

Building Bridges

Design Your Own Model of a Bridge to Cross the San Antonio River



This lesson plan comes from a series of lessons developed in conjunction with the Moving Waters Workbook. These art-making activities are based on the principles of the [Visual Thinking Strategies](#), a student-centered, discovery-based method that uses art to teach thinking, communication skills, and visual literacy to young people.

Teaching art and environmental awareness through the VTS provides students with open-ended forums for discovery and reflection. The lessons are designed to be experimental and flexible, focusing on the process over the final product. Learn more about the VTS and how you can get involved on our website 04ARTS.ORG.

Goals

To create materially and conceptually inventive model bridges

Objectives

- To learn the basic principles of bridge building
- To learn about the history of San Antonio River bridges
- To use recycled materials in a creative and thought-provoking ways

Materials

- Handouts on the basics of bridge building and engineering
pghbridges.com/basics.htm is a good site to gather information
- Handouts on the history of San Antonio bridges:
thesanantonioriverwalk.com is a good site to gather information
- Recycled boxes, cans, magazines etc.
- String, tape, hot glue

LESSON DESCRIPTION

In this lesson students will have a chance to learn about the basics of bridge building, the history of the San Antonio River, and build a model bridge of their own out of recycled materials. The lesson can span between one and three lessons, and can be tailored to any grade level.

LESSON PROCEDURE

Introduction

Introduce this lesson with a discussion of the basics of bridge building and an overview of the history of the San Antonio River. Extend this introduction with images of local as well as famous bridges from around the world.

Some additional questions to use in discussion:

1. Suppose all the bridges in a large city (New York City, for example) were closed. What effect would that have on that city? What are some specific ways that people would adapt to not using bridges?
2. Discuss how each of the three basic types of bridges – suspension, beam, and arch – transfers loads from the bridge to the ground. Describe where tension and compression occur on each type of bridge.
3. Many bridges are icons for their city or region. Why do you think people associate certain bridges with certain cities, while other bridges seem unremarkable?
4. Compare and contrast a beam bridge and an arch bridge. List at least three ways they are similar and three ways they are different.
5. The U.S. government requires states to inspect and rate all bridges at least once every two years. Describe ways that technology can be used to make monitoring and inspection of bridges more efficient and effective.
6. The earthquake in October 1989 in the San Francisco Bay area caused great structural damage to many of the bridges in the area. What features would you design as part of a bridge to make it better able to withstand an earthquake? Explain your ideas.

MAIN ACTIVITY

Bridge Building

Allow students to create several sketches of the kind of bridge they would like to build. Allow for discussion and feedback from within the group.

After the students have reviewed their sketches, provide the class with a wide range of materials including boxes, different kinds of containers, rope, string, glue, tape, cardboard, and anything else that could contribute to their constructions. Encourage creative problem solving from within the group. I have found that it is sometimes helpful to have students work in teams to facilitate independence and collaborative learning.

CLOSURE/CONCLUSION

Have students present their finished designs to the class. Ask the class what the strengths and weaknesses of each design are.