Lesson Summary:
Students will learn how maple syrup is made, and use their senses to analyze its qualities.

Objectives:
Students will be able to:

- Discuss the characteristics of maple syrup, including taste, smell and appearance; using their senses.
- Demonstrate an understanding of the steps in the maple syrup making process.
- Be able to describe the journey of maple syrup from production, processing, marketing and finally to the customer.

Time Required:
30-35 Minutes

Background Information:
The Sugar Maple is the official state tree of New York, and is very popular for its yellow and orange leaves in the fall. While the process of gathering and processing maple sap into syrup is not a large component of the NYS economy, it is a very interesting and tasty part of it. New York produces more syrup than any other state except for Vermont. The beauty of the Sugar Maple in fall and the lure of maple syrup time in late spring contributes to tourism throughout the state.

Maple syrup became an important commodity for the early settlers of the United States. They used it to trade until the prices and taxes on sugar cane went down. Maple trees are a unique example of the trees we collect food from. Instead of picking fruit from its branches, we collect the sweet sap from its trunk.

Traditionally, maple syrup was harvested by tapping a tree through the bark and into the xylem (the channels through which the sap runs), then letting the sap run into a bucket; more advanced methods have superseded this. Once trees have a diameter of ten inches at chest height and are at least forty years old, holes are bored into them and hollow tubes, called spiles, are inserted. These drip sap into buckets or into plastic pipes. Modern use of plastic tubing with a partial vacuum has increased production. A new hole must be drilled each year, due to the natural healing process of the tree, called walling-off.

In the late winter, when nights are still cold, but the days are warming, sugar makers tap into Sugar Maples or Black Maple trees, and gather the sap. Production is concentrated in February,
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March, and April, depending on local weather conditions. The change in temperature causes the sap to move through the tree. The sap is fed automatically from the storage tank, through a valve, into a corrugated pan, where it is boiled until it forms a sweet syrup. Boiling down the sap reduces water content and creates syrup, cream or candy, depending on the temperature and length of time it is cooked. The process is slow, and takes approximately forty gallons of sap to make one gallon of syrup.

Maple syrup, and its artificial imitations, are the perfect toppings for pancakes, waffles and French toast. Maple syrup can also be used in many other dishes, such as biscuits, doughnuts, fried dough, fritters, ice cream, hot cereal and fresh fruit. It is also used as a sweetener for many baked goods, candies and drinks.

A wonderful field trip to take students on would be to visit a local sugar shack. There are several in the Lockport/Niagara Region. Visit the NYS Maple Producer’s website at www.nysmaple.com.

Materials:
- Sugarbush Spring by Marsha Wilson Chall.
- Seven laminated cards/pages from Sugarbush Spring; each describes one step in the maple syrup making process
- One Ounce soufflé cups (two for each student) or Dixie Cups
- Items to taste the two syrups (mini pancakes, mini waffles, shortbread cookies, etc.)
- Bottle of two different maple syrups (one real preferably NYS and one “fake”)
- Student activity sheet
- Protective covering for table/floors

Procedures:

1. Read the book Sugarbush Maple by Marsha Wilson Chall.
2. Tasting Maple Syrup:
   a. Ask students:
      i. How many of you have had maple syrup?
      ii. What is a word that you would use to describe maple syrup?
   b. Procedure (before the start of class if possible):
      i. Pour a small sample of maple syrup into soufflé/Dixie cups one for each student. Label one A and label the other B.
      ii. Explain to students that they will be using their senses to complete the front page of a worksheet looking at the smell, color and taste of maple syrup.
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iii. Pass out the activity sheet, “Fun with Maple Syrup”.
iv. Distribute soufflé cups in the manner most practical for the class.
v. Cover table or floor with newspaper if necessary, to protect from spills.
c. Instruct students to look at, smell, and then slowly slip their syrup samples.
d. Allow students 5-10 minutes to fill out the worksheet and then discuss their answers as a group.
e. Spend the most time on questions 5 and 6, and have students explain which foods they chose and why.

3. Class Activity:
   a. Ask for seven volunteers.
b. Give each volunteer a sign to hold up, describing one of the steps in the maple sugaring process.
c. Mix up the volunteers so that the steps are out of order, and have them then stand in line in front of the class.
d. Read aloud the different steps.
e. Ask another student to move the volunteers into the correct order, following instructions from the remaining class members.
   i. To avoid all students calling out at once, have them raise hands and wait to be called on.
   ii. Call on one student each for steps 1-7.
f. When the volunteer is finished, ask the remaining students if they agree with the order of the steps.
g. If not, ask students to explain what they would change.
h. In order to make a change to the sequence, they must have approval from the rest of their classmates.
i. When the correct order of steps has been established, review the sequence.
j. For classes with fewer than 7 students, or where having volunteers hold the signs is not practical, simply place the cards in front of the class without using student volunteers to hold them, and carry out the same procedure.

4. Follow up questions:
   a. How many of you have been to a real sugar shack?
b. How was what you saw different from what was shown in the book/example?
   i. Discuss possible reasons for a difference.

5. Conclusion
   a. After completing the lesson, have the students fill out the back page of the worksheet.
   i. Write a sentence describing an interesting fact that they learned.
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ii. Once students have finished, ask for volunteers to share their answers aloud.

iii. Students may color the bottom of the worksheet.

ANSWERS FOR CLASSROOM ACTIVITY:

Sap to Syrup:

The proper order for the cards is:

1. It freezes at night and thaws in the morning
2. Find the right trees to tap by measuring them with your arms
3. Drill, tap, and hang a pain on each tree
4. Gather the sap from the buckets
5. Build a fire to boil the sap down into syrup
6. Filter the syrup and pour it into bottles
7. Use real syrup on your pancakes

References/Resources:

www.nysmaple.com – NYS Maple Producers Association

www.cornellmaple.com

www.mapleweekend.com- where to go see Maple sugaring process firsthand

www.Siropcool.com- contains fun interactive activities about maple syrup


Keller, Kristen Thoennes. From Maple trees to Maple Syrup. Capstone Pr. Inc., 2004