LESSON GOALS

Students have been sorted into comparative study groups of 3 - 4 children. The groups have toured the school grounds and have chosen a tree to study throughout the school term. The study will be conducted on the tree in each of the four seasons. The overall study question is “How will our tree change throughout the 4 seasons?” The physical features of the tree will be observed/measured documented the second week of the new season.

The unit is divided into three major components. The components will be observed in each of the 4 seasons:
1. The physical features of the tree.
2. The animals/organisms that live in, on, and under the tree.
3. The climate affecting the tree.

POSSIBLE STUDENT-DRIVEN QUESTIONS

Question: How will our tree change through the seasons?

Other questions:
- What do the leaves look like?
- What are the colors of the leaves?
- How strong are the leaves?
- How many leaves are on the tree?
- Does the tree have any berries, nuts or buds?
- Can you eat the nuts of berries?
- What animal likes the nuts or berries on this tree?
- What’s eating the leaves?
- Why are the leaves changing colors?
- Why are the leaves falling off the tree?
- What does the trunk feel like?
- How big around (girth) is the tree?
- How tall is the tree?
- How far do the branches stretch out (width of the crown)?

PROCEDURE

During center time or reading time, assist pairs of students in logging onto the follow site: http://urbanext.illinois.edu/trees1/. This site will help students learn the critical role that trees play in maintaining the ecological balance on this planet. An audio version may be selected so that students may listen and read along without assistance.

Day 1: Look What I did with a Leaf
Read the book (15 minutes)
1. Remind students of the nature walk they took on a previous day.
2. Ask students what they noticed in each area (leaves).
3. Ask students for some ideas of things they can do with the leaves. List on a chart.
5. Ask students what they think the author did with the leaves.
6. Read and discuss the story, pointing out the different animals/insects the author made from the leaves.

**Discussion Groups (20 minutes)**
1. Divide the class into discussion groups of 3 - 4 students.
2. Give each group a stack of large sticky notes and a marker.
3. Instruct the groups to think of animals/insects they can make from leaves.
4. Students may draw or write one animal/insect on each sticky note.
5. Have students take turns to insure that each person gets to write/draw at least 2 ideas.
6. While students are discussing, hang a chart on the board labeled animals/insects.
7. Call the groups to order.
8. Call on a student to share the animal/insect he thought of and to decide which side of the chart it belongs on. Discuss with the class why this is correct/incorrect. List the sorting rule at the bottom of the chart.
9. Continue until everyone has had a turn.
10. Have students choose an animal/insect they would like to make from leaves and sketch it on a piece of paper. Students may look at magazines and other sources for ideas. Save sketches in a science journal.

**Day 2: Leaf Hunt**

**Introduction (5 minutes)**
1. Have students open their science journals to their sketches.
2. Play “Give One, Get One.” A student starts with the person sitting next to him. With his partner, he shares one idea he has for his leaf creation. The partner then shares his idea. When the bell rings (1 minute), he moves around the table to the next person. Continue for 3 rotations.
3. Call on a few students to share an idea they got from a partner.

**Leaf Hunt (30 minutes)**
1. Give each student a large Ziploc bag in which to collect leaves. Have the names printed on the bags ahead of time.
2. Remind students to collect different types of leaves.
3. If parents/adults have come to assist, divide the class into groups for the hunt and give a time to meet back in the classroom.
4. Demonstrate the correct way to carry scissors and the correct way to cut leaves from a tree branch.
5. Remind students not to strip the leaves from a branch.
6. For some students who do not want to “hurt” a tree, it may be necessary to point out that plants have the ability to grow back new parts, unlike most animals.
7. After the hunt, show students how to zip close to the end and blow air into the bag. Explain that this process will keep the leaves fresh until the next day.

**Day 3: Sort, Identify and Press Leaves**

**Sort Leaves (15 minutes)**
1. Have students retrieve bags of leaves from the previous day. Have students pull out four leaves and place them on their desks. Leave the rest of the leaves in the bag and set out of the way.
2. Divide the class into discussion groups.
3. Provide 2 boxes/baskets to each group.
4. Have the groups sort all of their leaves into 2 boxes. Instruct the groups to find the sorting rule.
5. Call on a group to share the sorting rule they chose. Continue until all groups have shared. Choose the rule that the majority of the students used and have every group sort by this rule. Guide toward needles/broadleaf.
6. Teacher records the rule on the chart to create a leaf taxonomy. You will need to guide the students toward the taxonomy you have used to create your schoolyard taxonomy book with.
7. Set aside needles and give each group another box/basket.
8. Continue sorting in this way as far as you feel the class is capable of going.

Identify Leaves (15 minutes)
1. Instruct students to retrieve their 4 leaves.
2. Give each student a schoolyard leaf taxonomy book (teacher creates), labels, and a sharpie marker.
3. Demonstrate how to use the taxonomy chart to find the section their leaf is in.
4. Instruct students to find the name of the leaf and to write it on the label.
5. Check on student progress.
6. Continue until all 4 leaves are labeled for each student.

Press Leaves (15 – 30 minutes)
*other adult assistance would be helpful for this day, as well as the follow-up activity.
1. Give each student a piece of cardboard, absorber, and piece of newspaper already folded to the correct size.
2. Have students write their names on their piece of newspaper.
3. Show students how to place their 4 leaves on the newspaper and lay the labels next to the leaves. Fold the paper over.
4. As a group finishes, gather their sections and stack. Demonstrate how to slide the belts around the press and tighten. The whole class can probably go into 2 presses.
5. Now give each pair of students a press and the pieces needed to press their remaining leaves.
6. Have students write their names on a sticky note and place on top of the press.

The following week... (30 – 45 minutes)
Open the presses with the labeled leaves and demonstrate how to glue the leaves to a piece of poster board. Stress the fact that this is a good time to use a LOT of glue. Show students where to glue the labels for their leaves. Write the name of the season at the top of the poster board.
1. Give students a piece of poster board and a bottle of glue.
2. Have students write their name and the season on the board first.
3. Allow students to create their pressings.
4. When finished, have students open their science journals to their leaf sketches.
5. Help students open presses and begin their leaf press picture.
6. During reading groups on another day, have students write a story about their leaf press picture. Display or ad to the science journal.

Day 4: Draw and Measure the Tree
*other adults are needed on this day
This portion will need to be done at an earlier time: Now that students can identify the type of leaf, they are ready to get outside and begin studying a tree. Divide the class into study groups. Bring out pictures of the areas of the schoolyard taken in the nature walk. Assign each location a name, like Kindergarten Playground, Panda Pad, etc. Allow students a few minutes to discuss and list their top three choices. Collect papers and assign groups their area.
1. Give each student a data sheet and clipboard. Students are going to record the feel of the tree bark, shape and color of the leaves, shape of the crown, whether the tree has nuts/fruits/buds, height of the tree, girth of the tree, width of the tree, name of the tree and the season. Students will draw a picture of the entire tree.

2. Read over the data sheet before

3. Show the students a yardstick and a ruler to familiarize them with how to read one (this may be done during math time).

4. Have students think of ways to measure the girth of the tree, height, and width of the crown.

5. Demonstrate how to do these things.

6. Assign an adult to each group and give a time to meet back in class. Give each adult a digital camera if available.

7. When students return to class, split the groups up so that one person from each group is in the group. Allow students to share what they discovered about their tree.

8. During math time, graph the results of the height of the tree, width of the crown and girth. Have students place papers in their science journal.

Day 5: Leaves of Steel
Follow directions on the “Leaves of Steel” page found in the OIEE class notebook.

RESOURCES

• University of Illinois Extention
  <http://urbanext.illinois.edu/trees1/>
• Acorn Naturalists, Resources for the trail and classroom
  <www.acornnaturalists.com>
• Look What I Did With a Leaf, Mortez Sohi

BUDGET

• 23 Clipboards, $23
• Field lenses/binoculars (minimum 5 pairs), $100 (but most likely able to borrow from parents/community members)
• Leaf presses (minimum 13), $280
• Graduated cylinders (minimum 5), part of a science kit
• Tree Field guides, can be borrowed from the library
• Solo cups, $4