Forest Ecology and Resources Unit
By Jeffrey Wasilewski

Unit Overview
I developed this unit to supplement the readings and activities that are mandated by the Detroit Public Schools. The Detroit Public Schools makes sure that the teachers follow an instructional sequence that was developed by the district. The district does this because our population is transient and many students move to several different schools throughout the year. The district wants to make sure that if a student moves, the classwork will be at approximately the same place as the school the child came from. The only drawback is that this framework leaves little room for developing units that are not part of the curriculum. I spent many hours looking through the curriculum guides and the instructional sequences to find a place where I could supplement the curriculum with the activities that I learned about at the institute. The following unit was developed using the Detroit Curriculum as well as the information learned at the Michigan Tech Forest Ecology Institute.

Michigan Grade Level Content Expectations

Science
L.OL.E.1 Life Requirements- Organisms have basic needs. Animals and plants need air, water, and food. Plants also require light. Plants and animals use food as a source of energy and as a source of building material for growth and repair.
   L.OL.04.15 Determine that plants require air, water, light, and a source of energy and building material for growth and repair.

L.EC.E.1 Interactions- Organisms interact in various ways including providing food and shelter to one another. Some interactions are helpful; others are harmful to the organism and other organisms.
   L.EC.04.11 Identify organisms as part of a food chain or food web.

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Social Studies
Environment and Society. Understand the effects of human-environment interactions.
   4-G5.0.1 Assess the positive and negative effects of human activities on the physical environment of the United States.

English Language Arts

Comprehension.
   R.CM.04.04 Apply significant knowledge from grade-level science, social studies, and mathematics texts.

Resources/References
Discovering Trees by Keith Brandt (Troll Associates, 1982)
Harcourt Science text (Harcourt School Publishers, 2005. 4th Grade Science textbook)
Project Learning Tree (American Forest Foundation, 2003)
Farewell to Shady Glade by Bill Peet (Houghton Mifflin, 1966)
A Log's Life by Wendy Pfeffer (Simon and Schuster, 2007)
Learning Objectives
Students will be able to:
1. Describe the overall structure of trees and plants.
2. Describe the function of the trunk (stem), leaves, and roots.
3. Explain how the trunk (stem), leaves, and roots help the tree survive.
4. Collect information about various organisms in an ecosystem by observing the living things in the neighborhood and conducting observations on a walk through the woods.
5. Give examples of different habitats within an ecosystem. For example; Life in living trees, life in logs, life in a pond.
6. Show how plants and animals interact and can change their environments.
7. Create a simulated web of life using a ball of string.
8. Walk through a wooded environment and observe interactions and interdependencies between different species of plants and animals. Explain how they depend on each other for survival. For example; The consumers eat the producers. The consumers spread the seeds of the producers so new producers will grow.
9. Describe how humans shaped the present environment of Belle Isle.
10. Describe how trees can be a habitat to a variety of different life forms.

Lesson 1

Procedure:
1. The teacher will begin the unit by reading; Discovering Trees by Keith Brandt
2. The teacher will then ask the students to define (orally) leaves, roots, stems, transpiration. These words will be the Key Vocabulary words.
3. Teacher will place the vocabulary words on Science Word Wall.
4. Students will read Harcourt Science text pages A78-81 together.
5. Students will write their own definitions of the vocabulary words in their journals.
6. Students will write and answer the question on page A81 in the Harcourt text in their journals.
7. Students will complete Project Learning Tree Lesson 61 pages 217 and 218, “The Closer You Look”. Lesson must be modified to meet the needs of my 4th graders. When students illustrate their trees, they should label the tree parts and the function of the parts on their drawings.

Assessment: Teacher will check the accuracy of the tree illustrations, the accuracy of the vocabulary definitions, and check to make sure the questions were answered correctly.

Lesson 2
Materials: Science textbook, Science journals, pencil, string, paper, scissors, magazines.

Procedure:
1. Begin the lesson by reading; Farewell to Shady Glade by Bill Peet to the whole class.
2. The teacher will ask the students why the animals were forced to move? The teacher will also ask what would have happened to the animals if they stayed?
3. The teacher will then ask the students to define (orally) habitat, producer, decomposer, consumer, and food web. These words will be the Key Vocabulary words.
4. Teacher will place the vocabulary words on Science Word Wall.
5. Students will read Harcourt Science text pages B20-B25 together.
6. Students will write their own definitions of the vocabulary words in their journals.
7. Students will write and answer the question on page B25 in the Harcourt text in their journals.
8. Students will complete Project Learning Tree Lesson 45 pages 148-150, “Web of Life”. Lesson must be modified to meet the needs of my 4th graders. Stop after step 5 and skip to the variation on page 150.
9. Complete the Enrichment portion on page 150.

Lesson 3

Materials: Science journals, pencil

Procedure: (review what was gone over in the previous lesson)
1. At the start of lesson 4, the teacher will begin the lesson by reading; A Log’s Life to the whole class.
2. Have the students write and answer the following questions in their journals. 1. Describe what kind of an environment an oak tree lives in? 2. What animals depend on an oak tree for survival? 3. Describe what living things use the oak tree for survival once it falls to the ground.
3. Students will complete Project Learning Tree Lesson 23 pages 72-74, “The Fallen Log”. Lesson must be modified to meet the needs of my 4th graders. Use the Variation on page 74 to help. You can also use the example in A Log’s Life to help point out the various decomposers.

Assessment: Teacher will check the accuracy of vocabulary, questions, and food web in the student journals.

Lesson 4

Materials: Science journals, pencil, chart paper, magazines, scissors, glue.

Procedure:
1. The teacher will begin the lesson by having the students brainstorm ideas about what can hurt an ecosystem. The teacher will create a word-web on the chalkboard.
2. The teacher will then ask the students to define (orally) pollution, acid rain, and reclamation. These words will be the Key Vocabulary words.
3. Teacher will place the vocabulary words on Science Word Wall.
4. Students will read Harcourt Science text pages B60-65 together.
5. Students will write their own definitions of the vocabulary words in their journals.
6. Students will write and answer the question on page B65 in the Harcourt text in their journals.
7. Students will complete Project Learning Tree Lesson 36 pages 114-117, “Pollution Search”. Lesson must be modified to meet the needs of my 4th graders. Do not do Part B or the Enrichment.

Assessment: Teacher will check the accuracy of vocabulary, questions, and the charts from the Project Learning Tree Activities.

Lesson 5

** As a culminating activity, I really want the students to observe a wooded environment as most of my children have never been exposed to a wooded area before. Sure, they have seen trees, but many have never walked through the “woods”.

Materials: Science journals, pencil.

Procedure:
1. The students are to bring their journals and pencils to the Nature Center.
2. Point out the man-made and natural features of Belle Isle as we pass them on the bus.
3. The students will be lead through the Belle Isle Nature Center with docents and the teacher.
4. The students will get to see the displays on the flora and fauna of Michigan.
5. The students will get to walk through the woods and observe the environment around them.
6. The students will pick one plant and one animal that they see and write/illustrate them in their journals.
7. Once we get back to school, the students are to write what would happen to the environment if their particular plant/animal was to disappear or become more prevalent.

Assessment: Teacher will check the accuracy of writing to make sure the students had an understanding of how the food web works.

Unit Assessment: The teacher will administer the following test:

Question 1. Have students identify the forms of pollution found on pg 188 of the Project Learning Tree book.
Question 2. Describe how the leaves, stem (trunk), bark, and roots help a tree survive?
Question 3. Describe what happens to the animals living in a forest when a forest is removed, either by fire or by clearing the land for building new homes.
Question 4. What actions can you to reduce the number of trees being cut down?
Question 5. Tell about 2 different organisms that break down the rotting logs in a forest.
Question 6. Tell about 3 different forms of pollution found in the neighborhood.
Question 7. Tell about what you can do to help fight the pollution in the neighborhood.
Question 8. Draw and label a picture of a food web found in Michigan.
Question 9. What would happen to your food web if the producer is eliminated?
Question 10. What would happen to your food web if the top consumer became extinct?