Let's Stop the Spread of Germs

Science Film Festival Knowledge Through Entertainment

FILM

- Elli's Little Corona Lesson - Corona without Granny and Grandpa
- Elli's Little Corona Lesson - How Can I Fight Corona?
- House of Little Scientists - How Germs Spread
- Youth and Corona

KEY OBJECTIVES

1. Understand how easily germs spread
2. Understand how washing hands with soap and water can remove the germs
3. Test the presence of bacteria on surfaces (for older children)

INTRODUCTION

We've been washing our hands a lot lately—for good reason! It is recommended to wash your hands with soap and warm water for at least 20 seconds. This is one of the best and easiest ways to help keep you healthy. In this activity, we will see how easily germs can spread, so you can see why it's so important to wash your hands. We will also see what happens to germs when it comes near soap.

GUIDING QUESTIONS

- Look closely at your hands and fingers. Do you see anything there?
- Do you think they are clean? Can you see the germs?
- What happens to the germs when they come in contact with soap?

TOPICS

Social science | wellbeing | health | hygiene

KEYWORDS

Germs | cleanliness | disease | health | hygiene | hand wash | soap

LEVEL

Elementary School (Simple Activity)
Primary/Secondary School (Advanced Activity)

RESOURCE TYPE

Experiment | Demonstration

INTENDED AUDIENCE SIZE

50

MODE OF DELIVERY

Small group | live online

TIME FOR ACTIVITY

20 min. (Early Learner)
3-4 days (Primary/Secondary) School

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MATERIALS/PREPARATION

Part 1

- Small bottle of baby oil
- Glitter
- Cup (or something else you can pick up, like a plate or silverware)
- At least one other person
- Hand soap

Part 2

- Bowl of Water
- Pepper Powder
- Drop of Hand Soap

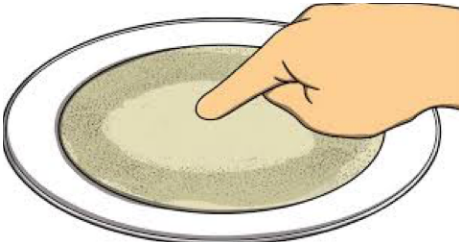
TASKS/PROCEDURE

PART 1

1. Have everyone participating in the experiment rub baby oil on their hands.
2. Then have an adult sprinkle glitter onto their hands. These are our germs. You've been sneezing and coughing and wiping your nose, and now the germs are all over your hands!
3. Shake hands with another person. What happens to the germs?
4. Pick up a cup (or some other item you have available). What happens to the germs?
5. Try washing your glittery hands in warm water without soap. Did the germs go away?
6. Wash your hands again. Use soap this time. Wash your hands for 20 seconds. Did the germs go away?

PART 2

Sprinkle pepper powder evenly across the surface of water in a bowl. The pepper powder will float on the surface. Now dip your finger in the hand soap and then put it onto the middle of the pepper water. What happens?



FOSTERING DISCUSSIONS

1. How do germs spread? Do they spread through the air? Do they spread through surfaces? Do they spread through personal contact?
2. Do all germs spread in the same manner?
3. What is the best way to wash your hands? How long should you ideally scrub them with soap?
4. How does soap help with cleaning dirt and removing germs?
5. Is using a hand sanitizer same as a hand soap? When should we use a sanitizer?

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SAFETY INSTRUCTIONS

Be careful when using glitter and soap. See that it doesn't get into your eye.

POSSIBLE EXTENSIONS

Is it required to use an antibiotic soap to wash hands?
Some people like to use antibiotic soap to help kill germs, but this can have negative side effects. The germs can adapt and evolve defences against antibiotics if they're overused, which means they become much harder to kill. These days most health professionals recommend you just use regular soap at home. It will wash away the germs without creating antibiotic resistance.

EXTENSION ACTIVITY FOR PRIMARY AND SECONDARY

INTRODUCTION

Growing and Testing for microbes on different surfaces can be done using simple materials. However it is VERY crucial that proper safety instructions are followed while handling and disposing the bacteria colonies, since serious illness can result from large concentrations of these.

MATERIALS/PREPARATION

- Disposable plastic bottle with cap (this will be the container to hold the growth medium – laboratories use petri dishes)
- Water – 1 glass
- Gelatine/Agar Agar/China Grass – 2 tsp per glass
- Sugar – 1 tsp
- Chicken/Meat Stock/Clear Dal Broth (vegetarian option) – 50 ml

TASKS/PROCEDURE

To prepare a general growth medium - Boil some water, and in a heat resistant vessel add 2 teaspoons of gelatine/ agar powder/china grass to each cup (250 ml) of hot water and gently stir until dissolved. To grow a range of microbes, add a teaspoon of table sugar for each cup of liquid and dissolve. Now add about 50 ml of strong hot clear meat broth. A vegetarian alternative can be a 'dal' broth. Mix gently, but quickly, and while still hot, pour into your bottle to a depth of between 5 and 10 mm (keep the bottle horizontal). While hot, close the bottle cap and keep in a cool location (a fridge, if possible) until ready to introduce the bacteria.(Picture 2)

Decide on a source for collecting bacteria (kitchen sink, bathroom counter, cell phone etc). Rub a sterile swab across the chosen surface. Dip the swab in a small volume (5 ml) of clean water (boiled and previously cooled), mix it and then pour it into the culture bottle and gently move it around. Any excess can be poured off. Keep this in a dark room temperature place like a closet for 3-5 days and examine the bacterial growth in the bottle WITHOUT opening the bottle cap.

This experiment can also be done to check the effectiveness of different antibacterial agents like regular soap, hand sanitizers, anti bacterial soap etc. Cut small squares of blotting paper and using a clean tweezer, dip them in the chosen cleaners. Blot the excess cleaner using a paper towel. You can then use the tweezer and carefully put the squares into the bottle on top of the jelly after adding the bacteria solution. In a few days, you can see which square has the least bacterial growth around it.

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FOSTERING DISCUSSIONS

1. Are our surfaces actually germ free?
2. How can bacteria help us? Are all bacteria harmful?
3. How can bacteria harm us?
4. What are anti-bacterial agents?

SAFETY INSTRUCTIONS

Adult approval/supervision is required while handling and disposing bacterial cultures.

Care should be taken when handling hot liquids and pouring them into a bottle.

The plastic bottle should be of a quality good enough to withstand hot liquids.

AUTHORS AND SOURCES

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