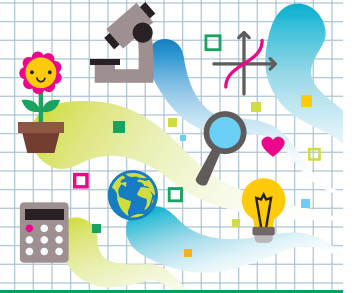




HEADS IN, HEARTS IN

Peanut Hut

Instructions for Set-Up



Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Engineering Process” handout (1 per participant or family)
- Paper
- Pencils
- Toothpicks
- Cornstarch packing peanuts
- Water
- Container to pour water such as measuring cup with spout or plastic water bottle
- Small toy
- Heavy book
- One 1-gallon plastic bag that seals closed
- Display table

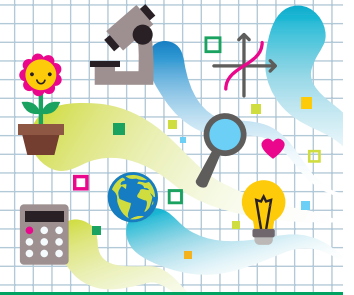
Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one “Engineering Process” handout per participant or family. Optionally, print and laminate a few to leave on the table.
- ▶ Place the heavy book in the gallon bag and seal it to ensure the book does not get wet.
- ▶ Set up the display table and arrange needed supplies.



HEADS IN, HEARTS IN

Peanut Hut Guide for Families



Learning Objectives

What you need to know:

Engineering is a process used to solve problems by designing, building and testing things. An engineer is a person who uses math and science to create new things, solve problems or make things better.

Some engineers work to build structures or buildings. A **structure** is the result of building or constructing something by arranging materials or parts. In engineering, structures are specially designed to make buildings safe and durable. How a structure or building is designed can affect how sturdy and safe it is.

What you will do and learn:

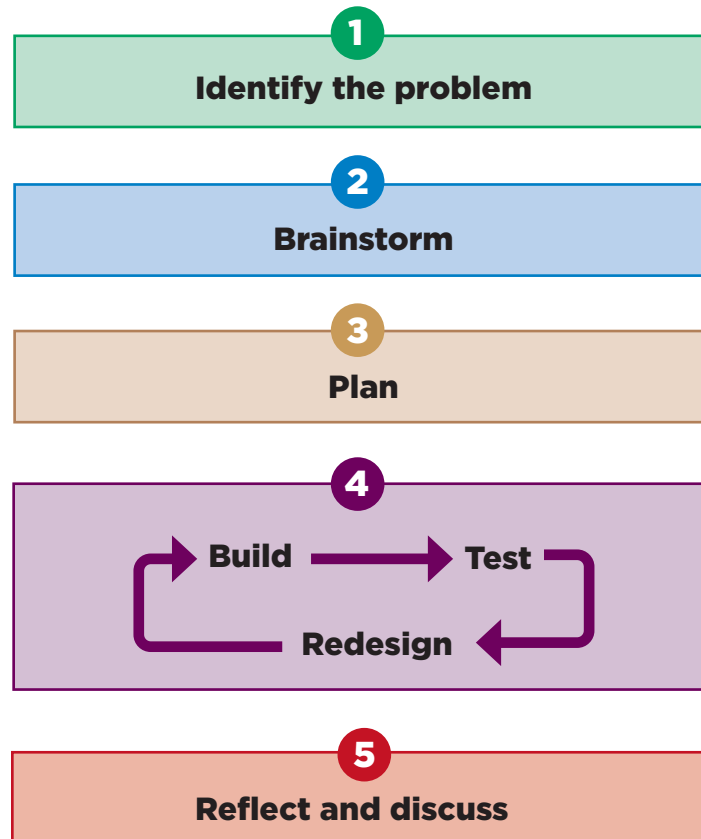
In this activity, you will practice using the engineering process to build the model of a hut. A hut is a simple structure or dwelling that can be compared to a tent, igloo or small shelter. The goal of this activity is to build a hut that can fit a small toy inside and is strong enough to support a heavy book without collapsing.

Instructions

1. Using the “Engineering Process” handout, start to work through building your hut.
2. Identify the problem: How can you build a structure strong enough to support a heavy book, as well as house a small toy?
3. Brainstorm: How can you build your hut? What might the structure look like? Think about other structures you have seen that can support a heavy weight. What shapes were the structures? Getting the packing peanuts wet will help them stick together; how can you stick them together to build a structure? How could you use the toothpicks to make your structure?
4. Plan: Gather your toothpicks, packing peanuts and water. Make a drawing or sketch of your design.
5. Build: Build your hut. Adding a little water to the packing peanuts makes them sticky so they will stick together.
6. Test: Put the small toy inside your hut to make sure it fits. Then, place the heavy book on top of your hut. Does the hut support the book?
7. Redesign: Make some changes to your design to improve your hut. Try some of the ideas you came up with during your brainstorming.
8. Repeat steps 6 and 7 as many times as needed.
9. Reflect and Discuss: How sturdy was the structure that you built? How does the amount of water used affect the strength of the hut? Did the toothpicks help make your design sturdier? Are buildings in the real world designed similar to your hut? Why or why not? What materials could you use instead of the materials provided today? How might this apply to the real world?

Engineering Process Handout

Engineering Process



- 1. Identify the problem:** Engineering is about identifying problems and designing solutions. As you go through these activities, think of the goal you are trying to achieve.
- 2. Brainstorm:** What are the many different ways I could solve this problem? What are the potential advantages and disadvantages of different ideas? What things do I need to think about to make that solution successful?
- 3. Plan:** What are the different ways I can solve this problem or make the build? What steps can I take to try out my solution? What do I need to do to prepare my build? What might happen if I choose that solution? During your design phase, you might discover new problems that you need to brainstorm.
- 4. Build:** Construct and carry out the design. As you build your design, you might come up with more problems that you need to brainstorm and design new ideas for.
Test: How does my solution work? Does it solve the problem? Is it effective? Are there additional problems?
Redesign: How can I improve my design? What can I try to make my solution work better?
- 5. Reflect and Discuss:** How did the solution turn out? What could I do differently next time? How would my design be different if I had different materials?