

Student scientists may be the key Anne Marie, Bergen, Chair, Cal TAC



Additional information about the Convocation is available at <http://nasonline.org/village>

“Do hands on, work in groups, and we understand why.” This was Olivia’s simple yet profound response when I asked her what she thought of her experiences with hands on, inquiry based science. On April 29, 2009 key stakeholders in California keenly interested in the necessary changes to sustain effective K-8 science education gathered resolving to create a coalition of business, industry, K-12 educators, and higher education. Jay Labov from the National Academy of Sciences along with many others carefully designed two days to set the stage for conversations and future actions to create engaging, exciting, and meaningful science experiences for our young students so that they are inspired and prepared to be our next inventors, STEM workforce, and thoughtful and scientifically literate citizens.

Students took the stage

early on the first day, demonstrating a scientific inquiry lesson. Later, we visited science stations (where I met Olivia), each facilitated by elementary students engaging attendees with experiments such as magnetism, electricity, and chemical reactions. The students not only experimented, they also eagerly told us what they learned, and the connections they had made. The excitement and enthusiasm of these 3rd-5th grade students filled the room and made a lasting impression on the convocation attendees.

Several sessions followed, all valuable and thought provoking. However, it was the time with students that has stayed with me and caused me to think. As this California coalition moves forward to make the case for changes in how we educate our youngest science students, we might want to consider the power and impact that students engaging adults with science, thinking, and enthusiasm may have on our legislators and

decision makers.

During this year, Cal TAC has participated in three major gatherings to improve STEM education. All of these gatherings continue the “drum beat” for change and improvement in science education practices in our classrooms. As NTAC and Cal TAC members, we provide to decision makers and the education community the teacher voice and wisdom from our perspective. Our voices are wise, our stories compelling, and our passions deep, especially our passion for students. Witnessing the connections that students made with the convocation attendees causes me to think that the key changes for elementary science education may just be the students themselves. Keeping students center stage during this process may be the key to moving us from fact driven solitary science learning to group experimentation, questioning, and problem solving. As Olivia stated, “Do hands on, work in groups, and we understand why.”

News of three founding members of the TAC



Share your accomplishments and success stories with your colleagues in a future TAC Newsletter! Contact Betty Carvellas at bcarvellas@yahoo.com.

Ford Morishita, Clackamas High School, Portland, Oregon, was recently designated a lifetime National Associate of the National Research Council of the National Academies “in recognition of extraordinary service to the NRC in its role as advisor to the Nation in matters of science,

engineering, and health.”

Valdine Mclean, Pershing County High School, Lovelock, Nevada, was selected as one of ten Society for Science and the Public Fellows in the inaugural 2009 Class of Fellows. Valdine was recognized for her vision to promote science in

under-resourced communities.

In April of this year, **Lynn Countryman**, Price Lab School, Cedar Rapids, Iowa, was sworn in as the new President of the Iowa Academy of Sciences.

Congratulations Ford, Valdine, and Lynn!

Great resource at your fingertips (www.nationalacademies.org)

If you have not visited the [National Academies website](http://www.nationalacademies.org) recently, you might have forgotten how incredibly valuable it is, not only for teachers but for your students as well. At a quick glance, you'll find the headings "Top News," "Science in the Headlines," and "New and Notable." Have your students been asking about the H1N1 virus? Read what the president of the Institute of Medicine has to say about the importance of real-time science during a pandemic. How about the increased health risks of rising air pollution or the impact on marine life of ocean acidification caused by carbon dioxide

emissions? It was all there recently. And, the site is updated continually to reflect the most recent research and breaking news in science. "Under New and Notable," a recent search yielded the titles of several books available from the National Academies Press (e.g. *Learning Science in Informal Environments*) all of which can be read FREE online.

In addition to timely information, the website homepage provides a quick link to the Marian Koshland Science Museum home page. If you haven't visited this incredible resource, summer would be a great

time to delve into the wealth of teacher and students resources available there. For those not close enough for a real time museum visit, the virtual tour and related information are invaluable.

Don't forget to check out the link to Popular Searches. Click on evolution or climate change to find a treasure trove of resources, all based on solid scientific research. (TAC members reviewed the redesign of the evolution web pages)

Just a suggestion - find a rainy day this summer, click on the Academies website, dig in and **have fun!**

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

Workshop on common standards

In June, 46 states and Washington D.C. announced plans to draft common academic standards in English language arts and math. The decision was based on substantial research including work done at two Academies workshops sponsored by the NRC's Center for Education. TAC member **Ed Nolan** attended the second workshop designed to evaluate the options for common standards. During the workshop, held just after the release of the National Mathematics Advisory Panel report, those in attendance examined the development and

evolution of standards across different states and the positive and negative aspects of each state developing its own standards. Participants expressed concern that measurability and fact/skills have been emphasized over flexibility (grade level versus grade band) and concepts. Topics/areas of discussion at the workshop included:

- occasional vagueness in conceptual-based standards
- content/discipline experts "versus" assessment experts
- lack of rigor and conceptual representation in state standards

- the role of professional development
- content differences and expectations/performance level differences among current standards
- lack of research on the impact of standards
- cost of assessment programs
- localism as the tradition in the U.S. educational system
- legal history and potential legal issues

Alaska, Texas, South Carolina and Missouri have not yet agreed to the plan for common standards, and discipline based groups (e.g. NCTM) have expressed concern that they have not been a part of the process to date.

TAC member participates in National Academies workshop on common standards.

A report from this workshop, *Common Standards for K-12 Education?: Considering the Evidence*, can be downloaded without cost at: http://www.nap.edu/catalog.php?record_id=12462

[NAE committee](#) looks at possible K-12 content standards for engineering

TAC members on K-12 engineering standards committee

TAC members, **Mario Godoy** and **Roberta Tanner** have been participating on a National Academy of Engineering committee charged with assessing the potential value and feasibility of developing and implementing content standards for engineering education in K-12. In particular, the committee

has been reviewing existing efforts including what is and is not included in current K-12 science, mathematics, and technology standards. Roberta reports that they are studying the value and impact of content standards in general, and what changes to educational policies, programs, and practices

would be needed at the national and state levels to successfully implement K-12 engineering standards or alternative approaches. Committee work started during the summer of 2008 and will continue with a workshop during the summer of 2009.

Relax, Reflect, Revitalize Robert Willis, TAC Chair

It's that time of year again, a time which teachers associate with certain rituals. We collect and return textbooks, disassemble our classrooms, store instructional materials for a two-month hiatus, and wait for the ringing of the final bell of the school year. This is the time of the year when we can exercise our options to participate in a variety of activities ranging from teaching summer school, taking classes, participating in workshops, or just sleeping in. As you exercise your options of how you are going to spend your summer vacation, keep in mind that this is also the time for you to relax, reflect, and revitalize yourself.

I considered consulting the dictionary to define **relax**, but I realize that a dictionary definition would be insufficient. As you deal with the word relax, you must keep in mind

that what is relaxing for one person may be stressful for someone else. Make sure that relaxation is top on the list of things that you do on your summer break. Take some time to participate in activities of your choosing, and just say no to those you don't wish to do. Read a book that you've wanted to read, visit and spend time with family and friends that bring joy into your life, or complete that project you've wanted to get done.

Now that the school year is over there is time for you to **reflect** on the effectiveness of your teaching strategies and lessons of the past year. Evaluate what worked well, what needs to be improved, and what you need to forget about trying again. I have two goals for this summer. One is to develop an instructional strategy that I tried for the first time this year and the other is to develop a

portfolio assessment program for monitoring student progress. (If you have information on portfolios, please forward it to me at willisedu@aol.com).

Finally, you must **revitalize** yourself. I'm able to achieve this through a combination of relaxation, reflection, and professional development. This is a perfect time to gain additional knowledge about a topic that interests you or to learn something totally new. Keep in mind, you might want to pursue a topic that has nothing to do with what you teach. The goal here is that you do what you need to do to feel energized for the upcoming school year. Your mission is to report back to school and be able to say "I had a great summer!" I leave you with this thought: May you have summer experiences that you can smile about during the rough times of the new school year.

Robert Willis, TAC Chair, comments on the three R's of summer

Michigan establishes state Teacher Advisory Council, Ohio is next

Thanks to the hard work of TAC member **Dwight Sieggreen**, Michigan has become the second state to establish its own Teacher Advisory Council (California's TAC was established in 2002). In December 2008, **Betty Carvellas**, Teacher Leader for the national TAC joined Dwight at the meeting of the Network of Michigan Educators (NME) to present two informational workshops for interested teachers. The Network of Michigan Educators connects more than 500 award winning educators so the audience consisted of those already recognized for their

outstanding contributions to education. Since that meeting, the members of the new council have been identified and approved by the NME leadership, and will soon be notified. MiTAC, modeled after the national TAC, will hold its first meeting in December of this year.

Ohio is poised to become the third state to establish a network of teachers who can provide the "wisdom of practice" to discussions and decisions important to teachers. The Board of the Ohio Academy of Science approved the

creation of Ohio STEM-TAC in April. They will soon develop a roster of expertise among STEM teachers (P-16) who have direct classroom contact with students at least 51% of the time. We'll have more news about Ohio's new STEM-TAC in the next newsletter.



Results of a Chemistry Roundtable workshop available free online

TAC member **Steve Long** served as a reviewer for the NRC report *Strengthening High School Chemistry Education through Teacher Outreach Programs* and found his role to be interesting, informative, and professionally rewarding. The following description of the report is taken directly from the National Academies Press website:

"A strong chemical workforce in the United States will be essential to the ability to address many issues of societal concern in the future, including demand for renewable energy, more advanced materials, and more sophisticated

pharmaceuticals. High school chemistry teachers have a critical role to play in engaging and supporting the chemical workforce of the future, but they must be sufficiently knowledgeable and skilled to produce the levels of scientific literacy that students need to succeed. To identify key leverage points for improving high school chemistry education, the National Academies' Chemical Sciences Roundtable held a public workshop, summarized in this volume, that brought together representatives from government, industry, academia, scientific societies, and foundations

involved in outreach programs for high school chemistry teachers. Presentations at the workshop, which was held in August 2008, addressed the current status of high school chemistry education; provided examples of public and private outreach programs for high school chemistry teachers; and explored ways to evaluate the success of these outreach programs."

The full report can be downloaded free as a PDF file at http://www.nap.edu/catalog.php?record_id=12533

New NRC report on chemistry education can be downloaded for FREE!

Teacher Advisory Council

National Academies
Keck Center
500 Fifth Street, NW
Washington, DC
20001

We're on the Web!

See us at:

www7.nationalacademies.org/tac

Carnegie Foundation releases new report

Bruce Alberts, former President of the NAS and founder of the TAC, was a member of the Carnegie – Institute for Advanced Study Commission on Mathematics and Science Education which launched their report, *The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy*

on June 10. Among other recommendations, the report challenges the nation to:

“Establish common standards for the nation in mathematics and science—standards that are fewer, clearer, and higher—along with high-quality assessments

Improve math and science teaching—and our

methods for recruiting and preparing teachers and for managing the nation's teaching talent

Redesign schools and systems to deliver excellent, equitable math and science learning.”

You can access the entire report, including the Executive Summary at <http://www.opportunityequation.org>.

Next TAC meeting

The TAC meets again on August 14 – 15, 2009.

Some of the items on the agenda include:

- forging closer ties with NSTA
- discussions with representatives from NSF and the Smithsonian

- results of the Carnegie Commission's work on STEM education
- discussion with Dr. Bruce Alberts about making the journal *Science* more accessible to K-12 teachers
- A possible

teleconference with members of CalTAC.

Ongoing work with those at the Academies responsible for communications and outreach.

There's no doubt this will be a productive meeting!

“In a completely rational society, the best of us would aspire to be teachers and the rest of us would have to settle for something less, because passing civilization along from one generation to the next ought to be the highest honor and the highest responsibility anyone could have.”

Lee Iacocca, American businessman