

Discovering the Properties of Flubber

Subject(s):

- Science/Physical Sciences

Description: In this lesson, students will work with a substance called Oobleck. Students will be amazed at what they see!

Goals: The main goal of this lesson is for students to become more familiar with the states of matter, specifically solids and liquids.

Objectives:

1. Students will observe the movement of Flubber and be able to compare its movement to that of solids and liquids.
2. Students will be able to state the properties of solids and liquids and compare them to the properties of Flubber.

Materials:

- Flubber (already prepared; see directions below)
- pie pans
- newspaper (to cover desks)
- small objects (paper clips, pennies, confetti, marbles, toothpicks, string)
- Bartholomew and the Oobleck by Dr. Seuss

Procedure:

Directions for making Oobleck:

Pour 4 cups of water into a large bowl. Add a few drops of green food coloring. Use your hands to mix in 4 boxes of cornstarch. [Each box contains about 2 cups (16 oz.) of cornstarch. All four boxes together equal about 8 cups of cornstarch.] Add another 1 3/4 cups of water and mix thoroughly.

Lesson Introduction:

Begin the lesson by introducing the principles of solids and liquids.

Liquid:

- assumes the shape 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)

Solid:

- has a fixed volume and shape (the particles are locked into place)

- is not easily compressible (little free space between particles)
- does not flow easily (the particles cannot move/slide past one another)

Inform students that it is possible for a substance to have both the properties of a solid and a liquid. Read the book Bartholomew and the Oobleck by Dr. Seuss. Discuss what Oobleck is and tell students that they will have an opportunity to experiment with Oobleck.

Lesson Focus:

Divide the students into groups of 4. Have one student from each group come to the front of the room to gather materials. Explain the activity: Students will be free to handle and explore the consistency of the Oobleck. Students will then place the objects given to them (marble, paper clip, penny, confetti, toothpick, and string) in the Oobleck and observe what happens with each.

[**Author's Note:** The students will discover that the marble, penny, and paper clip sink in Oobleck; the confetti, toothpick, and string float in Oobleck. The students may come to the conclusion that any object will either sink or float depending on its weight. Heavier objects will sink and lighter objects will float.]

Conclusion:

Ask students to share their group findings with the rest of the class. Explain that Oobleck is a non-Newtonian fluid. Introduce the new term non-Newtonian fluid -- a substance that exhibits characteristics of both solids and liquids. A Venn diagram or other chart can be used to compare the Oobleck with a solid and a liquid. In their science journals, have students write about their experiences with the Oobleck.

Assessment: Informal observations can be used (i.e. teacher observation of group work). Evaluation can also come from students' responses in their science journals.

Special Comments: This lesson can be adapted easily for students with special needs. Visually impaired students would be able to feel the Oobleck and with help from a classmate, he/she could easily be included in this activity. For a hearing impaired child, simply use more written cues (i.e directions).