LESSON: To Wriggle or Not to Wriggle GRADE: 3

OBJECTIVES:

From Molecules to Organisms: Structures and Processes

- **3-LS1-1** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Science as Inquiry-

S.3-5.SI.3 Plan and conduct scientific investigations.

- Students should engage in systematic observation, making accurate measurements, and identifying and controlling variables.
- Students understand the concept of a fair test.
- Students follow appropriate safety procedures when conducting investigations.

MATERIALS & RESOURCES:

- 4 plastic tubs with lids
- Shredded newspaper
- Plant based material: vegetable & fruit food scraps, eggshells, leaves, grass-clippings (chemical free). Refer to books for suggestions
- Red Wiggler Worms (easily ordered from Internet or bought at bait shop)

PRESENTATION:

Students will read compost book. Explain to students that the class will conduct an experiment to determine if red wiggler worms make a difference in the compost process. As a class or in small groups, have students discuss the composting process and record their predictions about the experiment. During the experiment students will observe the bins regularly and chart the decomposition.

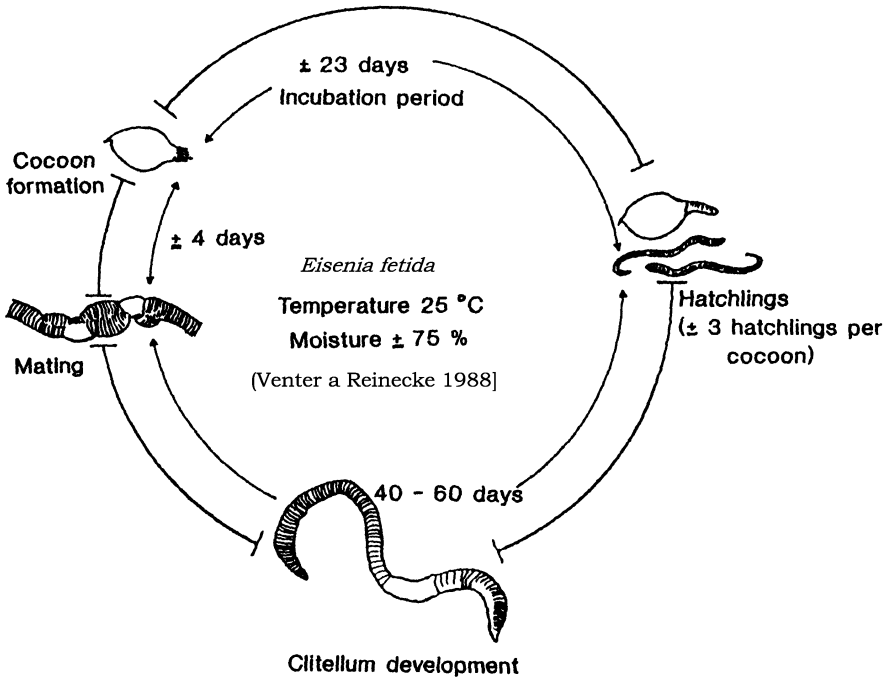
DIRECTIONS:

1. Read books about composting. Two suggested titles are *Compost Stew*, Mary McKenna Siddals and *Composting: Nature's Recyclers*, Robin Koontz
2. Students can gather in small groups, or as a class, discuss what they know or learned about composting. The class or each group will record the predictions and questions they have about adding red wigglers to the compost process.
3. Assemble 2 compost bins with identical materials. Students can weigh or measure the amounts of materials to create a fair test.
4. Add red wigglers to *one* compost bin. Label bins accordingly.
5. Each week, students will observe, measure, and record the progress of each bin in a journal. They can weigh the compost or measure with a ruler. The volume of compost will shrink as it decomposes.
6. Students will also write answers to their original questions as well as other observations about the process. Have students consider what variables could affect the compost process. Some examples are:
    - Amount and kinds of decomposers (worms vs. no worms)
    - Amount of moisture
    - Balance of brown vs. green material (carbon vs. nitrogen material)
    - Quality of aeration within the compost bin. Decomposers need oxygen.
7. Based on their journals from this experiment work with students to make a list of questions or investigations, which could be pursued with compost bin experiments. Help students think about how to make a fair test and include safety procedures involved in these experiments.

Additional Activity for Next Generation Science Standard:

1. Follow the cycle of reproduction in the worm bin.

TIME: **45 min** -20-30 minutes weekly to observe and record findings



PROCESSING THROUGH THE SIX PILLARS:

WHAT HAPPENED?

- What took place in the bin without the worms?
- What took place in the bin with the worms?
- Why was there a difference?

SO WHAT?

- How does composting show we are Responsible?

NOW WHAT?

- Share what you learned with your school and family. Discuss ways you could promote composting.