Objective

By the end of this lesson, you will understand the properties of Ooblek and how it behaves as a non-Newtonian fluid.

Materials and Prep

- Cornstarch
- Water
- Food coloring (optional)
- Mixing bowl
- Measuring cup
- Spoon
- Old newspapers or plastic tablecloth (to protect surfaces)

No prior knowledge is required for this lesson.

Activities

- Mixing Ooblek: In the mixing bowl, combine 1 cup of cornstarch with 1/2 cup of water. Stir the mixture until it becomes a gooey, semi-liquid substance. Add food coloring if desired.
- Exploring Ooblek's Properties: With clean hands, pick up a handful of Ooblek and squeeze it tightly. Observe how it behaves. Release your grip and watch it flow like a liquid. Repeat this process several times to see its unique behavior.
- Testing Ooblek's Resistance: Place a small amount of Ooblek on a flat surface. Try tapping it gently with your finger and notice how it feels. Now, try hitting it with more force and observe the difference in resistance.
- Creating Ooblek Shapes: Mold the Ooblek into different shapes using your hands. Experiment with making balls, cubes, or even pouring it from one hand to another. Notice how it changes shape and consistency based on the force applied.

Talking Points

- Ooblek is a non-Newtonian fluid, which means its viscosity (thickness) changes depending on the applied force.
- When you squeeze Ooblek tightly, its particles align and it becomes more solid-like. This is called shear thickening.
- When you release your grip, the particles lose alignment and it flows like a liquid. This is called shear thinning.
- Ooblek's unique properties make it fun to play with and explore. It's a great example of how materials can behave differently from what we expect.
- Scientists use non-Newtonian fluids like Ooblek in various applications, such as body armor, impact-resistant materials, and even in some food products.