Virtual Engineer-a-thon Activity Plan

Engineers Without Borders

Title of Activity	Water Filtration
Content of Subject Area	Civil Engineering
Length of Video	~10 minutes
Duration of Activity	*~20 minutes*

Safety protocols

The water will still not be clean enough to drink at the end of this experiment. True water filtration processes require more steps to remove contaminants that you can not even see.

General Objectives	Over 700 million people in the world lack access to clean water, in this experiment we will perform a filtration process to clean some contaminants out of dirty water.	
Learning Outcomes *What do you want students to know and be able to do?* *What knowledge, skills, strategies, and attitudes do you expect students to gain?* *What important math/science and engineering or computer science applications will students learn?* *What are the safety protocols you should take.*	Clean water is vital to health. Some things that make water dirty can be seen, some cannot. We will show a process for how the larger particles that you can seen can be removed with porous filters. Porous filters are objects that allow water to flow through them but prevent larger things, like dirt from flowing through. For example a Kleenex is a filter. Air and water	

	can go through Kleenexes. Larger items (like what comes out of your nose) does not.	
Materials and Resources	Materials: Plastic Cups: 2/person Muddy water: 2 cups Filtration materials - cotton balls (10/person) - coffee filter (1/person) - washed sand/gravel (~1 cup) - Anything else?	
Instructional Procedures *Why should students care about this topic or activity? How does it help them learn about engineering or computer science?* *What "big" questions will generate discussion about this topic and what engineering, or computer science is?* *(Reference Grand Challenges when possible - tie back to earlier videos)*	1. Make muddy water a. get dirt from the yard or potting soil and mix it into 2 cups of water 2. Take 1 plastic cup and poke a hole in the bottom (about the size of pencil). This is your filtration cup 3. Place filter in filter cup a. What order of supplies	

	will work best? b. Why do you think this filter will work? 4. Place the second cup below the first to catch the clean water a. leave a gap between the cups 5. Pour the muddy water through the filter. a. What happens? b. Did you get clean water? c. What happens if you pour the clean water through the filter again? d. How could you make this filter better?	