Lesson Plan - **Making Maple Syrup**

Grade Level: Grade Five

Learning Objectives:
1. Have students learn the steps involved in the production of maple syrup
2. Student will review the process of evaporation

Expectations: Matters and Materials - Properties of and changes in matter
- Demonstrate an understanding of the three states of matter and of changes in state
- Recognise on the basis of their observation, that melting and evaporation require heat

Materials: Sugar, water, large pot, stove or electric frying pan

Procedure/activities:
1. Start this lesson by finding out what prior knowledge the students have of maple syrup. Generate classroom discussion by asking the following questions: Where does sap come from? How do we get it out of a tree? Once it's been removed from the tree what happens with it?
2. Discuss, using pictures, the tapping process (see pictures provided on the OMSPA website)
3. Make sure students understand that sap consists of 1/40 sugar and the rest is water
4. Ask the student how we can keep the sugar? What do we need to get rid of? (Water) How can we get rid of water? Look for key words such as boil, evaporate
5. Tell the students that today, as a class, they will get to make their own sap and maple syrup
6. First figure out how much syrup you want to end up with. Measure that amount of syrup. Then ask the students how much water we will need. (1 part sugar add 40 parts water) Have each of the students add an equal amount of water. For example: 1/4 cup maple syrup each add 1/4 cup water) Make sure each student has had a turn then count up the students and ask them if they know how much more water needs to be put in (40- number of students = how much more water). Put in the rest of the water needed
7. Mix the water and syrup, select a few students help with this. Explain to them that they have made sap
8. After the sap is made, ask the students what they have to do to reverse the process they went through and have syrup again? (by boiling the sap and water so that the water evaporates)
9. After they have correctly answered, boil the mixture. Have the students comment on what is happening. (the water is starting to evaporate). The sap should start to turn a light, amber colour
10. The sap will start to bubble and foam, this means that the sugar content is getting higher than the water content
11. Make sure you continuously stir. Boil the syrup until it is thick enough that it will coat a spoon.
12. Talk to students about hydrometers and what their purpose is (To compare the densities of liquid and see how much of the sap still contains water and how much is sugar)
13. Cool the syrup so that the student can try a little bit.
14. Ask the students what will happen if they continue to boil the syrup (the rest of the water will evaporate leaving only the natural maple sugar)
15. If there is time, continue to boil the syrup until it turns to small grains in the bottom of the pot
16. Give the students the opportunity to try some of the maple sugar.
17. While they are eating their maple treats, ask the students to go over the steps that take place to produce maple syrup
18. In their journal, have the students write about the journey of sap from the tree to the table.

Assessment:
- Final product in journal

Extension Activities:
- Bring the students on a trip to the sugar bush to watch the process of producing maple syrup take place
- Use the maple syrup to make maple popcorn. Refer to the lesson plan for making popcorn

Developed for the **Ontario Maple Syrup Producers Association**
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