

Meeting Videos and Handouts from November 2011

A big thanks goes out to Glenn Lid for hosting the November 3rd meeting at Proviso East High School

Our meeting theme was “Energy with a Touch of Cooperative Learning and Summer Enrichment for Students”

Glenn Lid from Proviso East High School: glid@pths209.org

- Glenn showed a great energy demonstration where he cooks an egg using calcium oxide and water which creates calcium hydroxide and lots of heat! While the egg is cooking you can talk about how the reaction is exothermic and the egg is endothermic. ([Video](#)) Then he suggests throwing a rubber egg at the students as a practical joke.
 - Glen also shared an amazing demonstration involving fire and sound waves. Basically he has a metal tub which he runs gas through. There are little holes in the tube and he can light little flames that go across the tub. Then by playing different sounds on one side of the tube the flames take the shape of a sound wave due to the vibrations. You can see low energy waves vs high energy waves. He relates these sound waves to light waves. THIS IS A MUST SEE DEMONSTRATION ([Video](#) of demo) ([Video#1](#) [Video](#) #2 of instructions on how to build the tube)
- Glenn showed an experiment with a smoke maker and laser pointers. As he jumped off a stack of books he turned on the red laser pointer through the smoke and mentioned that low energy light comes from a small drop of an electron. Then he jumped from a chair and turned on his green laser and mentioned that high energy light comes from a larger drop of an electron. ([Video](#))
- Glenn shared a great demonstration to explain ionization energy. ([Video](#)) If you take a strong magnet and attach a string of three paper clips (they should be attached to each other by magnetism not linked) then students can see that it is easier to pull off the first paper clip unlike the last one which is closest to the magnet or "nuclear charge." Eventually he wants to get more than one magnet to show that as the magnetism (nuclear charge) increases it has a better hold on the paper clips (electrons).
- Glenn shared how he loves to review material using stations. In nomenclature activity students are given cards in envelopes which they have to put them in categories. ([Handout and instructions](#)) He also uses stations to help students review acids and bases. ([Handout](#)...sorry it is wrinkled and for some reason I do not have the last page so I e-mailed Glenn and hopefully he gets that to me)
- Glenn shared a book which he loves that encourages cooperative learning. "In addition to the cooperative structures for chemistry, you'll find ready to use activities and

reproducible blackline masters for the most common themes in chemistry: Matter and Reaction, Structure and Bonding, States of Matter, Chemical Calculations, Water and Solutions, Energy and Chemistry. Make the science of matter really matter to your students." ([Picture of book and the activity be shared](#)) ([Buy the book here](#))

- Glenn showed a movie that students should see about Haber ([Link](#) to buy the film.....just click "contact")
- Glenn finally talked about great opportunities for students. One was at Fermi lab where students can work with scientists that are there. I found a link for students internships at Fermi Lab. ([Link](#)) I am going to ask him to send me more information on the other opportunities.

JulieAnn Villa from Niles West High School:

- JulieAnn presented an easy, safe, and fun combustion rocket. It is much safer than the whoosh bottle. The demonstration didn't behave but it was good because we learned that a film canister with a really good seal is vital. ([Video](#))

Autumn Penney from Niles West High School:

- Autumn presented a really great activity to introduce equilibrium. It involves transferring liquids back and forth between two graduated cylinders until students realize they have reached the point where they are always transferring the same amount.....as apposed to the point when there is the same amount of volume in each graduated cylinder. She asks the students to graph the volumes as they go along. ([Video](#) of Penney explaining the set up...sorry it is blurry) ([Video](#) of the activity) ([Handout](#))

Mary Cunningham from Argo Community High School (I think):

- Mary shared a really great and low tech alternative to clickers. She suggests you give students four cards on a ring with A, B, C, and D. ([Video](#))

Kevin Kopack from Lane Tech High School:

- Kevin shared a really fun activity where he has students take 1 mL of water....pass them along on spoons covered in magic sand (he says to use spray on adhesive), and then pour the drop of water in a 1 cm³ box. This will show students that 1 mL = 1 cm³ ([Video](#))
- Finally he presented a great example of how science can be applied to the lives of his students. He found a study about how scientists are studying woodpeckers in order to figure out how to make more effective helmets. The idea is to figure out how the woodpeckers brain can withstand the violent back and forth movement from pecking a tree. Kevin presented this scientific research to his students and asked them to come up with ideas on better ways to protect their heads while biking. ([Article](#))

Janelle Hollingshead from Lane Tech High School:

Janelle was at Chem Ed this summer and learned about how to turn worksheets into fun sorting activities.

- She first presented an activity to help students discover what it was like to create the periodic table. She passed out bags with pictures of elements on them. The names of the elements were not on the pictures. She asks students to sort the pictures in categories based on their properties and describe the categories. Lots of students categorize them as solids, liquids, and gases. After that she asked them to put them in only two categories and define them. Many of her students categorized them as metals and nonmetals. Without any prompting Janelle's students learned how the periodic table was organized before they had even started to talk about it. ([Cut outs](#)...the clear glass bulbs have gasses in them....also I got these images from Google Images)
- Second she passed out bags of pieces that helped students review Lewis dot structures, how many electrons should be gained or lost, and charges. ([Cut outs](#)) ([Answer key](#)...there are three answer keys)

David Lieberman from Glenbrook South High School:

- David ([Picture](#)) presented a fun Bubble Gum Lab that asks students to determine the percent sugar in bubble gum and then write an empirical formula. ([Handout](#)) In this activity he talked about how he helps his students write conclusions. One great piece of advice is to, instead of asking them to think up certain sources of error, ask them how specific situations would affect their results. Look at the bubble gum lab for an example.
- He also gave us a great periodic table puzzle (Worksheet)

Karl Craddock from William Fremd High School:

- Karl first presented "Amazing Ice Melting Blocks." Both blocks look the same (they are painted black) but when an ice cube is placed on each one the block made out of aluminum melts the ice where the wooden block doesn't. Students learn about the difference between their specific heats and how aluminum is so good at taking heat from other objects. "Applications are found when you ask students about why you use glass, metal, or porcelain pans for cooking or why different floors are made out of different materials." ([Video](#)) ([Handout](#))
- Second, he showed us how to boil water in a paper cup! Because of the very large specific heat of water it draws heat away from the cup and the cup doesn't burn....except for the parts of the cup that are not touching water. Karl then talks to his students about "why Chicago is always cooler by the lake in the summer and warmer in the winter due to the lake's heat sink." ([Handout](#)) ([Video](#))

Robert Credo from New Trier High School:

- Robert loves to bring his students into the BOILER ROOM! Students can learn about where their heat really comes from and how it works. ([Video](#)) ([Handout](#))
- He also talked about bringing the discussion of nuclear power into the classroom and sent me these great articles to post.

([Nuclear Power Both Sides](#)) ([Nuclear is the Way](#)) ([Nuclear is not the Way](#)) ([Nuclear is Not the Way #2](#))

Mike Palazzolo from Schaumburg High School:

- At the closing this teacher showed us how to make a FIRE TORNADO....pretty much because it is really cool! "It is also a great way to illustrate the way winds whip through the trees in the forest and collide with the warm updraft from the wildfire." ([Handout](#)) ([Video](#))
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