

Spanish St. Augustine: 1500s to 1700s

Houses of the colonial Spanish period, with a science based theme.

Interdisciplinary Unit — Social Studies and Science

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Intended Grade: 4th & 5th

Subject Area: Social Studies, Chemistry, Geology

Correlation to National Standards: (see below)

Objectives:

- Become familiar with various types of materials used for construction of dwellings: coquina, tabby, wattle and daub. (SSB2.2.2 SCD 2.2.1)
- Experience laws of physical, chemical change through use of materials. Explore vocabulary: oxidation, mixture, aggregate, burning, solution, etc. SCA 1.2.2, SCA 1.2.4. (SCA 1.2.5)
- Formulate understanding of sedimentary rocks by studying the formation and use of coquina. (SCD 1.2.1)
- Understand the use of natural resources and native materials in building dwellings. (SCD 2.2.1)

Approximate Time Required: Four lessons

Materials Required:

Instructions:

Lesson 1: Discuss how houses are constructed

Assess background depth by brainstorming what homes are made of.

Graphic organizer to be used in organizing information:

Today's homes, Native Americans of Florida (a previous unit),

St. Augustine – Early Spanish Coquina and Tabby English – Wattle and Daub

Lesson 2: Construction with stone in Spanish Florida – Coquina

KWL to introduce the concept of coquina and assess prior knowledge

Questions: What is it? Qualities of the rock

How is it formed? Discuss rock cycle, sedimentary rock, pressure, time.

How is it quarried and used to build structures.

Resource materials (Coquina):

- Gordon, Elsbeth K, *Florida's Colonial Architectural Heritage*. University Presses of Florida, Gainesville, 2003 (The Darkened Age of Wood, pp 56-77)
- <http://www.drbronsontours.com/bronsoncoquina.html>
- <http://www.worldandi.com/specialreport/1987/january/sa12398.htm>

Lesson 3: The use of tabby in colonial houses – Tabby

History behind tabby

What is it?

Science Lesson on Physical /Chemical Change

How to make tabby

Demonstrate components and class will make samples of tabby.

Supplies: oyster shells, lime, sand (other aggregate can work if oyster shells are not readily available in the area).

Demonstrate *physical change*:

- Whole oyster shells broken into smaller bits

Demonstrate *chemical change*:

- Oyster shells + heat (oxidation) = lime

When oyster (calcium carbonate) is burned at a high temperature the shells are reduced to a powdered ash (lime)

(CAUTION: This should be only a chalk and talk demonstration. Actual burning in class would not be recommended! See website.)

Demonstrate *mixture*: recipe for tabby

- 1 part aggregate (oyster shells),
- 1 part sand,
- 1 part lime

Discuss qualities of mixture

Students receive a baggie to measure the recipe and mix their own tabby.

Pour into milk carton to make slabs. Allow to dry.

How and why was tabby used in construction?

Resource materials (Tabby):

- Luis Rafael Arana and Alberl Manucy, *The Building of Castillo de San Marcos*. Eastern National Park & Monument Association, 1977, pp 17-24
- <http://www.co.beaufort.sc.us/bftlib/tabby.htm>

Lesson 4: Wattle and Daub Construction

Supplies needed:

- As a surprise element, ask students to bring in a collection of sticks (finger size and smaller),
- large twist ties and/or string to lash sticks together,
- mud (clay)

Prepare a visual example of a Wattle and Daub wall as the process is described.

Allow students to make their own wattle and daub structures using milk cartons as a base. If you are feeling rather adventurous – maybe sink the wattles into a sand/dirt lined box to simulate actual early construction.

Discussion opportunities:

What are the positives of this type of construction?

What are the negatives particularly in regard to the moist, damp climate of the area?

What is the permanence of wood wattles sunk into the ground?

What other resources could be used to make these structures more stable over time? (tabby cement footings). Lime plaster was used to cover inside and out to reduce the insect population and extend the life of the mud. Roofs usually were peaked and thatched or flat with a slight pitch to drain rain water. English period brought on second stories with higher pitched roofs that were covered with hand-hewn wood shingles.

Resources materials (Wattle and Daub, Thatching):

- Gordon, Elsbeth K, *Florida's Colonial Architectural Heritage*. University Presses of Florida, Gainesville, 2003 (The Darkened Age of Wood, pp 56-77)
- Wattle and Daub
<http://www.wealddown.co.uk/poplar-cottage-construction-thatch-wattle-and-daub.htm>
- Thatching
<http://www.flheritage.com/archaeology/sanluis/reconstruction/>