



Cal TAC UPDATE

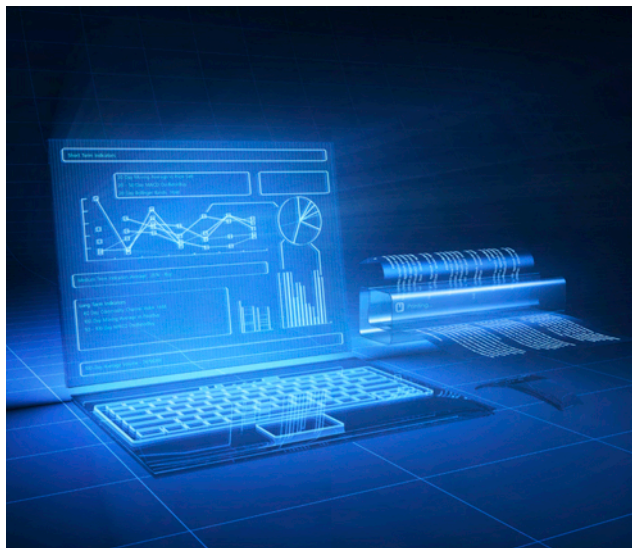
Bringing the voice of teachers and the wisdom of their classroom practice to those who can use this information to improve science and math education in California: researchers, policymakers, and fellow teachers.

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Imagining the Future

A Cal TAC Symposium on Digitally Enhanced Education in California

On March 25, 2011, a group of Cal TAC members joined representatives from technology companies, philanthropies, policy groups, STEM (science, technology, engineering, and mathematics) networks and publishers on the grounds of Cogswell Polytechnical College in Sunnyvale, California for a Cal TAC symposium on digitally enhanced education.



The Cogswell setting seemed particularly appropriate for a symposium on digitally enhanced education. The college is known for excellence in digital media, arts, animation, audio technology, and engineering and was recently designated one of the 10 “most wired” campuses in the country by U.S. News and World Report.

The symposium was organized around several questions:

- What does a digitally designed and enhanced classroom look and feel like?
- How will it transform teaching and learning — the culture of a school?
- What is the toolkit to accomplish this type of transformation?

As one teacher noted at the close of the symposium, “Ultimately, teachers want kids to be successful and engaged in the learning process. For kids today, the digital environment is their world. Ours was tactile; theirs is virtual. We shouldn’t ignore the virtual world they live in, we should engage them.”

Opportunities Amidst the Obstacles

Cogswell Polytechnic College President Charles Haskell delivered the symposium’s keynote address. Noting the tough budget climate in the state, Dr. Haskell still sees many opportunities to deliver digitally enhanced education to the state’s classrooms. These include:

- Encouraging colleges and universities with expertise in digital media and technology to design and offer professional development workshops for teachers;
- Creating venues for teachers to learn from other teachers;
- Engaging the private sector, along the lines of models such as the Sloan Multi-versity consortium and Futurelab’s Pedagogy 3.0;
- Finding mechanisms to use the talents of current students, such as using federal college work-study funds to support undergraduate students working in public schools; and
- Creating a comprehensive clearinghouse for new technology options, simulations, objectives reviews, and commentaries.

(Continued on page 3 . . .)

IN THIS ISSUE

	Page
Imagining the Future	1
Meet Cal TAC Members: Jeff Bradbury and Caleb Cheung	2
Reflections on Cal TAC and NTAC Membership: An Interview with Barbara Shannon	4

The California Teacher Advisory Council (Cal TAC) is a statewide group of 12 outstanding K-14 science and math classroom teachers and is modeled after the successful National Teacher Advisory Council (NTAC) established in 2002 by the National Academies.

Cal TAC works to provide a valuable connection between the teaching community and the educational experts and policymakers who are shaping California’s educational system. They serve as the teachers’ voice in addressing critical needs in math and science education.

Cal TAC members are appointed for 3-year terms. The California Council on Science and Technology (CCST) and the Center for the Future of Teaching and Learning (CFTL) jointly support Cal TAC.

Meet Cal TAC Members Jeff Bradbury and Caleb Cheung

Jeff Bradbury represents a new segment in the education pipeline for Cal TAC: the community college. Jeff is a veteran teacher of high school chemistry, where he began his teaching career before switching to the college setting. In fact, he taught for over a decade in the same high school he himself had attended — where he had the opportunity to teach alongside his own chemistry teacher as an intern. (“I just did whatever he did, a day behind him,” Jeff recalls fondly.)



Jeff Bradbury with some of his students

Jeff was drawn to teaching thanks to his own good teachers. Competition for the teaching profession came from two other careers he considered — medicine and the ministry. “It was between body, mind, and soul,” Jeff says, “and I chose the mind.” Although he loved teaching high school, Jeff was mindful of advice he got from several different teachers on his first day on the job: to avoid burning out by thinking ahead to a second career. Jeff knew he wanted to keep teaching, so he changed venues instead of careers.

The main difference between high school and community college students, he says, is that community college students have to want to be there. He is able to compare not only high school and college students in general, but specific students. By staying in the same area, he has seen many of his former high school students come through his college chemistry classes, and he appreciates how many have stayed in touch. One of his most memorable students is a current student — a young woman who arrived with her family from Vietnam in 2008, speaking no English. In just a few years, she has become fluent, writing lab reports that Jeff describes as “unbelievable.” Indeed, this particular student achieved a nearly perfect score last semester on all her quizzes, lab reports, and exams, missing just one point. “It must have been my mistake,” Jeff concedes. She maintains straight As with a course load that includes calculus, physics, and chemistry — not to mention a nearly full-time job. “She’s brilliant,” Jeff says, “and everyone knows it, except for her.”

Although Jeff served on the California Science Teachers Association (CSTA) Board when he taught at the high school level, he wasn’t aware of Cal TAC until he heard about last year’s Assessment Sym-



Caleb Cheung

posium. Since joining Cal TAC, he’s been impressed with the group’s emphasis on sharing information through venues like the symposia, as well as Cal TAC’s access to and connections to policymakers and movers and shakers within California’s education system. During his time with Cal TAC, he hopes to bring forward the community college perspective and the needs of the students it serves. Too often, educators and the public alike seem to think of education as limited to K-12 and four-year institutions, he notes. In that regard, community colleges are a bit like middle schools, bridging age groups and educational experiences, but set apart.

When **Caleb Cheung** brought a microscope to his first-grade show-and-tell — a real microscope, not a toy one — it was probably an early sign that he would be involved in science education beyond his student days. The microscope was a natural prop in a scientific family. Caleb’s father, a medical technician who also did relief work abroad, was fascinated by nature, animals, and insects and passed on those interests to his children.

Caleb has fond and lasting memories of his own science teachers, first in Los Angeles, where he attended elementary school, and later in Taiwan, where his family lived for four years. During college at UC Berkeley, Caleb taught abroad as a volunteer and began to think more seriously about teaching as a profession. After an internship program that landed him in a struggling West Oakland district, he ended up teaching middle school science for a decade before becoming the science manager for Oakland USD five years ago.

In that role, Caleb borrowed and expanded an idea from the San Joaquin Office of Education to create opportunities for students and teachers to interact with scientists. The program that emerged, Dinner with a Scientist, was featured in a previous Cal TAC newsletter; his video about the program was one of five winners of STEMposium’s video contest this year. (STEMposium is an annual event celebrating innovative and compelling concepts in STEM education.)

To view Caleb’s award-winning video on YouTube, click here:
<http://www.youtube.com/watch?v=mEAJoeC9ddw>



A screenshot from Caleb Cheung's "Dinner with a Scientist" STEMposium video. "What do you get when you combine prom, career day, and speed dating?
Dinner with a scientist!"

Meet Cal TAC Members

(Continued from page 1 . . .)

Caleb has appreciated Cal TAC's ability to bring key stakeholders together to talk about science and math education in California, and especially to focus on changing policy. California's education system can be daunting and complex, he notes. Cal TAC's discussions and symposiums provide one mechanism for breaking down barriers and making the types of changes that he feels need to happen in order for teachers to be able to do a better job supporting students — and in order for districts to do a better job supporting teachers.

"It's been an amazing opportunity to find like-minded people to share ideas and discuss our work," he says of Cal TAC.

Imagining the Future

(Continued from page 1 . . .)

The Toolkit for Transforming Classrooms

Next, the group heard from three industry representatives about tools that can be used in the classroom — and how they are being used around the country and around the world. Jim Vanides, Program Manager for HP's Office of Global Social Innovation, described his office's work as exploring what's happening at the intersection of teaching, learning and technology to create what he called "powerful learning experiences." Over the past 7 years, the Office has supported 1,200 educational institutions in 41 countries.

Julie Dunkle, Headquarters Education Manager for the Intel Corporation, reviewed three professional development tools for teachers that are available on Intel's website. The tools are designed to help teachers integrate technology effectively into content they already use to promote creativity and critical thinking.

Catriona Glazebrook, Senior Development Officer for the MIND Research Institute, provided an overview of the Institute's visual math software program, ST Math. The program is based on neurological research on spatial temporal reasoning (STR), which is defined as the brain's innate ability to hold an image in working memory and then evolve it through a sequence of steps in space and time (e.g., envisioning a chess move).

MIND Research Institute's ST Math software uses this research to help children visualize math concepts. The program, Ms. Glazebrook explained, is now in place in over 1,000 schools in 20 states, involving 13,000 teachers and 300,000 students.

The Digitally Enhanced Schools and Classrooms of the Future are Here: Minarets High School

A lunchtime presentation from Minarets High School's principal, Michael Niehoff, and English/communications instructor Jon Corippo inspired the audience with the possibilities of a 1:1 laptop school engaging students with full — and unfettered — access to various types of technology, incorporated into everything from classwork and assignments to turning the school's library into a media lounge.

Next up? Sharing these ideas more widely.

(Continued on page 4 . . .)

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Agricultural Science Teacher
Florin High School

Diana Herrington
Mathematics Teacher
Clovis High school

Jennifer Howard
Kindergarten Teacher
Miraloma Elementary School

Sue Pritchard
Science Teacher
Washington Middle School

Katrina Williams
Elementary School Teacher
Steinbeck Elementary School

Links for Digitally Enhanced Education Tools

Hewlett Packard Office of Global Social Innovation
www.hp.com/go/socialinnovation

Intel Education Tools
<http://www.intel.com/about/corporateresponsibility/education/k12/tools.htm>

CHECK IT OUT!

Who inspired you? Members of the President's Council of Advisors on Science and Technology (PCAST) answer this question on film as they reminisce about K-12 teachers who made a difference in their lives: <http://www.whitehouse.gov/blog/2010/09/16/who-inspired-you>

What are Californians' views on science education? Findings from a state-wide public opinion telephone poll and focus groups yielded insights about the public's support for science education and how it could be strengthened. To find out more, visit the Center for the Future of Teaching & Learning's Web site: <http://www.cftl.org/science>

Reflections from a Departing Cal TAC Member

Barbara Shannon was one of the 12 founding members of Cal TAC and served as Vice Chair for her last two years with the organization. As her term drew to a close, Barbara took a few moments from her busy schedule as principal of Synergy Kinetic Academy (a new middle school she co-founded, whose curriculum is focused on science, technology, engineering, and mathematics education) to reflect on her experiences with Cal TAC.

"I feel fortunate to have been involved with the founding group," Barbara says. "I got to meet a lot of very vibrant people." At first, she recalled, Cal TAC — like many new, fledgling organizations — wasn't sure about its direction. Now, she sees an organization that has really found its footing, from sponsoring well-attended symposia on topics important to classroom science and math-

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I really feel bad for other areas that don't have a Cal TAC!

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ematics teachers (such as assessment and digital learning), to bringing the voice of teachers forward to state and national legislative arenas.

Being a part of Cal TAC has helped Barbara connect to other initiatives, including a recent talk she gave at Cal State Los Angeles on the direction of science education in the state. "That wouldn't have happened without Cal TAC," she says. Despite the brutal budget cuts that lie ahead, Barbara is optimistic that Cal TAC will continue to find ways to support classroom teachers and make their voices and wisdom heard. "I really feel bad for other areas that don't have a Cal TAC!" she said.

The Cal TAC Update focuses on Cal TAC activities and highlights innovative science and mathematics education and research in California. The Update is written by Anne Marie Bergen and Nicole Lezin, who welcome information from readers. Newsletter layout is by Sandra Vargas. The Update thanks Cal TAC members for their generous assistance in providing material for this issue. If you would like more information about Cal TAC initiatives, please contact us at:

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