

Recreating El Camino Real

Grade Level: 3-5, 6-8, 9-12

Subject Areas: History, Geography, Social Studies, Urban Planning

Lesson Summary:

In this lesson, students will learn about the construction techniques of adobe structures in Spanish colonial architecture. Through a hands-on reconstruction project, students will engage in adobe construction and material testing, concluding in a research report connecting the historic missions to their contemporary city landscapes.

Common Core State Standards:

Grades	3-5	6-8	9-12
Mathematics	3.OA.A-D, 3.NBT.A, 3.MD.A-D 4.OA.A-C, 4.NBT.A-B, 4.MD.A-B 5.OA.A-B, 5.NBT.A-B, 5.MD.A-C, 5.G.A-B	6.RP.A, 6.NS.A-C, 6.EE.A-C, 6.SP.A-B, 6.G.A 7.RP.A, 7.NS.A, 7.EE.A-B, 7.SP.A-C, 7.G.A-B 8.EE.A-C, 8.G.A-C, 8.G.A-C, 8.SP.A	HSN.Q.A HAS.CED.A HSG.MG.A HSG.GPE.A-B HSS.ID.A-C HSS.IC.A-B
English Language Arts	W.3.1-8, W.3.10, SL.3.1-6, L.3.1-3, L.3.6 W.4.1-10, SL.4.1-6, L.4.1-3, L.4.6 W.5.1-10, SL.5.1-6, L.5.1-6	W.6.1-10, SL.6.1-6, L.6.1-6 W.7.1-10, SL.7.1-6, L.7.1-6 W.8.1-10, SL.8.1-6, L.8.1-6 RH.6-8.1-10, RST.6-8.7-10	W.9-10.1-10, RH.9-10.1-10, SL.9-10.1-6, L.9-10.1-6, RST.9-10-7-10 W.11-12.1-10, RH.11-12.1-10, SL.11-12.1-6, L.11-12.1-6, RST.11-12.7-10

Learning Objectives:

After completing this lesson, the student will be able to:

- articulate the construction techniques and architectural elements of the Spanish colonial style in relation to the California missions.
- understand native resources in California available during the colonial period, and how factors such as soil composition and water access affect architecture and design.
- demonstrate competence in scientific inquiry, creating effective experiments to test durability and resistance of various construction materials.
- illustrate capacity for understanding scale and determining scale ratios for a reconstruction model.
- analyze the process of urbanization from historic mission sites to today's large cities.

Lesson Description:

Between the years 1683 and 1834, Spanish missionaries on the west coast of Mexico and California established numerous religious outposts, each within a day's ride from the next along what was called El Camino Real, translating to "The Royal Highway" or "The King's Highway" in Spanish. These outposts today serve as concrete physical reminders of Spanish occupation and presence in California, and are visually representative of California's Spanish colonial history. Running parallel to the San Andreas Fault, these outposts along El Camino Real de California include 21 missions, 4 presidios, and 3 pueblos. Many of these structures have been preserved, upgraded, and made earthquake safe, but some remain seismically unstable. These sites mark 600 miles of the California coast, and all are vital in the telling of California's history as we know it today.

In this lesson, students will embark upon a research project to better understand the origins of El Camino Real, the construction of the California missions, and the defining architectural elements within this construction style. Navigate the class to www.CyArk.org, and click on the Themes tab. Find El Camino Real Theme, and explore the active projects within this theme portal.

As the class explores the website, ask them to make a list of all construction materials they think have been used to build the Missions. Prompt them to conduct Internet research as they consider the following issues:

- What is the dominant material used to construct the buildings?
- What are other materials that you see being used?
- What plants and animals are native to California?
- What construction materials exist using native materials?

After discussing their findings with the class, guide the students towards the process of making adobe:

- What does adobe consist of, and how is it made?

- What conditions are necessary to make adobe successfully?
- What kinds of buildings were built using adobe?
- Is adobe still in use today?

Divide the class into small groups, and provide materials to build adobe. Ask each group to build one prototype adobe brick, thinking about proportions of materials and ideal conditions for drying the bricks. Give the class time to plan their prototype and to build it. Once complete, engage in a testing period to consider the following factors:

Heat resistance: use a hair dryer or heat lamp to direct heat onto each group's bricks for 5 minutes.

Wind resistance: use a high-speed fan to simulate wind for 5 minutes.

Weight bearing: place a dumbbell evenly across each brick for 5 minutes.

Water resistance: use a spray bottle to spray water consistently across brick surface for 5 minutes.

Each group will complete a report to explain how they built their bricks and to determine how well the material withstood the above four conditions. As a class, compare each report to determine the most effective and durable ratio of materials and brick drying conditions. Once determined, this construction method will be used by the whole class to build a scaled reconstruction of a mission façade.

Students will decide which mission façade they would like reconstruct, either as a whole class or in large groups. Each group will determine real-life dimensions of the façade they wish to reconstruct, and convert it to a smaller reconstruction model. Students will then adjust the size of their adobe bricks and begin to make them. Additional resources to consider are materials for windows and roof coverage.

The final product may be mounted for display.

Student Project:

After the class completes their reconstruction of a mission façade, students will begin on a lab report explaining their process of planning and building an accurate reconstruction. This report should also reference their earlier report determining what combination of materials works best for adobe construction.

As part of this report, students will also analyze the growth and change that occurred at their selected mission site from the colonial period until today. Questions to consider are:

- What city currently exists around your selected historic mission?
- How has Spanish colonial culture and architecture influenced this city today?

- How are streets and buildings named, and what stylistic architectural elements remind us of our Spanish history?
- How has the growth and development of this town been influenced by the historic mission center? Where is the downtown area in relation to the mission?
- What concerns related to transportation would be present during mission times?
 - Consider proximity to the ocean, regional location, and position in relation to other missions along El Camino Real.
- Describe the city's relationship to water supply.

The above elements (reconstruction report and urbanization research) should be written in a well-composed essay.

Resources:

CyArk website: www.CyArk.org

A Virtual Tour of the California Missions: <http://missiontour.org/index.htm>

California Missions Resource Center: <http://www.missionscalifornia.com/>