

ADDING SCIENCE TO YOUR GUIDANCE LESSONS

Tricia Norby, MA, MS, LPC

WHY ADD SCIENCE?

- Dr. Brad Johnson and Tammy Maxson McElroy write in their book *The Edutainer: Connecting the Art and Science of Teaching* that teachers need to find more engaging ways to deliver instruction and connect the material to students' lives.
- Effective teachers possess such traits as vulnerability, wit, excitement, humor, and most importantly, a desire to motivate students to excel
- The edutainer approach utilizes the "three Rs" that we define as relationship, responsibility, and relevant learning
- Students are exposed to so much information that it almost becomes "white noise" to them. If they can't find relevance in it then they are likely to tune it out.
- Using multiple senses allows more cognitive connections and associations to be made with a concept.



MAGNETIC SLIME

Supplies

- 4 ounces school glue
- 1/3 cup water
- 2 tablespoons iron oxide
- 1/2 cup liquid starch
- Neodymium magnets
- Cost: \$20-\$25

Lesson Ideas

- Peer Pressure Role Playing
 - Getting too close to people who make poor choices can pull you in to those experiences
- Addiction
 - The 4 stages of addiction (experimentation, daily preoccupation, regular use, addiction)—just a little experimentation can be all consuming before you know it!



EGG IN A BOTTLE

Materials

- Wide mouth bottle (Snapple)
- Lighter
- Newspaper
- Hard boiled egg (or water balloon)
- Water (just in case)

- Cost: \$2

Lesson Ideas

- Peer Pressure
 - The longer you stay in a risky situation, the more likely you are to get sucked into negative choices.

PENICILS IN A BAG



3. NO-LEAK MAGIC BAG

[youtube.com/brusspup](https://www.youtube.com/brusspup)

Materials

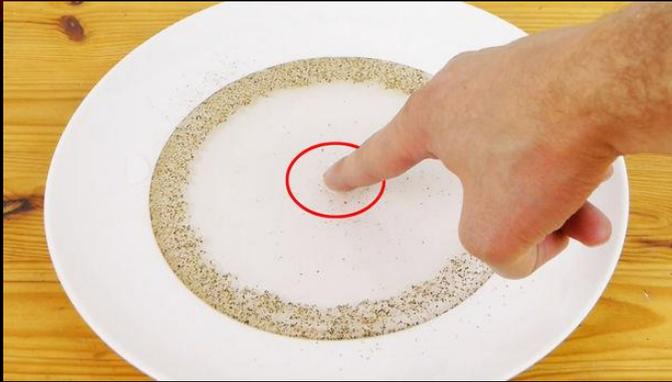
- Plastic Bags
- Water
- Pencils

- Cost: \$2

Lesson

- Resiliency
 - If our bag starts out full, it takes a lot of stabs before we start losing our confidence
 - Most plastic bags are made of polyethylene, a polymer that is durable, flexible, and shaped like long strands. When the pencil is quickly pierced into the bag of water, the polyethylene molecules separate but don't break, forming a seal around the pencil. If the pencil is pierced into the bag before the water is put in, the water will leak.

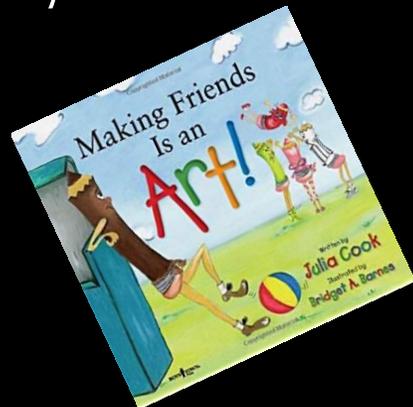
ATTRACTING FRIENDS



Materials

- Clear glass bowl
- Pepper
- Liquid or bar soap
- Book on friendship (Yertle the Turtle, Making Friends is an Art)

- Cost: Free-\$2



Lessons

- Read a book about friendship and discuss all the things that the students would like to see in a friend (kindness, humor, sharing, etc). For each quality that a student says, have them put a dash of pepper in the bowl. Then discuss what could ruin a friendship—add a drop of soap (and see the pepper move away). Discuss what you need to repair a friendship.

GETTING YOUR POINT ACROSS

Materials

- 1 c. corn starch
- ½ c. Water
- Food coloring (optional)

- Cost: \$3



Lesson

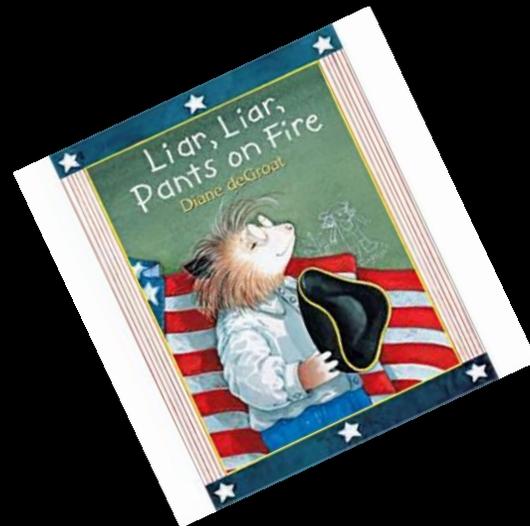
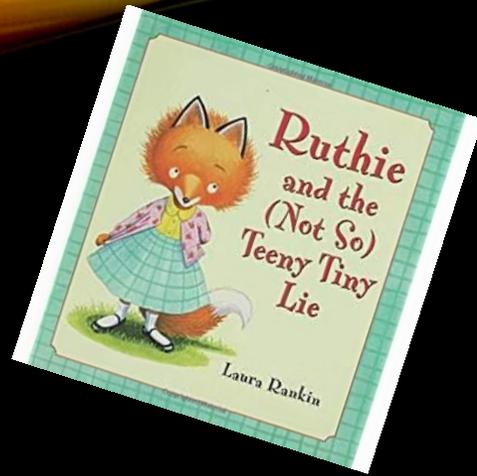
- Since this 'Oobleck' remains firm when you poke it too hard and becomes liquid when you are gentle and move slowly, it makes a nice analogy about how to have a discussion about getting your point across. (Viscosity)
- Pairs nicely with the Mindup lesson on Mindful listening.

OUBLECK

- Oobleck is called a non-Newtonian fluid. This means that when pressure is applied it's elasticity changes. It is characterized as a colloid because, unlike a suspension, the contents do not settle and the particles are too big for it to be a solution. Although it displays some characteristics of a solid it is only for a few moments when pressure is applied. It is still a mixture and it still considered to be a type of liquid. It acts the way it does mostly because of water movement when it is surrounded by water, the surface tension helps it's granules flow freely due to extra lubrication. However when water movement stops all of a sudden it creates a lot more friction between its granules. Oobleck is a non-Newtonian fluid providing a realization of a shear thickening of fluid. Non-Newtonian means that at a state of rest, it acts like a liquid but when outside force is exerted upon it, it acts like a solid. Oobleck can be made with cornstarch and water which is also a common thickening agent used in cooking. When force is applied a cornstarch acts as a solid and resistive force.

Materials

- Quarter
- Pennies (1 for each child)
- Book on honesty (Liar, Liar, Pants on Fire; Ruthie and the Not So Teeny Tiny Lie; Oh Bother, Someone's Fibbing)
- Glass bowl
- Water
- Cost: \$.25



A LESSON ON LYING

BY BARBARA GRUENER

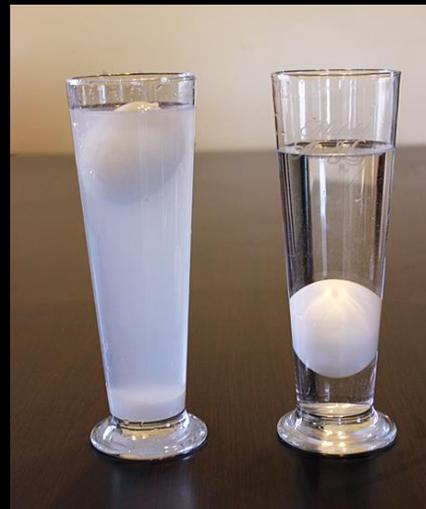
Lesson

- The quarter represents the 'lie' and you ask for observations (it sank, it's heavy, it made waves, it rippled out, etc.) Then explain that sometimes people try to tell little whit lies to cover up the lie. So each student gets a penny or two to give it a shot—let them pitch them in one at a time and try to COVER the lie. It's impossible, really, because of water displacement, so you always have a built-in science lesson. They may get on top of it a bit, but you can STILL see the lie. In the end, each students gets to go home with an 'honest Abe' to remember to always tell the truth!

MASLOW'S CLIMATE OF CARING

Materials

- Large, Clear glass of water
- Egg
- Bowl of Salt
- Teaspoon
- Cost: \$1



Lesson



- Start the lesson by making a thinking map about what caring looks like, sounds like, and feels like.
- Once your map is complete, drop a fresh egg gently into a drinking glass or vase.
- Ask the kids to make observations - it sunk, it's drowning, it's covered with water - then connect those observations to how someone who isn't receiving any caring, affirmation or love might feel.
- Pose the question, "How much kindness might it take to give that egg hope and bring it back to the top?"
- Remove the egg from the water. Using salt to represent kindness and compassion, sprinkle in one (1) Tablespoon for every suggestion that students give you about how they could make that egg feel loved and keep it from drowning. Make sure to use at least 1/3 cup of salt.
- Stir in the suggestions vigorously for good measure, then gently drop the egg back into the water. It should float, but if it doesn't, use that to reinforce with students that everybody's different and maybe this particular egg needs even more caring, love and affirmation before adding another Tablespoon or two. When the egg floats, reflect with students on how we can use caring to lift one another up.
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- How many students come to school hungry? Or tired? What can you do to meet those needs? Safety comes next. How many of your students have some anxiety about something? How many lack stability, strong limits, structure, order? What will you do for them? Look at what's next - LOVE. And belongingness. Relationships are HUGE! How many of your students really feel connected? To one another? To you? To someone? Then comes esteem, under which you'll find responsibility and reputation. Do your students even know what this means? When parents come by to ask me to help give their children self-esteem, I always ask them, "What are they responsible for?" Give kids some chores and watch what happens at home. Give them jobs in the classroom and see what develops.
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- Check it out; according to Maslow, ALL of this has to be in place before students are ready to learn. Cognitive needs are fifth on the pyramid.
- <https://www.yahoo.com/news/two-brains-both-belong-three-120608571.html> (take a look at this article and see how a child's brain is affected by neglect.

MY MOUTH IS LIKE A VOLCANO

Materials

- My Mouth is Like a Volcano, by Julia Cook
- Clay
- Soda can or bottle
- Baking soda (in paper towel)
- Red food coloring
- Vinegar
- Plate (to catch mixture)

Lesson

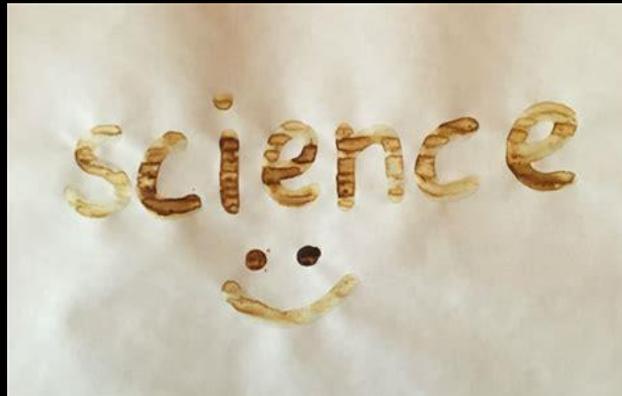


INTEGRITY

Materials

- Lemon juice
- Paper
- Heat source

- Cost: \$1



Lesson

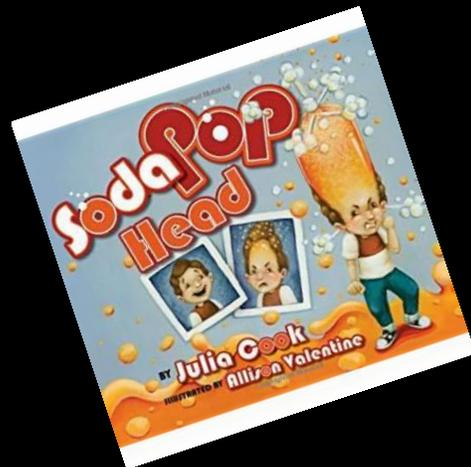
- Doing the right thing, even when no one else is looking. Have a discussion about what integrity means. Have students write kindness notes to each other.
- Lemon juice is acidic and weakens paper. When paper is heated, the remaining acid turns the writing brown before discoloring the paper.

ANGER

Materials

- Warm Diet Coke bottles (1 big, 1 small)
- Mint Mentos (4 small and 7 large)
- Soda Pop Head, Julia Cook

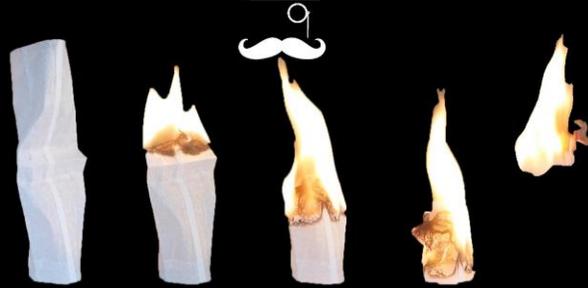
- Cost: \$10



Lesson

- Discuss emotions and how to manage them before they get out of control. Use a 12 oz bottle first and use mini Mentos for when emotions are small (easier to calm down) and then add big Mentos to show what happens as emotions get bigger and how it is harder to manage when they get too big.
 - -Jeanne Winters Morriss
- According to Wikipedia, "the numerous small pores on the candy's surface catalyze the release of carbon dioxide (CO₂) gas from the soda, resulting in the rapid expulsion of copious quantities of foam"

FLYING TEA BAG ROCKET



FLYING TEA BAG

Materials

- Traditional Tea Bag
- Lighter
- Fire safe area
- Scissors
- Glass or ceramic container

- Cost: \$1

Lesson

- As you probably know, heat rises! Hot air balloons work at lifting a balloon off the ground by making the air inside the balloon hotter, and ultimately less dense, than the air outside. Similarly, this tea bag flying machine lifts off once the fire burns the tea bag into lightweight ash. The rising hot air current lifts what's left of the bag and blows it into the air.
- This lesson can be tied to a discussion on success and what each student needs in order to 'rise up' and be successful. Also add in a brainstormed list of what 'holds us down' (the tea).

RESOURCES

- Learning Is Multi-Sensory: How To Engage All The Senses So Children Really Benefit, by [Anna Pitts](#) | Dec 13, 2012
- **Edutainers Make Lessons Engaging, Relevant**, Ellen R. Delisio
Education World© 2010 Education World
- **This DIY Magnetic Goo Will Blow Your Mind**, By [RayPajar](#), November 4, 2016
- Air Pressure_The Egg and Bottle <https://www.youtube.com/watch?v=28TlyWdfxxc>
- Pepper and Water Science Trick <https://www.youtube.com/watch?v=ho0o7H6dXSU>
- Oobleck and Non-Newtonian Fluids: Crash Course Kids #46.1
<https://www.youtube.com/watch?v=Fnd-2jetT1w>
- <https://www.thoughtco.com/make-invisible-ink-with-lemon-juice-602225>
- <https://www.stevespanglerscience.com/lab/experiments/original-mentos-diet-coke-geyser/>