

Activity 1

Habitat

Rationale: The data collected for the Habitat Activity will be used for other activities. This lesson also provides opportunities to study the physical characteristics of the Habitat over a continuous period of time.

Objectives

One or more websites, videos, texts, etc should be explored, studied, discussed by the students before this vermiculture activity is started. The students need to have several completed lessons on vermiculture before beginning these activities. The inquiry approach for these activities is best accomplished when the students are already familiar with the task at hand. A successful worm bin should be on hand as an example.

- 1) Measure, record, and analyze the physical constants of the Habitat.
- 2) Collect data on selected variables of the Habitat.
- 3) Record the data in a journal and Data Table 1.
- 4) Record and analyze the data collected over a period of time (Activity 2).
 - a. Rate of change in the mass of vermicompost
 - b. Rate of change in the volume of vermicompost
- 5) Analyze, discuss, and predict future effects on the Habitat.
- 6) Recommend any changes deemed necessary.

PDE Standards

Science and Technology

3.1.7. A,B,C

3.2.7. A,B,C,D,E,F

3.6.7. A,B

3.7.7. A,B,C,D

Environment and Ecology

4.1.7. A,B,C

4.2.7. A,C

4.6.7. A,B,C

Math

2.1.8. A,B,D,G

2.2.8. A,B,F

2.3.8. A,B,D

2.4.8. A,B,D,F

2.5.8. A,B,C,D

2.6.8. A,B,C,E,F

2.7.8. B,C,D

2.8.8. F,G,H,I,J

2.10.8. A,B

2.11.8. A,B

Materials

Worm bin	Graphing calculator (optional)
Scales (bathroom)	Graphical Analysis (software)
Rulers	Breeder worms
Flexible tape measure	

Introduction

The physical characteristics of the Habitat are very important. The students will collect and record the following data in Data Table 1: the amount of space occupied by the bedding, the volume of air above the bedding, the mass of the bedding, and the volume of the bedding. The students, with guidance/coaching, will decide how to collect the data and how often to collect the data.

The change in volume and mass of the bedding will give students an indication of the environmental quality of the Habitat. As these data are collected and analyzed, the students will begin to develop a quantitative record of the health of the Habitat.

Strategies

This activity is best done with minimal guidance if you want students to develop a sense of inquiry. Have each group “brain storm” the possible constants and variables needed. Have each group report to the whole class, providing a short period of time for questions, answers, and advice. Each group should then discuss the information and advice received from their classmates. They should revise and turn in the data table. The data table will then be evaluated and returned to the student/group for revising or to be used by that group. An acceptable data table format must be completed by each group before the next activity period.

Procedure

This will vary from class to class as the groups develop their personal plans for the collection, recording, and analysis of data. A typical procedure is outlined below.

- 1) Record the mass of the empty clean bin (do not forget the lid).
- 2) Record the volume of the bin.
 - a. This will require the use of some geometry and some estimation (corners).
 - b. A height scale in centimeters should be developed and placed on two sides of the bin. This will allow students to quickly determine the height of the bedding (vermicompost).
 - c. The average area (sum of bottom and top area divided by 2) will need to be calculated each time if a commercial bin is used.
 - d. If commercial bins are not used and a rectangular bin has been constructed, the area will remain the same.
- 3) Record the mass of added bedding in the journal and Data Table 1.
- 4) Record the mass of added water in the journal and Data Table 1.

Expectations

The students should be able to:

- 1) set up the Habitat and understand what constants and variables are needed for this project.

