

Water Purification Device



Materials:

- 1L Water Bottle
- 5 Coffee Filters
- Empty 20oz. Bottles for Collecting Water to test and filter
- 100mL each of coarse sand, fine sand, gravel, pebbles, and stones
- 20g of activated charcoal
- 10 Cotton Balls
- Several Sponges

Objective:

Students design a portable water purification device that creates clean, drinkable water for people who live in places where clean water is not always available.

Engineering Design Process:

1. Define the Problem - What is the problem or challenge you are trying to solve or fix?
2. Background Research/Benchmarking - What do I have to work with?
What solutions have been done before? What hasn't been done?
3. Specify Customer Requirements - What does my final design need to be seen as successful?
4. Brainstorm Solutions - What are possible solutions to the problem or challenge?
5. Choose the Best Solution - Which solution is the best (think about what materials to use and how to use them, etc.)?
6. Build a Prototype - You must build your concept, so you can test your solution.
7. Test - Did it work?
8. Redesign - What could make my design better?

Instructions:

1. With your team, observe the materials that could be used for the making of your water filter.
2. Brainstorm with your team what each material might do, how much of each material you could use, and what order the materials should be placed in the 1 L bottle.
3. Write down your step-by-step plan for how your device will be built and what materials you will use.
4. Once you have your plan drawn out, begin building your device.
5. Once everyone's device is done, we will test each filter.