

byrd@home



Video 2: Creating a Prototype

To celebrate National Inventor's Day, we're showing you some of our favorite ways to prototype new inventions. A prototype is just a preliminary model.

Basic Materials:

- Cardboard
- Tape
- Scissors/Hobby Knife

Science Experiment

1. Have students choose (or you choose) a variable, something they can change or control, and ask a question about what will happen when you change this variable. For this project, they can change the type material used to build.
2. Have students make a hypothesis, or educated guess, on the results of changing the variable.
3. Design and complete an experiment to test the hypothesis.
4. Have students communicate (in writing or speaking) the results of their experiment.
5. This doesn't have to be the end! If the experiment leads to more questions, design another experiment. Remember the scientific method is iterative, or circular!

Engineering Project

1. Have students identify a problem that they want to solve.
2. The only criteria is that they must be able to prototype their solution.
3. You can define constraints including what materials students can use and the time they have to design and build.
4. Students should brainstorm solutions.
5. After brainstorming, students should pick the most promising solution and design.
6. After designing, students will prototype their designs.
7. They might be able to test their ideas depending on if they built a functioning prototype or not. If they want to, students can try to build a functioning product based off of their prototype.

Bonus Math Lesson: Geometry

Prototyping is a GREAT way to teach geometry. Have students prototype a house through one of the methods used in the videos. Students can practice (1) measuring an original object and (2) thinking about either cross-sections (if using the 1st method) or perspective drawings (if using the 2nd method). This hands-on activity is both aligned to real-world engineering skills and focuses on important 3D geometry concepts.

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