Lesson 1.4 "New Hampshire's Weather"

Unit 1: New Hampshire Geography

Lesson Objectives

- Students will investigate different weather events that impact New Hampshire.
- Students will be able to describe and use weather-related vocabulary.
- Students will be able to integrate information from two or more sources to create a factual presentation.

Lesson Competencies

- I can conduct short research projects to investigate different aspects of a broader topic, event, or concept. (ELA 8)
- I can use descriptive, precise, and content specific vocabulary to elaborate on each idea presented. (ELA 5)
- I can locate and use evidence from a variety of sources to develop and support explanations or claims about cause/effect relationships. (Science 3)
- I can locate relevant key ideas using text features, including visual and graphic information, to make connections within or across sources and explain how various parts of information contribute to overall meaning. (ELA 3)

Essential Question
How has New Hampshire come to be the way it is?

Focus Question
How does where you live impact how you live?

Estimated Time
Five 40-minute class sessions

Materials & Equipment
Videos of meteorologist (see Supporting Materials)
Infographic "Extreme New Hampshire Weather"
Printed out sources of floods, hurricanes, blizzards, ice storms
Class set of "Analyze It! Photograph" worksheet
Class set of "Extreme Weather Notes" worksheet
Class set of "Meteorologist Report Planning Sheet" worksheet
Materials for students to use to create their visuals for meteorologist presentation
Technology for meteorologist report recording

Educator Introduction & Rationale

From its Atlantic coastline, through its dense forests and meandering river, across its lakes, and over the peaks of its alpine mountains to its international border with Canada, New Hampshire's geography is like no other state. Exploring the weather of New Hampshire is important so students understand what the weather is, and how it affects their daily lives.

This lesson is the fourth lesson of Unit 1: New Hampshire Geography and focuses on New Hampshire's weather and how it impacts the people who live here. Although this is the fourth lesson, achievement of earlier lesson objectives is not necessary for students to participate in this lesson. Students first watch a video clip of an actual meteorologist giving a weather forecast and then analyze photos of real New Hampshire weather events. After this, students research more facts about blizzards, floods, ice storms, and hurricanes so they understand the characteristics, damage, and safety prevention associated with each. Following research, students work in small groups to write a weather forecast script about their extreme weather and prepare a visual to enhance their presentation. Students finally reflect on which weather they feel is the most damaging to New Hampshire and why. Please adapt all the material in this lesson, as necessary, to meet the needs of the students in your classroom.

Teaching tips: Students can be videotaped when they give their weather forecast so it is connected to real television meteorologists, or they can give their presentations live in front of their classmates. If you wanted to expand student learning you could also include tornadoes, thunderstorms and droughts.

Please note, lesson vocabulary and definitions are at the end of the document. You may wish to preview these with your students. A reinforcement activity is provided for students who need more practice with the types of weather in New Hampshire and connections to current events. Extension activities are provided for students who would like to go further with researching weather-related events.

Learning Activity

Activation

Real-life meteorology. Show a brief video clip of an actual meteorologist giving a weather report. In a pair-share or as a class, brainstorm different types of weather that typically occur in New Hampshire. As students share their ideas, list them on chart paper according to the season they are most likely to occur. Discuss any weather students have experienced. If blizzards, hurricanes, floods, and ice storms are not mentioned, guide the students to the kinds of extreme weather most often seen in New Hampshire.

As a class, discuss the infographic "Extreme New Hampshire Weather."

Direct Instruction

Historical weather with primary sources. Display photographs depicting the flood of 1936, the hurricane of 1938, the blizzard of 1978, and the ice storm of 2008 in New Hampshire. Choose one of the pictures and use the Analyze It! photographs worksheet from the Analyze It! section of the "Moose on the Loose" website to work through as a class to examine the picture. Emphasize any weather that can be seen and any damage that can be seen as a result of the weather.

Guided Practice

Analyze It! in groups. Break the class into groups of two or three, giving each group one of the photos and an Analyze It! photographs worksheet. Have them Encounter, Investigate, and Build on the pictures. Give multiple groups the same picture if need be.

Share observations and pictures among groups when done so that each group shares their thoughts with at least two other groups.

Teaching Tip: This is a good spot to pause if you will divide the lesson between several teaching periods.

Independent Practice

Researching extreme weather. In the same groups or new ones of two or three, assign one of four types of extreme weather and provide students with a variety of weather resources online or in print (see Supporting Materials for ideas). Distribute the "Extreme Weather Notes" worksheets and have students research to answer:

1) What are the characteristics of the extreme weather?
2) What damage can the extreme weather cause?
3) How can you stay safe in this extreme weather?

Teaching Tip: This is a good spot to pause if you will divide the lesson over several teaching periods.

Formative Assessment

Student meteorologists. Once students understand the aspects of characteristics, damage, and how to stay safe for their type of weather, they should move on to preparing a weather forecast in their groups. As appropriate, move groups along to this by reviewing the Meteorologist Report Planning Sheet and giving them the materials necessary to plan their report. Groups should prepare some kind of visual to help with their presentation.

If possible, record each presentation with their visual and play it on a screen just like a real weather broadcast. If this is unavailable, have students present their reports live in front of their classmates.

Teaching Tip: Pause teaching as necessary for your timing as students prepare and finalize their reports.

Reflection

Worst weather? After the presentations, have students independently reflect and answer the question: Which do you think is the worst weather New Hampshire can experience and why? Discuss as best for your class.

Reinforcement

1) **Weather news stories.** Have students find examples of New Hampshire weather news stories and bring them in to share with the class. Post and add to them throughout the year.

Extension

1) **Army Corps of Engineers.** Research the Army Corps of Engineers and their work with seven flood risk management project dams throughout the state of New Hampshire. Invite student presentations or see if there is a student outreach program.

2) **Writing connections.** Students write a narrative piece based on some unusual New Hampshire weather that affected their life. Some examples might be snow days from school or outings cancelled due to rain. Or, students write an historical fiction piece based on a real New Hampshire weather event, such as the flood of 1936 or the blizzard of 1978. Include facts and details about the weather event in the story.

3) **Oral history.** With supervision, students contact and interview people who experienced New Hampshire extreme weather events, such as the blizzard of 1978 or the ice storm of 2008. Students could then present the interview to the class.

Supporting Materials

New Hampshire Historical Society Resources

1. Rattle River Bridge, After Flood, circa 1936
2. Flooded Car, 1936
3. Trees in Flood, 1927
4. Downed Trees in Nashua, 1938
5. Cars on a Flooded Street, 1938
6. Hurricane Aftermath on Park Street, 1938
7. Large Tree Down After Hurricane, 1938
8. A Shoveled Path, 1921
9. Snow Plowing, 1948
10. Horse-drawn Snow Roller, 1900
11. Buildings on Mount Washington in Winter, 1870
12. Milk Truck in Ice Tunnel, 1986
13. Tree Service Company Trims Limbs, 1983
14. Ice Storm in Portsmouth, 1886

Other Resources

Internet resources:
Disaster Facts. https://www.ready.gov/kids/disaster-facts Kid-friendly information about natural disasters.

Disasters and Emergencies. www.ready.gov/be-informed. More complete information about being prepared for all kinds of weather as well as other types of emergencies, including "Active Shooter" and "Pandemic." Information for weather emergencies is clear and informative, but students should be monitored carefully while on site.

Meteorologist videos:
WMUR-TV. (2018, January 3) *Blizzard warning posted for NH coastline* [video file]. Retrieved from www.youtube.com/watch?v=sgdFG9v3TLQ

WMUR-TV. (2012, October 12) *Updates: Meteorologist Kevin Skarupa tracks Hurricane Sandy* [video file]. Retrieved from www.youtube.com/watch?v=EOt-pRzGbz8

WMUR Weather: www.wmur.com/weather. Includes current weather for New Hampshire as well as videos of meteorologists.

Print resources:

Lisa Bullard, *Blizzards* (2009)
Basic information about blizzards presented in an easy-to-read format with engaging pictures.

Lorraine Jean Hopping, *Hurricanes!* (1995)
A Wild Weather Scholastic book that takes students through the facts of tornadoes in story form. Easy read but informative.

Lorraine Jean Hopping, *Tornadoes!* (1994)
A Wild Weather Scholastic book that takes students through the facts of tornadoes in story form. Easy read but informative.

Josh Judge and Kathe Cussen, *Weather Facts and Fun: New England Edition* (2010)
Engaging and informative, this book was written by a meteorologist and science teacher team. Includes all local weather, from cloud types to tornadoes and blizzards. Has fun facts and experiments, discusses tools for forecasting, and many maps and pictures.

Paul P. and Diane M. Sipiera, *A True Book of Floods* (1998)
Presents the causes and effects of floods through investigative reading. Engaging pictures and straightforward writing.

Melissa Stewart, *Hurricane Watch* (2015)
Accurate and engaging, written clearly. From the "Let's Read and Find Out" series, which aligns with Common Core. Explains how hurricanes work and discusses what to do in the event of a hurricane.

Standards

"Moose on the Loose" Content:

- ✓ Students will understand that New Hampshire has a diverse geography, with mountains, seacoast, and farming land. They will understand it has been inhabited for thousands of years and has a variety of resources. (3-5.T1.1)

"Moose on the Loose" Skills:

- ✓ Gathering, Interpreting, and Using Evidence (3-5.S1.1)
- ✓ Communicating and Critiquing Conclusions (3-5.S2.2)
- ✓ Using Technology Responsibly (3-5.S7.1)

New Hampshire Social Studies Frameworks:

- ✓ Geography: Physical Systems (SS:GE:4:3.2)
- ✓ Geography: Environment and Society (SS:GE:4:5.2)

NCSS Themes:

- ✓ Theme 3: People, Places, and Environments

C3 Frameworks:

- ✓ Geographic Representations: Spatial Views of the World (D2.Geo.2.3-5)
- ✓ Gathering and Evaluating Sources (D3.1.3-5)
- ✓ Communicating Conclusions (D4.2.3-5)

Common Core ELA:

- ✓ Craft and Structure in Informational Text (RI.4.4)
- ✓ Integration of Knowledge and Ideas in Informational Text (RI.4.7, RI.4.9)
- ✓ Comprehension and Collaboration in Speaking and Listening (SL.4.1, SL.4.1a, SL.4.1b, SL.4.1c, SL.4.1d)
- ✓ Presentation of Knowledge and Ideas (SL.4.4, SL.4.5, SL.4.6)

Science NextGen:

- ✓ Earth's Systems: Processes that Shape the Earth (4-ESS3-2)

Lesson Vocabulary

blizzard	(noun) a long severe snowstorm (Merriam-Webster.com)
climate	(noun) The typical weather conditions, such as temperature and precipitation, in a specific area
flood	(noun) a rising and overflowing of a body of water especially onto normally dry land (Merriam-Webster.com)
hurricane	(noun) Violent tropical cyclonic storm having wind speeds of at least 72 miles per hour
ice storm	(noun) A storm in which falling rain freezes on contact (Merriam-Webster.com)
meteorology	(noun) A science that deals with the atmosphere and its occurrences and especially with weather and weather forecasting (Merriam-Webster.com)