



"The Connector Inspector" Winter Fourth Grade Outdoor Activity

Michigan Science Objectives: At the end of this lesson, students will be able to:

1. Explain the concept web of life and the term inter-relationships in the natural world and give examples (Ecosystem 2 and 3).
2. Describe the change in matter from water into snow (Changes in Matter 1).
3. Measure the physical properties of snow (Matter and Energy 2).

Thinking Skills: Observe, predict, draw conclusions, summarize.

Overview of Activity: A costumed "Connector Inspector" (aka Sherlock Holmes) will run the students through a three-part "Connector Inspector's Training Course" to see how well they understand the concept of interrelationships. Note: This activity was purchased from the Institute for Earth Education and is available in the text, "Conceptual Encounters 1."

National Park Connection: National Parks across our country preserve a mosaic of natural and cultural resources and the interrelationships found in these places with the land and the people.

Materials needed: Pencils and 3x5 cards, web, leaf, caterpillar, endangered species globe, connection posts, connection post signs, connector scopes, animal/plant role cards on string (31), eye hooks for connector posts, laminated snow ID charts, magnifying lenses, soil thermometers, snowshoes, dry erase board, globe, "poison spray".

Procedure:

"Boys and girls, you are on a mission today! It is a mission of grave importance. Today you will be asked to create a model for the web of life. Constructing this model is vital for you to understand how to protect life on earth for the rest of your lives! What you have learned about interrelationships thus far will help you to accomplish this task, so please keep that information in your mind. Who recalls what a natural interrelationship is? What kinds are there that you learned about in the pine marten story?"

"Outside a giant leaf and caterpillar is on the wall. The sun is in the center as a yellow disk. Radial lines in different colors make up the strands of the "web." How about the relationships or connections between the caterpillar and the plant? Each connection is shown by a different colored web strand. Air is blue, soil nutrients are brown, water is dark blue, and energy is yellow."

“During the next part of the training course, you will become a plant or animal and must connect yourself into the web of life to get your basic needs. You will get a card to hang around your neck like this one. It shows what you animal or plant you are and what your basic needs are. Please look at these things carefully. You will need this information when you connect yourself to the web.”

Distribute the cards. Hike to connector inspector training course where there are several large stakes in the ground. On the front of the stakes, there are large symbols for clouds, soil, or lakes. In the center is a sun symbol. These are what the students connect themselves to according to where they get their needs. Of course, only the plants connect to the sun; the rest must connect to animals or plants to get their energy.

Demonstrate one for the students. First to connect are the producers (plants). Next are first level consumers (plant eaters). Finally, the second level consumers (predators). After everyone is connected ask, "What does this look like? A WEB! What have you created? You have just recreated the incredibly complicated connections that tie everything together in the web of life. Connections like this occur everywhere in real life, even if we do not always see them.”

“But hang on for a second. I am going to do just one thing! Then I am going to ask you to apply your information about the web of life to tell me if you my action would or would not harm the web of life.”

“Okay, let’s pretend I live in the city and I am going to put some weed killer on these weeds in the web of life in my yard. I do not want to hurt anything else in the web but this one kind of weed. What do you think about this? Is it true that I will not hurt anything else in the web?” Allow time for student answers.

“Why might the rest of the web get hurt too?” (Because of connections or interrelationships.)
“Does everyone see this? Any questions?”

"You're right. If it rains, some of that poison may wash into a creek that empties into a lake, so I have done more than one thing. I have poisoned the weeds in my yard and the plants in the lake. So I'm afraid the plants that live in my yard and the lake better sit down because you've been disconnected!"

"Now look what I have done. Since these plants have been disconnected, guess what happens to the things that are connected to them. That is right! They are disconnected too! Have a seat!"

"That one little thing I did sure ended up doing an awful lot. It has affected so many other things. Why?" (Because everything is connected in the web of life.) “Every time do something to one part of the web, we end up affecting other parts too! **Remember - you cannot ever just do one thing to the web of life!**”

"Let's head down the trail and look for other connections or relationships out here in the web of life using our special connector scopes as we hike along the trail toward the beaver pond.”

Native American Snow Terms. “The Native Americans had a great many terms for snow. Can anyone guess why?” (To describe different kinds of snow.) “Do you think this was important to them to describe different kinds of snow? YES! Why?” (Because of their close relationship with the outdoors for their survival, they could tell each other more clearly what the other could expect to find with a variety of snow terms, i.e., good snow for tracking.)

“I would like to distribute some laminated cards for you right now to look at the Native American snow terms (Appendix 6). As we hike along, I would like you to try to find different kinds of snow and think about the relationships of those kinds of snow! Also, if you would like, think of a new name for a type of snow you might see and be able to tell its relationship to something else!” Discuss findings.

At the beaver pond: Discuss the relationship of beaver lodge to beaver, beaver to pond, how beaver survives winter. Discuss fact that we do not want to walk across lodge and pack down the snow. (Because puffy snow with air pockets is a great insulator; packed down snow is not.) What could a scientist do to prove snow is a good insulator? (Conduct an investigation.) What could we do? (Predict temperature below the snow and use thermometer to collect data.)

Working in groups, have the students do this with soil thermometers. Take the students step-by-step through scientific method. (Predict, gather data, interpret data, and draw conclusion.) Is it warmer below the snow? How much? Do any animals use this fact? (Yes – for instance, hare, grouse, moose, and mice.) Could snow help people at our house? (Keep pipes from freezing, plants in garden, keeps the basement warmer.) In the winter, snow provides many interesting kinds of relationships or connections. Children are asked to predict different temperatures above, below, and in the snow. How would a scientist collect this data? (Use thermometer. Analyze information gathered.) What does snow do for animals? How can it affect people and their homes?

Conclusion: Hold up the globe of earth and endangered species. Explain that 74 plant or animal species per day are becoming extinct because people are breaking the connections or interrelationships in the web.

“We need to keep all the pieces of the web because for many we still do not know how they are connected to other things. Perhaps a plant or animal species could be a cure for cancer someday or maybe it is a source of food for something. It is nice to keep as many things as possible intact in the web of life if nothing else just to enjoy their beauty and uniqueness.”

“You can help, in your life, with things that you do or do not do! I am going to ask your teacher to give you this take home activity when you get back to school. I would like you to take it home and do what it says with your parents or guardians. That way you can help protect the web of life and teach them about it at the same time! If you complete this activity and bring the completed form to your teacher, she will send it to me and I will send you one of these Resource Keeper glass beads, which shows you care enough to help take care of interrelationships and our web of life!”

