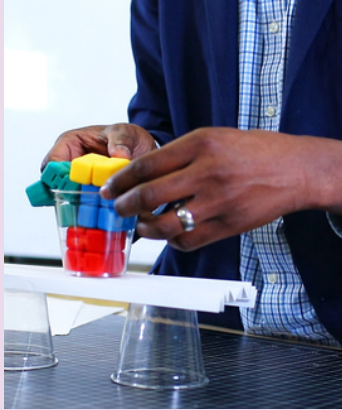# byrd@home

Video 3: Practicing Iteration

To celebrate National Engineering Week, we are learning about iteration. Iteration is the act of repeating an action or process. In engineering, we usually start with a basic idea and then iterate until we find the best solution.

Basic Materials:
- 3 cups
- paper
- objects with mass (i.e. toys, blocks, pens)

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 how far apart the cups are from one another or what type of paper is used.
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. Students should find a problem to solve with objects at home and practice iterating!
2. The criteria for the project is that they create a basic prototype, then improve their solution using iteration.
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 their solution and if it does not work, work to find a solution. Remember the engineering design process is also iterative!

Bonus Art Lesson

Science and engineering are not the only iterative processes. Art, the A in STEAM, is also iterative. Have students complete an art project of your choice, but then find a way to make it iterative. Have students change, fix, or add something to each version of their project.

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