



Popsicle Bridge



TryEngineering

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Lesson Focus

Lesson focuses on how bridges are engineered to withstand weight, while being durable, and in some cases aesthetically pleasing. Students work in teams to design and build their own bridge out of up to 200 popsicle sticks and glue. Bridges must have a span of at least 14 inches and be able to hold a five pound weight (younger students) or a twenty pound weight (older students). Students are encouraged to be frugal, and use the fewest number of popsicle sticks while still achieving their goals. Students then evaluate the effectiveness of their own bridge designs and those of other teams, and present their findings to the class.

Lesson Synopsis

The "Popsicle Bridge" lesson explores how engineering has impacted the development of bridges over time, including innovative designs and the challenge of creating bridges that become landmarks for a city. Students work in teams of "engineers" to design and build their own bridge out of glue and popsicle sticks. They test their bridges using weights, evaluate their results, and present their findings to the class.



Age Levels

8-18.

Objectives

- ✦ Learn about civil engineering.
- ✦ Learn about engineering design.
- ✦ Learn about planning and construction.
- ✦ Learn about teamwork and working in groups.

Anticipated Learner Outcomes

As a result of this activity, students should develop an understanding of:

- ✦ structural engineering and design
- ✦ problem solving
- ✦ teamwork

Lesson Activities

Students learn how bridges are designed to meet load, stress, and aesthetic challenges. Students work in teams to design and build a bridge out of up to 200 popsicle sticks and glue that can hold a standard weight based on the age of the students. Teams test their bridge, evaluate their own results and those of other students, and present their findings to the class.

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Page 1 of 12

Resources/Materials

- ✦ Teacher Resource Documents (attached)
- ✦ Student Worksheets (attached)
- ✦ Student Resource Sheets (attached)

Alignment to Curriculum Frameworks

See attached curriculum alignment sheet.

Internet Connections

- ✦ TryEngineering (www.tryengineering.org)
- ✦ Sydney Harbor Bridge History (www.cultureandrecreation.gov.au/articles/harbourbridge)
- ✦ Building Big - Bridges (www.pbs.org/wgbh/buildingbig/bridge)
- ✦ ITEA Standards for Technological Literacy: Content for the Study of Technology (www.iteaconnect.org/TAA)
- ✦ National Science Education Standards (www.nsta.org/publications/nses.aspx)

Supplemental Reading

- ✦ Bridges of the World: Their Design and Construction (ISBN: 0486429954)
- ✦ Bridges: Amazing Structures to Design, Build & Test (ISBN: 1885593309)

Optional Writing Activity

- ✦ Write an essay or a paragraph about how new engineered materials have impacted the design of bridges over the past century.

Extension Ideas

- ✦ Challenge advanced students to design and build a bridge out of popsicle sticks and glue that can hold the weight of three students.