw material into a finished product.

**PHYSICAL PROPERTIES** – things we can observe and measure without changing what the material is.

**PROCESSING** – a series of operations performed in the making or treatment of a product.

**PULP** – a soft, moist mass of fibers used in paper-making.

**RECYCLE** – the process used to make new products from materials that have been previously used.

**REDUCE** – to lower the amount of waste generated.

**REUSE** – to use a material or product over again and again.

**SILICA** – material made almost exclusively from silicon and oxygen ( $\text{SiO}_2$ ), mainly derived from quartz sand.

**SMELTER** – an apparatus for melting in order to separate the metallic constituents.

**VIRGIN STOCK** – initial raw material from which something is made.

**VOLUME** – the amount of space an object takes up.

