



**MACHE 2009 Annual Conference Saturday Workshops**  
**Workshop:** The Seven Biggest Mistakes Made in Teaching Science  
**Speaker:** Aurora Lipper  
**Session:** VI **Time:** 3:00 p.m.

## The Seven Biggest Mistakes Made in Teaching Science *...and What to Do About Them*

Did you have a teacher that really had an impact on you? Remember the excitement? Or the thrill you felt when you taught something to someone else and they really *got* it?

First, let me *thank you* for your commitment to education – a value that is high enough for you that you are stretching for resources to help you reach your goals.

In this workshop, I'm going to share with you some of the common mistakes that educators often make. If you've fallen prey to one or more of these, it simply means that no one told you about them yet. Once you know, you can then focus on solutions. Or, perhaps you'll find that you are already on track, and this may reaffirm that you are headed in the right direction. Are you ready?

Mistake #1. \_\_\_\_\_

Mistake #2. \_\_\_\_\_

Mistake #3. \_\_\_\_\_

Mistake #4. \_\_\_\_\_

Basket 1: \_\_\_\_\_

Basket 2: \_\_\_\_\_

Basket 3: \_\_\_\_\_

Mistake #5. \_\_\_\_\_

Mistake #6. \_\_\_\_\_

Visual Audio Kinesthetic Digital Matcher Mis-matcher Fire-Ahead Fire-Behind

Mistake #7. \_\_\_\_\_

Secret Word: \_\_\_\_\_

Unanswered Questions:

## “What does my child *really* need to learn in science?”

Before you can teach your kid science, you're going to need a basic science understanding yourself. We've prepared a science quiz to see where you are and how you're doing. This is portion of the same quiz we give the kids during our science workshop, so you can test them again after the workshop is over to see how well they've pick up the stuff. So take a few minutes and give it your best shot. We've giving out prizes for the highest scores. Good luck.

1. What would happen if you belched in Antarctica? (a) the carbon dioxide in the burp would freeze into a solid (b) the carbon dioxide in the burp would sublime (c) nothing special (d) the oxygen and carbon dioxide will form will liquefy into carbon trioxide (e) are you *serious*?
2. When the sun runs out of fuel, what do you think will eventually happen? (a) it will go supernova (b) it will turn into a black hole (c) it will turn into a hard, black diamond the size of the earth (d) it will snuff like a candle
3. When you cap a lit candle in a glass jar, what happens? (a) the flame will go out because fire eats air and the flame runs out of oxygen which is required for combustion (b) nothing special (c) the flame gets brighter and lasts longer (d) an explosion takes place that shatters the jar
4. What does the word LASER stand for? (a) Light Amplification by Stimulated Emission of Radiation (b) Lost Another Scientist Eating Raisins (c) Light And Sound Emitting Raygun (d) Light And Sensory Emitting Reflector (e) 'LASER' *stands* for something?
5. What is the difference between a light bulb and a laser beam? (a) the laser is a focused beam, while the bulb is a scattered beam (b) the laser is a scattered beam and the bulb is a focused beam (c) lasers emit photons and bulbs emit only electrons (d) this is why I dropped out of science (e) they're both breakable and not allowed anywhere near my kids
6. Which one generates light by electrifying a gas? (a) incandescent bulb (b) neon sign (c) fluorescent bulb (d) car headlight
7. What happens when you scuff across the carpet in socks on a dry day? (a) you can zap your kids (b) you store up an electric charge in your body (c) you store up extra neutrons in your body (d) the same thing that happens to blankets in the dryer
8. What is an atom made up of? (a) photons, electrons, and positrons (b) neutrinos, positrons, and bosons (c) protons, neutrons, and electrons (d) gluons, muons, and gravitons (e) what on *earth* is a "boson"?
9. Which are the three primary colors of light? (a) red (b) blue (c) green (d) yellow (e) pink
10. If you inflate a balloon (don't tie the end), which direction does the air in the balloon *and* the balloon itself travel? (a) both the same way (b) in opposite directions (c) nothing happens (d) inside-out
11. What happens if a tank of oxygen leaks and fills an entire room, and you walk in and strike a match? (a) nothing (b) BOOM!!! (c) the match will burn brighter (d) I don't even want to know
12. When you drop an effervescent tablet into water, what happens? (a) bubbles foam up (b) it belches (c) carbon dioxide gas is released (d) it produces a chemical reaction that can propel a rocket skyward
13. If you blow up a balloon and stick it in the freezer, what happens? (a) it gets bigger (b) it gets smaller (c) nothing (d) it glows
14. Where is the area of higher pressure in a balloon? (a) on the inside (b) on the outside (c) both are the same (d) none of the above
15. When you wire up a circuit and it does not work, you should (a) check for good metal-to-metal connections between wires (b) see if the batteries are in the right way (c) replace the entire thing (d) reverse the wires powering your electrical component

16. What does it mean when batteries get hot to the touch? (a) they are working well (b) they are about to explode (c) you have a short in your circuit (d) they are about to leak acid everywhere
17. What makes a cell phone vibrate? (a) little green men (b) magnets (c) a tiny, off-center eccentric drive system (d) a tiny gear drive system
18. Does pure water conduct electricity? (a) yes (b) no (c) not sure (d) I can't believe you're asking this... exactly *what* are you teaching my child?
19. Higher pressure does which? (a) pushes (b) pulls (c) decreases temperature (d) causes winds, storms, and airplanes to fly (e) meows
20. What is the phone number for poison control? (a) 1-800-POISON-ME (b) 1-800-222-1222 (c) 911 (d) 0 (e) Exactly *why* do I need to know this?
21. What happens when you put a large chocolate bar in the microwave without a turntable? (a) it melts only in certain spots (b) it freezes (c) you can measure the speed of light (d) the chocolate bar emits radiation
22. Which of the following are examples of light? (a) radio (b) TV remote controls (c) ultrasounds (d) microwaves (e) sunburns
23. The electricity from an electrical outlet is the same kind as (a) lightning (b) the shock you get from scuffing along the carpet (c) the electrons that flows in a circuit (d) the electricity from a battery (e) the light show from wool socks fresh from the dryer
24. What happens when you combine a red beam of light with a green beam of light? (a) you see polka-dots (b) you get yellow light (c) you get cyan light (d) you get that muddy-looking color just like when you mix all the paints together (e) nothing – they stay the same
25. If an apple is the size of the earth, then the atoms inside the apple are the size of: (a) Manhattan (b) a grain of sand (c) the size of the original apple (d) Alaska (e) zooplankton
26. What are the four states of matter? (a) solid, liquid, gas, and plasma (b) earth, wind, fire, and water (c) oxygen, fuel, spark, and heat (d) ice, water, bubbles, and steam
27. Which of the following are seriously dangerous chemicals? (a) dihydrogen monoxide (b) sodium chloride (c) sodium tetraborate (d) sodium bicarbonate (e) all of these (f) none of these

**Extra Credit:** *Basic Scientific Principles* The following list of questions address the **basic scientific principles** your child needs to know, understand, and use before they hit college.

1. Why do airplanes fly?
2. Why do I get shocked on dry days?
3. Why does a compass needle flutter near an electrical cord?
4. Why does my food come out of the microwave with hot and cold spots?
5. What two colors make yellow light?
6. Why does soda explode when you shake it?
7. What happens when you fart in space?
8. Why does the water come out of the hose faster if you put your thumb over the end?
9. Why does the ball roll down the hill faster if you start it higher up?
10. Why do rockets have fins instead of wings?
11. Why don't the planets go flying off into space instead of orbiting the sun?
12. If you scream in outer space, can anyone hear you?
13. Why does the hot coffee get colder and not hotter?
14. What happens when I stick an inflated balloon in a freezer?

**Answer Key:** [www.SuperchargedScience.com/answ](http://www.SuperchargedScience.com/answ)