

# byrd@home



## Video 1: Creating a Vacuum

February 4th is National Create a Vacuum Day! Creating a vacuum at home is simple! It is just where the pressure inside an object is lower than the pressure outside of it.

Basic Materials:

- An empty plastic bottle
- A straw
- A pencil/pen/knife
- A balloon

## 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 or size or type of bottle or a material that they can use to replace the balloon.
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. The problem students should be asked to solve is to build the coolest vacuum!
2. The criteria for the project is that the pressure must be greater inside an object than outside and we should be able to demonstrate this.
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 build their designs.
7. They should test that a vacuum is created and if it does not work, work to find a solution. Remember the engineering design process is also iterative!

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