Laws of Nature Post-Field Trip Lesson Plan

Overview
Research has shown that field trips are more educationally beneficial for students if students have the opportunity to review and reflect upon what was learned during the field trip (Flexer & Borun, 1984; Farmer & Wott 1995, Knapp, 2000). The following activities can be used individually, or in combination, to review the laws of nature discussed during the field trip and tie them back to the concept of ecology.

Objectives
After completing post-field trip activities, students will be able to:

- Explain or illustrate the relation of one or more laws of nature to:
  - A current or past event
  - Natural relationships in their local environment

- Communicate information using a presentation medium of their choice

Teacher Preparation
Read the choices of culminating activities at the end of this lesson plan. These activities are designed as alternative assessments through which students can apply what they learned on their field trip and extend that learning further. Based on the resources available to you and your students, determine which activities would be most successful in your classroom. If time does not permit activities to be carried out in the classroom, activities can be assigned as homework or group projects. Full descriptions of culminating activities, as well as each activity’s grading rubric, can be downloaded at: http://www.uwsp.edu/cnr/cwes/PreandPosts/Laws_of_Nature/Laws_of_nature_home_page.aspx.

Lesson Outline
- Review of the laws of nature
- Explanation of culminating activities

Lesson Details

Reviewing the Laws of Nature: During the field trip to CWES, students learned and looked for examples in nature of the four laws of nature:

1. Everything is connected to everything else
2. Everything must go somewhere else
3. Nature knows best
4. There is no such thing as a free lunch

Have students review these laws and then explain the alternative assessment assignment(s) they will use to demonstrate what they have learned. If you have access to the internet in your classroom, a helpful page on the CWES website for reviewing these laws is http://www.uwsp.edu/cnr/cwes/PreandPosts/Laws_of_Nature/Reviewing_the_laws_of_nature.aspx. Otherwise, you can print out the Laws of Nature Review Pictures (included at the end of this lesson plan). Divide students into small groups and hand each group one of the photos to discuss. Then, have each group share what they came up with. The following page includes discussion prompts to help you and your class review the laws.
### Reviewing the Laws of Nature Post-Field Trip Activity

Each of the photos below illustrates at least one of the laws of nature. Describe the picture to your class. Discuss the pictures and some of the laws each might apply to.

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|   | 1. A bee flies to a flower with pollen stuck to its legs and antennae. When the bee lands, some of this pollen will be left on the flower. The pollen will help the flower to reproduce.  
*Nature knows best. Both the bee and the flower are getting something beneficial from this relationship.* |
| ![Image](image1.jpg) | ![Image](image2.jpg) |
|   | 2. The trash we throw away does not disappear once the garbage truck comes to take it away. Though it is not in our house anymore, it still exists.  
*Everything must go somewhere. The trash we throw away ends up in a landfill.* |
| ![Image](image3.jpg) | ![Image](image4.jpg) |
|   | 3. The flesh of the cactus would be a tasty meal for some animals. However, the cactus has an adaptation (its thorns) that protects it from these animals.  
*Nature knows best. The cactus has developed a way to protect itself from its predators. Thorns are an adaptation that allows it to survive.* |
| ![Image](image5.jpg) | ![Image](image6.jpg) |
|   | 4. A tiger must be patient as it tracks its prey. It must remain silent and pick the right moment to pounce upon its meal. While hunting, the tiger is using up energy that it will need to replace.  
*There is no such thing as a free lunch. As the tiger hunts for his prey, he will use up energy that will need to be replaced.* |
| ![Image](image7.jpg) | ![Image](image8.jpg) |
|   | 5. The roots of a tree gather both nutrients and water from the soil beneath the tree. If something happens to that soil, the tree will be affected.  
*Everything is connected to everything else. The tree gets nutrients from the soil that allows it to grow. When the tree drops its leaves in the fall, the leaves will break down into nutrients for the soil.* |
| ![Image](image9.jpg) | ![Image](image10.jpg) |
|   | 6. When a fire burns, that which is being burned (wood in this case) does not disappear completely. Some parts of the wood will be released into the air, and some parts of the wood will be reduced to ash and mix with the soil upon which the fire was built.  
*Everything must go somewhere. Even when we burn something and most of it seems to disappear; those parts are released into the air.* |
| ![Image](image11.jpg) | ![Image](image12.jpg) |
|   | 7. When a caterpillar climbs onto a leaf to eat, it is not as camouflaged as it once may have been while walking along tree trunks or the ground. To eat, the caterpillar must risk being eaten or attacked by other animals. A wasp found this caterpillar and is attacking it.  
*There is no such thing as a free lunch. As the caterpillar goes to look for food, it must risk being attacked by predators like the wasp.* |
| ![Image](image13.jpg) | ![Image](image14.jpg) |
|   | 8. A mushroom, like the one growing on this log, is known as a decomposer. Decomposers get their food from materials that are dead or rotting. As a decomposer, the mushroom completes the cycle of life - turning something that was once alive back into nutrients for plants growing in the soil.  
*Everything is connected to everything else. The mushroom gets nutrients from the log as it rots. If things in nature did not die, the decomposers in nature would not exist. If the decomposers did not exist, there would be no way to replace nutrients in the soil.* |
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Culminating Activities

1) **Laws of Nature in Current Events:** Students work in small groups and select a current event that illustrates one of the four laws of nature. Next, they plan a presentation in the format of a short news bulletin for their classmates. Each group’s presentation should recap their current event and connect it with one or more of the laws of nature.

2) **Laws of Nature in History:** Students work in small groups and pick a law of nature about which they will create a power point or “prezi” presentation ([http://prezi.com/](http://prezi.com/)). They research historical events and show 3 examples of events that illustrate the law of nature that they chose.

3) **Laws of Nature Through the Seasons:** Students work in pairs to explore how the laws of nature are timeless. Students will explore natural events that occur in Wisconsin each season. They will choose an event from each season that they believe demonstrates a law of nature. They will explain their choices on the activity worksheet.

Wisconsin Model Academic Standards Addressed

**Environmental Education (5th – 8th grade):**
- Questioning and Analysis - A.8.4, A.8.6
- Knowledge of Environmental Processes and Systems (Energy and Ecosystems) - B.8.8

**Science (5th - 8th grade):**
- Science Connections - A.8.3
- Science Inquiry - C.8.2, C.8.6, C.8.7, C.8.8, C.8.9
- Life and Environmental Science (Regulation and Behavior) - F.8.7
- Life and Environmental Science (Populations and Ecosystems) - F.8.8

**English Language Arts (5th – 8th grade):**
- Reading/Literature - A.8.4
- Oral Language - C.8.1
- Media and Technology - E.8.1, E.8.2, E.8.3
- Research and Inquiry - F.8.1

**Math (5th – 8th grade):**
- Mathematical Processes - A.8.1
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6. When a fire burns, that which is being burned (wood in this case) does not disappear completely. Some parts of the wood will be released into the air, and some parts of the wood will be reduced to ash and mix with the soil upon which the fire was built.

7. When a caterpillar climbs onto a leaf to eat, it is not as camouflaged as it once may have been while walking along tree trunks or the ground. To eat, the caterpillar must risk being eaten or attacked by other animals. A wasp found this caterpillar and is attacking it.

8. A mushroom, like the one growing on this log, is known as a decomposer. Decomposers get their food from materials that are dead or rotting. As a decomposer, the mushroom completes the cycle of life - turning something that was once alive back into nutrients for plants growing in the soil.