Science of Clean - DIAL

Reels/TikTok Creator Brief

Presented by the
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Exploring the Science of Soap and Hand Washing with STEM Expert Steve Spangler

Overview

When you understand the science of how Dial® soap works, frequent hand washing makes even more sense.

The selection of this experience is based on three criteria…

#1 – Real Science – The experience must be based on science pedagogy that encourages the young scientist to use critical thinking skills to better understand the scientific method and the science behind the chemical reaction.

#2 – Safety – Each of the experiments must be safe to conduct and allow for additional experimentation in a safe environment.

#3 – Experience - The goal is to create an experience that promotes wonder, discovery and exploration. The experiments should serve as a catalyst for the young scientist to ask additional questions and conduct further experimentation.

We believe the current focus on STEM – science, technology, engineering and math - is a call to action for every parent and educator who wants to best prepare children for an emerging workforce that places high value on both the core subject areas and the important skills of collaboration, communication, critical thinking and creativity.

The Science of Clean project focuses on giving consumers the ability to create a highly engaging STEM experience using Dial® Spring Water® antibacterial Liquid Hand Soap as a pathway to open-ended inquiry and exploration.

Stained Glass Glue

Some very unusual interactions take place when you mix a little white glue, food coloring, and a drop of Dial liquid soap. Use this experiment to amaze your friends and uncover the scientific secrets of soap.

The original activity was first published by Steve Spangler for National Chemistry Week in November 2007.

Successful elements of this experience include…

- Engaging "Science of Clean" theme
- Easy-to-find materials
- Simple mixing instructions
- "Take It Further" opportunities to explore using the scientific method
- Easy clean up

HERE'S WHAT YOU'LL NEED

- Dial® Spring Water® Antibacterial Liquid Hand Soap
- White glue
- Dinner plate
- Food coloring
- Cotton swab
- Plastic cup - 8 oz
- Popsicle stick

LET'S GET STARTED

1. Measure 3 tablespoons (45ml) of white glue into a plastic cup.

2. Add 1 tablespoon of water to the glue and stir with a popsicle stick to mix thoroughly.

3. Pour the glue mixture onto a dinner plate.

4. Add one drop of each of the four colors of food coloring-red, yellow, green, and blue-to the glue. Keep the drops close together in the center of the plate of glue.

5. Place a drop of *Dial* liquid soap on the other end of the cotton swab. Place the soapy end of the cotton swab in the middle of the glue and hold it there for 10 to 15 seconds. Look at that burst of color!

6. Add another drop of soap to the tip of the cotton swab and try it again. Experiment with placing the cotton swab at different places in the glue mixture. Notice that the colors in the glue continue to move even when the cotton swab is removed. What makes the food coloring in the glue mixture move?

HOW DOES IT WORK?

Glue is mostly water, but it also contains a much longer, more flexible chemical compound called polyvinyl acetate. These long flexible molecules called a polymer are moving around in the water like intertwined strands of boiled spaghetti.

The secret of the bursting colors is in the chemistry of that tiny drop of soap. Picture a snake when you think about a molecule of soap. The head of the snake (the water-loving or hydrophilic part of the molecule) is attracted to the water in the glue. The water-fearing or hydrophobic body of the snake is attracted to the long polymer molecules that make up the glue.

The glue molecules bend, roll, twist, and contort in all directions as the soap molecules race around to join up with the glue molecules. As the soap becomes evenly mixed with the glue, the action slows down and eventually stops.

THE SCIENCE OF CLEAN

This colorful experiment reveals the amazing cleaning power of soap. When you wash your hands, one end of the soap molecule is attracted to the oil and dirt where bacteria and germs collect while the other end of the soap is attracted to the water. This cool chemistry allows the soap to grab onto the oil, bacteria and germs and easily wash away with water.

TAKE IT FURTHER - HOW TO MAKE STAINED GLASS GLUE

This is the easiest part of the experiment. You'll need to allow the glue to completely dry out on the plate. Be patient… this could take a day or longer to fully dry. Carefully peel the glue off the plate to reveal your amazing work of science art. As the colorful disc continues to dry out, the edges will curl up to create an original masterpiece.