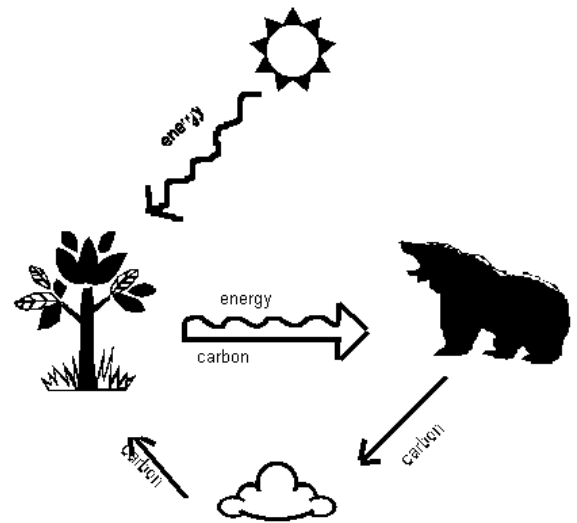




The Carbon Cycle

Demonstration Instructions, taken from *Dr. Art's Guide to Planet Earth,* Art Sussman, Ph.D.



Instructions:

1. Select 4 students to demonstrate this activity. Other students will be the audience.
2. Designate 1 student as the sun, one as a plant, one as the bear, and one as the air. Give costumes/ props.
3. To begin demonstration, give the sun 6 yellow balloons and the air 6 black balloons. Give the bear a pin. Tell the class that the yellow balloon represents *energy* and the black balloon represents *carbon*.
4. Demonstration begins with the sun giving the plant 1 yellow balloon (energy). The air gives the plant 1 black balloon (carbon). This is a good place to explain the basics of photosynthesis.
5. Then the bear “eats” a leaf from the plant and takes the yellow balloon (energy) and the black balloon (carbon). The bear does a little dance (or exercise) and pops the yellow balloon (uses up energy). When the bear pops the balloon, have class shout, “**Energy flows.**” Then the bear breathes out and passes the black balloon to the air (breathes out carbon dioxide). When bear passes black balloon back to air have class shout, “**matter cycles.**” Do the first round slow, and explain each step.
6. Do demonstration over again, starting with the sun giving the plant a yellow balloon... *follow steps 4-5 over.* Do faster and faster until all yellow balloons have been popped.

Debrief:

1. How many yellow balloons did we use in this game? *Six.* Why did bear have to pop the balloon? *He used up energy, released as heat into the air.* Did the yellow balloon go through a complete cycle? *No. It was released as heat by the bear and did not go back to the sun. That is because energy flows through ecosystems. It does not cycle.*
2. How many black balloons did we use in this game? *One.* *Carbon cycles through the ecosystem back to the air.* In what form does the plant take in the carbon? *As carbon dioxide.* What does it do with the carbon dioxide? *It combines it with water and uses the energy from the sun to make sugar.* In what form does the animal take in the carbon? *In the form of sugars and starches from the plant's body.* Animals can only get carbon by eating a plant or an animal. In what form does the animal release the carbon? *In the form of carbon dioxide.*