a WOW Lab BLUEPRINT

Cauldron Bubbles

Achievements and Competencies

Learning Outcomes

K-Grade 3	Grades 4-6
Liquids and solids	Properties and changes of materials
Analyzing and interpreting	

Achievements and Competencies are based on the Common Framework of Science Learning Outcomes (K-12) set by the Canadian Council of Ministers of Education (1997).

Specific Expectations

Grade 2

PHYSICAL SCIENCE

Liquids and solids

100-17 Investigate and compare properties of familiar liquids and solids (e.g., compare the texture and appearance of solids such as rocks, pencils and modeling clay. Compare properties of different liquids and their droplets when placed on wax paper).

The properties of oil and water will be compared through mixing the two substances. In addition, adding salt to the oil and water mixture will allow students to see that the salt dissolves in water but not in oil.

100-18 Investigate and describe the interactions of familiar liquids and solids (e.g., investigate and describe the interaction of liquids with different surfaces, powdered solids and other liquids. Investigate and describe ways of changing the characteristics of liquids and solids).

The students will investigate how salt interacts differently with oil and water. Salt increases the density of the oil droplets causing them to sink. The salt dissolves in water and the oil rises back up to the oil layer.

100-20 Investigate changes that result from the interaction of materials and describe how their characteristics have changed (e.g., determine that melting ice changes its feel, flow and ability to interact with other materials and recognize that the changes can be reversed. Discover that mixing materials may create a new material with characteristics that are different from the original components).

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Cauldron Bubbles - Achievements and Competencies

The students will investigate the changes that occur when the oil and salt interact. Adding the salt to the oil solution will change the density of the oil, causing the oil and salt mixture to sink to the bottom of the container. The salt will dissolve in the water layer, allowing the oil droplet to rise back up to its original position.

> 100-21 Demonstrate an understanding of sinking and floating objects by solving a related practical problem (e.g., describe and demonstrate ways to make sinking objects float and floating objects sink; select and assemble materials so they will float, carry a load, and be stable).

Initially the students will see how oil floats on top of the water, but when they add the salt, the oil and salt droplet will sink to the bottom of the container. Students will be able to continue their investigation by adding increments of salt until the solution becomes saturated.

> 202-2 Place materials and objects in a sequence or in groups according to one or more attributes (e.g., sequence a set of materials by the level that they float in water).

The students will place the water and oil into the container in a particular sequence according to their densities. This will allow them to see that the oil and water do not mix together and can be used to explain to students that the two liquids have different attributes.

Grade 5

PHYSICAL SCIENCE

Properties and changes of materials

> 204-2 Rephrase questions in a testable form (e.g., rephrase a question such as "Does changing the physical characteristics of an object change its mass?" to "What happens to the total mass of a piece of cardboard when it is cut up into several pieces?").

Before adding the salt to the oil and water mixture, students can come up with testable questions such as "How is the density of the oil affected when the salt is added to the solution?".

> 204-5 Identify and control major variables in their investigations (e.g., control variables such as the amount of liquid and the mass of solids being dissolved in a solubility test).

The addition of salt is the controlled variable in this activity. The students will add salt to the oil and water mixture in small increments until the solution becomes saturated.