CHEMISTRY MODELING IN ACTION!

Below is an informative note on **chemistry modeling** from Brenda Royce, co-leader of the Chemistry Modeling Workshop in 2005. Brenda teaches 10th grade chemistry in a "physics first" high school where both physics and chemistry are taught using Modeling Instruction.

Brenda has used Modeling Instruction in physics and chemistry since 1998. She is science department chair and Science Olympiad coach. She has led several Modeling Workshops in Fresno. She gave permission to post this.

Date: Sat, 19 Feb 2005
From: Brenda Royce <brendar@csufresno.edu>
To: Larry Dukerich <ldukerich@mac.com>

... I had a teacher from a local school (that houses a magnet GATE program) visit my class this week to see what chemistry modeling looks like. He had attended our local physics modeling workshop last summer. *He seemed impressed with how well the kids were able to reason and discuss energy of reactions* (topic of the day, which he was also currently teaching). He commented on the usefulness of the energy flow diagram and bar graphs in particular. I am hoping he can come to our workshop this summer. He is checking on that.

I also had an interesting encounter with one of my students about a week ago. She had sat in on a Science Olympiad chem lab study session on redox reactions (she was checking us out for next year's team). She took a particular interest in the topic and continued reading and making notes after the study session ended. She cornered me for some more questions, and as we were wrapping up, I commented on how much easier it is to communicate new chemistry ideas to students who have some physics and think in models. She looked at me and responded, "*why would you do it any other way?*" (She is a conscientious student, though not one of the obvious science whiz kids, who is seeing the pieces come together.)

I have had a number of experiences with other crash-course study sessions related to Science Olympiad events in chem and physics where it was quite easy to get some critical ideas across that we hadn't studied in class because the kids had a framework of models to hang the new ideas on. It is evident in my classroom, as well (which my visitor picked up on), as some ideas seem to come together without me having to force the understanding. Activation energy was one that came up at the first discussion of chemical energy changes last semester (we were looking at the formation and decomposition of water to discuss this). An afterthought question of what has to happen to the H2 and O2 for water to form led to a quick discussion from a number of the students of why we had to have a flame to kick-start the reaction even though there was a net release of energy. It came up naturally again following the types of reactions lab. Cool.

It's nice to have found something that makes teaching even more satisfying.
Brenda