Germs and Soap
Mini Challenge

Problem Scenario: There is a pandemic caused by a virus that has spread around the world. The best defense in this pandemic is to wash one’s hands with soap and water. You must create a tool to demonstrate why soap and water are such a powerful weapon against this deadly pandemic.

Challenge: How do germs stick to hands and what role does soap play in keeping germs off of one's hands?

Criteria:
Your design must demonstrate how germs:
• Spread?
• Stick to your hands or surfaces?
• What exactly does soap do?

Materials:
Bowl of Water, Black Pepper, Dish or Hand Soap, Paper Towels, Pen and Paper

1. Brainstorm: Use the space below to brainstorm the design and approach to maintaining neutral buoyancy.

Questions to consider:
• What do germs even look like and why are they so small?
• What are different words for “germs”?
• What do you think fat has to do with this?
• How does soap work?
• What is saponification?
• What is static electricity?
2. Design:
1. Set out a clean bowl and fill it with water.
2. Gently sprinkle pepper on the surface of the water.
3. Keep a few paper towels on hand to keep things clean!

3. Build:
1. Place your clean finger into the water with pepper on it.
   • Record what happens when you do that.
2. Now put a drop of soap into the pepper.
   • Record what happens when you do that.
3. Place your clean finger into the area where the soap is on the water.
   • Record what happens when you pull your finger clear.

4. Evaluate:
When you test your pepper germ — Record what you THINK is going to happen
• What is the control?
• Just water and pepper?
  • Record what happened
• When you add the soap, what do you THINK is going to happen?
• Now when you add the soap, what happens?
  • Record all of that.

Why do you think that is? — Make sure you wash your hands!

5. Modify:
• What happens when you use soapy water and pepper?
• Can you see a difference between how hand soap and dish soap work differently?
• Does the type of material the bowl is made of matter?

6. Share:
Share your creation on Social Media!
Tag us on Facebook, Twitter or Instagram @pastfoundation
Use the hashtag #ThisIsPAST or #DesignThinking