"Learning from the Past, 
Preserving it for the Future"

Hollis Upper Elementary School
Proposal for the
New England NEA 2005 Summer Institute:
Boston Public Library: Art, Architecture,
and the Public Square

Grade 6 Unit Design by:
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October, 2005
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## Unit Overview

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## Mini-Unit 1  Values

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## Mini-Unit 2  Preservation

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## Mini-Unit 3  Seven Wonders of the World

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Project: Design a poster or travel brochure for your own 7 Wonders of the World to share with class
Extend: Identify the shortest routes to visit your 7 Wonders & cost to travel there

Lesson 7 National Historic Registry

Mini-Unit 4 Pompeii, Decay, & DNA  
Lesson 8 Video  
Discussion on community values  
Lesson 9 Science of DNA

Mini-Unit 5 The Boston Public Library & Back Bay  
Lesson 10 History of BPL & Back Bay  
Discussion on community values  
Lesson 11 Architecture – Then & Now Compare/Contrast

Mini-Unit 6 Pyramid Construction  
Lesson 12 Egyptian Antiquities  
Lesson 13 Sizing up Khufu  
Lesson 14 Research Theories of Pyramid Construction

Mini-Unit 7 Reflection  
Lesson 15 Class discussion – What did we learn about the past and preserving for the future?

Content Areas Covered by each lesson  

November Bulletin Board pictures  

Pictures from implementation of Lesson #3 - Salt of the Earth

Photography credits
Unit Overview

Students will use cross-curricula inquiry methods to investigate how communities express their values through preservation and restoration. We will help students make connections to the past, present, and future by comparing and contrasting the Boston Public Library, as the anchor work, to the Lawrence Barn Restoration Project in Hollis, NH, and to ancient civilizations.

Students will investigate different preservation methods used by different communities throughout time, and the values each community ascribed to the items being preserved.
Essential Understanding(s)/Question(s)

🌟 What does the term “value” mean?
🌟 How does a community express their values?
🌟 How does the restoration and preservation of an ancient city like Pompeii demonstrate what was valued in that community?
🌟 How does the restoration and preservation of the Boston Public Library show what was valued in that community?
🌟 How does the restoration and preservation of the Lawrence Barn show what is valued by our community?
🌟 What methods were used by ancient civilizations to preserve their valued items?
🌟 What methods were used by the curators of the Boston Public Library to preserve and restore the works of art and architecture?
🌟 What methods are being used by the Lawrence Barn Restoration Project to restore the barn at its new location?
🌟 What can we learn from ancient civilizations, the restoration of the Boston Public Library, and Lawrence Barn restoration to help us in the future?
Mini-Unit 1: Values

Lesson #1

Objectives: To introduce students to the overall project.
To develop an understanding of values and community.

Materials: Slide show
Easel, paper, and markers

Procedures: Introduce students to the project with brief overview and slide show.
Write the term VALUE on paper. Have students develop synonyms for
vocabulary word. Do the same for COMMUNITY.
Have students respond to the following writing prompt:
If you were asked to leave your home and you could only take one
item with you, what would it be and why.

Vocabulary: value
community
Boston Public Library
Lawrence Barn
Archeology

Evaluation: HUES Grade 6 Writing Rubric
Mini-Unit 1: Values

Lesson # 2

Objectives: To develop an understanding of restoration and preservation.

Materials: Easel, paper, and markers
Cite the Site graphic organizer for booklet
Research graphic organizer

Procedures: Write the term RESTORATION on paper. Have students develop synonyms for vocabulary word. Do the same for PRESERVATION.
Divide class into 4 cooperative learning groups (research teams)
    Group 1: Boston Public Library restoration
    Group 2: Lawrence Barn restoration
    Group 3: Pompeii archeological finds & preservation of them
    Group 4: Ancient Egypt archeological restoration projects
Each group must research their topic and provide a written, oral, or visual presentation for the class of their findings.
Have each group keep a record of web sites used by using Cite the Site organizer. Create one class booklet of these sites.

Vocabulary: restoration
preservation
Pompeii
archeology

Evaluation: Blooms Taxonomy
# Cite the Site

<table>
<thead>
<tr>
<th>Date</th>
<th>Student(s)</th>
<th>Web Site address</th>
<th>Topic</th>
<th>Rate the Site: 1-5☆</th>
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Mini-Unit 2: Preservation

Lesson # 3

Objectives: Introduction to mummification through Salt of the Earth experiment. Understanding the scientific process.

Materials: KWL worksheet
Salt of the Earth experiment materials (see attached)
Data collection sheet

Procedures: Have students complete KWL worksheet to determine what they know and what they want to learn about MUMMIES.

Discussion:
What is a mummy?
Where have mummies been found?
What are examples of different types of mummies?
Why were people mumified?
How are mummies preserved?

Tie this in with the term “preservation”. Unlike fossils or skeletons, mummies still have some of their soft tissue, such as organs or muscles. Such tissue usually decays, or breaks down, as fungi and bacteria grow. When a body is mumified, it is preserved so that the bacteria and fungi cannot grow. While some mummies are intentionally preserved by humans, others are accidently preserved by the natural qualities of the environment, such as ice or a bog. Different types of mumification include:

- Embalming: process of deliberately preserving a body. It involves drying a body with sunlight, fire, smoke, or chemicals, which removes the moisture that bacteria and fungi need to grow.
- Ice: preserves a body because bacteria and fungi cannot live in freezing temps.
- Peat bogs: cold, deep, stagnant bodies of water with high acid levels (Ponemah Bog, Amherst). Bogs preserve bodies because bacteria and fungi cannot live in these oxygen-free environments.
- Some soil and mud environments (Pompeii) preserve bodies because they contain chemicals that kill bacteria. Dry desert environments may preserve bodies because there is very little moisture in the air.

Salt of the Earth Experiment (see attached)

Vocabulary: bog embalm mummy bacteria fungi

Evaluation: HUES Grade 6 Science Rubric

EXTEND: research project: Other forms of mumification (bog, ice, etc.) Compare Egyptian mumification to other forms of mumification
### KWL Chart

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<th>K</th>
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<tbody>
<tr>
<td><strong>What I Know</strong></td>
<td><strong>What I Want to Know</strong></td>
<td><strong>What I Learned</strong></td>
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</table>

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Salt of the Earth

Discover how you can make your own mummy.

Have you ever wondered why every time you eat salty foods, you get thirsty? Or why fresh vegetables tend to shrivel up when you sprinkle salt on them? The answer is simple. Salt is a desiccant - it helps remove water from things, including human bodies. In this activity, you will experiment with different salt compounds and discover which makes the best mummified apple.

Materials

- 2 fresh apples
- large box of table salt
- large box of Epsom salts
- large box of baking soda
- apple slice
- eight 12-oz disposable plastic cups
- measuring cup
- large mixing bowl
- permanent marking pen
- roll of masking tape
- sensitive balance or food scale
- piece of graph paper and pencil

1. Slice the two apples into quarters so that you have eight slices similar in size. Place a piece of tape on each cup and write the words “starting weight.” Select one slice, weigh it, and record the weight on the outside of cup 1. Follow the same procedure with the other seven apple slices until each cup has been labeled with the appropriate starting weight.

2. Add exactly 1/2 cup of baking soda to cup 1, making sure to completely cover the apple. Write the words “baking soda only” on the outside label. Fill cup 2 with 1/2 cup Epsom salts. Fill cup 3 with 1/2 cup table salt. Make sure you label each cup.

3. Repeat the same procedure for cups 4-6 using a 50:50 mix of Epsom and table salts in cup 4, 50:50 mix of table salt and baking soda in cup 5, and a 50:50 mix of baking soda and Epsom salts in cup 6. Again, make sure each cup has the correct label.

4. In cup 7 make a mixture of 1/3 baking soda, 1/3 Epsom salts, and 1/3 table salt. Leave cup 8 alone as a control. Place the cups on a shelf out of direct sunlight and let them sit for seven days. After a week has gone by, take out each apple slice, brush off as much salt as possible, and reweigh. (Do not rinse the apple off because that will rehydrate it.) Compare the starting and ending weights of each slice and calculate the percentage of weight which is moisture lost for each by dividing the difference in weight by the starting weight.

Questions

1. Which compound would seem to work best at making an apple mummy?
2. Would you have achieved the same results if you used a whole, unpeeled apple? Try it and find out.
3. What was the point of leaving one of the apple slices in a cup without any salt at all?
4. Where did the moisture in the slices go? How could you confirm this?

http://www.ktea.org/newtons/13/mummy.html

10/9/2005
### Salt of the Earth Experiment
#### Record Sheet

<table>
<thead>
<tr>
<th>Environment</th>
<th>Beg. Weight</th>
<th>End Weight</th>
<th>Look</th>
<th>Feel</th>
<th>Skin Color</th>
<th>Smell</th>
<th>% Water Loss</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>change in mass ÷ starting mass x 100 = % water loss</td>
</tr>
</tbody>
</table>
Name _____________________________ Date _____________________________

Science: Scientific Method 6-

Salt of the Earth Experiment

I. Question (Purpose):

II. Materials Needed:

III. Hypothesis (Guess):

IV. Procedure (Steps):

V. Results:
VI. Conclusion:
Which compound would seem to work best at making an apple mummy?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Do you think you would have achieved the same results if you used a whole, unpeeled apple? Please explain your thinking.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Where did the moisture in the slices go? How could you confirm this?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Mini-Unit 2: Preservation

Lesson # 4 Architects in Action

Objectives: Students will understand that ratios are used to create scale models of buildings and structures
Students will understand the principles of ratio and apply these principles to the solution of problems
Students will understand how to calculate scale using ratio

Materials: 0.25 inch grid paper
map(s) of US pencils ruler (metric or inches) tape measure

Procedures: see attached lesson plan

Vocabulary: ratio scale equivalent perimeter symmetry

Evaluation: HUES 6th grade Math rubric
Objectives

Students will:
1. understand that ratios are used to create scale models of buildings and structures;
2. understand the principles of ratio and apply these principles in the solution of problems; and
3. understand how to calculate scale using ratio.

Materials

The class will need the following:
- 0.25-inch graph paper
- map(s) of the United States
- pencils
- ruler (metric or inches)
- tape measure
- Take-Home Activity Sheet: Home Measurements

Procedures

1. Begin by introducing the concept of scale. Write the word scale on the board and brainstorm examples of where scales are found and what they measure. For example, we use scales to measure the weight of an object, the temperature of air, the length of an object, and so on.

2. Show students a map of the United States and point out the scale in the map key. Remind them that this map is a smaller, scaled-down representation of the United States, not an actual representation. Explain that sometimes we shrink objects or make them larger so they are easier to work with. The map is a scale model of an object that is too large to represent on paper. Other scale models represent objects that are too small, such as a diagram of an atom or a magnified view of a computer chip. Review the scale on the map. For example, the scale may say that 1 inch is equal to 50 miles. Explain that a scale is a ratio used to determine the size of a model of a real object. In this case, the map of the United States is the model.

3. A ratio is a relationship between two objects in quantity, size, or amount. For example, four quarters are in a dollar, so the ratio of quarters to dollar is 4 to 1. In other words, a quarter is one-fourth the value of a dollar. Have students think of other examples of how money can be turned into a scale, such as dimes to dollars (10:1 or 1:10) or pennies to dollars (100:1 or 1:100).

4. Illustrate how to draw an object to scale. Use a ruler to draw a square on the board with sides that equal 10 inches in length.
Ask students how they might use this square to draw another that is half its size. Explain that an object is not simply cut in half when it is scaled down. The whole object is shrunk proportionally, meaning that it doesn’t change shape but is reduced to a smaller size. For example, if you could scale a carrot to half its size, you wouldn’t simply cut the carrot in half. All parts of the carrot need to shrink equally in size.

5. Now measure and draw a second square with 5-inch sides. Explain that when an object is scaled down, the length of its sides must be reduced by the same amount. Compare the corresponding sides of the two squares. The ratio of the small square to the larger is 5:10. Explain that a ratio can be expressed in three ways: 5:10, 5 to 10, or 5/10, which is a fraction that reduces to 1/2.

6. Remind students that the perimeter of an object is the sum of the length of its sides. So if an object has been scaled down proportionally, the perimeter of the object will scale down by the same ratio. For example, the perimeter of the smaller square is 20, or 5 \times 4, which is half the perimeter of the larger square, which is 40, or 10 \times 4.

7. Explain that students will use ratio to make a scale drawing of the classroom floor plan. First invite students to brainstorm a list of the kinds of people who might use scale drawings. (Examples include architects, construction workers, and cartographers.)

8. Divide students into teams of four. Explain that each team will measure the surface areas of objects in the classroom—the desks, tables, closets, and so on. The class may choose to use either metric or English measurements. Explain to students that their floor plan will show objects in the classroom as seen from above. Each group should have access to a tape measure, pencils, and paper to record their measurements.

9. Construct a class data table on the board with three columns labeled “object,” “measurement,” and “scaled measurement.” Students should copy this table in their notebooks and fill in the answers as they measure the objects.

10. Once teams have recorded all their data, they will decide on the scale of their floor plan. Distribute graph paper. With the class, discuss the proportions that would allow students to draw the entire room on one sheet of 8.5” \times 11” graph paper. (For example, if the longest wall in the classroom is 16 feet long, then a scale of 1” = 1’ will not work. But 0.5” = 1’ will work perfectly.)

11. Use the agreed-upon ratio to create the proportion for your classroom. Then have groups convert their measurements into scaled equivalents. For example, if a desktop measures 2 feet in width and the scale is 0.5” = 1’, use the following equation to figure out how large the scaled drawing of the desktop should be.

\[
\text{0.5 inches divided by 1 foot = the scaled down length of the object divided by 2 feet}
\]
Or, written as an equation of two ratios:

\[
\frac{0.5 \text{ inches}}{1 \text{ foot}} = \frac{y \text{ inches}}{2 \text{ feet}}
\]

\[y = 1 \text{ inch}\]

12. Students can determine their scaled equivalents by cross-multiplying. Students should recall that when both sides of an equation are multiplied by the same amount, the equation remains balanced. In cross-multiplication, both sides of an equation are multiplied by the denominators (the bottom numbers in the fractions). The result is the same as multiplying across the “equals” sign diagonally (i.e., the “bottom left” number times “top right” number equal to the “top left” number times the “bottom right” number). Have students consider the following example:

\[
\frac{0.5 \text{ inches}}{1 \text{ foot}} = \frac{y \text{ inches}}{2 \text{ feet}}
\]

\[1 \text{ foot} \times y \text{ inches} = 0.5 \text{ inches} \times 2 \text{ feet}\]

\[y = \frac{0.5 \text{ inches} \times 2 \text{ feet}}{1 \text{ foot}}\]

\[y = 1 \text{ inch}\]

13. Have students use their scaled measurement, rulers, and graph paper to draw the floor plan their team measured. Remind them to include a title, labels, and a scale.

14. As students complete their drawings, encourage them to calculate the perimeter of their classrooms. What is the relationship between the perimeter of the drawing and the perimeter of the actual classroom?

15. For homework, ask students to complete the sheet, asking them to make a floor plan of a room in their home.

Adaptations

Have students determine the relationship between the area of the drawing and the area of the actual classroom. They should notice that the ratio of these areas is the square of the scale they chose. For example, if a scale of 0.5 inch = 1 foot was used, the ratio of areas of the drawing to the actual room will be (0.5 inches)² = (1 foot)² or 0.25 square inches = 1 square foot. Students can also conduct experiments to determine how volume changes with scale.

Discussion Questions

http://school.discovery.com/lessonplans/programs/architectsinaction/

9/18/2005
1. Using what you have learned about ratios, proportions, and scale models, create four word problems for other students in your class to solve. For example: A square carpet measures 8 feet × 4 feet. Suppose the scale of a drawing containing the carpet is 1 foot to 1/4 inch. What are the dimensions of the carpet in the drawing? The answer: 2 inches × 1 inch.

2. Is it possible to draw scale models that are completely accurate? Why is accuracy important in the creation of maps, blueprints, and other scale models?

3. Compare your classroom floor plan to that of another student. How are they similar and different? Which would be more useful to a construction worker trying to build a classroom in a new school? Why?

4. List other instances in which you use ratio to compare objects in your daily life. Why is it important to maintain the same scale for each measurement you record when making your model?

5. Debate the merits of using the metric system and the English system to measure lengths. Explain how to convert between the two systems.

6. Compare your classroom to a nearby classroom using scale models of each. Explain how you could use estimation to create a scale model. Would the model be more or less accurate?

Evaluation

You can evaluate students’ work using the following three-point rubric:

- **Three points**: records and converts all of the measurements accurately; uses measurements to draw a classroom floor plan to scale in precise detail.
- **Two points**: records and converts most of the measurements correctly; uses measurements to draw a classroom floor plan that is not entirely accurate.
- **One point**: records and converts some or few of the measurements accurately; is unable to create a classroom floor plan that is accurate.

Extensions

Suggested Readings

Distance


Learn how standardized measurements developed, as early civilizations used parts of the body for measurements like cubits

and fathoms, which gradually became inches and feet. Ways of estimating distances and heights are included along with lots of easy measuring experiments you can do with just a few simple objects. A timeline of important measurement "events" shows the progress of standardization to the present.

The Story of Weights and Measures
Anita Ganeri, Oxford University Press, 1996.
An excellent introduction to the concepts of weight and measurement is encompassed in this slim book. Learn about the history of the development of instruments for accurate weighing and measuring. A short timeline and glossary are included, as well as illustrations and short descriptions.

Vocabulary

**equivalent**
*Definition*: Being the same or effectively the same; equal.
*Context*: The length of the front wall is equivalent to the length of the back wall in our rectangular classroom.

**perimeter**
*Definition*: The boundary, or border, of a closed, two-dimensional figure or area.
*Context*: We built a fence around the perimeter of our yard to keep the dog from running away.

**ratio**
*Definition*: The relation of one part to another or to a whole.
*Context*: We have twice as many girls as boys in our class. Therefore the ratio of girls to boys is 2 to 1, or 2:1.

**scale**
*Definition*: The ratio of the size of a model or other representation, such as a map, to the actual size of the object represented.
*Context*: By looking at the scale, we could tell that 1 inch represented 1 mile on our map of New York.

**symmetry**
*Definition*: A state in which parts on opposite sides of a plane, line, or point display the same size, form, or arrangement.
*Context*: The butterfly’s wings were exactly alike, displaying perfect symmetry.

Standards

This lesson plan may be used to address the academic standards listed below. These standards are drawn from Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education: 2nd Edition and have been provided courtesy of the Mid-continent http://school.discovery.com/lessonplans/programs/architectsinaction/ 9/18/2005
Research for Education and Learning in Aurora, Colorado.

**Grade level:** 6-8  
**Subject area:** Mathematics  
**Standard:** Understands and applies basic and advanced properties of the concepts of measurement.  
**Benchmarks:** Solves problems involving units of measurement and converts answers to a larger or smaller unit within the same system (i.e., standard or metric).

**Grade level:** 6-8  
**Subject area:** Mathematics  
**Standard:** Understands and applies basic and advanced properties of the concepts of measurement.  
**Benchmarks:** Understands formulas for finding measures (e.g., area, volume, surface area)

**Credit**

Jessi Hempel, communications team member, Bay Area School Reform Collaborative, San Francisco, California; former fourth-grade teacher in New York City Public School 92.
Mini-Unit 1: Preservation

Lesson # 5   Guest Speaker, Sharon Howe, Hollis Heritage Commission and Lawrence Barn restoration project

Objectives:   To give students background information on the value of historic preservation
              To give students background information on the origins of and process of the Lawrence Barn restoration project

Materials:    to be determined

Procedures:

Vocabulary:

Evaluation:   none
Mini-Unit 3: Seven Wonders of the World

Lesson # 6

Objectives: To introduce students to using criteria such as that used in determining the Seven Wonders of the World
Using their knowledge to generalize the above information to creating their own 7 Wonders of the World
To understand values of regions and ancient cultures of the world

Materials: Chart of Criteria graphic organizer
Easel, paper, markers
Pictures of Seven Ancient Wonders of the World and the Seven Wonders of the Modern World

Procedures: Provide background knowledge:
The 7 Wonders of the World actually refers to 7 ancient wonders identified by the Greeks and Romans as important works of art and architecture. The one ancient wonder of the original 7 that still remains is the Pyramids of Egypt in Giza. The other six include: the Hanging Gardens of Babylon, Statue of Zeus by Phidias, The Temple of Artemis at Ephesus, the Mausoleum of Halicarnassus, the Colossus of Rhodes, and the Pharos of Alexandria. The number “7” in ancient Greek and Roman times was of religious origin like the seven gates of heaven, seven days of the week, or the seven seas. It was thought to be a lucky number.

Criteria to be a “wonder”:
1. Architecture: visual beauty, size, originality
2. Engineering: built to last, durability, features
3. Religion: emotions it evokes, emotional beauty
4. Unity of the people that built it

Discussion:
What are the 7 Wonders of the Modern World that we have come to know today?
Why are they considered to be a wonder?
What important prerequisites would a society need in order to create a Wonder?
What values do you think were important to the ancients that caused them to identify the wonders?

Project: Identify 7 world pieces of architecture, sculpture, landscaping, etc. that would meet the criteria and would be places you would want to visit. Create a poster, travel brochure, etc. that would “sell” your 7 wonders. Include: information on location, approximate age and present condition, historical facts, pictures. What should I pack to make this worldwide trip?

EXTEND: determine most economical way to travel to your 7 Wonders (mode of transportation, routes, length of travel time costs.)
Vocabulary: criteria
architecture
engineering

Evaluation: Blooms Taxonomy
## My Seven Wonders of the World

### Chart of Criteria

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<th>Name/Location</th>
<th>Architecture</th>
<th>Engineering</th>
<th>Religion</th>
<th>Unity</th>
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B. Marshall, 199
Mini-Unit 3: Seven Wonders of the World

Lesson #7 Criteria & National Register of Historic Places

Objectives: To help students generalize what they have learned in Lesson 6 to another domain by learning about the criteria used by the National Parks Service to determine whether a home can be placed on the National Registry of Landmarks.

Materials: Writer's Workshop notebook
Pictures of historic landmarks

Procedures: Students will be taught background information on the criteria for selecting historical landmarks, especially the landmarks located within their community. Questions that will be explored include:
What are the criteria for listing?
How old does the property have to be?
How long does the nomination process take?

Vocabulary: contribution
distinctive characteristics
commemorative

Evaluation: Students will write in their Writer’s Workshop notebook and explain their own set of criteria regarding historical landmarks.

References: www.bucyrus-preservation.org/whatnatreg.htm
www.cr.nps.gov/NR/listing.htm
www.cr.nps.gov/nr/twhp/wwwlps/lessons/50carnegie/50carnegie.htm
Mini-Unit 4: Pompeii, Decay, & DNA

Lesson # 8 Mount Vesuvius movie and discussion on community values

Objectives: To introduce the history of the ancient city of Pompeii and its destruction. Students will also gain insight to the past through synthesizing historical information by imaginative writing.

Materials: Mount Vesuvius Discovery Kids movie
TV/VCR or DVD
Internet access
Writer's Workshop notebook and pencil

Procedures: Students will view a movie on Mount Vesuvius. Students will also locate Pompeii on a map. (Pompeii is located on the eastern shore of the Bay of Naples in Italy, near the base of Mt. Vesuvius. In 79 C.E., the city was buried under more than six feet of ash. Although some people returned to recover items they had left behind, Pompeii was abandoned after the catastrophe. In the early 18th century, a farmer found marble inscriptions while digging a well that revealed a typical ancient Roman city “preserved in time.”) Students will also be exposed to writing by Pliny the Younger, a survivor of the Mt. Vesuvius catastrophe. Translations of the letters that described the horrible event can be read through EDSITEment on the Pompeii Forum Project website. Students will also be divided into groups to explore a virtual field trip to Pompeii.
http://edsitement.neh.gov/view_lesson_plan.asp?id=271
Students will further explore life during ancient Roman times from the ruins of Pompeii. Students will be asked to explain their opinions on community values in their Writer's Workshop notebook.

Vocabulary: catastrophe
Pompeii Forum

Evaluation: Students will be assessed using the Grade 6 Writing Rubric
Mini-Unit 4: Pompeii, Decay, & DNA

Lesson # 9 The Science of DNA

Objectives: To help students generalize what they have learned in Lesson 8 to explore another domain by learning of the science of the Pompeii catastrophe.

Materials: Computer with internet access
Pictures of Pompeii (animals and humans)

Procedures: Students will be taught how archeologists, geologists, and other scientists have been able to piece together what happened during the eruption of Mt. Vesuvius. Archeologists made plaster impressions of spaces left by human and animal bodies as well as studying the artifacts found with the bodies. Radiologists used MRI to learn more about the skeletons that have been discovered. Scientists studied the rock layers to determine the different stages of the eruption, and how long each stage lasted. Scientists also studied the soil to find lack of bacteria, a sign of extreme heat. Scientists have also been able to recover DNA from human and animal remains as well as seeds from preserved vegetables. Students will also have the opportunity to take an interactive quiz about Pompeii, and test their knowledge of Pompeii and volcanoes at http://dsc.discovery.com/convergence/pompeii/quiz/quiz.html
Students will also identify crucial pieces of information that were provided from the first-hand account of Pliny the Younger.

Vocabulary: archeologist
excavation
pumice
pyroclastic flow
pyroclastic surge

Evaluation: Students will be assessed through participation in class discussions as well as citing examples of how scientists and Pliny the Younger's account have contributed to their understanding of Pompeii.

References: http://school.discovery.com/lessonplans/programs/enduringinfluence/
Mini-Unit 5: The Boston Public Library and Back Bay

Lesson # 10 History of the Boston Public Library & the Back Bay

Objectives: To introduce the history of the Boston Public Library and Back Bay, discussing the values of the community and the use of public space. The BPL is ‘a palace for the people’ according to C. McKim, intended to teach and inspire people.

Materials: Slides/pictures taken during week-long institute
Notes taken during week-long institute, particularly Alex Kreiger “The Many Roles of a Civic Institution” (8/4/05).
A Handbook to the Art and Architecture of the BPL

Procedures: Discussion around how and why the BPL was built where it is
Show pictures of exterior and art galleries within the BPL—John Singer Sargent’s Triumph of Religion, Memorial Lions
Main Ideas:
There are five functions of a public building. A public building is a
1. repository
2. monument
3. neighborhood anchor [reference First Night as many will have attended]
4. a work of art
5. a chronicler of history and cultural aspirations.

The BPL is a symbol of learning, an anchor for the Back Bay area, “Acropolis” of the New World and Boston is the “Athens of the New World”. BPL is the first great example of civic art in America, dedicated to learning and free for all.

Students will write an opinion piece on “Why do you think the BPL was built in its present location?” Support your opinion with the reasons why the BPL is thought to be a ‘palace for the people’ by McKim. Is the BPL a good example of a public building reflecting the values of its community?

Evaluation: Grade 6 Rubric scoring for a three-paragraph essay.
Mini-Unit 5: The Boston Public Library and Back Bay

Lesson # 11 Architecture

Objectives: To introduce architecture then and now—how things change and stay the same.

Materials: Pictures taken on August 2005 tours of Back Bay/Copley Square area. Pictures from within the library. Pictures before and after the restoration from website and postcards.

Procedures: In small groups examine pictures for one of these three areas:
- Compare/contrast the skyline of Back Bay area from 1890’s to 2000’s.
- Compare/contrast the interior of the BPL from 1890’s to restoration.
- Compare/contrast the exterior of the BPL from 1890’s to restoration.

Evaluation: Venn Diagram of similarities/differences of one of the following:
- Skyline for Back Bay/Copley Square area then and now
- Interior of the BPL then and now
- Exterior of the BPL then and now
Mini-Unit 6: Pyramid Construction

Lesson #12 Egyptian Antiquities

Objective: Students will understand that with the passage of time, some ancient monuments are deteriorating. Students will understand the difficulties encountered building pyramids. Students will understand why cultures build monuments.

Materials: Art history and archaeology books
David Macauley “Pyramid” video
Pyramid by David Macauley
Access to internet
Various art supplies: colored pencils, markers, crayons, scissors, glue sticks, chart paper, poster board, index cards.

Procedures: Read Pyramid, view video, use web sites to do further research and work on projects
www.sdcoe.k12.ca.ys/score/pyram/pyramtg.html
www.sdcoe.k12.ca.us/score/pyram/pyramsg2.html

Vocabulary: cartouche
mastaba
pyramid
sarcophogaus
vizier

Evaluation: Bloom’s projects from the Pyramid Unit; written essay explaining why the Egyptians chose to build these great monuments in light of the obstacles Egyptians encountered during the building process [evaluated using grade 6 writing rubric].
Mini-Unit 5: Pyramid Construction

Lesson #13 Sizing Up Khufu

Objectives: To help students apply math and science concepts they have learned to the methods of pyramid construction.

Materials: grid paper pencils measuring tools – metric and standard compass

Procedures: The corners of the Great Pyramid of Khufu are perfectly aligned with the cardinal directions (north, south, east, west). What is even more amazing is that the sides of this monument are each about 230 meters long! Of course, it’s one thing to have a few stones aligned, but it’s quite another to get the whole pyramid to line up. Some Egyptologists theorize that alignment was accomplished by celestial means. According to one theory, a circular wall was built to provide an artificial horizon. When a prominent star rose above the wall in the east, that direction was noted, and another line was drawn to the center. Then a line was drawn from the center to the midpoint between the east and west marks. This line pointed north.

To illustrate what an accomplishment this was, have students find the perimeter of the Khufu pyramid and the area of the pyramid’s base.
(perimeter = 230 meters x 4 = 920 meters - nearly a kilometer/
Area = 230 meters X 230 meters = 52,900 square meters)

Next have students create a scale of the base of Khufu on grid paper. Using cardinal directions and the circle concept, have students create their own pyramid to scale on grid paper showing all angles of their pyramid.

Vocabulary: cardinal directions Scale Perimeter Area alignment

Evaluation: Student work assessed using math rubric
Mini-Unit 6: Pyramid Construction

Lesson #14 Research Theories of Pyramid Construction

Objectives: Students will apply some of previously learned material from Lesson 12 as they further explore and discover methods and tools of pyramid construction. Students will design and build a model of an ancient Egyptian tomb using math and science concepts.

Materials: Construction materials such as sugar cubes, tooth picks, string, etc. Materials from Lesson 12

Procedures: Using internet, textbook, and various books and video have students working in groups to answer the following questions:
- How did the pyramid builders transport the massive stones?
- How did they lift them as construction progressed?
- How were they able to put the stones in place so accurately?
Investigate theories of pyramid construction and decide which theory your group feels is most effective and defend your choice during presentations.

Evaluation: Group presentations to share the information they have learned.
Mini-Unit 6: Reflection

Lesson # 15

Objectives: To reflect on knowledge gained

Materials: easel, paper, markers

Procedures: Class discussion: What did we learn about the past and preserving it for the future?

Vocabulary: review of all

Evaluation: assessment of class discussion
## Content Areas Covered

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November Bulletin Board

Learning from the past, preserving it for the future.

Ancient Civilizations Restored & Preserved

Boston Public Library

Lawrence Barn Restoration Project

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Ancient Ruins – Nancy Kring-Burns
Boston Public Library, Copley Square, and Classroom lesson – Betty Marshall
Lawrence Barn Project – courtesy of Lawrence Barn Project web site