My So-called BELA Life

Jay Mung 2011-2012
BODY ENGINEERING LOS ANGELES! My teacher partner, Ms. Moore, is a master teacher w/ 30+ years experience. Here she is in the lab after Alycen’s welcome party.

Ms. Moore teaches 6th grade science and math at Foshay. She is also involved in afterschool Robotics and other USC programs.
I'm a biomedical engineering student with Dr. Jesse Yen. For my dissertation I built an ultrasound system to guide vascular surgery. I defended in March.

Here I am in Ms. Moore's classroom, giving my first lesson about the heart.
My first “lesson” was to introduce myself and introduce my major: biomedical engineering. I used these images and some movies to spur discussion:

“Who has a relative that works in a hospital, what does he/she do?” || “Any guesses what this thing is?” || “Did you know robots could do surgery?” || “We are helping the blind see again!” || “Why would we want to look at the baby?”
“Write down 3 things you learned and 3 things you are curious about.”
Ms. Moore would often prompt the class after my talks and Q&A. I generated this chart of responses after my heart lesson and shared it during the following session to reinforce concepts. Bonus: a real-life graph example!

This lesson led into my first activity: the classic heart rate measurement lab. As a new riff, I brought in a pulse-oximeter so the students could compare measurements with their wrist pulse. All students got to try this! Faster groups also tried my iPhone’s pulse measurement app. I also explained to them how it worked.
Switching gears, I wanted to set the foundation for teaching ultrasound (my research) by teaching the concept of waves. I used Prezi + movies + Q&A.
Slinky Waves Lab: Tied in with earthquakes, but very relevant to my research (ultrasound)
-I led small groups (4-8 students at a time) and worked through 2 classes (~70 total)
-Students identified, created and measured different types of waves using worksheets
-Students worked in teams with defined roles (timer, slinky holder, wave maker, recorder)
Along the way, I had countless opportunities to present “exciting science current events” and stuff I thought was cool (usually Youtube + discussion). I often tied in other concepts and personal experiences relevant to the lesson.

As a sampling, here are videos of a robot hand, drilling Lake Vostok, a solar flare, how cloud seeding/weather engineering works, an MIT camera that sees around corners, and an “invisible” Benz.
All the while.. Earth Science: EROSION!

-2 months of tumblin'
-I supervised students to check on the tumbler 4-5x
-Students recorded observations, hypotheses & questions
-Science they could see, feel and smell!
The students go to the computer lab for math exercises several times a week. I help with that and other class-time assignments too.
I've been reinforcing the concept of waves through examples in music. Hopefully this will drive home the ultimate concept - which is ultrasound. Here are some media from my latest lesson:

Wave properties, tuba vs. piccolo (mario theme), speaker sizes, bats and ultrasound

I want to have one last activity demonstrating ultrasound...
My family science contribution compares your circulatory system with plumbing. Can you fix the aneurysm?