

**Project FOCUS
Best Lessons
SECOND GRADE**

Title of Lesson: Oobleck

Theme: Physical Science

Unit Number: 1 **Unit Title:** Properties of Matter

Performance Standard(s) Covered (enter codes):

S2P1

S2CS4a

S2CS4b

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Essential Question: (1) How can matter be changed? (2) What are the properties of matter?

Enduring Understanding Addressed: (1) All matter takes up space and has mass. (2) The properties of matter are observable and usually exist in one of three forms: solid, liquid, or gas.

(3) Things can be done to matter which may change their properties. (4) Not all matter changes the same way.

Key Terms: matter, solid, liquid, gas, property

Learning Activity (Description in Steps)

Abstract (limit 100 characters): The purpose of this activity is to enhance understanding of the different properties of matter.

Details:

* This activity can be done with or without the reading of Dr. Seuss's Bartholomew and the Oobleck. This book goes very nicely with the unit and gives the kids an idea behind the concept of the word "oobleck." Plus, all elementary students love reading books!

Background Information:

Oobleck is a substance that displays properties of both solids and liquids, known as a colloid. This is partly due to large molecules or clumps of small molecules in a colloid. They are small enough to move about randomly, as in a liquid, but are large enough to be bombarded by surrounding molecules which restricts movement, mimicking properties of a solid. In addition, these particles are not dissolved completely

in the medium, like a solution but the particles pass unchanged when filtered. However, colloidal particles are not totally suspended. Colloid particles do not temporarily settle out as in a suspension, but scatter light similar to suspensions.

Preparation:

Mix one box of cornstarch (454 g) and 250 mL of water in a bowl prior to class. Before you reveal the mystery mixture, you might want to review the properties of solids and liquids. I started the lesson by listing properties of chalk on the board. You may also want to go over the various tests they will perform. You can distribute the oobleck in clear plastic cups. Then allow the students to have five minutes of “free exploration” where they can determine observations such as color, texture, shape and smell prior to performing the experimental tests and filling out the data sheets. The experiments include the quick finger poke test, slow finger poke, conformity, pour, bounce, shatter, shape, heat and cool tests. The shatter test and heat test should best be saved to do as a demonstration to the students. Make sure that the students record their observations on their data sheet. When they are done filling out their data sheet, they can analyze their results by coloring in the pie chart (liquid properties in one color all together and solid properties in a different color all together). Since this fun activity may be slightly messy, you may want to cover the students desks with newspaper, or plan to go outside!

Possible Questions:

- What are properties of solids? What are properties of liquids?
- How are solids and liquids similar and different?
- What are physical changes and chemical changes?

Safety Issues:

- Make sure that the students do not eat the Oobleck
- Make sure to keep little fingers away from the candle flame to prevent burns
- Make sure to keep the hammer away from the students

Materials Needed (Type and Quantity):

- box of cornstarch
- water
- mixing bowl
- spoon
- hammer
- aluminum foil
- plastic cups
- zip-lock baggies
- wax paper
- candle
- clothespin

Notes and Tips (suggested changes, alternative methods, cautions):

Make sure to walk around and keep the students on task and performing their tests. They tend to want to just play with the Oobleck and forget that they are supposed to be scientists and filling out the data sheet. You might want to ask questions and help them decide whether or not the tests show properties of solids or liquids. When the students have finished their tests, bring the class back to order and discuss the findings and fill out the pie chart.

Sources/References:

- 1)
- 2)
- 3)