Explosives & Experiments

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I love science

• It’s unpredictable—nobody knows what’s going to happen and that’s the whole point!
• It’s hands-on—science programs empower kids to make their own hypotheses and test them
• It’s messy—and that’s ok
• It’s really simple--I promise
Why?

- “Wow, I never knew I loved science” said in utter shock
- Terminology & Concepts
- Always with the numbers...
- Broaden your base with Spine-Tingling Science (& marketing)
What Does a Science Program Look Like?

- Prep Time (*including time for you to try all of the experiments TWICE*)
- Size: 20 (and a few parents)
- Sign ups begin 1 hour before program
- Age: 6+ (possibly 7 or 8, A LOT of measuring)
- Place settings and shared ingredients
- Format: Experiment – Demo – Experiment – Demo – (Outdoor) Experiment
- Time: Approximately 1 hour plus clean-up 😊
Meet your new best friend!

Steve Spangler

Author of the best science experiment books
Worth purchasing (in my opinion):

- InstaSnow 375g (8 gallons) = $18
- InstaWorms Classroom Kit = $50 (2L, bottles, color solutions, etc)
- Vampire Slime (teaches properties of light and polymers)
- Hot Ice (sodium tetraborate – teaches about super-saturated solutions)

Not worth purchasing:

- InstaSnow Classroom Kit 192g (4 gallons) = $50 (measurers, bags, cups, more detailed teacher activity guide)
- InstaWorms Plain = $20 (1L)
- Dry Ice Bubble Maker (you can make it yourself)
I’m supposed to explain Non-Newtonian Fluids to six-year olds?!?

YES

and it’s easy!
Rockets & Lava Lamps

Alka-Seltzer – not just for heartburn!

Rocket:
• ¼ A-S + 1 t H2O in closed canister
• What will happen to the bubbles? Pressure?
• Hello parents!

Lava Lamp:
• What is a molecule?
• H2O + oil - why don’t they mix?
--- polar & heavy vs. non-polar & light
(have oil pre-poured)
• 1/4 A-S (no lids allowed!)
• A-S reacts with water → CO2 bubbles are created as A-S dissolves
• CO2 - light and wants to escape, carries some H2O up with it
• CO2 bubble pops, H2O sinks back down

A-S + H2O → CO2 + other stuff
Insta-Worms

- Fill worm activator cup ¾ full of H2O & mix (calcium chloride a.k.a. road salt)
- Worm Goo = Sodium Alginate
- Who likes ice cream?
- Liquid + liquid = solid?
- CaCl2 & sodium alginate molecules bond tightly together to make a long worm chains of molecules
Dragon Foam or Elephant Toothpaste or…

(the kid version)

• Mix 3 T warm water + 1 T yeast in cup - stir stir stir (ideally let sit 5 mins or so)
• What does yeast do?
• What does H2O2 do?
• Mix ½ c H2O2 & 1T dish soap in plastic bottle
• H2O2 molecule is oxygen & hydrogen, when you add yeast it breaks them apart and Oxygen (air)bubbles are released
• Give yeast one last stir and pour into H2O2/soap
Better than a volcano

Acid-Base Chemistry in Disguise

- Decorate balloon (art bonus!)
- ½ c vinegar in bottle
- 1T b. soda in balloon
- Hypothesis?
- Hold on tight to the balloon around the lip of the bottle
- B. soda (base) + vinegar (acid) → CO₂ bubbles + H₂O + salt & vinegar chips
- Pressure from CO₂ gas fills up balloon
InstaSnow

Super-Absorbent Polymers:

• Define:
  • (Super) Absorbent
  • Polymer
  • Sodium Polyacrylate & Baby Diapers

• 1 T snow powder + ¾ c H2O
Ivory Soap Explosion

- Kind of smelly
- Unlike other soaps, Ivory is whipped with air during the manufacturing process
- What happens to air when it is heated? (Charles’ Law)
- Extension: Will it float compared to other soaps? Will other soaps explode? Why?
Don’t try this at home…

*always try your experiments at least twice before a program*

Bernoulli Bags

Screaming Balloons

In Southeast Alaska?!?

Just stick with insta-snow powder…
Definitely try this!
(with conditions)
The infamous mentos - diet soda geyser