

Sixth Grade

Competency Goal 4: The learner will investigate the cycling of matter.

1.07 Prepare models and/or computer simulations to:

- Test hypotheses.
- Evaluate how data fit.

1.09 Use technologies and information systems to:

- Research.
- Gather and analyze data.
- Visualize data.
- Disseminate findings to others.

4.01 Describe the flow of energy and matter in natural systems:

- Energy flows through ecosystems in one direction, from the sun through producers to consumers to decomposers.
- Matter is transferred from one organism to another and between organisms and their environments.

Engage:

As a class examine a balanced system of living things. Good sources include pictures from calendars, magazines, textbooks or trade books. Books like NC Wild Places provides pictures of NC habitats and websites such as <http://www.mbgnet.mobot.org/> provide pictures of biomes and ecosystems of the world.

Have student groups make lists of living and non-living parts of the system being observed. Assess prior knowledge of students by having the groups brainstorm possible connections and interactions between the non living (abiotic) and living things (biotic) in a balanced and healthy system.

Identify how the organisms that live in those habitats are able to survive by different adaptations and/or how those adaptations are helpful to them for their survival.

Explore:

Through pictures of food chains and food webs, discuss what would happen if any one of the organism in it is over hunted to face extinction or is killed by use of pesticides. Show them the Alice Program clip on food chains to learn the concept of what is a food chain.

<C:\Documents and Settings\sanand\Desktop\Alice08\food chain.a2w>

A simple example would be grass eaten by deer and deer is eaten by lion. What would happen to the grass if the population of deer increases? Grass would become scarce if eaten in excess and deer would starve which would lead to their death. As a result of this lion will also die since deer are a food for them. So, the whole food chain will become unbalanced. Similar things happen in any ecosystem.

Explain:

Ask students what are some natural ecosystems? What relationships exist between these parts of an ecosystem? How might natural ecosystems become “unbalanced”? Students response will vary. Talk to them about how these ecosystems are categorized depending on where they are present and they are called ‘BIOMES’.

Show them the Alice Program on ‘BIOMES’.

<C:\Documents and Settings\sanand\Desktop\Alice08\biomes.a2w>

Students can take notes while watching it.

Elaborate:

Have student’s group research and prepare a presentation for classmates on selected biomes assigned to them.

Students work together to learn about the physical conditions, interesting plant and animal adaptations and interactions, and any looming threats to the existence or natural balance of living and nonliving components of their biome.

The group designs visuals (concept map, power point, illustrated poster, book, chart, etc) to record the conditions of temperature, moisture, soil quality and type, light, and other conditions that define the biome being studied. Labeled drawings can be used to show examples of different types of relationships between organisms in the biome such as coexistence, cooperation, and competition.

Evaluate:

Groups share visuals which describe the defining characteristics of each environment studied. Summarize sharing by having class compare and contrast each of the environments studied. How were they all alike? How was each different from the others? What are some examples of interesting adaptations for low levels of heat, light, energy, moisture, or poor soil quality? What are some interesting adaptations for high levels of heat, light, energy, or moisture? What are some common threats to populations of plant and animals in all these environments?

Resources:

Some websites that may be helpful for research are:

www.mbgnet.net/

www.worldbiomes.com/

<http://www.thewildclassroom.com/biomes/index.html>

<http://earthobservatory.nasa.gov/Laboratory/Biome/biograssland.html>

<http://www.cotf.edu/ete/modules/mseese/earthsysflr/summary.html>