

# Biosphere 09 Problem

The earth is a closed biosphere. The web of life is fragile; without balance organisms can have trouble surviving. How does keeping a guppy alive in a closed jar relate to the idea of a future Moon Colony?

Create a closed biosphere that can sustain guppy life. Write an instructional manual for creating an enclosed biosphere for a guppy. Review for an audience the cooperation and competition that exist among organisms to provide for the needs of the guppy and relate it to the future of establishing a colony on the Moon on Wednesday, September 9th.

Lab:  
Microscope  
Identification of organisms  
Photosynthesis & Respiration

*The Climbing Wave* by Marion Zimmer Bradley  
In this story, whose view of the future of the earth is most likely to endure and why?

## Language Arts

Literature; Character, theme  
Research comprehension

## Science

Chemical Cycles  
(nitrogen, carbon, photosynthesis, respiration, water)  
Carbohydrates, Proteins  
Energy pyramid  
Food web  
Conservation of matter and energy

## Social Studies

Society and Technology  
NASA  
Cooperative group skills

## **Biosphere Standards 2009-2010**

### **Science**

#### **Concepts & Processes (1)**

- Interdependence of Organisms
  - Predator/prey
  - Food chains & webs
  - Food pyramid
- Matter, Energy and Organization in Living Systems
  - Energy flow
  - Conservation of matter
  - Decomposition
- Geochemical Cycles
  - Nitrogen
  - Carbon
  - Water

#### **Inquiry (2)**

- Research
- Design an experiment
- Communicate results
- Science and technology
- Use of lab equipment

### **Social Studies**

#### **Culture and Cultural Diversity (2)**

- Various cultural influences impact society
- Shared cultural experiences influence personal perceptions of historical figures and world events

#### **People, Places, Environment (5)**

- Organize and process information about people, places & environment

### **Language Arts**

#### **Reading (1)**

- Understanding of literacy text
  - Character development
  - Theme
  - Predictions
- Variety of sources
- Understanding of informational resources

#### **Writing (2)**

- Bibliography
- Writing expressive pieces
- Writing w/ audience in mind
- Organization/focus

#### **Speaking & Listening (3)**

- Formal presentation
- Details to support ideas
- Group discussion
  - consider other's ideas before speaking
  - constructive criticism
  - lead,participate & moderate

### Vocabulary

#### **Biology**

*Photosynthesis*  
*Limiting Factors*  
*Biomolecules*  
*Interdependence*  
*Abiotic*  
*Biotic*  
*Biosphere*  
*Homeostasis*  
*Ecosystem*  
*Atom*  
*Molecule*  
*Ecology*  
*Population*  
*Cellular Respiration*  
*Sugars*  
*Proteins*