Engineering Structures

Description

Engineers must ask many important questions before designing and building a bridge: What type of bridge is best suited for this project? What materials should be used? What safety features will the bridge have? In this extraordinary, hands-on curriculum, students are faced with a similar set of questions, only on a smaller scale. As they learn about everything from correctly placing abutments, piers, piles, and trusses to evaluating the effectiveness of a bridge, students are putting their engineering knowledge into practice by designing, building, and testing a balsa wood bridge. In addition, great engineering structures of the past and present are covered with interesting facts and histories, including descriptions of the geodesic dome, Hoover Dam, and the Brooklyn Bridge.

Skills

- Build and test a model bridge
- Design a bridge using correct procedures
- Illustrate proper use of selected tools

Knowledge

- Components of bridge construction
- Features of correct bridge construction
- Safe tool procedures
- Proper procedures of testing bridges

Activities

- Activity 1 - Introduction
- Activity 2 - Design and Test Bridge
- Activity 3 - Bridge Design
- Activity 4 - Design and Construct Sides
- Activity 5 - Building the Top Section
- Activity 6 - Building the Base Section
- Activity 7 - Start Assembly of the Bridge
- Activity 8 - Finish Assembly of the Bridge
- Activity 9 - Evolution of Bridge Design
- Activity 10 - Post-Test and Wrap-Up
- Activity 11 - Bonus Activities
- Activity 12 - Challenge
- Activity 13 - Open-Ended Challenge
- Activity 14 - Careers
- Activity 15 - Internet

Standards

Math/Measure Problem Solving Reading

Module Includes:

Student Workbook, Instructor's Manual, Installation CD, Bridge Building Software, Electronic Scale (grams), Weight Set, Stick Trimmer (2), DEPCO Engineering Structure Tester, DEPCO Engineering Structures Student Workpads (8), Measuring Tools, Digital Scale (50 lbs.), Headphones (2), Engineering Structures Supply Kit for 24 Students

Requirements
Computer and supplies are required and sold separately.