

Connecticut Science Supervisors Association

Newsletter



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President's Message

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Can you believe that it is springtime? This was an unusual winter with many snow days and flood days(!) in most school districts. Our January 12th dinner meeting was rescheduled - twice - and finally took place on March 9th with a different keynote speaker (but still supported by BSCS and Kendall Hunt's Florence Russo). Those of us who hadn't already booked tickets to NSTA in San Francisco were able to learn a great deal from Dave Pinkerton. His Power Point presentation should be up on our website now, and I was really taken by his presentation style as he showed a new way to visualize Newton's Third Law in action (and reaction). More about Dave later.

Our students have been doing an awesome job representing our various schools and themselves in a number of competitive venues. I was on hand to deliver the CSSA Awards to two deserving projects at the CT State Science Fair's Special Awards program. Sagar Kaushik from Weston received our high school award for his project, "Prevention of Cardiovascular Disease: The Antiseptic Effect of *Syzygium aromaticum* on Periodontal Disease". Rayyan Ashraf and Shakeel Choudhury from Madina Academy in Windsor received our middle school award for their project, "Effects of composting leaves, coffee grounds, vegetables, or fruits compared to store-bought fertilizer and regular soil on the growth & appearance of plants and on soil nutrient levels."

I was a scoring room judge at the Odyssey of the Mind state competition at Bristol Eastern HS. What a worthy endeavor that is! Students from early elementary grades through high school and college age are able to compete in several different competitions (which change on an annual basis, so the problems are always fresh).

Another fantastic challenge that I attended was the FIRST Robotics competition held in the CT Convention Center in Hartford. The kids have done incredible work creating robots to meet this year's challenge. Again, this is a most worthy endeavor. You should attend one of these competitions and support our students. Encourage your high school to field a robotics team!

Thanks to a generous grant, my district was able to start up an Invention Convention in each of five schools. We are working on our district-wide invention convention and selecting students who will advance to the Connecticut Invention Convention held on May 14th at UCONN Storrs Campus. UCONN hosted the Junior Science & Humanities Symposium in March as well. There are many other science, math, and technology competitions and events out there. The only limitations are students' time and energies (and faculty or parent advisors or sponsors), but otherwise, there's something for everyone. So, in a recent President's Message, I was urging our members to share their knowledge with others by applying to present at an upcoming NSTA (or other regional or statewide association's) conference. This time, I am encouraging all of our members to find out about the various competitions and events that may inspire our youth.

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One great resource (one stop shopping) to find competitions and events for students is from the CT Academy's website, under STEM Resources. While you're on the CT Academy website, I strongly urge you to look at CONNverge and the many resources linked there. I provided the pre-dinner workshop at our March 9th dinner meeting and presented information about CONNverge. There is an article in this newsletter issue with more information about this great organization.

I mentioned our keynote speaker from the last dinner meeting in March, Dave Pinkerton. Dave is available to districts and organizations as an independent consultant (without the "associated burdensome overhead of large corporations"). He wrote to me after the dinner meeting, reminding me about his focus on equipping teachers with concrete tools to help them teach inquiry, close the achievement gap, and grow students into self motivated problem solvers. He would love the opportunity to work with Connecticut science teachers and students, and can be reached at kdpinkerton@yahoo.com or (970) 641-2584. I promised to pass along his contact information since I was so impressed with his March presentation to our organization.

Speaking of impressive presentations, the May dinner meeting has an outstanding set of speakers. Stephen Pruitt (Vice President, Achieve), and Page Keeley (Maine Mathematics & Science Alliance) will be providing us with each of their perspectives on the latest national trends in science education, including curriculum and assessment. We have had an outstanding year of presenters at our organizational dinners, and the board is hard at work to match it for the next year. Please reserve the following dates for next year's dinner meetings: September 21 (Keynote speaker will be Dr. Jenny Edwards of Cognitive Coaching), December 7, March 7, and May 9. In addition, mark your calendars for NSTA from October 27-29 and tentatively mark the last Wednesday in April for our annual CSTA-CSSA Awards Dinner.

Finally, we welcome two of our CSSA members, Lauren Amituro and Nancy Juliano, to our board of directors. Lauren will be the new Membership Secretary. We look forward to their many contributions on behalf of the full membership.

Pre-dinner professional development speaker:

Steve Pruitt (Achieve). Stephen Pruitt was named Vice President for Content, Research and Development in November of 2010. He joined Achieve as the Director of Science in July of 2010. In addition to his new role, he will continue to lead the development of the Next Generation Science Standards. For more information, go to: [Steve Pruitt](#)

Keynote speaker:

Page Keeley. Page Keeley is the senior science program director at the Maine Mathematics and Science Alliance (MMSA). She directs projects in the areas of leadership, professional development, standards and research on learning, formative assessment, and mentoring and coaching, and consults with school districts and organizations nationally. **To learn more about our speaker, please click on:** [Page Keeley](#)



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STATEMENT OF NEED

CT has the nation's largest student achievement gap in mathematics and science between privileged and low income children. However, the student success problem is much bigger than simply the student achievement gap.

The dilemma includes students who have taken and passed all the required mathematics course work to graduate from high school but do not have the knowledge to enter college without remediation. Over 60 percent of CT's 2009 high school graduates who entered the CT State University System institutions had to take remediated mathematics when they entered college. In CT community colleges, it was 72 percent.

Throughout the past twenty years, national reports, government leaders, and corporate executives have linked the importance of mathematics and science education to the nation's (and states') capacity to innovate for economic growth in the modern world. During that same period, CT has engaged in multiple educational reform efforts to improve student achievement in mathematics and science with unacceptable results.

WHY CURRENT EFFORTS FALL SHORT

None of the educational improvement initiatives, past or present, has yet to focus on balancing system reform with the consequence of culture as a driver to either improve or impede mathematics and science knowledge acquisition of children. In fact, American culture demonstrates a mind-set of being mathematically phobic and/or scientifically complacent.

According to national surveys, most parents say their children take enough mathematics and science now and are well prepared for college or the workplace. However, the facts do not back this up. And, far too many adults and children believe that proficiency in mathematics and science is not necessary for good jobs and that mathematical skill is only achievable by "smart" people - not through personal effort. Again, the facts do not back this up.

Educational reform efforts to improve student achievement must be balanced with changing the attitudes and behavior of children and adults regarding the need for mathematics and science in the modern world. Furthermore, increasing students' effort to learn must be supported by parental encouragement and through inspired and meaningful instruction. In the final analysis, students' must believe mathematics and science are important to their future and become engaged in and personally responsible for their own learning. Learning is What Students Do - not what is done to them.

CONNverge - A BALANCED SOLUTION

CONNverge is a statewide grassroots initiative that balances the state's extrinsic reform initiatives by fostering a new culture of intrinsic student effort and engagement based on recognition of personal need. Research confirms that students' personal effort, motivation, and involvement in their own learning are key elements to their academic success. Studies also show that children achieve greater success as learners when parents and other adults play an active role, regardless of socioeconomic status, ethnic/racial background, or the parents' own level of education.

CONNverge's two objectives are to:

1. Establish a culture where all students, especially historically underachieving populations, understand WHY they must learn mathematics and science and accept learning as a personal responsibility; and
2. Promote children's personal responsibility by fostering stronger family, educator and community effort to encourage students that they are capable, with effort, to learn and apply challenging and engaging mathematics and science to secure their future.

CONNverge OPERATIONAL SCHEMA:

The initiative was launched October 21, 2010, with more than 90 organizational representatives attending. The participants agreed that CONNverge must be at minimum a five-year effort.

CONNverge is facilitated by the CT Academy for Education on behalf of fifteen statewide organizations that have representatives on the initiative's Steering Committee. The 2011 operational plan approved by the Steering Committee identifies strategies, activities, and a timeline to achieve identified results in each of the following objectives:

- A. Establish CONNverge model district/community partnerships to pilot strategies to increase student engagement in mathematics and science with support from parents and the community;
- B. Establish a communication network that begins a dialogue among students, parents, educators and the community-at-large about best practices to strengthen students' motivation for and engagement in learning of mathematics and science; and
- C. Evaluate year one activities to inform progress.

It is unreasonable to believe that scaling up the same systemic reform efforts will render superior results without addressing the prevailing cultural beliefs and attitudes of children, parents, and communities about the importance of mathematics and science learning.

Please help CONNverge achieve its objectives. Your investment will leverage General Electric Foundation and CT Light and Power funding to support this effort.

Sign up on the CT Academy's website (www.ctacad.org) or contact Richard Cole at rcole@ctacad.org or 860.346.1177 to join the partnership. The detailed 2011 operational plan is available for review upon request.

Safe Science: Be Protected!

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THE DIRTY SAFETY “BAKER’S DOZEN” REVISITED

I. The Winds of Change

The need for more scientifically/technologically literate citizens, changing student enrollments, major economic issues, emphasis on hands-on laboratory science, acceleration of master teachers retiring and neophyte teachers entering service, and aging buildings/lab facilities, continues to increase as major issues/factors, amongst others, that are affecting science in our schools today worldwide.

The purpose of this article is to simply update those safety problems called the “dirty baker’s dozen!” This information will help science teachers to educate and work with their supervisors and administrators. The hope is that leadership can then be advocates for change, leading to improvements in the science laboratory.

II. What Are the Dirty Dozen?

1. *Air quality* – including ventilation, fume/exhaust hoods, bioaerosols, radon gas, to name a few. This is applicable at all levels where hazardous chemicals are being used – primary and secondary levels. Not only is this still an issue but scheduled preventative maintenance per manufacturer’s recommendations tend to be put off resulting from cuts in budgets. Instead of yearly inspections recommended by most manufacturers, anecdotal evidence indicates that inspections are being put off by five years or more!
2. *Water quality* – including radon gas, lead, copper, nitrates, methane gas, and eyewash/shower drains. As facilities get older, the chance for poorer water quality increases with inappropriately grounded wires on plumbing and more.
3. *Electricity* – including ground fault interrupters (GFI), EMFs. In laboratories or classrooms where water and electricity are being used in close proximity, there is danger of shock or electrocution. There is a need for GFIs in order to protect employees and students! If there are aquariums, wave tanks, and other equipment using both water and electricity – there is a need for GFI protected circuits! Remember – circuit breakers protect the physical structure or building – not the occupants like GFI protected circuits do.
4. *Heavy Metals* – including mercury thermometers, florescent Bulbs, barometers, manometers, sphygmomanometers, elemental mercury, to name a few. Mercury needs to be removed and environmentally disposed of. After all of the fanfare about heavy metals like mercury – there are still an unacceptable amount of the mercury being found in labs. Bottom-line is – get it out – appropriately!
5. *Asbestos* – including floor/ceiling tiles, burners, laboratory table tops, walls, etc. Friable asbestos is dangerous and still found in many schools. Asbestos needs to be either encapsulated or abated. Asbestos seems to be more of an issue when there are renovations being planned. Suspected areas should be tested prior to any work being done.

6. Chemical Management – including improper storage, use, and disposal. Many schools have hazardous chemicals which are unlabelled, not dated, improperly stored and incorrectly disposed. Although chemical management seems to have been improved, there are still an unacceptable number of academic labs using poor chemical management and making for an unsafe workplace – both for teachers and students. Much progress has been made but still more needs to be done.

7. Personal Protective Equipment (PPE) – Schools need to adopt regulatory standards and best professional practices for use of eye protection, hand and body protection as required. If the appropriate PPE is not available, the activity should not be done! Some science teachers still do not know the difference between safety glasses, directly vented and indirectly vented chemical splash goggles. Make it a point of knowing, adopting and enforcing. Don't give liability and negligence a place to roost!

8. Engineering Controls – Appropriate engineering controls such as fire suppression equipment, master energy controls, fume hoods, ventilation systems, and more are the safe guards for employees and students. Laboratories using hazardous chemicals should not be operated without appropriate engineering controls. It is not only use but again appropriate preventative maintenance necessary to make sure the engineering controls function correctly when needed. Make sure regulatory requirements and the manufacturer's recommendations are followed.

9. Radiation – including ionizing (radioactive materials) and non-ionizing (UV, lasers) radiation. Safe guards including appropriate levels, signage, use policies need to be addressed. The use of radioactive materials for instruction seems to be waning in some schools, especially gamma type sources. Health and safety concerns seem to be fostering these concerns.

10. Biohazards – including microbes, mold spores, bloodborne pathogens. MRSA, AIDS, H1N1 and other microbes are more of an issue than ever before. Most schools have been adopting policies and practices to reduce exposure; e.g. no human blood typing, no fresh cheek cell labs, limited general survey bacteria culturing, etc.

11. Occupancy Loads – This is new on the list though an issue with a long history. With limited funds, reduced teaching faculty and shortages on laboratories, numbers of occupants in labs seems to be increasing. Remember that laboratories are designed and built to hold a prescribed number of occupants (students and teacher) for safety operation and emergency egress. Know the load factor for the lab! Occupants' lives depend on it.

12. Personnel – including unsafe practices, unskilled, insufficient knowledge or training. Annual safety training is absolutely critical for faculty teaching science at any level! Topics like chemical management, bloodborne pathogens and more should be included.

13. Standard Operating Procedures (SOPs) – Some schools lack SOPs based on administrative procedures. Procedures should be written and the basis of annual safety training programs. Teaching of science as a profession includes professional expectations involving SOPs. It is the responsibility of the employer to provide appropriate safety training for science teachers to keep them informed and also hold them accountable in meeting those standards.

III. Insuring A Safe Working Environment

Professional science teachers need be aware of the dirty dozen and also work toward addressing them. Using the process “AAA” –Awareness, Assessment and Action, each of the dirty dozen can be addressed in earnest.

LIVE LONG AND PROSPER SAFELY!

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