Sustainability

Snappy science – make a lava lamp

COOL AUSTRALIA IS AN AWARD WINNING NOT-FOR-PROFIT THAT HELPS TEACHERS INSPIRE THEIR STUDENTS THROUGH REAL-WORLD LEARNING. THEY PROVIDE FREE-TO-ACCESS UNITS OF WORK AND LESSON PLANS THAT INTEGRATE TOPICS SUCH AS SUSTAINABILITY, ETHICS, ABORIGINAL HISTORIES AND CULTURES, ECONOMICS AND WELLBEING ACROSS SUBJECT AREAS. COOL AUSTRALIA'S 'SNAPPY SCIENCE' RESOURCES HAVE BEEN CREATED TO BOOST SCIENCE EDUCATION IN PRIMARY SCHOOLS ACROSS AUSTRALIA. EACH LESSON IS DESIGNED TO SUPPORT TEACHERS WITH THE SCIENTIFIC KNOWLEDGE, IDEAS AND RESOURCES TO STIMULATE A SENSE OF WONDER AND CURIOSITY IN THEIR STUDENTS. THE SNAPPY SCIENCE RESOURCES CAN ALSO BE USED TO ENGAGE FAMILIES IN FUN SCIENCE AND LEARNING FOR LIFE.

In this activity students make their own lava lamp.

Students can use the *Predict, Observe, Explain* table on the Student Worksheet to describe and reflect upon this experiment.

YOU WILL NEED

- A clean 1 litre clear soft drink bottle
- 3/4 cup of water
- Vegetable oil
- Antacid tablets (such as Quick-Eze or Mylanta)
- Food colouring

WHAT TO DO

Step 1: Pour the water into the bottle.

Step 2: Use a measuring cup to slowly pour the vegetable oil into the bottle until it's almost full. You may have to wait a few minutes for the oil and water to separate.

Step 3: Add 10 drops of food coloring to the bottle; the drops will pass through the oil and then mix with the water below.

Step 4: Break an antacid tablet in half and drop it into the bottle. Watch it sink to the bottom and watch the lava start to flow.

Step 5: To keep the effect going, just add another piece of antacid tablet. For a true lava lamp effect, shine a flashlight through the bottom of the bottle.

HOW DOES IT WORK?

To begin with, the oil stays above the water because the oil is lighter than the water. The oil and water do not mix because of something called "intermolecular polarity." (Molecular polarity basically means that water molecules are attracted to other water molecules. Oil molecules are attracted to other oil molecules. The structures of the two molecules do not allow them to bond together.)

The piece of antacid tablet sinks to the bottom of the bottle and starts dissolving and creating a gas. As the gas bubbles rise, they take some of the coloured water with them. When the blob of water reaches the top, the gas escapes and the water drops down again.

TAKE IT FURTHER

Repeat the experiment using water of different temperatures (very hot or very cold) or using antacid tablets of different sizes. How do these changes affect the lava lamp?

LINES OF INQUIRY FOR STUDENT LEARNING

- What is an oil spill and how do they happen?
- How do ice and water interact during an oil spill?
- How does oil affect marine life during an oil spill?

Australian Curriculum content description: This activity is relevant to Science Inquiry Skills across all primary year levels of the Australian Curriculum. For example:

- Year 2 Science - Different materials can be combined, including by mixing, for a particular purpose (ACSSU031)
- Year 5 Science - Solids, liquids and gases have different observable properties and behave in different ways (ACSSU077)

General capabilities: Critical and creative thinking.

Time required: 15 – 20 minutes to set up and demonstrate with lava lamp.

Resources required: Clean 1 litre clear soft drink bottle, 3/4 cup of water, vegetable oil, antacid tablets (such as Quick-Eze or Mylanta), food colouring.

For more information about this activity:
Download the Student Worksheet at www.coolaustralia.org/activity/snappy-science-make-lava-lamp/
Explore the Snappy Science library at www.coolaustralia.org/ca_topic/snappy-science/