Title: Railroad Bed Restoration Project

Abstract/Vignette: Students will develop an old railroad bed as a recreational, historical, and cultural resource, improving health and affording rich learning opportunities for all. Students will learn that they have the responsibility and the privilege to shape their world.

Grade level(s): Please check all that apply.
- [ ] K-2
- [ ] 3-5
- [✓] 6-8
- [ ] 9-12
- [ ] College and Lifelong Learning

Discipline: Please check all that apply.
- [✓] Art and Music
- [ ] Health and PE
- [ ] Foreign Language
- [✓] Literature and Language Arts
- [✓] Mathematics
- [✓] Science
- [✓] Social Studies and Geography
- [ ] History
- [ ] Technology

Year Developed: 2010

Period (month, week, year): Unspecified

Teaching environment:
- [✓] In the Classroom (indoors)
- [✓] On the Trail
- [✓] In the Community
- [ ] Online/Virtual
BIG IDEA:
At Buckfield Middle School students develop foundational skills through place-based service learning projects: a community garden, a composting project, and maintenance of over 300 US Veterans’ grave sites. In the same spirit, students will develop the old railroad bed as a recreational, historical, and cultural resource, improving health and affording rich learning opportunities for all. Students will build a Trail Head where the railroad bed intersects a main roadway in the village. This trailhead will feature student published educational materials that promote Leave No Trace ethics, identify biotic and abiotic inventories, and relate the history of the former railway. Students will use technology to develop maps and distance markers on the trail, create web pages that feature Quests along the trail, and create proportional simulations of the solar system and the Appalachian Trail. Access to student generated historical and environmental Quests will inspire community members to hike, bike, ski, or snowshoe the trail as they explore the history and culture of our unique town. Not only will this project beautify our community and provide fun educational opportunities, it will also elevate our students to educators and stewards. Through this place-based service learning project, students will learn that they have the responsibility and the privilege to shape their world.

STANDARDS: (Objectives, Anchors, Outcomes)

Essential Questions (Unit Objectives)
1. Can middle school students work together with their community to improve health and wellness (ecological, physical, social, emotional, etc.)?
2. Can middle school students improve their own foundational skills while working to educate their community?

Objectives
A. Students will transform a dormant railroad bed into a recreational, historical, and cultural resource, improving health and affording rich learning opportunities for our community
B. Students will develop a Quest focused on Buckfield Railroad
C. Students will develop a Quest focused on Buckfield Village
D. Students will develop a Quest focused on US Veterans buried at Damon Cemetery in Buckfield.
E. Students will create a proportional AT trail along 6 miles of the RR track.
F. Students will create and place quarter mile markers along the trail,
encouraging its use as a recreational trail.

G. Students will use the pythagorean theorem, as well as the geometric formulas to solve real world problems as they determine values on the RR bed.

H. Students will make observations to distinguish deciduous and coniferous trees.

I. Understand the scientific naming system for living organisms.

J. Describe and observe characteristics used to identify trees via a dichotomous key.

K. Understand the importance of different tree species in Maine, environmental and economical.

L. Complete field study mapping and identify at least 12 species in a given area.

**English Language Arts**

**Reading:** Students comprehend organizational patterns, text features, graphical representations, and ideas in informational and literary texts.
Students use strategies to organize, restructure, and synthesize text content.

**Writing:** Students draft, revise, edit, and critique written products so that final drafts are appropriate in terms of the following purposes: purpose, organization, details, and voice or tone.

**Listening:** Students actively listen to comprehend and recall messages. A variety of response strategies clarify explicit and implicit meanings of messages.

**Speaking:** Students participate in group discussion. They frame and deliver messages that take into account prior knowledge, beliefs, experiences, as well as those of other group members; roles and relationships within the group; and the group’s purpose, goals, and norms.

**Media:** Design and create media products that successfully communicate.

**Social Studies**

**Movement & Settlement:** Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world.
TTEC CURRICULUM MAP

Traditional and Social Histories: Demonstrate an understanding of the relationships among communities, community leaders, important events, and people's lives.

Understanding Place: Explore the interrelationship between the local environment and the local community heritage.
Demonstrate knowledge and history of local environment (soils, forests, watershed) and how the community relies on its environment to meet its needs (nutritional, economic, emotional).
Demonstrate knowledge of past and present community heritage (e.g., traditions, livelihoods, customs, stories, changing demographics, or land use) and recognize ways in which this heritage influences their lives.
Explore and participate in sustaining or building on uniques and valued elements of past and present community heritage.

Geographical Knowledge, Sense of Place: Describe such patterns as population distribution, land use patterns, climate, transportation networks in Maine, the U.S., and the world.

Being a Historian: Collect and use primary resources while creating original historical interpretations.
Use oral history methods to understand the ways in which people assign meaning to their own historical experiences.

Continuity and Change: Demonstrate an understanding that perceptions of change are based on personal experiences, historical and social conditions, and the implications of change for the future.

Mathematics

Ratios and Proportional Relations: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Geometry: Draw, construct, and describe geometrical figures and describe the relationships between them.
Explain a proof of the Pythagorean Theorem to determine unknown side lengths in right triangles in real world problems.
Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
Know and apply the formulas for volume of cones and cylinders and use them to solve real world mathematical problems.

Science
TTEC CURRICULUM MAP

Classifying Life Forms:
Students will understand that there are similarities within the diversity of all living things.

Ecology
Students will understand how living things depend on one another and on non-living aspects of the environment.

Inquiry and Problem Solving
Students will apply inquiry and problem solving approaches in science and technology.

Communication
Students will communicate effectively in the application of science and technology.

Art
Artistic Intent: Convey artistic intent from creator to viewer or listener; critique one’s own and others’ work in progress, both individually and in groups, to improve intent.

Models & Examples

• Students will begin the year with an introduction to the Appalachian Trail. They will record their healthy activities, converting them to AT miles, and compete in a virtual hike of the AT.

• 7th Graders will learn the Service Learning model at the University of Maine 4-H Camp and Learning Center, where they will revisit the projects completed by their peers over the last several years.

• Before beginning the Quest Units students will complete virtual Quests at www.vitalcommunities.org and www.wchoolsqogreen.org

• During the Quest Unit, many opportunities are provided for peer conferencing and evaluation.

• Students can visit http://www.umpi.maine.edu/info/nmms/solar/ to see a sample Solar System model that was created along Route 1 from Presque Isle to
Skills & Habits of Mind

1. Students will learn that with privilege comes responsibility.
2. Students will experience the joy that comes from giving and serving others, creating a long term pattern of behavior.
3. Students will feel a connection with their community that serves as an impetus for developing global stewardship.
4. Students will further develop successful work habits: responsibility, preparedness, timeliness, respect and tolerance for themselves and others, focus on high quality and depth of thought,

Community Connections

• Students will transform a dormant railroad bed into a recreational, historical, and cultural resource, improving health and affording rich learning opportunities for our community.
• Students will work with the town librarian to research primary sources at the Zadoc Long Free Library to complete several Quests.
• Students will work with the town clerks to research primary sources at the Buckfield Town offices to complete several Quests.
• Students will work with members of the Buckfield Historical Society to complete several Quests.
• Members of the American Legion will guide tours in the Damon Cemetery relating the burial sites of US Veterans
• Rails to Trails
• Todd Caldwell, Forest Consultant
• MATC
• Maine Representative, Theresa Hayes, will work with students to prepare a proposal to the town of Buckfield requesting permission to improve the railroad bed, and place a kiosk at the trailhead.
• Students will make a formal proposal to the Board of Selectmen seeking approval to improve the railroad bed
• Students will draft a proposal to the local lumber mill requesting discounted lumber for the construction of the Trail Head Kiosk
• Students will informally recruit family and friends to help them construct a kiosk at the trail head of the railroad bed

**Student Role**

• Students learn the Service Learning model at the University of Maine 4-H Camp and Learning Center, where they will revisit the projects completed by their peers over the last several years.

• They will subsequently discuss possible ideas for a new project, one of which is Bucks on Track, the development of the railroad bed as a recreational trail.

• Many aspects of the project will involve student choice, from the creation of quests, to the design of the kiosk, and the development and presentation of formal and informal student proposals.

• Students will self assess and peer assess their work throughout the project.

• Students will test their products on other students and adults as part of the revision process

**RESOURCES**

*Questing* by Delia Clark and Steven Glazer  
*Glencoe Math Text*


**REFLECTION**

• Journaling  
• Graffiti
TTEC CURRICULUM MAP

- Head + Heart + Hands
- What? So What? Now What?
- Pre Reflect / Reflect
- 3-Step Interviews
- Concept Mapping

STUDENT ASSESSMENT
Students will be assessed in a variety of ways that are listed below:
- Self Assessment
- Short answer constructed responses
- Tests
- Comparing Products to Exemplars using Rubrics
- Checklists
- Peer Assessment
- Performance Assessment (presentations, discussions, etc.)
- Communication Rubric
- Community Feedback
- Positive Public Relations (newspaper articles, Radio commentary, etc.)
- Reflection Activities: Journaling, Graffiti, Head + Heart + Hands, What? So What? Now What?, Pre Reflect / Reflect, 3-Step Interviews, Concept Mapping

Your Evaluation of the Unit

- To measure the effectiveness of this program, students will be given many opportunities for reflection throughout this process. Anecdotal records will summarize these reflections, driving scaffolded experiences and instruction
- Baseline data in ELA and Mathematics will be determined for each student in the fall and compared to spring scores to track growth of foundational skills
- The numbers of community members signing in at the trail head, as well as their mode of recreation: hiking, biking, skiing, snowshoeing, etc., will be recorded and analyzed over time
- The numbers of community members participating in Quests will be recorded and analyzed over time
- Student Surveys
- Community Surveys
- Web Pages will record numbers of community members accessing service
FINAL CELEBRATION

Our Final Celebration will be incorporated into Next Fall’s Harvest Supper that has become a tradition at our school. The Kiosk will be unveiled in the afternoon, and community members will be invited to take advantage of the art and educational materials that will be available there.

Jesse’s Gym, a local non-profit, will sponsor a “Fun Run along the AT,” a 5K beginning at the gym and running/walking on our newly developed Rail Trail to the finish at Buckfield Jr. Sr. High School where everyone can enjoy the Harvest Supper. The Fun Run along the AT will help us to publicize the Bucks on Track project and create awareness of the kiosk and railroad bed as a multi use trail.
Local Tree Identification
A Community Service Project

Caleb McNaughton
Buckfield Jr. Sr. High School
Buckfield Maine

Purpose
To identify and label trees along our schools nature trail and Buckfield’s discontinued railroad bed, creating an educational experience for students and residents of Buckfield, Hartford and Sumner.

Standards (Maine Learning Results)
A. CLASSIFYING LIFE FORMS
Students will understand that there are similarities within the diversity of all living things.
Students will be able to:

MIDDLE GRADES 5-8
1. Compare systems of classifying organisms including systems used by scientists.
2. Decipher the system for assigning a scientific name to every living thing.
3. Describe some structural and behavioral adaptations that allow organisms to survive in a changing environment.

B. ECOLOGY
Students will understand how living things depend on one another and on non-living aspects of the environment. Students will be able to:

MIDDLE GRADES 5-8
1. Describe in general terms the chemical processes of photosynthesis and respiration.
2. Analyze how the finite resources in an ecosystem limit the types and populations of organisms within it.
3. Describe succession and other ways that ecosystems can change over time.
4. Generate examples of the variety of ways that organisms interact (e.g., competition, predator/prey, parasitism/mutualism).
5. Describe various mechanisms found in the natural world for transporting living and non-living matter and the results of such movements.

J. INQUIRY AND PROBLEM SOLVING
Students will apply inquiry and problem-solving approaches in science and technology. Students will be able to:
MIDDLE GRADES 5-8

1. Make accurate observations using appropriate tools and units of measure.
2. Design and conduct scientific investigations which include controlled experiments and systematic observations. Collect and analyze data, and draw conclusions fairly.
3. Verify and evaluate scientific investigations and use the results in a purposeful way.
4. Compare and contrast the processes of scientific inquiry and the technological method.
5. Explain how personal bias can affect observations.
6. Design, construct, and test a device (invention) that solves a special problem.

L. COMMUNICATION

Students will communicate effectively in the application of science and technology. Students will be able to:

MIDDLE GRADES 5-8

1. Discuss scientific and technological ideas and make conjectures and convincing arguments.
3. Evaluate individual and group communication for clarity, and work to improve communication.
4. Make and use scale drawings, maps, and three-dimensional models to represent real objects, find locations, and describe relationships.
5. Access information at remote sites using telecommunications.
6. Identify and perform roles necessary to accomplish group tasks.

Objectives
After the completion of all activities, students will be able to:
· Make observations to distinguish between a deciduous and a coniferous tree.
· Understand the scientific naming system for living organisms.
· Describe and observe characteristics used to identify trees via a dichotomous key
· Understand the importance of different tree species in Maine, environmental and economical.
· Complete a field study mapping and identifying at least 12 species in a given area.
· Communicate researched information to peers and community members

Preparation
Introduce students to the Maine Forest Services *Forest Trees of Maine* book, both hard copy and PDF version online.

Introduction
Ask the students one way trees play a role in their lives (house, burn wood, toys etc). Stress the importance of Trees in our everyday life. Ask why it may be important to for them to be able to identify trees, possible jobs that require tree ID.

**Leaf Collection Project**
Students should be introduced to the leaf collection project early on as to allow them adequate time to collect leaves before the arrival of fall. After discussing the finer details of the project and rubric handout stress the importance of bringing a leaf press each class as much of their class time in the next several weeks will be outside and provide an excellent opportunity for students to complete the collecting piece of their project. See *Leaf Collection Project* handout.

**Characteristics of a Tree**
Have students write down characteristics of a tree that can be used in identification. Discuss these ways as a class. Add any characteristics that were not covered (bark, leaves, buds, twigs, etc). See *Field Drawing and Observation Activity* handout.

Provide students with the first note taking diagram sheet. Define the differences Between a Deciduous Tree and a Coniferous Tree by drawing the two kinds of trees on the board, have the students tell you what the two kinds are, write these names next to the correct tree. Then have the students brainstorm some differences between the trees (needles vs. broad leaves, cones vs. samaras, etc.), make a list under each tree to compare the differences.

On the board draw & explain alternate vs opposite, simple vs compound, and the 3 popular margins (serrate, toothed and lobed). Have students copy the information onto their note sheets.

Take it outside and view first hand the difference between Deciduous and Coniferous, simple vs compound, alternate vs opposite, and the margins as discussed earlier. Walking from tree to tree have students stop and take tome to recognize the different characteristics of each tree. Stress the importance of begin able to ID the characteristics vs remembering the species itself as once they understand the correct terminology they will be able to ID any species with a Dichotomous key.

**Using a Dichotomous Key**
Explain to the kids that they will be using a special tool called a dichotomous key to identify trees. Ask the students what the prefix “di” (two) and how each question has two choices, similar to a choose your own adventure book. Explain that remembering all the tree species in state is not as important as knowing how to use a Key and understand the correct terminology to be able to ID any tree in the world with the correct Key.

To show the students how the key works, have students work with a partner. Distribute one copy of *Forest Trees of Maine* to each pair of students. Explain to students that while outside they are to behave just as they are to in a classroom, all rules apply. The reason for going outside is because for this particular unit the natural environment is a much better classroom with all the materials needed. Students who do not obey by the classroom rules will not be welcome outside.

Have the students look at the key (pages differ depending upon the publication date). Emphasize that for each number on the key, they have two choices. As they move their eyes to the end of the
lines describing the appropriate choice, there will either be an underlined/bold/italicized tree name (indicating they have identified the species), or a number (which tell them the next set of characteristics to look at). Review the procedure, making sure everyone understands. Next, go through the keys and make sure that the students understand all the words or terms used and or where the Glossary can be found to look up the words.

Provide students with an opportunity to ID using the Tree Key by bringing them outside. Make sure students bring their notes sheet with them to help with comprehension of vocabulary necessary to the use of the provided dichotomous key. Once students are settled begin by selecting a particular tree and give the students ~10 min in pairs to work through the key. (Be ready to clarify and answer many questions). Continue to move from tree to tree for the remainder of class, less time will be needed with each additional species.

The following Summer Key can be found on Pages 12-13 Forest Trees of Maine.
## Summer Key

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leaves are needle, awl, or scale-like, coniferous</td>
<td>2</td>
</tr>
<tr>
<td>1. Leaves are broad and veined, not as above, hardwoods or broad-leaf trees</td>
<td>3</td>
</tr>
<tr>
<td>2. Leaves needle-like</td>
<td>3</td>
</tr>
<tr>
<td>2. Leaves awl- or scale-like, or both</td>
<td>4</td>
</tr>
<tr>
<td>3. Leaves flat, tips blunt, and occur singly</td>
<td>5</td>
</tr>
<tr>
<td>3. Leaves angular in cross section, tips pointed</td>
<td>6</td>
</tr>
<tr>
<td>4. Leaves taper, twigs limber, cones shorter than 1 inch</td>
<td>Eastern Hemlock p. 48</td>
</tr>
<tr>
<td>4. Leaves parallel-sided, twigs stiff, cones over 2 inches and upright</td>
<td>Balsam Fir p. 46</td>
</tr>
<tr>
<td>5. Leaves occur singly, never clustered</td>
<td>Spruce p. 57.45</td>
</tr>
<tr>
<td>5. Leaves occur in clusters, also singly in leaf</td>
<td>5</td>
</tr>
<tr>
<td>6. Leaves in clusters of 2-5 with papery sheath at base</td>
<td>Pine p. 25.56</td>
</tr>
<tr>
<td>6. Leaves in clusters of 8 or more on spurs, papery sheath lacking</td>
<td>Tamarack p. 56</td>
</tr>
<tr>
<td>7. Branchlets with sticky, awl-shaped leaves, cones are berry-like</td>
<td>Juniper/Eastern Redcedar p. 56-58</td>
</tr>
<tr>
<td>7. Branchlets with scale-like leaves, leaves not prickly, cones unberry-like</td>
<td>8</td>
</tr>
<tr>
<td>8. Twigs flat, cones elongated, woody, up to ½ inch, wood slightly aromatic</td>
<td>Northern White Cedar p. 54</td>
</tr>
<tr>
<td>8. Twigs slightly flattened, cones ¼ inch, rounded, leathery, wood strongly aromatic</td>
<td>Atlantic White Cedar p. 52</td>
</tr>
<tr>
<td>9. Leaves opposite, trees only</td>
<td>10</td>
</tr>
<tr>
<td>9. Leaves alternate</td>
<td>11</td>
</tr>
<tr>
<td>10. Leaves simple</td>
<td>12</td>
</tr>
<tr>
<td>10. Leaves compound</td>
<td>13</td>
</tr>
<tr>
<td>11. Leaf margin serrate</td>
<td>Nannyberry p. 156</td>
</tr>
<tr>
<td>11. Leaf margin lobed or entire</td>
<td>12</td>
</tr>
<tr>
<td>12. Leaf margin lobed</td>
<td>Maple p. 70-85</td>
</tr>
<tr>
<td>12. Leaf margin entire</td>
<td>Flowering Dogwood p. 171</td>
</tr>
<tr>
<td>13. Leaves palmate</td>
<td>Horsechestnut p. 158</td>
</tr>
<tr>
<td>13. Leaves palmate</td>
<td>14</td>
</tr>
<tr>
<td>14. 3-5 leaflets, lobed, coarse teeth</td>
<td>Boxelder p. 84</td>
</tr>
<tr>
<td>15. 5-13 leaflets</td>
<td>16</td>
</tr>
<tr>
<td>15. Leaves simple</td>
<td>17</td>
</tr>
<tr>
<td>15. Leaves compound</td>
<td>18</td>
</tr>
<tr>
<td>16. Leaf margin entire, wavy, or lobed</td>
<td>17</td>
</tr>
<tr>
<td>16. Leaf margin toothed or serrate</td>
<td>18</td>
</tr>
<tr>
<td>17. Leaf margin entire</td>
<td>19</td>
</tr>
<tr>
<td>17. Leaf margin wavy or lobed</td>
<td>20</td>
</tr>
<tr>
<td>18. Leaves thin, veins parallel</td>
<td>Alternate Leaf Dogwood p. 172</td>
</tr>
<tr>
<td>18. Leaves thick and leathery, not veined</td>
<td>19</td>
</tr>
<tr>
<td>19. Pith disintegrated, leaves 2-3 inches long</td>
<td>Black Tupelo p. 160</td>
</tr>
<tr>
<td>19. Pith not disintegrated</td>
<td>20</td>
</tr>
<tr>
<td>20. Leaves to 3 inches long</td>
<td>Mountain Laurel p. 165</td>
</tr>
<tr>
<td>20. Leaves 4-8 inches long</td>
<td>Rhododendron p. 170</td>
</tr>
<tr>
<td>21. Leaf margin wavy toward tip, base of leaf one-sided</td>
<td>Witch Hazel p. 167</td>
</tr>
<tr>
<td>21. Leaf margin lobed or wavy throughout</td>
<td>22</td>
</tr>
<tr>
<td>22. Leaf setule hollow and covers bud, numerous main leaf veins radiate from base</td>
<td>American Sycamore p. 158</td>
</tr>
<tr>
<td>22. Leaf setule not hollow, leaves with one main vein</td>
<td>23</td>
</tr>
</tbody>
</table>

*Papery sheath or white pine drops in late August
Larch leaves are borne singly or in varying sheaths.*
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>Twigs angular, pith star-shaped</td>
</tr>
<tr>
<td>23.</td>
<td>Twigs round, spicy odor and taste; leaves 0–3 paired</td>
</tr>
<tr>
<td>24.</td>
<td>Leaf margin singly-toothed or serrated</td>
</tr>
<tr>
<td>25.</td>
<td>Leaf margin doubly serrated</td>
</tr>
<tr>
<td>26.</td>
<td>Teeth hooked, prominent; fruit a bur</td>
</tr>
<tr>
<td>27.</td>
<td>Teeth not hooked, fruit not a bur</td>
</tr>
<tr>
<td>28.</td>
<td>Pith star-shaped; buds blunt, bark brown</td>
</tr>
<tr>
<td>29.</td>
<td>Pith round; buds long, pointed; bark gray</td>
</tr>
<tr>
<td>30.</td>
<td>Leaf base one-sided, leaf coriaceous, pith not symmetrical</td>
</tr>
<tr>
<td>31.</td>
<td>Leaf base even, pith symmetric in cross section</td>
</tr>
<tr>
<td>32.</td>
<td>Leaves long and narrow; petals short without glands; buds with a single, cap-like scale</td>
</tr>
<tr>
<td>33.</td>
<td>Leaves broad, or if narrow with glands on petiole; buds with several scales</td>
</tr>
<tr>
<td>34.</td>
<td>Leaf petiole usually long, flat, except rounded in balsam poplar, pith star-shaped</td>
</tr>
<tr>
<td>35.</td>
<td>Leaf petiole short, not flat, pith round</td>
</tr>
<tr>
<td>36.</td>
<td>Twigs slender when broken; glands on petiole</td>
</tr>
<tr>
<td>37.</td>
<td>Twigs odorless, leaf petiole glandless; buds slender, twisted at tip, silky within</td>
</tr>
<tr>
<td>38.</td>
<td>Leaf base one-sided, surface sandpaper</td>
</tr>
<tr>
<td>39.</td>
<td>Leaf base even, surface smooth</td>
</tr>
<tr>
<td>40.</td>
<td>Branches with thorns 1 inch or more long</td>
</tr>
<tr>
<td>41.</td>
<td>Branches without thorns</td>
</tr>
<tr>
<td>42.</td>
<td>Pith triangular, buds stalked, smooth</td>
</tr>
<tr>
<td>43.</td>
<td>Pith not triangular, bud scales overlapping</td>
</tr>
<tr>
<td>44.</td>
<td>Leaves hairy on both surfaces; pith green</td>
</tr>
<tr>
<td>45.</td>
<td>Leaves hairy only on one surface; bark smooth</td>
</tr>
<tr>
<td>46.</td>
<td>Stem flattened, bark smooth, gun-metal gray</td>
</tr>
<tr>
<td>47.</td>
<td>Stem not flattened, bark white, yellow, or red to dark brown</td>
</tr>
<tr>
<td>48.</td>
<td>Leaflets with margin entire</td>
</tr>
<tr>
<td>49.</td>
<td>Leaflets with serrated margin</td>
</tr>
<tr>
<td>50.</td>
<td>Twigs with paired spines, 7–10 leaflets</td>
</tr>
<tr>
<td>51.</td>
<td>Twigs spineless. 7–13 leaflets; leaflets poisonous</td>
</tr>
<tr>
<td>52.</td>
<td>Leaflets 1/2 inch long with fine, rounded teeth</td>
</tr>
<tr>
<td>53.</td>
<td>Leaflets over 1 inch long</td>
</tr>
<tr>
<td>54.</td>
<td>Pith chambered or diaphragmmed</td>
</tr>
<tr>
<td>55.</td>
<td>Pith solid</td>
</tr>
<tr>
<td>56.</td>
<td>5–7 leaflets; pith star-shaped</td>
</tr>
<tr>
<td>57.</td>
<td>11–33 leaflets</td>
</tr>
<tr>
<td>58.</td>
<td>Twigs smooth, 11–17 leaflets, buds large</td>
</tr>
<tr>
<td>59.</td>
<td>Twigs densely hairy, 11–33 leaflets, buds small</td>
</tr>
</tbody>
</table>

** See also Poison Ivy, page 6

** SUMMER KEY **
Significant Vocabulary *Forest Trees of Maine* pg. 14-17:


Hardwood Term used to describe all broad-leaved trees. These tree species are typically deciduous, retaining their leaves only one growing season. Despite the term, some “hardwoods,” such as the aspens, have wood that is relatively soft.

Leaf Stalk (petiole) and blade of hardwoods; needles and scales of conifers. Leaflets Smaller leaf units which together form a compound leaf.

Lobed [leaf ] With large, rounded or pointed projections along the leaf margin. Projection formed by indentations of the leaf margin.

Margin [leaf ] The edge, perimeter, or portion forming the outline.


Lobed [leaf ] With large, rounded or pointed projections along the leaf margin. Projection formed by indentations of the leaf margin.

Obovate Egg-shaped in outline; broadest above the middle.

Opposite [arrangement of leaves or buds] Directly across from one another on a common axis, or twig.

Palmate [arrangement of veins] Compound, with leaflets originating at the same point on a common stalk. Veins originating at a common point at base of leaf blade.

Pinnate [arrangement of veins] Compound, with leaflets along a common rachis or stalk. Veins originating along a common mid-vein.

Scales [bud] Small, modified leaves on the outer surface of buds. Scales [cone] The basic structures that enclose the seeds.

Scale-like [leaf ] Small, generally overlapping, triangular-shaped leaves of some conifers. Seed That part of the fruit capable of germinating and producing a new plant.


Opposite [arrangement of leaves or buds] Directly across from one another on a common axis, or twig.

Palmately Compound

Pinnate Veins


Softwood Term used to describe all needle-leaved trees. These species are typically evergreen, retaining their leaves through two or more growing seasons. Larches, including tamarack, are exceptions, being deciduous “softwoods.”

Toothed [leaf ] With moderate projections along the margin.

Tree A woody plant, generally single-stemmed, that reaches a height of more than 15 feet at maturity and a diameter of 3 inches or more measured at 4 1/2 feet above the ground.

Wavy [leaf margin] Undulating but smooth; not toothed nor lobed.

Terminal buds – Buds that are located at the end of the branch.

See *Tree Key Vocabulary Sheet* handout.

**Tree Hold’em Poker**
This is a fun, interactive activity designed to reinforce tree identification skills. See handout.

Field Trip
Setting up a field trip to a local business such as a paper mill, sawmill, log yard etc. offers students a first hand account of the importance that trees play in the local culture and economy. After completing this unit we visit Verso Paper in Jay, ME. Students are walked through the paper making process from raw timber to the finished product. They see first hand the significance of Maine’s natural resources, from the products they produce to the jobs they provide. See Permission Slip

Reciprocal Teaching Activity
The reciprocal teaching activity is an opportunity for students to specialize their knowledge surrounding one particular species. While following the handout students will research all aspects, environmental, social and economic of a particular tree species and prepare a presentation that will be presented to their peers. This lesson will establish an in-depth understanding of a particular species and provide students with the knowledge to complete the Tree Labeling Project see attached handout.

Trail Head and Tree Labeling Project
Students will begin the activity by selecting a particular tree species to label along the trail. As a class you should hike the trail / rail-bed and select a tree of their species to affix the sign.

Signs will be fastened to the tree using parachute chord, making sure not to harm the tree or devalue the wood in anyway.

Students will then create a placard with the following information
- Common name of the tree will be routered / carved into a pine board and protected with varnish. The use of a router not required and students can opt to paint the signs. Signs must be protected with several coats of a clear finish in order to withstand Maine’s climate.
- Students will then create a brochure that features all trees that are identified along the trail. Brochures will be available at the trail head kiosk along with Tree Identification keys should any visitors come across unidentified species. Brochures will include the following information about each species:

Example:

**Species Common Name:** American Elm
**Species Scientific Name:** *Ulmus americana* (note Italicized text)
**Location Found:** Edge of Field
Coniferous / Deciduous
Leaf Arrangement: Simple / Compound
Alternate / Opposite

Leaf Shape: Long Narrow / Short Broad

Leaf Margin: serrate, doubly serrate, lobed, smooth
Even / Uneven Base
Long / Short Petiole

Leaf Size: 3-6 inches

Other Leaf Characteristics: Leaves have uneven bases

Tree Characteristics / Facts: Tree is fast growing reaching 60-70 feet tall. In 1930, Dutch elm disease reached the United States in a shipment of elm logs from Europe. The disease quickly spread across the continent, killing millions of American elms, the remaining elms continue to die at alarming rates.

Uses: The wood is rather coarse-grained, hard, heavy, strong, tough and hard to split. It is used for plywood, flooring, railroad ties, hoops, farm lumber and pulp.

History
History and Purpose of the Maine Forest Service: Forest Trees of Maine pg. 2
Then and Now: Forest Trees of Maine pg. 7

Precautions (Ticks, Poison Ivy)

Poison Ivy
Several species of poisonous plants can be found in the Maine woods. The most common being Poison Ivy (Toxicodendron radicans). Staff and students should be made away of the potential severe dermatitis that can occur should contact with the plant occur and well as proper identification of each species.

Ticks
Ticks are becoming an increased problem here in the state. There are approximately 13 different species one of which carry Lyme disease. Students should be informed of how to ID and remove Deer ticks (Ixodes scapularis). Preventative measure should also be taken to avoid initial contact with all tick species.
See Forest Trees of Maine pg 9.
• Tuck your pant legs into your socks and your shirt into your pants.
• Wear light-colored clothing so ticks can be seen more easily.
• Use a repellent containing DEET according the label directions. Pay special attention to treating shoes, socks and pant legs. Use caution in applying high-concentration products to the skin, especially on children.
• To protect pets, consult your veterinarian about tick repellents.
• Inspect yourself, your clothing, your children, your companion and your pets when you get in from the field. Ticks often attach to body folds, behind the ears and in the hair. If possible, shower and wash clothes immediately. Heat drying is effective in killing ticks.

Activity Handouts:
Field Drawing and Observation Activity
Leaf Collection Project & Rubric
Tree ID Quiz 1 & Modified Version
Tree Key Vocabulary Sheet
Leaf Collection Template
Maine Trees Word Search
Gymnosperms and Angiosperms Reading & Venn Diagram
Alike But Different Poem and Table
Which Wood Burns Best Poem by C.P. Akers
Trees Fill in the Blank
Field Trip Permission Slip
Tree Hold’em Poker
Reciprocal Teaching Activity
Tree ID test
Essential Questions (Unit Objectives)

1. How can community measure their distance of their recreational activity of choice?

2. How can we educate the community on what the AT is and how large it is?

* State Standards:

Ratios and Proportional Relationships 7.RP
Analyze proportional relationships and use them to solve real-world and mathematical problems.

1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.

2. Recognize and represent proportional relationships between quantities.
   a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

Geometry 7.G
Draw, construct, and describe geometrical figures and describe the relationships between them.

1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

* Models & Examples

• Students can visit http://www.umpi.maine.edu/info/nmms/solar/ to see a sample Solar System model that was created along Route 1 from Presque Isle to Houlton, Maine.

* Resources
Math text (unit rates & scale drawings/proportions)
Need materials for creating mile markers & AT scale model

* Reflection

Constant conversation! What works? What doesn't? What can we do to improve it?

* Student Assessment

Informally, students' scores will be looked at in comparison to fall scores based on foundational skills.

* Service Project

Students will create and put out quarter mile markers along the railroad trail. They will be available for community members to use for measuring distance of their own recreational activities.
Students will create an Appalachian Trail model along the railroad trail. This will serve as an education tool for informing community members about the AT.
Big Idea:
What measurable values does the trail have with it’s relationship to trees in the areas of “lumber value”, Aesthetics value” and “biodiversity”.

Objectives:
* Students will use the pythagorean theorem to find the distance between two points with a grid on the railroad trail.

* Students will find the tree’s height by measuring distance of the base and angles.
* Students will use formulas to find volume of trees
* Students will produce a values chart and report

State Standards:
Geometry - 8.G section 7,8,9
7. Explain a proof of the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
9. Know the formulas for volume of cones and cylinders and use then to solve real-world and mathematical problems.

Essential Questions

Can we place value on a trail? (Trees and Trail)
Why does informing the public about the value of a trail help the community?

Activity:

Lesson #1
Students will research trees that are local to Maine and find out what lumber prices correspond to each tree. Todd Caldwell, a forest consultant, will come in and talk about lumber values and other important qualities to look for when grading a forest. Students will predict which trees may have a higher value and why.

Tree type        Grade       Price per foot
Pine
Oak
Spruce
Poplar
Birch
Cherry
Cedar
Maple

Students will hand in a report that has an introduction that talks about value and what it means and their predictions. The body will be a graph of ten species of trees they would
find out on the trail and shows the price relationship to the trees’ lumber value. The conclusion will summarize the students findings and an explanation of why some trees values are higher than others.

**Lesson #2**
Students will research biodiversity. Students will think-pair-share their findings. We will brainstorm some of the different animals we may find on the trail. From this list students will choose an animal to research and find the area they need to support their existence. Students will refresh their understanding of volume of cones and cylinders. They will be asked later to find volume of trees and place a lumber value from this. Students will write a paragraph on their animal and present their findings to the class.

**Lesson #3**
Students will write down what they think the word aesthetics means. Think-pair-share answers. As a class we will define aesthetics and discuss what different values we could grade our trees on. In groups students will create a survey and collect the data on specific criteria on the aesthetics of trees. We will pull the data together and create a common scoring rubric for the aesthetics of trees on the trail.

**Lesson # 4**
Students will review the pythagorean theorem in class. The class will go outside next to the school and practice using a grid and mapping different locations on the map. They will be given certain distances from points and they will need to calculate the missing distance on the map. For example they may have the distance from the exist door to the water tower, the distance from the water tower to the garden sign but not know the distance from the garden sign to the exit door. Students will hand in a map they created which is correctly labeled with calculates shown and a conclusion of their findings. Students will also hand in two different calculations of heights of trees by using base angle relationship.

**Lesson # 5**
Students will chose one of the three areas to work in (Biodiversity, lumber value, or tree aesthetics). We will pick a section of the trail that we will work on and collect our data. We will spend the next 2-3 writing workshops collecting data on the trail. Groups will have compiled their data on worksheets and report their findings on a graph which will consist of all the important qualities of a table graph. We will make one final graph after comparing all of the good qualities of everyones graphs.

**Lesson #6 Final Assessment**
Students will take this data and complete an individual report with an introduction, body and conclusion.
Intro- Students will talk about value and how you can measure it.
Body- Students will explain the three main areas of study.
Conclusion- How has the value of the trail changed in your eyes since we started the project.
Also the students must hand in a grid map of two points on the trail and have to calculate the missing distance.

**Rubric for Number Values on Trail**
<table>
<thead>
<tr>
<th>Category</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Student shows some understanding of aesthetics, carrying capacity and lumber value</td>
<td>Student can convey a good understanding of aesthetics, carrying capacity and lumber value on the trail.</td>
<td>Student can convey a good understanding of aesthetics, carrying capacity and lumber value on the trail. With examples that support statements.</td>
</tr>
<tr>
<td>Grid Map</td>
<td>Has two or more errors in calculations</td>
<td>Has no more than one error in calculations and shows all work</td>
<td>Has no errors in calculations and shows an extra example of how you could find distance between points</td>
</tr>
<tr>
<td>Shows use of Pythagorean Theorem and volume calculations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization/grammar/punctuation</td>
<td>Hard to read and understand. More than three errors in punctuation and grammar</td>
<td>Easy to read and understand. No more than two errors in grammar and punctuation.</td>
<td>Report flows in all areas and has no errors. The report shows sign of growth in students understanding of value and explains how this may impact them in other areas.</td>
</tr>
</tbody>
</table>

**Students meet the standard if they score a 3 or above.**

**Community Connection:**
Speaker - Todd Caldwell, Forest Consultant  
- A.T. Club member come in from Maine

Final product - Numbers value map posted in the kiosk to communicate with the public.

**Reflection**

**Beginning** - Students will reflect at the beginning of each lesson. We will use think-pair-share and group discussions.

**Middle** - Students will share their data they collect and reflect on the problems, successes and outcomes they have.

**End** - Students will talk about how we can distribute our data. What does the data tell us? How has this project changed your view on placing value on natural resources?
Introduce the idea by having students complete a virtual QUEST at
www.vitalcommunities.org or www.wchoolsgogreen.org

LESSON 1 - Introducing the Idea of Village Settlements

Essential Questions
• What makes a village?
• Why do villages grow in certain places?

Standards
• Traditional and Social Histories: Demonstrate an understanding of the relationships among community leaders, important events, and people’s lives
• Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage

Assessments
• Product: Students produce clearly colored maps, showing they recognize settlements, school districts, and key geologic and cultural features.
  Tool/reference point: teacher’s map/answer key
• Performance: Their concluding discussion reflects an accurate/reasonable interpretation of the data. Tool/reference point: checklist

Lessons
• Have students work together to make a map of Buckfield, focusing on topographical features.
• Use the map to foster a conversation that explores the following questions:
  1. Where do you think the first people settled? Why?
  2. When settling unsettled areas, why might a village “grow” in a certain place?
  3. What might settlers look for in terms of geography and location when choosing a home site?
  4. What architectural or human made elements and natural resources does it take to make a village? Generate a list of components.
• Research Activity: Distribute historic maps. Have students locate watercourses, geological features, old roads, places where buildings are grouped, and community structures like churches, cemeteries, and schoolhouses, using a color code.
• Help students to draw conclusions. Do these clusters actually relate to natural features? How so? What elements are common to most clusters? Why are there so many settlements and schools in just one town? Why is this no longer the case?

**Necessary Materials**
- magnifying glasses
- colored pencils
- photocopies of old maps
- contemporary maps for comparison

**Reflection**
Use Graffiti to encourage students to reflect.
1. Prepare the room by placing large pieces of paper around the room with the following statements written on them: Is it important to study the history of our community? Can you learn anything significant by using comparing old and new maps of our town? What? Why do you want to participate in this place-based service learning project? Do you believe that you can make a positive difference in your community?
2. Have students circulate around the classroom to respond to the prompts. They can be written or drawn, and students should be encouraged to read others’ responses as they visit each one.
3. After 10 minutes or so, the class should reconvene to discuss what’s been recorded.

**LESSON 2 - Investigating the Village**

**Essential Questions**
- What are the key elements that make up a settlement?
- How can we find clues that tell us about the past?
- How has this (and our) community changed over time?

**Standards**
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• Geographical Knowledge, Sense of Place: Describe such patterns as population distribution, land use patterns, climate, transportation networks in Maine, the U.S., and the world

• Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world

• Understanding Place: Demonstrate knowledge and history of local environment (soils, forests, watershed) and how the community relies on its environment to meet its needs (nutritional, economic, emotional)

• Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments

• Product: Students have colored and labeled the old maps clearly and accurately; the overlays are likewise complete and neat. Tool/reference point: compare with teacher’s map/answer key

• Short Answer: Students hand in journal entries about the observations they made in the field. Tool/reference point: checklist of key and main points

Lessons

• Compare maps and Discuss the following questions:
  How many students attempted to find our school?
  Was it there? Where were the schools?
  How far was the school from everyone’s homes? (time & distance)
  What are the essential buildings of this village?
  What is different about Buckfield today?

• Research Activity: Have a historian lead us on a tour of Buckfield Village, providing interpretation. Students make notes on their overlay what remains and what is not on their original map. Historians in the group ask questions and take notes.

• Help students to draw conclusions. Share maps and information gathered, using the ensuing discussion to revisit the last guiding questions: How do your findings help us to understand what life was like then and now? What do the changes in building use and land use suggest about what was important many years ago that is not as important today?
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• Homework- Have students attempt to find out when their own homes were built. Can they find out who lived in their homes in the past, as well as the professions of the former occupants.

Necessary Materials
• Enlarged detail maps
• Acetate overlays or tracing paper
• Paper & pen
• large Clipboards
• Colored pens

Reflection
Use Head + Heart + Hands to reflect.
1. Use the think, pair, share method to have students answer each of these 3 questions: Head- What have you learned about Buckfield Village? Heart- How do you feel about what you have learned or done in our project? Hands- Describe what you have done as a result of this project. How might you change your behavior in the future now that you have done this project?
2. Discuss by having students share their responses
3. Use the rubric to score their responses and the discussion

LESSON 3- Drawing the Village and Landscape

Essential Questions
• What are the key components of our settlement?
• How have these buildings changed over time? In structure? In terms of use? Why might they have changed?

Standards
• Artistic Intent: Convey artistic intent from creator to viewer or listener; critique one’s own and others’ work in progress, both individually and in groups, to improve intent.
• Sense of Place: Apply knowledge of local environment through active participation in local environmental projects.
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- Participation in Group Discussion: Frame and deliver messages that take into account prior knowledge, beliefs, experiences, as well as those of other group members; roles and relationships within the group; and the group's purpose, goals, and norms.

Assessments

- Product: Students have followed directions and have carefully executed, detailed drawings to show for it.
- Performance: Students have offered thoughtful feedback to their classmates on their work.

Follow-up

* Students should make final versions of their respective drawing(s) using black ink, which will allow the drawings to be photocopied or scanned to become part of the final Quest treasure map. (This could be homework.)

Lessons

- Students, select a number of significant sites to interpret. They take a digital photograph and create elevation and detailed drawings of the sites. Remind them of their purpose through guiding questions:
  - What were some of the community buildings on the map that are no longer present? Did we find evidence of them on site? Have any structures moved?
  - What interesting buildings/sites still remain? How has their use changed? Which sites/buildings would best fit into your Quest, the purpose of which is to show how the village has both changed and remained the same over the years?
- Students, working in small teams, focus on a site. Each group should photograph and produce one detailed drawing of the complete building, and at least one characteristic detail (enlargement) from that view (for example, a side view of a cemetery entrance and a close-up view of a single gravestone).
- In class critique:
  - Display drawings randomly. See if students can locate the detail drawing on the elevation drawing connecting the two. This can provide...
opportunity to discuss architectural history, teaching students to “read” the age.
Are the drawings detailed enough to be recognized? Do they need more? Photographs may be used to refine their drawings.

**Necessary Materials**
- digital cameras
- sketch boards
- pencils & erasers

**Reflection**
Use What? So What? Now What? to reflect on the lesson
1. Everyone in the group contributes a descriptive sentence or word about what happened.
2. Everyone in the group completes the short statement, “I’m glad that I…”
3. Everyone in the group answers the question, “If a friend asked you why being involved in the community is important, what would you say?”
4. Use the rubric to score student responses

**LESSON 4 - Primary Source Investigations at Municipal Office, Local Historical Society, and Library**

**Essential Questions**
- Where (and from whom) can we learn more about the history of our community?
- How has our community changed over time? Why?
- Are there key persons, places, and events linked to these changes?
- How are these changes related to changes in regional or American life-- or changes in technology?

**Standards**
- Being a Historian: Collect and use primary resources while creating original historical interpretations.
- Understanding Place: Demonstrate knowledge of past and present community heritage (e.g., traditions, livelihoods, customs, stories, changing demographics, or land use) and recognize ways in which this heritage influences their lives.
• Listen to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
• Short Answer: Students submit their answers to target questions asked at each station
• Product: Students submit their questions.
• Performance: Students share their “nugget” or “anecdote” with the rest of the class

Lessons
• PRE REFLECTION: Explain that pre-reflecting will allow them to see what they learn over the course of the lesson. Briefly introduce the lessons and than have students write: What they thin they will learn, what they want to learn, and what they are excited or anxious about learning. Collect and keep their responses.
• To model how students can use town records for research, begin by having your students review an online current or recent town report. This will help them to see how much a single document can tell about a town in a particular time.
• Introduce them to the types of info housed in the local historical society, town offices, or library. Explain how they should take great care with the documents.
• Arrange for students to meet with members of the historical society, Town Clerks at the Town Office, and the Librarian at Zadoc Long Free Library.
• Research Activity: Using the resources at each of the three locations have students focus on changes in structures, changes in use, changes in population, as well as the residents, activities, and businesses that flourished in that section of town. Students should also come up with two additional things:
  A question of their own design, whose answer can be found using one of the source materials
  One other nugget of information they find interesting, perhaps because of its anecdotal quality or its relationship to the people, places or events connected with the Quest.
• Report Out: Students share their own questions and bits of information from the preceding activity.
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Necessary Materials
• primary and secondary historical sources
• pencils
• clipboards
• lined paper

Reflection
1. Allow students some time to look over their Pre-Reflections, and reflect on what they now know after completing the lesson. Have students list what they now know.
2. Use the assessment rubric to assess students’ growth.

LESSON 5- Oral History Interviews

Essential Questions
• Who are the elders of our community?
• How can we learn from them?
• What kinds of things can we learn from them?

Standards
• History, Understanding Place, Being a Historian: Use oral history methods to understand the ways in which people assign meaning to their own historical experiences.
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage
• Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
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• Product: Completed question(s) and follow-up questions. Short write-up summarizing answer to the question (and/or one favorite anecdote or story from the session).

Lessons
• Arrange for 4-5 interviews and group students. The interviews can happen at school, but offsite will be more engaging. *Intergenerational photos!
• Review with students the concept of oral history and consider its validity as a historical source, as well as its limitations, due to the “story” component and the inherent perspective of the teller. Be sure to discuss the difference between a first-person account and a retold story, which can be embellished or romanticized. Also discuss Point of View.
• Prior to the storytelling, students should prepare interview questions. Discuss content questions that prompt more information rather than yes/no questions. Prepare students to develop possible follow-up questions.
• After some individual work, group students so that they can get feedback from one another. Questions should be of some quality as well as be appropriate. Encourage those that are informational and those that encourage anecdotal reminiscences.
• Students do the interview or participate in the storytelling session.
• Report Out: Students can work as a group to write up the interview and by ready to share information or anecdotes that would be of interest to the group. Storytellers may be videotaped if permission is granted, and this tape can be a helpful during the write up.
• Students begin to generate a list of ideas regarding the information they want to include in their teaching clues

Necessary Materials
• laptop or video camera
• clipboard
• pencils and paper

LESSON 6- Writing the Quest: Clues that Teach and Move

Essential Questions
• What are the key stories of this place?
• How can we tell them concisely -- and in verse?
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• How do we lead visitors on a playful guided tour of our adopted community?

Standards
• Writing: Draft, revise, edit, and critique written products so that final drafts are appropriate in terms of the following purposes: purpose, organization, details, and voice or tone.
• Continuity and Change: Demonstrate an understanding that perceptions of change are based on personal experiences, historical and social conditions, and the implications of change for the future.
• Understanding Place: Explore the interrelationship between the local environment and local community heritage.

Assessments
• Product: Students/groups have produced at least a draft of one or two appropriate couplets, either a clue that teaches, one that moves, or both

Lessons
• Before beginning to write clues, the intent of the Quest must be clear to all.
• Lead a discussion using the following guiding questions:
  What are the unique or interesting visual and historical elements that you might want to include in your clues?
  Where should the quest begin and end?
  Work as a class to establish the route and the order of sites to be visited, and the location of the treasure box. Discuss the attributes of good starting places (easy to find, parking, safe) and good hiding spots (secure, off the beaten path)
• Review clues that move you through space and the clues that teach
• Distinguish between a good clue, a better clue, and the best clue. A “good” clue will work to move a visitor in the right direction but not engage the sensory experience of the surroundings.
  good- “Go twenty paces and turn right.”
  better- “With a flashing light in sight turn right.”
  best- “The ol’ Vermont sugar maker says, ‘Wind from the east, sap runs the least. Wind from the west, sap runs the best.’ It’s a bad sap day so turn that way.”
• Use photocopies of students drawings, lay out a map of your village on a large table, a bulletin board, or the floor. Add roads, trails and watercourses using masking tape and yarn. Use string or scotch tape to lay out the proposed route
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of the Quest. Discuss with the students the need for both clues that teach about the buildings or sites and clues that will move the Questers from one site to the next.

• Designate to each group or pair the responsibility for producing a specific “moving” clue and a “teaching” clue, until the entire route is planned.
• Inform students of the formatting requirements for their clues.
  EXAMPLE: At least two couplets having nine to twelve syllable lines
  Expect some struggling, and remember the “best” ideas don’t occur first
• Report Out: Volunteers read what they have, and give and receive feedback.

Necessary Materials
• bulletin board
• string, tape
• pencils & paper

Reflection
Use 3-Step Interviews to Reflect.
1. Begin by reminding the whole class about effective follow-up questions in an interview. Post the following questions on the board: Can you explain more about that? What do you mean by that? Can you give an example? Why would that be interesting? Why do you think that? What might happen next?
2. In triplets, participant A interview participant B, participant C records responses. Rotate through until everyone has played a role.
3. The interviewers asks, “How do you feel about what you’ve done so far in this project? How might you behave differently in the future because of engaging in this service learning project?”
4. Analyze results/Group Reflect. After the interviews are completed, small groups pull out common themes that ran across responses and share back with the whole group. Write responses on poster paper to capture the sentiments of the overall group. Use the poster paper as a prompt to further discuss what people learned and got out of the service learning project.
5. Use the assessment rubric to assess student learning.

LESSON 7- Pulling It All Together

Essential Questions
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• What do we still need to do in order to have a finished map, polished clues, a completed treasure box?

Standards
• Design and Production: Design and create media products that successfully communicate
• Understanding Place: Explore and participate in sustaining or building on uniques and valued elements of past and present community heritage

Assessments
• Product: Students have completed their part of the Quest. Tool/reference point: task-specific rubric attached.

Lessons
• Show a sample of a finished quest to encourage discussion about design, layout, graphics, and so on. Tell them that this is the time for them to finalize their quest. Set a deadline for completion of tasks and develop small teams:
  • Cartographers: Photocopy student drawings, reduce the copies, and then place them all together onto a single map
  • Artists: Design the compass rose, indicating the directions. The best compass rose will be based on some quality of your Quest site, for example, the town logo, or distinct church steeple.
  • Editors: Type, proofread, and align the clues into a single text.
  • Designers: Organize and lay out all of the Quest components into a single publication.
  • Box makers: Make and/or decorate the treasure box.
  • Box hiders: Locate an appropriate location at the end site for hiding the box and create any needed modifications, such as Installing a false birdhouse or a hidden shelf.
  • Stamp makers: Design and carve a unique stamp
  • Poets: Make up introductory, closing, and fill-in rhymes, and ensure that clues hook together nicely.

Necessary Materials
• pencil & paper
• glue sticks
• computers
• compass
• box making material
• stamp making material

**Reflection**
Use Concept Mapping to Reflect
1. Explain to students what concept maps are (see examples). Explain that **nodes** are concepts, **lines** are relationships between concepts, **arrowheads** indicate direction, **Linking words** on the lines describe the nature of the relationship.
2. Do a sample Concept Map as a group (Railroads).
3. Now have students build their own concept map for Bucks on Track.
4. Allow students time to compare their new maps with their old maps to see the changes and progress.
5. Use the concept map assessment to score students' growth.

**LESSON 8 - Testing the Quest**

Once you have a complete treasure box, a map, and a polished set of clues, you are ready for testing. Get a volunteer -- another class, a group of parents, or a group of seniors -- to "test drive" your Quest and make sure it works. After testing, incorporate all recommended changes and then make your final draft as the final lesson. When you finish, throw a party to acknowledge the students' hard work and generous offering to the community.

**Taking It Public**

Share the Quest with the broader community at our annual Harvest Supper. Be sure to send every student home with at least one copy of the completed Quest. Also submit the completed Quest to the local papers and to the local Q.

**One of three Quests, also including:**

**BUCKFIELD RAILROAD QUEST**
**US VETERANS @ DAMON CEMETERY QUEST**
Works Cited


BUCKFIELD RAILROAD QUEST
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Introduce the idea by having students complete a virtual QUEST at
www.vitalcommunities.org or www.wchoolsogogreen.org

LESSON 1 - Introducing the Idea of the Railroad in Maine, specifically in Buckfield

Essential Questions
• What is the significance of the Railroad on our community?
• Why are railroads built in certain places?

Standards
• Traditional and Social Histories: Demonstrate an understanding of the relationships among communities, community leaders, important events, and people’s lives
• Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage

Assessments
• Product: Students produce clearly colored maps, showing they recognize settlements, schools, and key geologic and cultural features. Tool/reference point: teacher’s map/answer key
• Performance: Their concluding discussion reflects an accurate/reasonable interpretation of the data. Tool/reference point: checklist

Lessons
• Have each student create a concept map of Bucks on Track. Save their maps.
• Have students work together to make a map of Buckfield, including the RR
• Use the maps to facilitate conversation that explores the following questions:
  1. Why was the railroad built in Buckfield? Where did it come from and where did it go?
  2. How might a railway link settlements, and for what reasons?
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3. What might developers look for in terms of geography and location when choosing a railroad site?
4. What architectural, human made elements, and natural resources contribute to the site of the railroad? Generate a list of components.

• Research Activity: Distribute historic maps of Maine. Have students locate watercourses, geological features, and old railroads. Distribute historic maps of Buckfield and find where buildings are grouped, and community structures like churches, cemeteries, schoolhouses, and train station. Use a color code to make notes.
• Help students to draw conclusions. Why does the railroad run through our community the way it does? Why was there a station in Buckfield? What communities were linked by the rail way? Why? Why is this no longer the case?

Necessary Materials
• magnifying glasses
• colored pencils
• photocopies of old maps
• contemporary maps for comparison

Reflection
Use Graffiti to encourage students to reflect.
1. Prepare the room by placing large pieces of paper around the room with the following statements written on them: Is it important to study the history of our community? Can you learn anything significant by using comparing old and new maps of our town? What? Why do you want to participate in this place-based service learning project? Do you believe that you can make a positive difference in your community?
2. Have students circulate around the classroom to respond to the prompts. They can be written or drawn, and students should be encouraged to read others’ responses as they visit each one.
3. After 10 minutes or so, the class should reconvene to discuss what’s been recorded.

LESSON 2- Investigating Our Railroad Bed from S. Pond to Sumner

 Essential Questions
• What are the key elements that make up the railroad?
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• How can we find clues that tell us about the past?
• How has this (and our) community changed over time?

Standards
• Geographical Knowledge, Sense of Place: Describe such patterns as population distribution, land use patterns, climate, transportation networks in Maine, the U.S., and the world
• Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world
• Understanding Place: Demonstrate knowledge and history of local environment (soils, forests, watershed) and how the community relies on its environment to meet its needs (nutritional, economic, emotional)
• Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
• Product: Students have colored and labeled the old maps clearly and accurately; the overlays are likewise complete and neat. Tool/reference point: compare with teacher’s map/answer key
• Short Answer: Students hand in journal entries about the observations they made in the field. Tool/reference point: checklist of key and main points

Lessons
• Compare maps and Discuss the following questions:
  How far was the railroad from everyone’s homes?
  Where was the station in regard to everyone’s homes? (time & distance)
  What are the essential buildings of the village, and where are they in respect to the railroad?
  What is different about Buckfield’s railroad today?
• Research Activity: Have a historian lead us on a tour of where the railroad bed transects Buckfield Village, providing interpretation. Students make notes on their overlay what remains and what is not on their original map. Historians in the group ask questions and take notes.
• Help students to draw conclusions. Share maps and information gathered, using the ensuing discussion to revisit the last guiding questions: How do your findings
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help us to understand what life was like then and now? What do the changes in building use and land use suggest about what was important many years ago that is not as important today?

• Homework- Have students attempt to find a family member, family friend, or neighbor who remembers the working railway, and can relate a memory about it.

    Necessary Materials
    • Enlarged detail maps
    • Acetate overlays or tracing paper
    • Paper & pen
    • large Clipboards
    • Colored pens

    Reflection
    Use Head + Heart + Hands to reflect.
    1. Use the think, pair, share method to have students answer each of these 3 questions: Head- What have you learned about Buckfield's Railroad Bed? Heart- How do you feel about what you have learned or done in our project? Hands- Describe what you have done as a result of this project. How might you change your behavior in the future now that you have done this project?
    2. Discuss by having students share their responses
    3. Use the rubric to score their responses and the discussion

LESSON 3- Drawing the Railroad Bed and Landscape

    Essential Questions
    • What are the key components of the railroad bed?
    • How has the railroad changed over time? In structure? In terms of use? Why might it have changed?

    Standards
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• Artistic Intent: Convey artistic intent from creator to viewer or listener; critique one’s own and others’ work in progress, both individually and in groups, to improve intent.

• Sense of Place: Apply knowledge of local environment through active participation in local environmental projects.

• Participation in Group Discussion: Frame and deliver messages that take into account prior knowledge, beliefs, experiences, as well as those of other group members; roles and relationships within the group; and the group’s purpose, goals, and norms.

Assessments

• Product: Students have followed directions and have carefully executed, detailed drawings to show for it.

• Performance: Students have offered thoughtful feedback to their classmates on their work.

Follow-up

* Students should make final versions of their respective drawing(s) using black ink, which will allow the drawings to be photocopied or scanned to become part of the final Quest treasure map. (This could be homework.)

Lessons

• Students, select a number of significant sites to interpret (S. Pond, brick trestle crossing Nezinscot River, the trail-head at High St.). They take digital photographs and create elevation and detailed drawings of the sites. Remind them of their purpose through guiding questions:
  What were some of the community buildings along the railroad on the map that are no longer present? Did we find evidence of them on site?
  Have any structures moved?
  What interesting buildings/sites still remain along the railroad bed? How has their use changed?
  Which sites/buildings would best fit into your Quest, the purpose of which is to show how the village has both changed and remained the same over the years?

• Students, working in small teams, focus on a particular site along the railroad bed. Each group should photograph and produce one detailed drawing of the complete site, and at least one characteristic detail (enlargement) from that view.
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(for example, a side view of a cemetery entrance and a close-up view of a single gravestone).

• In class critique:
  Display drawings randomly. See if students can locate the detail drawing on the elevation drawing connecting the two. This can provide opportunity to discuss architectural history, teaching students to “read” the age.
  Are the drawings detailed enough to be recognized? Do they need more? Photographs may be used to refine their drawings.

Necessary Materials
• digital cameras
• sketch boards
• pencils & erasers

Reflection
Use What? So What? Now What? to reflect on the lesson
1. Everyone in the group contributes a descriptive sentence or word about what happened.
2. Everyone in the group completes the short statement, “I’m glad that I…”
3. Everyone in the group answers the question, “If a friend asked you why being involved in the community is important, what would you say?”
4. Use the rubric to score student responses

LESSON 4- Primary Source Investigations at Municipal Office, Local Historical Society, and Library

Essential Questions
• Where (and from whom) can we learn more about the history of the railroad in our community?
• How has the railroad in our community changed over time? Why?
• Are there key persons, places, and events linked to these changes?
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• How are these changes related to changes in regional or American life-- or changes in technology or economy?

Standards
• Being a Historian: Collect and use primary resources while creating original historical interpretations.
• Understanding Place: Demonstrate knowledge of past and present community heritage (e.g., traditions, livelihoods, customs, stories, changing demographics, or land use) and recognize ways in which this heritage influences their lives.
• Listen to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
• Short Answer: Students submit their answers to target questions
• Product: Students submit their questions.
• Performance: Students share their “nugget” or “anecdote” with the rest of the class

Lessons
• PRE REFLECTION: Explain that pre-reflecting will allow them to see what they learn over the course of the lesson. Briefly introduce the lessons and than have students write: What they thin they will learn, what they want to learn, and what they are excited or anxious about learning. Collect and keep their responses.
• To model how students can use town records for research, begin by having your students review an online current or recent town report. This will help them to see how much a single document can tell about a town in a particular time.
• Introduce them to the types of info housed in the local historical society, town office, or library. Explain how they should take great care with the documents.
• Arrange for students to meet with members of the historical society, Town Clerks at the Town Office, and the Librarian at Zadoc Long Free Library,
• Research Activity: Using the resources at each of the three locations have students focus on changes in structures, changes in use, changes in population, as well as the residents, activities, and businesses that flourished in that section of town. Students should also come up with two additional things:
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A question of their own design, whose answer can be found using one of the source materials
One other nugget of information they find interesting, perhaps because of its anecdotal quality or its relationship to the people, places or events connected with the Railroad.

• Report Out: Students share their own questions and bits of information from the preceding activity.

Necessary Materials
• primary and secondary historical sources
• pencils
• clipboards
• lined paper

Reflection
1. Allow students some time to look over their Pre-Reflections, and reflect on what they now know after completing the lesson. Have students list what they now know.
2. Use the assessment rubric to assess students' growth.

LESSON 5- Oral History Interviews

Essential Questions
• Who are the elders of our community?
• How can we learn from them?
• What kinds of things can we learn from them?

Standards
• History, Understanding Place, Being a Historian: Use oral history methods to understand the ways in which people assign meaning to their own historical experiences.
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage
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- Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
- Product: Completed question(s) and follow-up questions. Short write-up summarizing answer to the question (and/or one favorite anecdote or story from the session).

Lessons
- Arrange for 4-5 interviews and group students. The interviews can happen at school, but offsite will be more engaging. *Intergenerational photos!
- Review with students the concept of oral history and consider its validity as a historical source, as well as its limitations, due to the “story” component and the inherent perspective of the teller. Be sure to discuss the difference between a first-person account and a retold story, which can be embellished or romanticized. Also discuss Point of View.
- Prior to the storytelling, students should prepare interview questions. Discuss content questions that prompt more information rather than yes/no questions. Prepare students to develop possible follow-up questions.
- After some individual work, group students so that they can get feedback from one another. Questions should be of some quality as well as be appropriate. Encourage those that are informational and those that encourage anecdotal reminiscences.
- Students do the interview or participate in the storytelling session.
- Report Out: Students can work as a group to write up the interview and by ready to share information or anecdotes that would be of interest to the group. Storytellers may be videotaped if permission is granted, and this tape can be a helpful during the write up.
- Students begin to generate a list of ideas regarding the information they want to include in their teaching clues

 Necessary Materials
- laptop or video camera
- clipboard
- pencils and paper
LESSON 6 - Writing the Quest: Clues that Teach and Move

**Essential Questions**

- What are the key stories of the railroad through Buckfield?
- How can we tell them concisely -- and in verse?
- How do we lead visitors on a playful guided tour along the railroad bed?

**Standards**

- Writing: Draft, revise, edit, and critique written products so that final drafts are appropriate in terms of the following purposes: purpose, organization, details, and voice or tone.
- Continuity and Change: Demonstrate an understanding that perceptions of change are based on personal experiences, historical and social conditions, and the implications of change for the future.
- Understanding Place: Explore the interrelationship between the local environment and local community heritage.

**Assessments**

- Product: Students/groups have produced at least a draft of one or two appropriate couplets, either a clue that teaches, one that moves, or both.

**Lessons**

- Before beginning to write clues, the intent of the Quest must be clear to all.
- Lead a discussion using the following guiding questions:
  - What are the unique or interesting visual and historical elements that you might want to include in your clues?
  - Where should the quest begin and end?
  - Work as a class to establish the route and the order of sites to be visited, and the location of the treasure box. Discuss the attributes of good starting places (easy to find, parking, safe) and good hiding spots (secure, off the beaten path)
- Review clues that move you through space and the clues that teach
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• Distinguish between a good clue, a better clue, and the best clue. A “good” clue will work to move a visitor in the right direction but not engage the sensory experience of the surroundings, nor necessarily with rich language.
  
  good- “Go twenty paces and turn right.”
  better- “With a flashing light in sight turn right.”
  best- “The ol’ Vermont sugar maker says, ‘Wind from the east, sap runs the least. Wind from the west, sap runs the best.’ It’s a bad sap day so turn that way.”

• Use photocopies of students drawings, lay out a map of your village on a large table, a bulletin board, or the floor. Add roads, trails and watercourses using masking tape and yarn. Use string or scotch tape to lay out the proposed route of the Quest. Discuss with the students the need for both clues that teach about the buildings or sites and clues that will move the Questers from one site to the next.

• Designate to each group or pair the responsibility for producing a specific “moving” clue and a “teaching” clue, until the entire route is planned.

• Inform students of the formatting requirements for their clues.
  
  EXAMPLE: At least two couplets having nine to twelve syllable lines
  Expect some struggling, and remember the “best” ideas don’t occur first

• Report Out: Volunteers read what they have, and give and receive feedback.

  Necessary Materials

  • bulletin board
  • string, tape
  • pencils & paper

  Reflection

Use 3-Step Interviews to Reflect.

1. Begin by reminding the whole class about effective follow-up questions in an interview. Post the following questions on the board: Can you explain more about that? What do you mean by that? Can you give an example? Why would that be interesting? Why do you think that? What might happen next?

2. In triplets, participant A interview participant B, participant C records responses. Rotate through until everyone has played a role.

3. The interviewers asks, “How do you feel about what you’ve done so far in this project? How might you behave differently in the future because of engaging in this service learning project?”
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4. Analyze results/Group Reflect. After the interviews are completed, small groups pull out common themes that ran across responses and share back with the whole group. Write responses on poster paper to capture the sentiments of the overall group. Use the poster paper as a prompt to further discuss what people learned and got out of the service learning project.

5. Use the assessment rubric to assess student learning.

LESSON 7- Pulling It All Together

Essential Questions
• What do we still need to do in order to have a finished map, polished clues, a completed treasure box?

Standards
• Design and Production: Design and create media products that successfully communicate
• Understanding Place: Explore and participate in sustaining or building on uniques and valued elements of past and present community heritage.

Assessments
• Product: Students have completed their part of the Quest. Tool/reference point: task-specific rubric attached.

Lessons
• Show a sample of a finished quest to encourage discussion about design, layout, graphics, and so one. Tell them that this is the time for them to finalize their quest. Set a deadline for completion of tasks and develop small teams:
  Cartographers: Photocopy student drawings, reduce the copies, and then place them all together onto a single map
  Artists: Design the compass rose, indicating the directions. The best compass rose will be based on some quality of your Quest site, for example, the town logo, or distinct church steeple.
  Editors: Type, proofread, and align the clues into a single text.
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Designers: Organize and lay out all of the Quest components into a single publication.
Box makers: Make and/or decorate the treasure box.
Box hiders: Locate an appropriate location at the end site for hiding the box and create any needed modifications, such as installing a false birdhouse or a hidden shelf.
Stamp makers: Design and carve a unique stamp
Poets: Make up introductory, closing, and fill-in rhymes, and ensure that clues hook together nicely.

Necessary Materials
• pencil & paper
• glue sticks
• computers
• compass
• box making material
• stamp making material

Reflection
Use Concept Mapping to Reflect
1. Explain to students what concept maps are (see examples) Explain that nodes are concepts, lines are relationships between concepts, arrowheads indicate direction, linking words on the lines describe the nature of the relationship
2. Do a sample Concept Map as a group (Railroads)
3. Now have students build their own concept map for Bucks on Track.
4. Allow students time to compare their new maps with their old maps to see the changes and progress.
5. Use the concept map assessment to score students growth.

LESSON 8 - Testing the Quest

Once you have a complete treasure box, a map, and a polished set of clues, you are ready for testing. Get a volunteer -- another class, a group of parents, or a group of seniors -- to "test drive" your Quest and make sure it works. After testing, incorporate all recommended changes and then make your final draft as the final lesson. When you finish, throw a party to acknowledge the students' hard work and generous offering to the community.
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Taking It Public

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One of three Quests, also including:

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Works Cited


Introduce the idea by having students complete a virtual QUEST at
www.vitalcommunities.org or www.wschoolsgogreen.org

LESSON 1 - Introducing the Idea of a Community Cemetery

Essential Questions
• What makes a cemetery?
• Why do cemeteries grow in certain places?

Standards
• Traditional and Social Histories: Demonstrate an understanding of the relationships among community leaders, important events, people’s lives, deaths, and cemeteries
• Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage

Assessments
• Product: Students produce clearly colored maps, showing they recognize settlements, schools, cemeteries, and key geologic and cultural features. Tool/reference point: teacher’s map/answer key
• Performance: Their concluding discussion reflects an accurate/reasonable interpretation of the data. Tool/reference point: checklist

Lessons
• Have students work together to make a map of Buckfield, focusing on topographical features and the Damon Cemetery.
• Use the map to foster a conversation that explores the following questions:
  1. Where do you think the first people settled? Why?
  2. When settling unsettled areas, why might a village “grow” in a certain place?
  3. What might settlers look for in terms of geography and location for burying their dead?
4. What architectural or human made elements and natural resources does it take to make a cemetery? Generate a list of components.

- Research Activity: Distribute historic maps. Have students locate watercourses, geological features, old roads, places where buildings are grouped, and community structures like churches, schoolhouses, and the cemeteries using a color code.
- Help students to draw conclusions. Do these clusters actually relate to natural features? How so? Why might the cemeteries be located where they are? Why are there so many more people buried in one cemetery than the others?

**Necessary Materials**
- magnifying glasses
- colored pencils
- photocopies of old maps
- contemporary maps for comparison

**Reflection**
Use Graffiti to encourage students to reflect.

1. Prepare the room by placing large pieces of paper around the room with the following statements written on them: Is it important to study the history of our community? Can you learn anything significant by using comparing old and new maps of our town? What? Why do you want to participate in this place-based service learning project? Do you believe that you can make a positive difference in your community?
2. Have students circulate around the classroom to respond to the prompts. They can be written or drawn, and students should be encouraged to read others’ responses as they visit each one.
3. After 10 minutes or so, the class should reconvene to discuss what’s been recorded.

**LESSON 2 - Investigating Damon Cemetery and the US Veterans Buried There**

**Essential Questions**
- What are the key elements that make up the cemetery?
- How can we find clues that tell us about the past?
- How has this (and our) community changed over time?
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Standards
- Geographical Knowledge, Sense of Place: Describe such patterns as population distribution, land use patterns, climate, transportation networks in Maine, the U.S., and the world
- Movement and Settlement: Analyze and evaluate the causes and effects, and processes and patterns, of human movements, both chosen and forced, in the community, state, and world
- Understanding Place: Demonstrate knowledge and history of local environment (soils, forests, watershed) and how the community relies on its environment to meet its needs (nutritional, economic, emotional)
- Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
- Product: Students have colored and labeled the old maps clearly and accurately; the overlays are likewise complete and neat. Tool/reference point: compare with teacher’s map/answer key
- Short Answer: Students hand in journal entries about the observations they made in the field. Tool/reference point: checklist of key and main points

Lessons
- Compare maps and Discuss the following questions:
  - How many students attempted to find the cemeteries?
  - How many are there? Where are the cemeteries?
  - How far were the cemeteries from everyone’s homes? (time & distance)
  - What is the largest cemetery today?
  - What is different about Buckfield today?

- Research Activity: Have a historian lead us on a tour of Damon Cemetery, providing interpretation. Students make notes on their overlay what remains and what is not on their original map. Historians in the group ask questions and take notes.
- Help students to draw conclusions. Share maps and information gathered, using the ensuing discussion to revisit the last guiding questions: How do your findings help us to understand what life was like then and now? What do the changes in headstone, symbols, family plots suggest about what was important many years ago? Are they as important today? How many US Veterans? What conflicts did these Vets serve in? Did any of them die while in active service?
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• Homework- Have students attempt to find out if a family member is buried in Damon Cemetery. Do they have a family member or family friend that is a US Veteran that’s buried at Damon Cemetery? Where are these people buried?

Necessary Materials
• Enlarged detail maps
• Acetate overlays or tracing paper
• Paper & pen
• large Clipboards
• Colored pens

Reflection
Use Head + Heart + Hands to reflect.
1. Use the think, pair, share method to have students answer each of these 3 questions: Head- What have you learned about US Veterans in Damon Cemetery? Heart- How do you feel about what you have learned or done in our project? Hands- Describe what you have done as a result of this project. How might you change your behavior in the future now that you have done this project?
2. Discuss by having students share their responses
3. Use the rubric to score their responses and the discussion

LESSON 3 - Drawing Damon Cemetery and Landscape

Essential Questions
• What are the key components of the cemetery?
• How has it changed over time? In structure? In terms of use? Why might it have changed?

Standards
• Artistic Intent: Convey artistic intent from creator to viewer or listener; critique one’s own and others’ work in progress, both individually and in groups, to improve intent.
• Sense of Place: Apply knowledge of local environment through active participation in local environmental projects.
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- Participation in Group Discussion: Frame and deliver messages that take into account prior knowledge, beliefs, experiences, as well as those of other group members; roles and relationships within the group; and the group's purpose, goals, and norms.

Assessments
- Product: Students have followed directions and have carefully executed, detailed drawings to show for it.
- Performance: Students have offered thoughtful feedback to their classmates on their work.

Follow-up
* Students should make final versions of their respective drawing(s) using black ink, which will allow the drawings to be photocopied or scanned to become part of the final Quest treasure map. (This could be homework.)

Lessons
- Students are assigned a particular section of the cemetery to interpret. They take digital photographs and create elevation and detailed drawings of the sites. Remind them of their purpose through guiding questions:
  Which US Veterans are buried in Damon Cemetery? How have their remains been marked or honored?
  What interesting headstones still remain? How have they changed?
  Which sites/buildings would best fit into your Quest, the purpose of which is to show how the cemetery has grown and changed over time.
- Students, working in small teams, focus on a section of the cemetery. Each group should photograph and produce detailed drawings of the entire section, and at least one characteristic detail (enlargement) from that view (for example, a side view of a cemetery entrance and a close-up view of a single gravestone).
- In class critique:
  Display drawings randomly. See if students can locate the detail drawing on the elevation drawing connecting the two. This can provide opportunity to discuss architectural history, teaching students to “read” the age.
  Are the drawings detailed enough to be recognized? Do they need more?
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Gretchen Kimball

Photographs may be used to refine their drawings.

**Necessary Materials**
- digital cameras
- sketch boards
- pencils & erasers

**Reflection**
Use What? So What? Now What? to reflect on the lesson
1. Everyone in the group contributes a descriptive sentence or word about what happened.
2. Everyone in the group completes the short statement, “I’m glad that I...”
3. Everyone in the group answers the question, “If a friend asked you why being involved in the community is important, what would you say?”
4. Use the rubric to score student responses

**LESSON 4 - Primary Source Investigations at Municipal Office, Local Historical Society, and Library**

**Essential Questions**
- Where (and from whom) can we learn more about the history of our community?
- How have our cemeteries changed over time? Why?
- Are there key persons, places, and events linked to these changes?
- How are these changes related to changes in regional or American life-- or changes in technology?
- Who are the US Veterans buried in the Damon Cemetery

**Standards**
- Being a Historian: Collect and use primary resources while creating original historical interpretations.
- Understanding Place: Demonstrate knowledge of past and present community heritage (e.g., traditions, livelihoods, customs, stories, changing demographics, or land use) and recognize ways in which this heritage influences their lives.
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- Listen to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
- Short Answer: Students submit their answers to target questions asked at each station
- Product: Students submit their questions.
- Performance: Students share their “nugget” or “anecdote” with the rest of the class

Lessons
- PRE REFLECTION: Explain that pre-reflecting will allow them to see what they learn over the course of the lesson. Briefly introduce the lessons and than have students write: What they thin they will learn, what they want to learn, and what they are excited or anxious about learning. Collect and keep their responses.
- To model how students can use town records for research, begin by having your students review an online current or recent town report. This will help them to see how much a single document can tell about a town in a particular time.
- Introduce them to the types of info housed in the local historical society, town offices, or library. Explain how they should take great care with the documents.
- Arrange for students to meet with members of the historical society, Town Clerks at the Town Office, and the Librarian at Zadoc Long Free Library.
- Research Activity: Using the resources at each of the three locations have students focus on the US Veterans buried in Damon Cemetery:
  - A question of their own design, whose answer can be found using one of the source materials
  - One other nugget of information they find interesting, perhaps because of its anecdotal quality or its relationship to the people, places or events connected with the Quest.
- Report Out: Students share their own questions and bits of information from the preceding activity.

Necessary Materials
- primary and secondary historical sources
Reflection
1. Allow students some time to look over their Pre-Reflections, and reflect on what they now know after completing the lesson. Have students list what they now know.
2. Use the assessment rubric to assess students’ growth.

LESSON 5 - Oral History Interviews

Essential Questions
• Who are the elders of our community?
• How can we learn from them?
• What kinds of things can we learn from them?

Standards
• History, Understanding Place, Being a Historian: Use oral history methods to understand the ways in which people assign meaning to their own historical experiences.
• Understanding Place: Explore the interrelationship between the local environment and the local community heritage
• Listens to Comprehend: Active listening enhances comprehension and recall of messages. A variety of response strategies clarify explicit and implicit meanings of messages.

Assessments
• Product: Completed question(s) and follow-up questions. Short write-up summarizing answer to the question (and /or one favorite anecdote or story from the session).

Lessons
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- Arrange for 4-5 interviews and group students. The interviews can happen at school, but offsite will be more engaging. *Intergenerational photos!
- Review with students the concept of oral history and consider its validity as a historical source, as well as its limitations, due to the "story" component and the inherent perspective of the teller. Be sure to discuss the difference between a first-person account and a retold story, which can be embellished or romanticized. Also discuss Point of View.
- Prior to the storytelling, students should prepare interview questions. Discuss content questions that prompt more information rather than yes/no questions. Prepare students to develop possible follow-up questions.
- After some individual work, group students so that they can get feedback from one another. Questions should be of some quality as well as be appropriate. Encourage those that are informational and those that encourage anecdotal reminiscences.
- Students do the interview or participate in the storytelling session.
- Report Out: Students can work as a group to write up the interview and be ready to share information or anecdotes that would be of interest to the group. Storytellers may be videotaped if permission is granted, and this tape can be helpful during the write up.
- Students begin to generate a list of ideas regarding the information they want to include in their teaching clues

**Necessary Materials**
- laptop or video camera
- clipboard
- pencils and paper

**LESSON 6 - Writing the Quest: Clues that Teach and Move**

**Essential Questions**
- What are the key stories of this place?
- How can we tell them concisely -- and in verse?
- How do we lead visitors on a playful guided tour of our adopted community?

**Standards**
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- Writing: Draft, revise, edit, and critique written products so that final drafts are appropriate in terms of the following purposes: purpose, organization, details, and voice or tone.
- Continuity and Change: Demonstrate an understanding that perceptions of change are based on personal experiences, historical and social conditions, and the implications of change for the future.
- Understanding Place: Explore the interrelationship between the local environment and local community heritage.

Assessments

- Product: Students/groups have produced at least a draft of one or two appropriate couplets, either a clue that teaches, one that moves, or both

Lessons

- Before beginning to write clues, the intent of the Quest must be clear to all.
- Lead a discussion using the following guiding questions:
  - What are the unique or interesting visual and historical elements that you might want to include in your clues?
  - Where should the quest begin and end?
  - Work as a class to establish the route and the order of sites to be visited, and the location of the treasure box. Discuss the attributes of good starting places (easy to find, parking, safe) and good hiding spots (secure, off the beaten path)
- Review clues that move you through space and the clues that teach
- Distinguish between a good clue, a better clue, and the best clue. A “good” clue will work to move a visitor in the right direction but not engage the sensory experience of the surroundings.
  - good- “Go twenty paces and turn right.”
  - better- “With a flashing light in sight turn right.”
  - best- “The ol’ Vermont sugar maker says, ‘Wind from the east, sap runs the least. Wind from the west, sap runs the best.’ It’s a bad sap day so turn that way.”
- Use photocopies of students drawings, lay out a map of your village on a large table, a bulletin board, or the floor. Add roads, trails and watercourses using masking tape and yarn. Use string or scotch tape to lay out the proposed route of the Quest. Discuss with the students the need for both clues that teach about the buildings or sites and clues that will move the Questers from one site to the next.
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- Designate to each group or pair the responsibility for producing a specific “moving” clue and a “teaching” clue, until the entire route is planned.
- Inform students of the formatting requirements for their clues.
  EXAMPLE: At least two couplets having nine to twelve syllable lines
  Expect some struggling, and remember the “best” ideas don’t occur first
- Report Out: Volunteers read what they have, and give and receive feedback.

**Necessary Materials**
- bulletin board
- string, tape
- pencils & paper

**Reflection**
Use 3-Step Interviews to Reflect.
1. Begin by reminding the whole class about effective follow-up questions in an interview. Post the following questions on the board: Can you explain more about that? What do you mean by that? Can you give an example? Why would that be interesting? Why do you think that? What might happen next?
2. In triplets, participant A interviews participant B, participant C records responses. Rotate through until everyone has played a role.
3. The interviewers ask, “How do you feel about what you’ve done so far in this project? How might you behave differently in the future because of engaging in this service learning project?”
4. Analyze results/Group Reflect. After the interviews are completed, small groups pull out common themes that ran across responses and share back with the whole group. Write responses on poster paper to capture the sentiments of the overall group. Use the poster paper as a prompt to further discuss what people learned and got out of the service learning project.
5. Use the assessment rubric to assess student learning.

**LESSON 7- Pulling It All Together**

**Essential Questions**
- What do we still need to do in order to have a finished map, polished clues, a completed treasure box?

**Standards**
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• Design and Production: Design and create media products that successfully communicate
• Understanding Place: Explore and participate in sustaining or building on uniques and valued elements of past and present community heritage

Assessments
• Product: Students have completed their part of the Quest. Tool/reference point: task-specific rubric attached.

Lessons
• Show a sample of a finished quest to encourage discussion about design, layout, graphics, and so one. Tell them that this is the time for them to finalize their quest. Set a deadline for completion of tasks and develop small teams:
  Cartographers: Photocopy student drawings, reduce the copies, and then place them all together onto a single map
  Artists: Design the compass rose, indicating the directions. The best compass rose will be based on some quality of your Quest site, for example, the town logo, or distinct church steeple.
  Editors: Type, proofread, and align the clues into a single text.
  Designers: Organize and lay out all of the Quest components into a single publication.
  Box makers: Make and/or decorate the treasure box.
  Box hiders: Locate an appropriate location at the end site for hiding the box and create any needed modifications, such as installing a false birdhouse or a hidden shelf.
  Stamp makers: Design and carve a unique stamp
  Poets: Make up introductory, closing, and fill-in rhymes, and ensure that clues hook together nicely.

Necessary Materials
• pencil & paper
• glue sticks
• computers
• compass
• box making material
• stamp making material
Reflection
Use Concept Mapping to Reflect
1. Explain to students what concept maps are (see examples) Explain that nodes are concepts, lines are relationships between concepts, arrowheads indicate direction, Linking words on the lines describe the nature of the relationship
2. Do a sample Concept Map as a group (Railroads)
3. Now have students build their own concept map for Bucks on Track.
4. Allow students time to compare their new maps with their old maps to see the changes and progress.
5. Use the concept map assessment to score students growth.

LESSON 8- Testing the Quest

Once you have a complete treasure box, a map, and a polished set of clues, you are ready for testing. Get a volunteer -- another class, a group of parents, or a group of seniors -- to "test drive" your Quest and make sure it works. After testing, incorporate all recommended changes and then make your final draft as the final lesson. When you finish, throw a party to acknowledge the students' hard work and generous offering to the community.

Taking It Public

Share the Quest with the broader community at our annual Harvest Supper. Be sure to send every student home with at least one copy of the completed Quest. Also submit the completed Quest to the local papers and to the local Q
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One of three Quests, also including:

BUCKFIELD RAILROAD QUEST
BUCKFIELD VILLAGE QUEST

Works Cited
