Beech Maple Forest Classroom Unit

Theme: Forest Web & Terrarium Project Wrap-Up
Recommended Grade Levels: 1st – 3rd grade
Unit Connection: Concluding lesson in Beech Maple Forest unit (lesson #5)
Subject: Science
Lesson Length: Part 1 – approx. 60-70 minutes

Essential Questions: How do the plants, animals, and resources in a Beech Maple forest work together in order to survive? Is it possible to create a forest in a terrarium? Why or why not?

Key Concepts: what makes up a forest, forest web, plant and animal survival needs, predator, prey

Lesson Summary: This lesson is the concluding lesson to the Beech Maple forest unit. Since it is composed of two parts: a forest web activity and the terrarium project wrap-up, it may be completed in one day or broken down over two days. Part one - the forest web activity - gives the students an opportunity to create a forest web by becoming forest plants, animals, or resources and tossing a ball of string to one another in order to see how everything in a forest is interconnected. The students also have an opportunity to create their own forest web on paper. Part two – the terrarium project wrap-up – encourages the students to reflect on and discuss the following question: Based on what we learned from building terrariums and the forest web, can we really create a forest in a jar? Why or why not?

Materials: “Terrarium Observation Record” packets (students should already have these)
Forest web cards
Ball of string
“Forest Web” worksheets – 1 per student

I. Objectives

Objectives:
1) Students will be able to identify the plants, animals, and resources that make up a forest.
2) Students will be able to demonstrate a forest web and how everything is interconnected in an ecosystem.
3) Students will be able to create their own forest web.
4) Students will be able to discuss whether or not they can accurately create a forest in a terrarium.

Michigan State Standards:

<table>
<thead>
<tr>
<th>1st Grade Standards</th>
<th>2nd Grade Standards</th>
<th>3rd Grade Standards</th>
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<tbody>
<tr>
<td>S.IP.01.11 Make purposeful observation of the natural world using the appropriate senses.</td>
<td>S.IP.02.11 Make purposeful observation of the natural world using the appropriate senses.</td>
<td>S.IP.03.11 Make purposeful observation of the natural world using the appropriate senses.</td>
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<tr>
<td>S.IP.01.12 Generate questions based on observations.</td>
<td>S.IP.02.12 Generate questions based on observations.</td>
<td>S.IP.03.12 Generate questions based on observations.</td>
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<td>S.IP.01.13 Plan and conduct simple investigations.</td>
<td>S.IP.02.13 Plan and conduct simple investigations.</td>
<td>S.IP.03.13 Plan and conduct simple and fair investigations.</td>
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<td>S.IA.01.12 Share ideas about science through purposeful conversation.</td>
<td>S.IA.02.12 Share ideas about science through purposeful conversation.</td>
<td>S.IA.03.12 Share ideas about science through purposeful conversation in collaborative groups.</td>
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<td>S.IA.01.13 Communicate and present findings of observations.</td>
<td>S.IA.02.13 Communicate and present findings of observations.</td>
<td>S.IA.03.13 Communicate and present findings of observations and investigations.</td>
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<tr>
<td>L.OL.01.13 Identify the needs of animals.</td>
<td>L.OL.02.14 Identify the needs of plants.</td>
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II. Before you start

Prerequisite knowledge and skills.
- plants, animals, and resources that make up a Michigan forest

Assessment (formative and summative)

Formative Assessment:
Forest Web interactive activity
- Observe students making connections between the plants, animals, and resources.
- Do all of the students actively participate?
Class Discussion
- Do all of the students participate in the terrarium wrap-up discussion?

Summative Assessment: Students will create their own forest web and make connections between plants, animals, and resources on their own.
## Classroom Set-Up

Make sure that you have a large, open space where your entire class can sit or stand in a large circle. Move desks around if necessary.

## III. The Plan

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| Prep work (before the lesson) | **Before lesson:**<br>- Cut-out forest web activity cards<br>- Make copies of “Forest Web” worksheet – 1 per student | **Part 1 – Forest Web**<br>Now that you’ve learned more about the parts of a Michigan Beech Maple forest, it’s time to see how all of the plants and the animals in the forest are connected and work together to survive. In order to see how everything in the forest is connected, we’re going to create a forest web together. For this web, we need to think of important parts of a forest.

What are some plants, animals, or resources that are important parts of a forest?

Have the students list the various plants, animals, and survival resources that they discovered are important parts of a forest and write them down on the board. |
| Motivation (Opening/Introduction/Engagement) | **Forest Web Activity:**<br>For this forest web, I have a card for each of you with some of the plants, animals, and resources that make up a forest.<br><br>Hand out a forest web card to each student in the class and have the students form a large circle.<br><br>Explain the food web activity:<br>One student will start by holding onto the end of the string and tossing the ball of string to another person with a card that is connected to his/her card in some way. They could toss the string to their prey (source of food), their predator (something that eats them), or a basic survival need (water or shelter). This pattern continues until every person is holding onto the string at least once. However, the students may toss the ball of string several times to the same student in order to show the interconnectedness of the forest web.<br><br>After all of the students have received the ball of string several times and the web appears to be complete, talk about how every plant, animal, and survival need is important because they are all interconnected. Then, as the teacher, pull on one part of the string. As you tug on the string, all of the students should be able to feel the tug. This shows that if one thing is out of order in the forest web, all of the plants and animals will feel the change. | **Development**

Give some examples of scenarios that might upset the forest web:

1. For example, what would happen if humans cut down all of the trees and used the wood from the trees to make furniture? Look at the students holding the tree cards and see what plants and/or animals are connected to the trees. Have the “trees” gently tug on their strings and then anyone who feels a tug from the “trees,” should also tug on their strings, and so on. This pattern continues until nearly everyone has felt a tug in order to show the interconnectedness of forest relationships.<br>   a. Animals wouldn’t have food (no seeds), shelter, or fresh air (trees give us fresh air to breathe) and would die.<br>   b. No dead trees to turn into rotting logs, so the decomposers wouldn’t have any food or shelter and would die. If the decomposers die, they wouldn’t make rich soil, and no new seeds would be able to grow in the forest again.

2. What would happen if there was a drought and there wasn’t much water available for the plants and animals? Look at the students holding the vernal pool/water cards and see what plants and/or animals are connected to them. Have the “water” card gently tug on his/her strings and then anyone who feels a tug from the “water,” should also tug on their strings, and so on. This pattern continues until nearly everyone has felt a tug in order to show the interconnectedness of forest relationships.<br>   a. Animals and trees would die without water.<br>   b. If most of the animals and trees died, there wouldn’t be anything left for other animals to eat and they would all die too.<br>   c. If all the trees died...(see #1) |
3. What would happen if all of the rotting logs were removed from the forest and the decomposers had nothing to decompose (break down)? Look at the students holding the decomposer cards and see what plants and/or animals are connected to them. Have the “rotting log” gently tug on his/her strings and then anyone who feels a tug from the “rotting log” should also tug on their strings, and so on. This pattern continues until nearly everyone has felt a tug in order to show the interconnectedness of forest relationships.
   a. Decomposers wouldn’t have food or shelter and would die.
   b. The soil would become poor soil without the rich nutrients from rotting logs and the trees would die from poor soil. New seeds wouldn’t be able to grow with poor soil.

Wrap up the ball of string and collect all of the students’ cards.

Wrap-Up:
As you can see, all of the plants and animals in the forest are connected and must work together in order to keep the forest alive. Each plant, animal, and resource plays an important role and a forest needs all of these things in order to survive.

Assessment:
After completing the interactive forest web activity, have the students create their own forest webs by completing the Forest Web worksheet and drawing lines to connect the forest plants, animals, and resources to each other. Use some of the organisms and resources from the Forest Web cards.

*Note: There are more forest web cards than there are boxes on the forest web worksheet. This allows students to choose the plants, animals, and resources to include.
*Suggestion: Teacher reads off card ideas while the students fill in the boxes or the teacher can project the full sheets of images on the board for students to look at.

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Part 2 – Terrarium Wrap-Up

Terrarium Observation Record & Wrap-Up Discussion:
Students observe their terrariums and record their observations, drawings, and questions in their observation packet one last time.

Class Discussion:
After students finish their observations, have a class discussion about the following:
- Based on what we learned from building terrariums and the forest web, can we really create a forest in a terrarium? Why or why not?
- When we try to put a forest in a terrarium, what is missing? (large animals, trees, variety of animals, space for plants and animals…etc.)
- What are the 4 resources that the plants in the terrarium need to survive? (air, water, sunlight, nutrients/soil)
- What are the 5 resources that the animals in the terrarium need to survive? (food, water, air, shelter, space)
- If you were going to make another terrarium, how would you change it? What would you do differently? Would you add anything? Take anything away?

*Optional activity: Create another terrarium as a whole class based on what the students learned.

Resources:
The following website contains numerous webpages about specific animals. The pages include a description of the animal, the animal’s diet, habitat information, unique characteristics/adaptations, predators, animal sounds, and relationships between plants and animals. It is a very helpful resource for learning about specific animals and relationships within their ecosystem:
http://www.fcps.edu/islandcreekes/ecology.htm