



# Soil & Recycling Department

## Lesson 2 - Worming Around the Soil

### Essential Questions:

*What are the components of soil?  
What is the role of earthworms in soil production in many parts of the world?*

### At a Glance:

Club members will continue to learn about the Soil & Recycling Department's (SRD) workers through a puppet show or dramatic reading. In Stage 2 and 3, learners will observe and investigate the behavior of worms and their role in soil formation and recycling. The first part of Stage 4 engages learners in a time of questioning and reflection. The remainder of Stage 4 is spent making a small vermiculture worm bin so learners are able to experience the SRD at home.

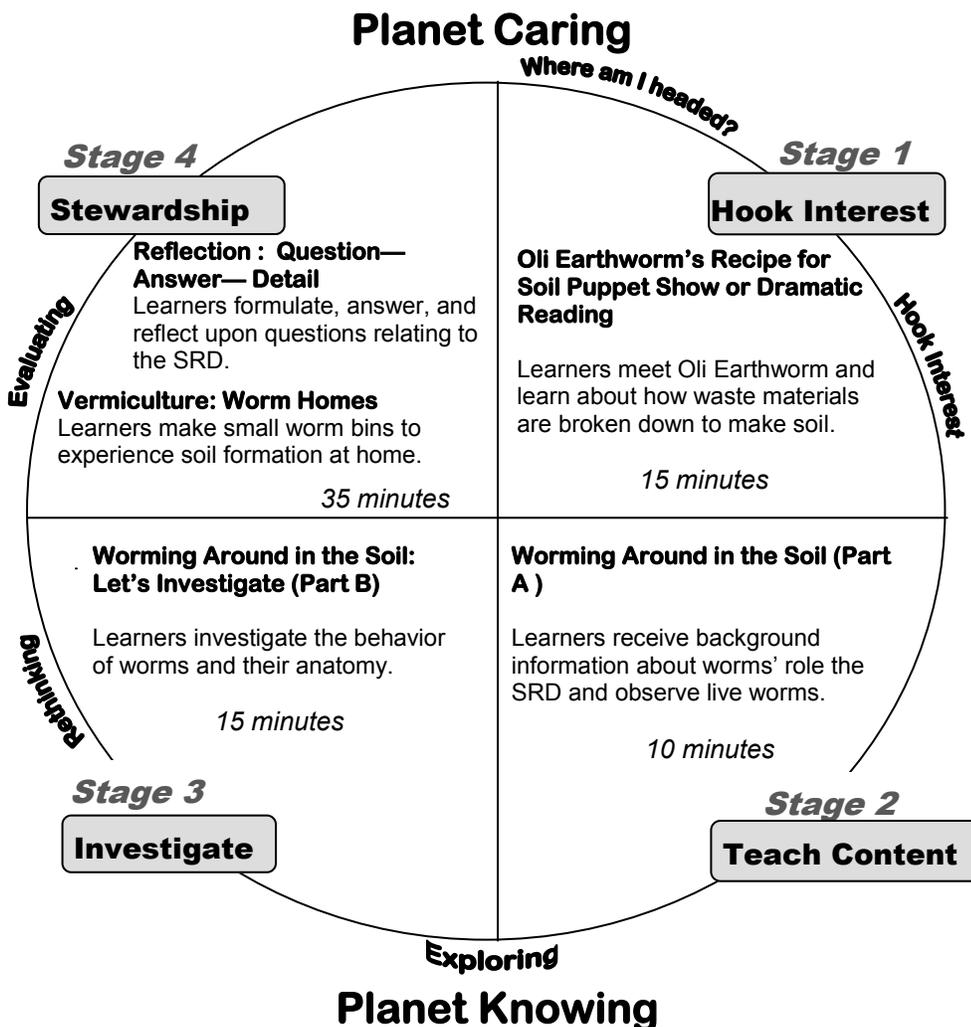
### Concepts:

- Soils are complex materials, containing both organic and inorganic components.
- Human activities can negatively affect soil conditions.
- Earthworms and decomposer insects are important soil producers.
- Earthworms react to a variety of stimuli including pH, light, and touch.

### Objectives

*Learners ...*

- 1) discover the components of soil and how it is formed.
- 2) develop an understanding of how earthworms and decomposer insects participate in soil production and the breaking down of plant and animal material.
- 3) observe and investigate the behavior of worms.
- 4) formulate, answer, and reflect upon questions relating to the Soil & Recycling Department.



## PROCEDURES IN BRIEF: Lesson 2—Worming Around in the Soil!

### Stage 1. Oli Earthworm's Recipe for Soil *Puppet Show or Dramatization*

#### Procedure:

1. Assemble the learners in front of the puppet theater. Tell them that Oli Earthworm would like to visit and show them how he makes rich, delicious soil.
2. Perform the puppet show.
3. If a dramatization is more fitting for your group, allow students to read and act out the character parts using the puppet show script. This may be as elaborate as you and the students desire (i.e. costumes, props, backdrop, etc.)
4. Follow up with these questions:
  - What was included in Oli's recipe for soil?
  - What did Legs and Grunt do?
  - What happens to dead animals and plants in the forest?
  - Who are some decomposers? (FBI-Fungi, Bacteria, Insects)

#### Supplies

#### Puppets:

- Foreco
- Oli Earthworm
- Grunt (a fungus)
- Legs (a decomposing insect)

#### Props:

- a bowl full of soil
  - a mixing bowl
  - rocks
  - leaf litter
  - wood / sticks
  - fake animal guts
  - fake animal poop
  - small container of water
  - magnifying glass
- #### Script:
- Oli Earthworm's Recipe for Soil

### Stage 2. Worming Around in the Soil (Part A)

#### Procedure:

1. Provide learners with background information about earthworms' role in soil production. Refer to the 'Wormformation' side of the worksheet and the facts below.
  - Earthworms eat organic material
  - They can eat more than 1/3 of their body weight in a day
  - Their castings, or poop, are very nutrient rich
  - Worms burrow, allowing air and water into the soil
  - They also mix up the soil by bringing organic material from the top down to the soil below
  - There are approximately 2,700 different kinds of earthworms
2. Learners can work in groups of 2 or 3. Provide each group of learners with at least two worms and a clump of moist soil on a clear plastic plate (or Petri dish). Spray the worms as needed so they don't lose body moisture during the activity.
3. Allow students to simply observe the worms and think of 'I Wonder' questions before they move on the investigation part of the activity in Stage 3.

#### Supplies

- worms
- rocks
- worksheet and pencil for each child
- clear plastic plates

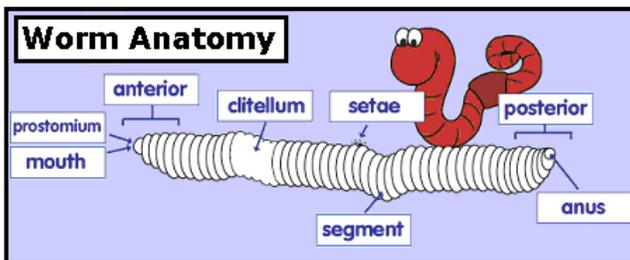
### Stage 3. Worming Around in the Soil (Part B)

#### Procedure:

1. To complete the investigation, learners will also need a rock, a grape, a slice of pickle, and use of a flashlight.
2. Give each learner a 'Worming Around in the Soil' worksheet to complete as they begin the investigation.
3. Questions on the worksheet will guide learners through the investigation.
4. Once learners complete their investigation, review their answers and their 'I wonder' questions. Suggest ways they might answer their own 'I wonder' questions.

#### Supplies

- worms
- rocks
- worksheet and pencil for each child
- clear plastic plates
- flashlights
- spray bottle with water
- foods – pickle slices and grapes



### Stage 4. Question—Answer—Detail Reflection

#### Procedure:

1. Prior to beginning this lesson, work with students to formulate **questions** about the Soil & Recycling Department..
2. After engaging in the learning experience, have individuals or small groups of students **answer** the questions with supporting details.
3. Students may take notes and further reflect upon the **details** of the lessons and their feelings in journal form.

#### Possible QAD questions:

- Who are the top workers in the Soil & Recycling Department (SRD)?
- How is soil formed? Why does it take so long for soil to form?
- What are some problems facing the SRD?
- What is your role in the SRD?
- Does the SRD need you? Why or why not?
- What are some actions you can take to minimize your impact on the SRD?
- What is your motivation in helping the SRD?

**\*\*Please see full write-up for the Vermiculture: Worm Homes portion of Stage 4**