

Animal Response to Temperature

Standard 3240-02	Students will investigate changes biological energy.	<i>Topic: Chemical changes and Physical change Course: 3240</i>
Objective 3240-0201	Relate energy requirements of plants and animals to physical and chemical changes.	
ILO's	2a Identify variables and describe relationships between them. 2b Formulate research questions and hypotheses. 2c Plan field studies, controlled experiments and other investigations.	

Description of Activity:

Title of Activity: Animal response to temperature

Activity Overview: In this activity, each group of two to four students will write and perform their own experiment using the scientific method to determine if a change in temperature affects the animal processes of Sow Bugs.

Duration of Activity: 30 - 60 minutes

Materials, facilities and Resources: Sow Bugs, thermometer, a goose neck lamp or other type of light bulb heat source, graph paper, a cookie sheet, a stop watch, any other equipment that the instructor feels may be needed by the students.

Background Information:

Sow Bugs will hibernate when it gets cold. Their metabolism will decrease during this time. Hibernation- Sleep like state during which all body activities slow down. Metabolism- All chemical activities in an organism.

Teaching and Learning Strategies:

Ensure Inquiry: DO NOT tell the students how to design their experiments. DO NOT discuss metabolism or hibernation. Allow the students to discover these terms.

Prerequisite Instruction: none

Invitation to Learn:

1. Place 5 to 10 Sow Bugs (per team) in the refrigerator 24 hours prior to the activity. (This will slow down their metabolism and mimic a hibernation state)
2. Organize the students into groups (2 - 4 works best).
3. Tell the students to design an experiment to determine the effect of temperature on Sow Bugs. Tell the student that the procedural steps must be written down.
4. Have the students conduct their experiments.
5. Have the students report their findings to the class in brief 3 minute summaries. Introduce the terms "hibernation" and "metabolism" as the opportunity arises during the student reports.

Problem: Does temperature affect body processes of animals?

Activity Described as a Problem: Jerry, a fourth grade student, did a science project last November. For his project, he gathered some bugs from under a board in the back yard. He took them into the house to mount them in his bug collection but was interrupted for a short time. When he returned, his "dead" bugs had all returned to life and were crawling all over his room. What really happened?

Safe Operating Procedures: Please remember that Sow Bugs are living animals. Treat them kindly. Be sure to wash your hands when you are through. Report any broken equipment to the instructor immediately. Be careful of broken glass, Care should always be taken when using electrical devices or heat sources.

Summary of Learning:

Assessment of Learning: Evaluate the Student's Activity Sheets

Multiple Choice:

1. How do cold temperatures affect the metabolism of a Sow Bug?
 - a. It slows down the organism
 - b. It speeds up the organism
 - c. No noticeable changes occur
 - d. The bugs eat more

answer: a

2. What is hibernation?
 - a. Sleeping all winter
 - b. Slowing down the rate of chemical changes in the body of an organism
 - c. Hiding from ones natural enemies
 - d. Speeding up the body processes

answer: b

Student Activity Sheet for "Animal Response to Temperature"

Invitation to Learn:

Jerry, a 4th grade student, did a science project last November. For his project, he gathered some bugs from under a board in the back yard. He took them into the house to mount them in his bug collection but was interrupted for a short time. When he returned, his "dead" bugs had all returned to life and were crawling all over his room. What really happened?

Things to consider:

Did I only test one variable at a time?

Does my experiment plan include a control?

How can I record my data in a way that will minimize error?

Have I stated all possibilities before drawing conclusions?

Have I stated the concepts and science principles in my own words?

Procedural Steps for the Experiment

Data

Conclusion