



Bridge Building:

Focus: Civil Engineering

Grades: suggested for all grade levels

Background:

The purpose for the bridge building experiment is to expose students to the field of engineering. Introduce students to an engineer and give them an overview of some of the kinds of things an engineer has to deal with on a day-to-day basis. An actual bridge is brought in to the classroom, giving the students the opportunity to work with a physical structure, work cooperatively, build a bridge then cross the bridge that they have built. The wizard explains directions to the student then identifies the parts of the bridge, splits students into groups, assign tasking to students and finally place the bridge on four chairs for the children to cross. When the bridge is completed, the wizard has a discussion with the students relative to what they have learned and then they break back into groups to dismantle the bridge.

Objectives:

- ✓ Students will apply prior knowledge to analyze the structure of a bridge.
- ✓ Children will observe the material needed to build a bridge.
- ✓ Students will demonstrate how to build a bridge.
- ✓ Students will be able to describe in their own words the process that takes place when building a bridge.
- ✓ Students will be able to describe how important total involvement is when working on cooperative group project.

Cryogenics Cont.

Learning outcomes:

Learning outcomes for this lesson parallel the 4th grade proficiency test.

The learner will be:

- ✓ Collaborating with others to construct meaning.
- ✓ Reporting with clarity and accuracy all phases of exploration.
- ✓ Choosing appropriate material for exploration.
- ✓ Listening to , reflecting upon, and discussing the ideas and expression of others.
- ✓ Participating in group critiques of investigative results.
- ✓ Communicating the results of exploration with others.
- ✓ Solving problems of personal interest that can be addressed scientifically.
- ✓ Following simple procedures to create a products.
- ✓ Designing, inventing,building and sharing projects individually and collaboratively

Lesson Overview

- ✓ Introduce yourself.
- ✓ Discuss various bridges.
- ✓ Name types of bridges.
- ✓ Introduce various parts of a bridge.
- ✓ Organize students into groups to begin building the bridge.

Activity

Work in cooperative group to discuss and learn about structures.

Build a bridge.

Explanation:

Discuss the various parts of a bridge:

The truss, lateral brace, floor beams, truss brackets, deck brackets, wing nuts, and the decking. Also discuss tension and compression.

Steps:

1. Lay the equipment out in order in which it will be used.
2. Place all of the same parts together.
3. Select a group of students to work on specific parts of the bridge.
4. Finally, have each group work in their designated area. Keep students interested in activity.