Objective

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

Materials and Prep

- Cornstarch
- Water
- Bowl or container

No prior knowledge or preparation is required for this lesson.

Activities

- Mixing Oobleck: In a bowl, mix cornstarch and water in a 2:1 ratio. Stir the mixture slowly and observe how it changes consistency. Try squeezing it in your hand and see what happens.
- Oobleck Dance Party: Place a small amount of Oobleck on a speaker or subwoofer. Play music with heavy bass and watch the Oobleck dance and move along with the vibrations.
- Oobleck Races: Fill two bowls with Oobleck and set up a race track using a flat surface. Use spoons or other utensils to move the Oobleck from the starting line to the finish line. Observe how the Oobleck behaves differently from a regular liquid.

Talking Points

- **What is Oobleck?** Oobleck is a non-Newtonian fluid made from a mixture of cornstarch and water. It behaves like a liquid when poured, but turns solid when a force is applied.
- **Why does Oobleck behave this way?** The unique behavior of Oobleck is due to its shear thickening properties. When a force is applied, the cornstarch particles align and create a temporary network, making it act like a solid.
- **What happens when you squeeze Oobleck?** When you squeeze Oobleck, the pressure causes the cornstarch particles to come closer together, increasing the viscosity and making it feel solid. Once you release the pressure, it returns to its liquid-like state.
- **Why does Oobleck dance on a speaker?** The vibrations from the speaker cause the Oobleck to move and dance. The vibrations disrupt the temporary network formed by the cornstarch particles, allowing it to flow and change shape.
- **What makes Oobleck different from a regular liquid?** Unlike a regular liquid, Oobleck can resist changes in shape and behaves like a solid under pressure. It is an example of a non-Newtonian fluid, which means its viscosity changes depending on the applied force.