MIND TREKKERS
Trading Places: Liquid Science Lesson Plan

Amount of time Demo takes: 10-15 min
# per hour: 6

Materials:
1. Two shot glasses
2. Plastic card, like a student ID (1)
3. Oil (1 ounce)
4. Water (1 ounce)
5. Food coloring (1 bottle/day)
6. Water bucket

Set up instructions:
1. Fill each glass completely: one with water, the other with oil
2. Add food coloring to the water (so it is easier to see the switching liquids)
3. Place the plastic card over the top of the glass with water - holding the card to the glass, flip the glass upside down. Place the card/glass system on top of the glass filled with oil.
4. Make sure you line the glasses up along the rims. Then, move the card so that there is just a small amount of open space at the edge of the glasses.
5. Over the next few minutes (about 10 minutes for shot glasses), the liquids will exchange places. The oil will rise to the top, and the water will settle to the bottom.

SAFETY!
1. Perform this demonstration in a bin to avoid oil/water spills on the tables and floors.

Lesson’s big idea bullet points
- Oil and water have different densities. Density is the mass per unit volume (for instance, water’s density is one gram per milliliter). The oil rises to the top, while the comparatively dense water sinks to the bottom. You could see the same result if you removed the card entirely from the system - however, this way is prettier.

Clean Up
Clean up between demonstrations if needed. When completely finished gather all materials listed for this demonstration and make sure everything is accounted for. If something was used up, broken or damaged, let someone know so it can get replaced or fixed.

Clean out the shot classes and wipe up any spills. Clean up the ID card and other materials so that they are not covered in oil or water.

References:
http://chemistry.about.com/od/chemistrymagic/a/liquid-science-magic-trick.htm
National Standards:
K-4 Content Standard B: Properties of objects and materials
5-8 Content Standard B: Properties and changes of properties in matter
9-12 Content Standard B: Structure and properties of matter