

SOAP AND GERMS LESSON PLAN



OBJECTIVES: After this class, students should be able to:

- Understand that soap cleans things
- Understand what germs are and when they can be good or bad
- Demonstrate that soap repels germs using a simple experiment

EQUIPMENT: 1 group = up to 5 students

- Small bowl half full of water (x1 per group)
- Ground black pepper or glitter
- Liquid soap
- Paper towels or cloths for drying hands



BRAINSTORM: Discuss with the class

What does soap do? (cleans things)

What do you use soap for in your everyday lives? (Bathing, cleaning dishes)

Why do we need to clean things? (Remove dirt, grease and germs)

What are germs? (Tiny things like bacteria, viruses and fungi)

Are all germs bad? (No, some useful bacteria can make cheese or yoghurt)

Why are some germs bad? (They can make people sick)

How do germs stick to us? They stick to the surface oil on our skin.

How do we get germs off our skin? Soap reacts with the oil on our skin and breaks it up so it's easy to remove with water.

DEMONSTRATION:

Split the students into groups and have them sit around their bowl of water. Get the students to sprinkle the black pepper or glitter into the water in the bowl.

The particles should float.

Explain that the particles represent germs - like bacteria and viruses.

Get the students to guess or hypothesise what would happen if they dip a finger in the bowl.

Have one student dip their index finger into the water - the particles should stick to their finger.

Ask a different student to cover their index finger with liquid soap.

Have this student dip their soap covered finger into the water.

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OBSERVATIONS:

The students should have seen that the particles stuck to the finger of the student that didn't have a soap covered hand.

The particles should have darted to the sides of the bowl and away from the finger of the student that had a soap covering.

DISCUSSION:

Ask the students if they observed any differences between the two experiments. See if any of the students can guess why the particles moved away from the soapy finger.

Ask the students if the experiments help them to see how soap cleans our hands.

THE SCIENCE:

Water is made up of water molecules which are tiny atoms of hydrogen and oxygen or H_2O .

Soap breaks down something called the 'surface tension' of water.

This is what makes soap great at cleaning!

The surface tension is how well water molecules can hold on to each other.

Because the water molecules want to keep sticking together, they move away from the soap taking anything they are touching with them (like the particles/germs).

When we wash our hands with just water the germs still stick to the oil on our skin.

When we use soap with the water, soap breaks down the oil on our hands which the bacteria stick to and the water washes the soap, oil and bacteria away.

CURRICULUM LINKS: Levels 1-3

Nature of Science: Using models to develop explanations, carrying out investigations, thinking about the roles of scientists (e.g. microbiologists) in our society, understanding that science is a way of explaining the world, participating in science and using science to explore issues of concern to society.

Living World: Thinking about how life processes are suitable to a particular environment (viruses need to be in a particular environment to replicate and survive), grouping species according to science-based classifications.