

Activity 16

Response to Light by Age

Rationale: From previous Activities 12, 13, and 14, the phototropic response to light was determined by intensity and by color. A question that remains: Does the response change with age of the worm? If the response is learned, then the older the worm is the quicker it will respond to bright light.

Objectives

- 1) Set up an experiment for response to light by age of the worm.
- 2) Use the previous age classifications to collect data for this question.
- 3) Determine if there is a relationship between age and response time.

PDE Standards

Science and Technology

3.1.7. A,B,C

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

3.4.7. B

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. FG,H,I,J

2.11.8. A,B

Materials

Worms sorted by age

Small polystyrene cups with lids

Stopwatch

Ring stands

Test tube clamps

Introduction

One of the more interesting aspects of worm behavior is whether certain behaviors are learned or instinctual. *Planaria* can be taught to navigate a maze in search of food. The search for food is instinctual, but the navigation of the maze is a learned behavior. Do vermiculture worms learn to avoid light or is it instinctual?

Strategies

The students should quickly design a good experiment to determine the effect of age on the avoidance response to light. The most difficult part of this experiment is finding very young worms and not hurting them.

Procedure

- 1) Set up the equipment to measure burying times.
- 2) Sort worms into the three classifications (hatchlings, juvenile, mature).
- 3) Collect about a ½ dozen of each.
- 4) Place 4 worms on a flat pile of vermicompost.
- 5) Record the burying time in the journal and Data Table 1.
- 6) Compare the class averages for each age classification.
- 7) Draw conclusions from the results.

Expectations

The students should be able to:

- 1) set up the equipment quickly and accurately.
- 2) collect burying times with a minimum of teacher assistance.
- 3) determine if there is an age vs. burying time relationship.
- 4) record measurements for trials in the journal and record the averages in Data Table 1.

Data Table #1

Time (s)	Hatchlings	Juvenile	Mature	Relationship*
Group 1 (ave)				
Group 2 (ave)				
Group 3 (ave)				
Group 4 (ave)				
Group 5 (ave)				
Averages(1- 5)				

* Determine a small whole number relationship (Ex. 31s, 39s, 35s) = 1:1:1 or 40s, 100, 44 = 2:5:2)