Trees & People Forestry Unit

Theresa Kraut

Target Grade/Subject: 5th grade, Science, ELA

Unit Overview:
These lessons provide an opportunity for students to be introduced to trees and the effect people and the environment can have on them. They will also be able to learn different types of trees, by finding out how to identify them through their leaves. I have incorporated Science and English Language Arts lessons to help out with time constraints and cross curriculum learning. I also have linked in picture books typically thought of for lower elementary into a fifth grade classroom. My students love the use of picture books in our 5th grade classroom and it helps to engage and spark their interests. I am excited about trying these lessons this year in my classroom. This class was a whole new learning experience and I gained valuable information to learn in my classroom.

Lesson One

Sources:
The Empty Lot by Dale H. Fife ISBN 0-8716-859-4

Objectives:
Students will learn how to measure a plot area with a tape measure. Students will also work on making and recording observations. Finally, students will take the observations and data collected to support what would be best development for their vacant lot.

Content Benchmarks:
S.IP.05.13 Use tools and equipment (meter sticks and tapes) appropriate to scientific investigations
S.IA.05.13 Communicate and defend findings of observations and investigations using evidence
S.RS.05.17 Describe the effect humans and other organisms have on the balance in the natural world

Materials:
Stakes
String
Tape Measure
Paper
Clipboards
Drawing Paper
Pencils

Activity:
- I will read the story an Empty Lot to my students to introduce the activity and get them excited about going an making their own observations at an empty lot
- Explain to students that we will be visiting a “living classroom” to learn about plants and animals
- Ask students to list plants and animals they think they might see on a vacant city lot.
- Make the list and post on the white board with students answers.
• As a class we will walk down the sidewalk to an empty lot close to our school
• Divide students in to teams of 3. Give each group a clipboard, pencil and worksheet to record their observations.
• Have each group stake out a 12 foot square plot
• Students can complete the worksheet as a group
• Students will observe their plots, focus their attention on the following discussion questions:
  - Is there evidence the plot is used by animals?
  - Do certain plants grow better in certain locations?
  - What other interactions did you observe among plants and animals?
  - How do the plants and animals get the water they need?
  - How have people used this site?
  - Are there any signs of pollution?
• Gather all the materials and walk back to the classroom
• If time permits have each group prepare a visual presentation of what they observed at the empty lot (this will probably have to be started and completed on the next school day) Introduce so they can be thinking about it and have a game plan for the next class period.
• Some ideas would be: Drawings, flip charts, poems
• Students as a group will present their presentation to the class

Assessment:
• Students will be assessed through observation on their participation when working with their groups at the empty lot.
• Students will also be assessed on their understanding of information and conclusions through their group presentations.
• Finally I will assess students by them drawing a picture of improvements they could make to the empty lot to encourage its best productivity without harming the creatures at the empty lot.
Empty Lot Observations

Observations:

<table>
<thead>
<tr>
<th>Living Thing</th>
<th>Picture</th>
<th>Plant/Animal</th>
<th>Location</th>
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Lesson Two

Sources:
Project Learning Tree: Pre K-8 Activity Guide, American Forest Foundation (Activity #68)

Objectives:
Students will collect and identify several trees using various physical characteristics.

Content Benchmarks:
S.IP.05.11 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.
S.IA.M.1 Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.

Materials:
Ziploc bags
Paper
Pencils
Glue
Drawing Paper

Activity:
1. Draw a picture of white pine or spruce needles, maple, oak, weeping willow leaves on the white board.
2. Have students discuss and share similarities and differences between them.
3. Now teach the students about Needles or Leaves, Shapes of Leaves, Simple or Compound leaves and Leaf arrangements.
4. There are 2 types of basic trees in the world: conifers - coniferous trees, and broad-leaf - deciduous trees. (For basic purposes conifers have needles and are evergreens, which mean they don’t lose their leaves. Deciduous trees such as oaks and maples have broad flat leaves and lose their leaves)
5. Explain how the shape of the leaf is unique to each tree.
6. Have students take notes, drawing each leaf and labeling what kind of tree it is.
7. Take students on a nature hike around the block or neighborhood to collect the leaves from trees.
8. Each student should have a Ziploc bag to carry their leaves in.
9. When you come back to the classroom, use their notes and the notes on the white board to classify each type of leaf they found and what type of tree did it come from.
10. Students can then take their leaves and do a leaf press. (Usually putting them between heavy books for a couple days will work)
11. These leaves are going to be used later for another lesson.
12. Read students the books Red Leaf, Yellow Leaf and Leaf Man.
13. Students will then use drawing paper, and their pressed leaves to construct their own leaf creature.
14. The leaves can be glued onto the drawing paper and a great way to stretch their imagination.
15. These leaf creatures will be displayed in the hallway for parent teacher conferences.

Assessment:
- Students’ participation in categorizing leaves and trees.
- Students’ completing the worksheet and notes to determine the type of leaf they collected.
<table>
<thead>
<tr>
<th>Name of Tree</th>
<th>Picture of Leaf</th>
<th>Conifer or Deciduous</th>
<th>Notes</th>
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Sources:

Objectives:
Students will examine cross-sections of trees.
Students will infer from a tree’s rings what environmental conditions might have occurred in its life.
Students will correlate the time it takes a tree to grow with events in human history.

Content Benchmarks:
SL.5.1. Engage effectively in a range of collaborative discussions with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.
S.IA.M.1 Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.
S.IP.05.11 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.

Materials:
Cross sections of a variety of trees
Paper plates
Pencils

Activity:
- Divide students into groups of three.
- Pass out tree cookies to groups.
- Have the students estimate how old this part of the tree was when the tree cookie was cut.
- Ask the students how they estimated the age.
- Under the Elmo put the student example page of a tree cookie.
- Show the students how to count the rings to estimate the age of the tree.
- As a class count the tree rings together to estimate the age of the tree example.
- Now have students in groups count the age of their tree cookies.
- Discuss how it can be that a bigger tree cookie might not be as old as a smaller tree cookie.
- Look back at the tree cookie example under the Elmo.
- What could have happened to the tree to make the rings farther apart or closer together?
- What could have caused the scar to form in the tree cookie?
- Give each student a paper plate.
- Have students make a tree cookie for their life. (They should have as many rings on their paper plate as what their age is)
- Next students can write significant events that might of happened at each year of their life on their own tree cookie.
- These will be displayed in the hall for parents to see at parent teacher conferences.

Assessment:
- Have students look at other tree cookies and write a possible scenario that accurately matches the patterns of the growth rings.
- Participation in class discussion of the tree cookies and how their rings were formed, or why they are closer together or farther apart.
Lesson Four

Sources:

Objectives:
Students will understand the structure of a tree and how different parts of a tree help the tree function.

Content Benchmarks:
S.IA.M.1 Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.
S.IP.05.11 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.

Materials:
Paper
Note cards
Drawing Paper
Pencils
Yarn
Scissors

Activity:
- Write the following parts of a tree on note cards.
  - Heartwood 1
  - Xylem 3
  - Roots 3
  - Cambium 5
  - Phloem 6
  - Bark 8
  - Leaves 4
  - Total = 30 note cards
- Have a class discussion about what all the parts of a tree are and do.
- Label the parts and write their definitions on the white board.
- Heartwood-forms the central core of the tree, provides strength of the tree
- Xylem- sapwood carries water and nutrients up from the roots to the leaves
- Cambium- thin layer that makes cells which become xylem, phloem, or cambium
- Phloem- inner bark and carries water and the sugar made in the leaves down to other parts like roots, stem, bark
- Bark—protects the tree from injury caused by insects and other animals, by other plants, by disease, and by fire.
- Roots— they anchor the tree in the ground; also absorb water and nutrients from the soil.
- Make four branches for your tree by cutting yarn into four 6 foot sections.
- Take the class outside on the playground
- Ask students what people need to survive? (Food, water, air)
- We are just like trees they need the same thing.
• Ask students to think about trees and how do they get their food, water and air.
• Questions:
  Where does the water come from?
  How does it get into the tree?
  How does it get to all parts of the tree?
  How do trees get the food they need?
  How do trees keep from blowing over in a storm?
• Tell students they are going to use this information to make a living tree
• Ask students what makes up the center of the tree giving it strength? Heartwood. The student with the heartwood note card is going to stand in the center and say, “I support, I support!”
• Ask students what part of the tree transports water to all parts of the tree? Xylem students will join hands to form a circle around the heartwood. These students will say, “Slurp, glurp, slurp, glurp, slurp, glurp!”
• Ask students where the water in the xylem travels to? The Leaves. Have the heartwood hold the 4 branches made from yarn. Give the other end to a student holding the note card labeled leaves. These students will flutter like leaves in the wind and say, “We make food, we make food, we make food!”
• Ask the leaves what happens to all the food they make using sunlight, air and water? Ask everyone how does the food get transported? Then the Phloem note cards with form hands making a circle around the tree. These students will say, “Food for the Tree, Food for the Tree, Food for the Tree!”
• Ask the students what layer of the tree produces xylem and phloem to keep the tree healthy? Have the cambium students form a circle between the phloem and the xylem. Tell them to sway from side to side and chant, “New phloem, xylem, and cambium, New phloem, xylem, and cambium!”
• Finally ask the students what final component of their tree is missing? It’s something that protects the tree? Have the students with the bark note cards make a final circle around the tree. These students will say over and over, “We are the bark, please keep out, we are the bark, please keep out!”
• When the tree is completely assembled have all the students act out their parts, and chant their sayings over and over.

Assessment:

• Have students draw a cross section of a tree and label the parts of the tree.
• Heartwood, Xylem, Cambium, Phloem, Bark

Lesson Five

Sources:


Objectives:

Students will understand the basics of poetry. Students will create their own original poem or poems to be published and displayed in the hallway.

Content Benchmarks:

RL.5.2 Determine a theme of a story, drama or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
RL.5.10 By the end of the year read and comprehends literature, including stories, dramas, and poetry, at the high end of the grades 4-5 text complexity band independently and proficiently.

W. 5.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose and audience.

W. 5.5 With guidance and support from peers and adults develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

Materials:
Writing Paper
Drawing Paper
Pencils
Colored Pencils

Activity:
- Ask students to name some of the benefits they have learned about trees and forests
- Ex. What experiences have they had with trees? What do they think about when they stand next to a tree? Do they have any favorite trees? Do they have any favorite stories about trees?
- On the white board have students as a class come up with characteristics and attributes of trees or forests.
- Let students know they are going to have a chance to create a poem about a tree.
- Read to students the book The Sky Tree, a book of tree poems. Discuss the poems.
- Show students examples of the different types of poems they can choose from or create their own free verse.
- Examples:
  - Shape Poetry-from a picture of what is happening in the poem (Picture of a tree and the poem is inside the tree)
  - Windspark Poem- has five lines with the following pattern: “I dreamed… I was…” where an action and how.
    I dreamed
    I was a pine tree
    In my front yard
    Decorated for Christmas
    Beautifully.
  
  - Haiku – is a Japanese form of poetry that consists of three lines: 1st- 5 syllables, 2nd- seven syllables, 3rd- 5 syllables. The 3rd line often contains a surprising element.
    Trees
    Big oak tree
    Out in the open forest
    Feeding the whitetails.

Assessment:
- As students create their poems they should be jotting down notes, writing, revising a rough draft before creating a published poem. They should keep these materials to turn in their writing folder.
- Students published poems will be graded and displayed in the hallway for parent teacher conferences.