Sources:

- https://frugalfun4boys.com/make-magnetic-slime/
- https://www.stevespanglerscience.com/lab/experiments/magnetic-slime/

Lesson Outline:

1. Setup
2. Magnetism
3. Activity
4. Review Questions

Materials:

1. Liquid Starch
2. Elmer's Glue
3. Iron Oxide Powder
4. Bowls (for mixing)
5. ¼ Measuring Cup
6. Tablespoon
7. Magnets
8. Trays

Prep:

- For each group, have:
    - ¼ cup of Elmer's glue
    - 2 tablespoons of iron oxide powder
    - ⅛ cup of liquid starch
- Have trays at each desk

MS-PS1-1 Matter and its Interactions

Magnetism

Make sure to ask a lot of clarification questions throughout this part! Go through it slow - this is the most important part.

- **Ask:** Has anyone ever played with magnets?
- **Ask:** What happens?
    - "They stick together!"
    - "Sometimes they repel"
        - Repel aka push away
- **Ask:** What causes magnets to stick together or repel from each other?
- Something called magnetism!

    - Magnetism: attraction of two things that cause them to stick together
- Certain types of metal are magnetic, have a property/characteristic of magnetism, like iron and cobalt
- Magnets have a north pole and a south pole
    - The north pole attracts to the south pole
    - The north pole repels other north poles
    - The north pole attracts to the Earth's north pole (where Santa lives)
        - The Earth is made up of magnetic materials and acts as one huge magnet
- Magnetic field: invisible area around a magnet that attracts other magnets
    - All magnets have magnetic fields, including the earth

Activity

1. Separate students into groups of three
2. For each group, pass out the Elmer's glue, iron oxide powder, and liquid starch
    a. Ask them to try to identify each!
    b. For the iron oxide powder, explain that it's really tiny bits of iron - a metal. This is what will make our slime magnetic!
3. Add the iron oxide powder into the glue. Mix.
4. Add the ⅛ cup of liquid corn starch. Stir well.
5. Eventually, the liquid corn starch and glue will start to react, and it'll start to feel a bit more like slime.
    a. When that happens, students may need to take out the slime and knead it a bit, like bread.
    b. If it's too sticky, add a *little* bit more starch. If it's too gooey or stringy, add a *little* bit more glue.
6. Once they've finished making their slime and have a chance to see how it works, pass out their magnets. This is a good time to explain that magnets are fragile, so please be careful with them.
7. Let them play around with the magnets for a while.

Post-Activity

1. Ask: What did you observe about the slime?
2. How did we observe magnetism with the slime?
    a. When students used the magnets and brought it near the slime, they should have noticed the slime's attraction to the magnets. This is caused by the ***molecules*** of iron oxide inside the slime, going back to our definition of magnetism
3. What would have happened if we used a stronger or weaker magnet?
    a. If the magnet was stronger, the slime would have been even more attracted to it because it would have had a larger **magnetic field**. The opposite would be true had the magnet been smaller.

Review Questions

1. What is magnetism?
2. What do we call the two “ends” of a magnet?
3. What materials are commonly magnetic?
4. What is a magnetic field?
5. What caused the slime to be magnetic?