

Investigating a Non-Newtonian Fluid

Oobleck

Push it

Roll it

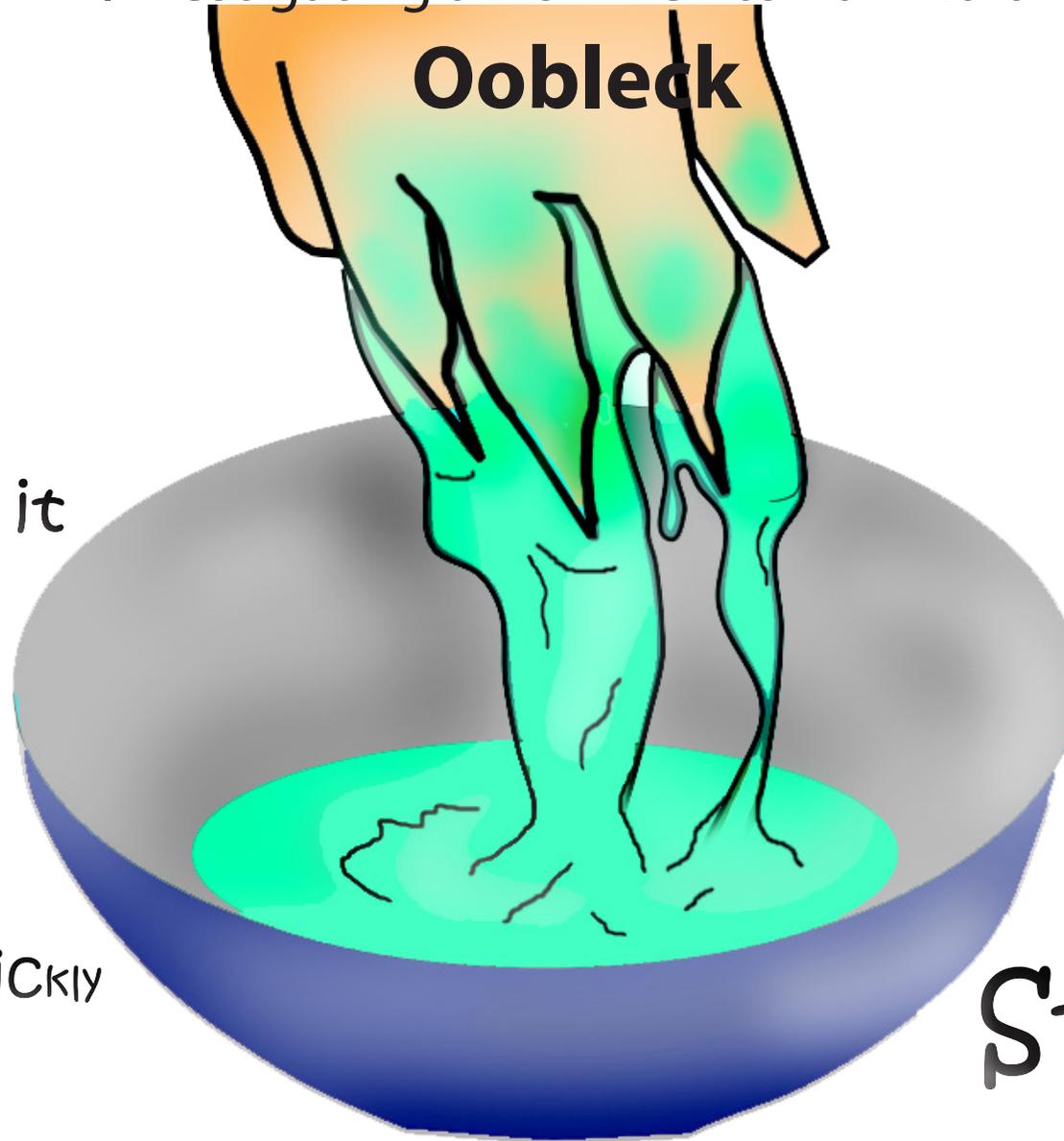
Stir it quickly

Pour it

Tap it

Drip it

Stir it slowly



Investigating a Non-Newtonian Fluid

Mix the following Ingredients

1 cup water

1.5t to 2 cups cornflour (add slowly)

1/2 drops food colouring

How easily does it move? Pour it, stir it.

What happens if you tap it with a spoon?

Does the same thing happen with water?

What happens if you place a small plastic toy on the surface?

How would you describe it?

If you add more water to your mixture are the effects the same?

Put your fingers at the bottom of the oobleck.

What happens when you pull them out quickly?

What would happen if you put a large foil tray with a little oobleck in, on a speaker? Adjust the sound put on a different beat.

Oobleck



Do your fingers sink if you rest them on top?

What happens when you squeeze it?

What happens when you stop squeezing?

If you stir it quickly, what happens?

What happens if you stir slowly?

What will happen if you leave a blob to dry?

Can you roll it into a ball?

What happens when you stop rolling?

Study other fluids and try to carry out the same investigations. Are the results the same?



Oobleck Lesson Plan

Primary Curriculum links

Understanding about Science
Investigating in Science
Communicating in Science
Properties and changes of matter

What you need

Cornflour, Water, Food colouring, Bowl and spoon.

Introduction *(It is a good idea to do some investigations with solids and liquids before or after this experiment, so children have something to compare this experiment with)*

How can we tell if something is a solid or a liquid? We will investigate a substance to see if it is a solid or a liquid. Like scientists, we will do some observations, using some of our senses (not just sight).

Investigate!

Throughout the investigation encourage the students to use words such as solid, liquid and words describing their characteristics (e.g. runs, drips, hard, shape...).

Mix together 2 cups of cornflour and 1 cup of water. Add a couple of drops of food colouring. Stir until everything is well combined.

Encourage the children to experiment with it.

Discuss

Let the children ask questions first, but then you may wish to use the poster attached to encourage more questions for investigation.

Do you think the oobleck is a solid or a liquid? Try spreading it out thin and pressing it into a ball shape. What happens?

Can something be a solid and a liquid at the same time?

Pre or Post Activity (For older children there is a investigation recording sheet attached)

Explore solids and liquids. Who can tell me one of the characteristics of a solid and then a liquid? Investigate: viscosity, dissolving, movement or motion.

Liquid: Assumes the shaped of the container, which it occupies. Is not easily compressible (little free space between particles)Flows easily (the particles can move/slide past one another)

Solids: Has a fixed volume and shape (the particles are locked into place)Is not easily compressible (little free space between particles) It does not flow easily (particles cannot move/slid past one another)

Does oobleck behave in this way?

Teacher explanation

The oobleck behaves like a solid and a liquid depending on the forces or pressure applied to it. When you hold the oobleck loosely in your hands or slowly stir it, the water particles can easily mix with the cornflour particles, making the oobleck behave like a liquid. When you force the oobleck into a ball shape, the cornflour particles are pushed together so that the water can't get in between. In this case, the oobleck acts as a solid.

Te Whariki Links

Strand 5: Exploration

Links with Essential skills

Problem-solving skills: Children enquire, carry out research and develop and test ideas and solutions as they explore.

Links with Essential Learning Areas

Science: Children learn strategies for active investigation, thinking and reasoning.

Investigating Solids and Liquids

What is it?	Describe it	Solid or liquid ?	Does it dissolve in water?

