



STEM Ahoy! Build A Better Bandage Challenge Directions



Challenge:

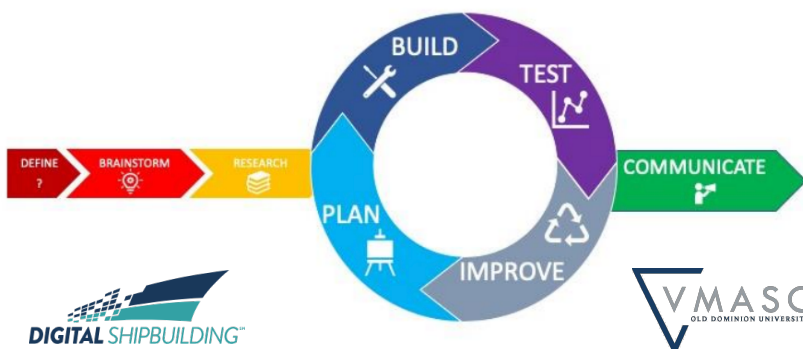
Experiment with biomedical engineering principles to create a new “bandage” to be used in a trauma situation!

Directions

First you need to understand and observe how the water absorbing crystals work, prior to experimenting with creating a new bandage.

1. For the initial research, you will need a paper towel, eye dropper, a small cup of water and a water absorbing crystal.
2. Observe the water absorbing crystal- what does it look like, what the texture?
3. Place the crystal on a paper towel, and drop a small amount of water on top until you observe a change.
4. Next place the crystal into the small cup filled with water. Make predictions on how the crystal will change being submerged for up to 10 minutes. *Think how this information will help you create your bandage!
5. After your research and observations on water absorbing crystals, reflect on how bandages look and how they are made.
6. Bandages are intended to help stop blood loss. Brainstorm and sketch how you can create a bandage that can hold three eye dropper’s worth of "blood"!
7. Using the materials mentioned, construct and design your bandage, tape should only be on the top of the bandage and not in between bandage/skin!
8. Test your bandage prototype(s) over a sink to minimize mess.
9. ****You should be testing the bottom of the bandage, the part that would touch the skin, not the tape.
10. Reflect on the design process: Did you bandage work? What worked best and what didn’t work so well? How might you need to change this design to use in the real world on an actual person?

VDOE Engineering Design Process:



Materials:

- *Suggested Items*
- *Red Food Coloring
- *Eyedropper
- *Paint Tray or Sink
- *Water Absorbing Crystals (purchase on Amazon)
- *Pipe Cleaners
- *Tape
- *Medical Gauze