

The Sap is Running...Saving our Maple Trees

Moharimet Elementary School

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Lesson Plan

Our Sap is Running: Saving Our Maple Trees

2007-2008

STANDARDS:

Standard 1: SS:GE:1 **Geography Standards Addressed:**

SS:GE:4:1.1: Identify and describe the characteristics and purposes of geographic tools: maps, globes, graphs, diagrams, photographs, satellite-produced images, and other technologies. (Themes: C: People, Places and Environment, F: Global Transformation)

SS:GE:4:1.2: Display spatial information on maps and other geographic representations, e.g., home-to-school routes or settings in appropriate children's literature. (Themes: C: People, Places and Environment, G: Science, Technology, and Society, J: Human Expression and Communication)

SS:GE:4:1.3: Locate major physical and human features in the United States and on Earth, e.g., mountain ranges, principal parallels or meridians. (Themes: C: People, Places and Environment, G: Science, Technology, and Society)

SS:GE:4:1.4: Illustrate that places and features are distributed spatially across Earth's surface, e.g., community grid maps or population density maps. (Themes: C: People, Places and Environment, F: Global Transformation, I: Patterns of Social and Political Interaction)

Standard 2:

SS:HI:2: Contacts, Exchanges & International Relations

Students will demonstrate an understanding of the events, actions and policies of our nation in relation to other peoples and governments over time.

SS:HI:4:2.1: Describe the interconnectedness of the world developed using examples., e.g., the contact between Native Americans and European settlers or the location of family members serving in foreign countries. (Themes: A: Conflict and Cooperation, C: People, Places and Environment, D: Material Wants and Needs)

Standard 3:

SS:HI:4: Economic Systems & Technology

Students will demonstrate an understanding of the changing forms of production, distribution and consumption of goods and services over time.

SS:HI:4:4.1: Explore major developments and changes in economic productivity, e.g., adoption of Native American crops or use of mass production. (Themes: C: People, Places and Environment, F: Global Transformation, G: Science, Technology, and Society)

ICT Standards:

Productivity tools (Creativity & innovation)

Communications tools (Communication & collaboration)

Research tools (Research & information fluency)

Problem solving & decision making tools (includes critical thinking)

Essential Question: What will become of our Maple Trees?

OBJECTIVES:

Late Fall/Early Winter:

- Students would identify maple trees on Moharimet Property & start database for tree data collection. Utilize Moharimet Forest Plan to aid in identification/location of sugarbushes.
- Students applied knowledge of latitude & longitude to utilize GPS units and learned how the units work by marking each of the maple trees
- Using on-line resources and Google Earth, explore the different types of map projections and learn the specific uses of each map. Distinguish between a topographic map & aerial photograph.
- Identify trees using tree identification guides & on-line guides measure the circumference & diameter of each tree
- Review basics of weather

January/February:

- Discuss how the weather impacts sap flow & how we know when to tap trees
- Discuss the origins of maple sugaring in New Hampshire & its relationship to the Native peoples of New Hampshire
- Use on-line exercises to practice making predictions for sap flow for varying conditions of temperature and weather
- Use links to weather maps and satellite photographs to predict weather and compare that with professional weather forecasts available on-line
- Learn the ideal set of conditions for tapping trees & getting the first 'run'
- Making own predictions for sap flow for each maple tree being studied
- Learning the correct steps for tapping
- What does the cross section of maple tree look like?
- Start tracking the high/low temperatures using www.noaa.org

Late February/Early March:

- Prepare materials for tapping trees
- Use GPS & maps to find trees again
- When conditions are ideal, tap trees
- Record sap flow throughout the season for each tree on Moharimet property. The entire school will help with this undertaking. The information will be given to fourth grade students to add to the database.
**Due to the large amount of data, a parent is working on setting up a user friendly school-wide database for use next year. We have over six years worth of data that needs to be inputted. Next year's fourth graders will help with this undertaking
- Explore the relationship between global warming and the maple sugaring season

- Invited a speaker from Clean Air, Cool Planet to discuss this impact. Explore our carbon footprint and ways to reduce our carbon footprint
- Develop interactive slide show called *Going Green to Save Our Maple Trees* to present to visitors at Pancake Breakfast. This includes a carbon footprint quiz.
- Invited and Presented information gathered to Woodman Park Elementary School from Dover, NH.
- Daily: bring collected sap to sugarhouse to be boiled
- Learn how the evaporator works
- Print map of Sugarbushes located on property to display at Pancake Breakfast
- Graph sap collection from each classroom tree using Excel

Late March/Early Spring:

- Present information gathered using technology at annual Pancake Breakfast on March 29, 2008
- Pull taps
- Clean equipment

Fall 2008

- Identify new maple trees to be tapped
- Mark trees with GPS & add to Google Earth Map
- Input data to database

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Websites:

General Background on Maple Sugaring:

<http://www.nhmapleproducers.com/index.html>

<http://www.massmaple.org/>

Global Warming & Maple Sugaring:

Clean Air, Cool Planet www.cleanair-coolplanet.org/

Lesson Plans:

<http://www.vt-aitc.org/pdfs/full-Maple-Unit.pdf>

A full interdisciplinary unit for K-8 on Maple Sugaring in Vermont. You can pick and choose lessons to teach. A great resource!

www.umext.maine.edu/onlinepubs/pdfpubs/7036.pdf

A great resource for first time tappers!

Movies:

Discovery Education-Maple Sugaring videos for the overview

BrainPop – Global Warming and Natural Resources

Books:

Sugaring Time by Kathryn Lasky

Ininatig's Gift of Sugar:Traditional Native Sugarmaking by Laura Waterman

Wittstock

Sugaring Season: Making Maple Syrup by Diane Burns

Sugaring by Jessie Haas

Maple Harvest by Elizabeth Gemming

Sugarbush Spring by Marsha Wilson Chall

At Grandpa's Sugarbush by Margaret Carney

Equipment:

Promethean Board (<http://www.prometheanworld.com/us/>)

ETrex GPS (<https://buy.garmin.com/shop/shop.do?CID=145&pID=173>)

Software:

Map Source software (comes with the GPS)

Google Earth

Excel

Weather Planning Sheet for Students

Group name:

1. Look for Discovery Education video - mastway
03824
2. Download to the shared folder (students)
3. Create Storyboard
4. Write video script
5. Record your video
6. Download video to movie maker
7. Import video from Discovery Education
8. Add title slides (beginning and ending credits)
9. Save Project and then create as a video.