



engineering:
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things such as roads, bridges, and machines

Mars Rover Model Celebration – Lesson Plan

Introduction:

One of the new vocabulary words for this unit is “engineering”. Engineering means “the work involved in designing and building things, such as roads, bridges and machines”. People use engineering to solve the problems they encounter when they try to build something.

Let’s look at two pictures that will help us understand the meaning of “engineering”. Popsicle sticks are very thin and fragile, meaning they break easily. However, when popsicle sticks are glued together in a certain fashion using the principles of good engineering, like on the popsicle stick bridges shown here, they can make a structure that is quite strong. The fashion in which the sticks are put together (the diagonal patterns and the vertical lines) give the entire bridge a lot of strength. The engineering on the popsicle bridge (in the bottom picture) allows it to support some very heavy weights.

Example:

There are many different types of engineering. Civil engineers help build bridges, buildings, roads and waterways. Chemical engineers design new materials, medicines and chemicals people use every day. Mechanical engineers develop machines, robots and things that run using energy. Electrical engineers work to develop products that produce or use electricity. They also work with electromagnets. Aerospace engineers solve problems in the designs of aircraft, spacecraft, missiles, rockets and satellites.

Reflection:

I am going to tell you about a project or problem. Think about the different types of engineering you have learned about—civil, mechanical, chemical, electrical, aerospace (*Teacher: cut one sheet of engineering icons for each student.*) Hold up the card and say the type of engineering you think would be best suited to work on the project or problem. Some may have more than one correct answer as engineers often work as teams to solve problems. Be ready to explain why you picked a particular type of engineering.

- An oil leak on the international space station. (aerospace or mechanical engineering, chemical is also possible, but no chemicals are being mixed or manipulated)
- Making a computer work more quickly (electrical engineering)
- Building ponds, sewer lines and bayous so a new neighborhood doesn’t flood (civil engineering)
- Turning plants into bio-fuels that can power cars and trucks (chemical engineering)

Make it personal:

If you were to study engineering in college, which type of engineering would you choose and why? Think about this for a few minutes. Then I will ask you to share with a neighbor. I will call on some of you to share your career choice with everyone.