Community Resources for Science News

Weaving connections among teachers, students & science in the Bay Area

Volume 17, Issue 2 Newsletter, Fall 2019

Pathways to Understanding through Stronger Science Learning

Science provides students with access to learning across all curriculum subjects, including social/emotional areas. Motivation for learning, critical thinking, and creativity are enhanced. Science allows students to deepen their appreciation and awareness of the world around them. These values provide, in the bigger perspective, a better world for everyone. – OUSD Science Super Star teacher

Caught in the crosshairs of shrinking funding, increased testing, crammed school schedules, new technology, and community dynamics, classroom teachers rarely have a moment to step back and consider "big picture" issues. Yet, when they do have time to reflect, their voices are powerful, as illustrated by the thoughtful reflection (above) from one of our Science Super Star honorees on why she invests time and effort in strengthening her science teaching.

This teacher is a leader, but fortunately she's not alone! Each year, CRS conducts evaluation and assessment, collecting quantitative and narrative data about teaching practices, transition to new standards, and most importantly, opportunities for young learners to engage in exploration and discovery and to meet inspiring STEM role models. And, over the past several years, we're delighted to report that the data points to steady, significant strengthening of science teaching and learning in our member teachers' classrooms and schools.

In places where strong district support is in place, teachers have been adding greater depth to their lessons each year, integrating student writing and argumentation from evidence into robust science units.

In some new partner schools, teachers who three years ago indicated they taught "little or no" science, or, that their science teaching was "mostly reading text and watching video" have made significant strides, with 75% now reporting they teach 1 -2 hours of hands-on science each week – a huge jump!

We're happy to play a part in helping our teacher and principal members to make improvements, from whatever their starting point, to bring their students more learning experiences that connect science content and students' real-world experiences together. Here's a small sampling of our most recent evaluation results:

As a result of CRS support and services, teachers indicated they:

- **97% Taught more science after having BASIS in-class lesson**
- **95% Discovered new strategies for engaging struggling learners**
- **88% Became more enthusiastic about teaching science**
- **82% Added new lessons, field trips, learning experiences**
- **80% Became more confident in planning and teaching science**

Students are amazed by the East Bay Regional Park's "Fishmobile" mobile fish exhibit that they received for being a Science Super Star School.

Richmond students exploring the chilling effects of salt and ice during a "Fuel Your School" Day of Science. Younger grades enjoyed noting observable outcomes of the byproduct, while older elementary school students contemplated real world applications of of the experiment.

"I greatly appreciate CRS's tireless efforts to meet teachers "where they are" in order to build our scientific literacy and teaching capacity. I also appreciate their readiness to provide resources that will enrich and deepen our instruction!" -- Oakland Teacher

Raising the Bar: What Exellence Looks Like

What does excellent elementary science teaching really look like? What impact does it have on students?

These are the two key questions driving the CRS Science Super Star Challenge, now entering its 9th year. Each year, in consultation with teachers and scientists, we've raised the bar for completing the Challenge, nudging teachers to implement new teaching strategies and engage their students in active learning and inquiry that allows students to make meaning rather than simply memorize a list of facts.

The results are encouraging! Teachers report they are spending more time on high-quality science and engineering lessons, and incorporating field trips and other outside the classroom experiences to build greater connections to students' daily lives. Even those who don't quite manage to turn in their documentation for formal recognition tell us simply having the framework of best practices in the challenge helps to shape and motivate their science teaching.

One of our Science Super Honorees, Lorraine Mann, summed up the impact of the program on her and her students:

"The varied supports CRS provides, including introductions to field trip possibilities through the Field Trip for Teachers program, BASIS lessons, lesson planning and help in finding resources, all help increase teacher confidence in their ability to teach science. The Science Superstar program takes this a step further by challenging teachers to take their new pedagogical knowledge and push it just a bit outside their comfort zones, then reflect on how it impacted student achievement throughout the curriculum. My science program has improved immensely both in quality and in quantity since I started receiving CRS supports many years ago."

Oakland students explore the peoperties of bubbles by blowing them and observing their characteristics.

Students make "snow" from a polymer during the "Day of Science" with Clorox employees.

From 14 teachers in the first Challenge in 2011-12 school year, we've seen nearly 100 teachers every year successfully complete the Challenge. They've documented how they are transforming their teaching practice, and reflecting on what they notice in their students:

"I was a bit worried but I let the students take the lead in their learning, and I was surprised by how they rose to the occasion, stayed engaged and on task, and were proud of what they accomplished."

"I had to add more time into lessons for student writing, because they had so much they wanted to write about in their science journals. They are discussing their ideas in greater depth, and talking with one another about what they explore and learn."

"I discovered science is one area where some of my students who struggle in other areas can shine, and actually become leaders. This builds their confidence and I see it carry over into other parts of the school day."

Since the program began in 2011, we've seen a significant shift in the school districts we serve, with ever more importance placed on science teaching. There is still a long way to go, but progress is happening and every day kids are getting more opportunities to wonder, explore, discover, and be inspired.

Explains CRS teacher services manager Corinn Brown, "The Science Super Star Challenge is impactful to teachers because it provides a pretty simple tool to get them to reflect on their science teaching practice. Because we launch the Challenge every fall, teachers can also use the Science Super Star Challenge framework to plan what to incorporate in their lessons throughout the year."

And, of course prizes are the cherry on top! Thank you to the many sponsors, partners, publishers, and donors who make it possible for our honoree teachers and students to celebrate with prizes ranging from books to field trips, from gift certificates to full day-of-science festivals for the entire school, and more.

Season of Giving: Sparking Wonder, Inspiration, and Discovery

We invite you to join our efforts to bring more joy, discovery, inspiration and learning to more kids in East Bay schools. Your gift directly strengthens opportunities for young learners in our community, particularly in classrooms where enrichment and support are needed most.

Students observing the procces of how different materials have visible reactions to various chemicals in "CheMystery Liquids" BASIS session.

Members of the CRS Board of Directors have collectively pledged to match all Fall Giving contributions up to $15,000! Give today and double the impact.

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Donors from 1/1/2019 to 10/15/2019

Thank you notes from students show the impact of BASIS lessons on their classes.

"It's been awhile since I've been able to volunteer with CRS, and I miss it! Funny enough, I ran into a high school student on Friday who remembered my Elements presentation from her 5th grade classyears before. She remains interested in STEM, so that was great to hear." -- Longterm BASIS Volunteer

"Yesterday a teacher compared getting a BASIS lesson from @crscience to getting Hamilton tickets and let me tell you I felt like a rock star." -- BASIS Volunteer

Quotes from BASIS Volunteers highlight the program's effects on teachers, students, and even volunteers themselves!

UC Scientists Bring Inquiry to Young Learners

Between the Bay Area Scientists in Schools (BASIS) program bringing lessons to K-6 classrooms and the Be a Scientist program bringing scientist mentors to 7th grade classrooms, more than 750 UC Berkeley grad students, post-docs and undergrads reached more than 16,000 students with the joy of science last year. That's amazing growth from a partnership that started 16 years ago with just a handful of grad students in the lab of Chemistry Professor Robert Bergman!

7th graders carry out their own designed experiment in Be A Scientist program.

Teachers love having BASIS teams visit their classes. Said one teacher: "The kids were buzzing talking about the explosive demonstrations from class today. Beyond the science, even, they really connected to the scientist's realness and enthusiasm for Chemistry."

The impact is amplified beyond the actual lesson presentation, because more than 90% of teachers tell us they increase the amount of science they teach after seeing how engaged their students are during the BASIS investigations.

Berkeley 7th grade students feel empowered in the Be a Scientist mentoring program, as they have (often for the first time) agency to decide what phenomenon they want to investigate. "We become powerful in our learning," explains one student.

Summertime Explorations Link Teachers, Scientists

Exploring plant adaptations in the UC Berkeley Botanical Garden, collecting environmental data at Strawberry Creek, and touring Chemistry and Biology labs to learn about cutting edge research including CRISPR technology – these were some of the amazing experiences UC Berkeley graduate students designed for an eager group of Oakland 4th through 8th grade teachers this summer.

UC Berkeley Chemistry Graduate Student gives a tour of her lab to Oakland Unified School Teachers showing different chemical reactions such as the flame test.

Together, the teachers and scientists then worked together to develop lesson plans. Once the school year started, the grad students have been going into the classrooms of their partner teachers to present learning experiences that tie in with what the students are learning. The impact is immediate and long-lasting. Student surveys show that students become more interested in the topics they are studying after having a scientist visit the classroom, and the teacher observations back that up A sampling:

"The students were thrilled to have a local scientist in the room, to learn about them in a personal way and also about their profession. The fish our scientist brought into the classroom was a memorable experience for us all, and it sparked students to ask more questions about gene-editing and to think differently after learning about this technology."

"They were ASKING ALL the questions. They wanted to know the applications of inorganic chemistry, making connections to biology, and even our most reluctant learners were brimming with ideas."

"Chemistry can feel pretty removed from everyday life. Our scientist, Jade, really focused on how we ARE all chemistry and how it is all around us."

The Joy of Making, No Special Equipment Required!

CRS teamed up with MakerEd (located in West Berkeley) to host a special Field Trip for Teachers. Since space was very limited, invitations were offered to Spring 2019 Science Super Star honorees and teachers who had indicated on our year end survey that they were interested in learning more about how to incorporate making into their classrooms.

Our hosts included Aaron Vanderwerff, a national leader in Maker Education, and his colleague Dora Medrano Ramos. They provided a tour of the amazing creative studio where they offer workshops for teachers throughout the year. They led our group through a fun exploration of light and shadows, modeling how to use simple, inexpensive materials to bring maker explorations to support science discoveries in elementary classrooms.

"Oh my students are going to love this!" was a refrain we heard throughout the workshop from many teachers eager to bring what they learned right back to their classrooms.

MakerEd hosts professional development in their Berkeley lab and at school sites locally and around the country. Check out their information and resources: https://makered.org/

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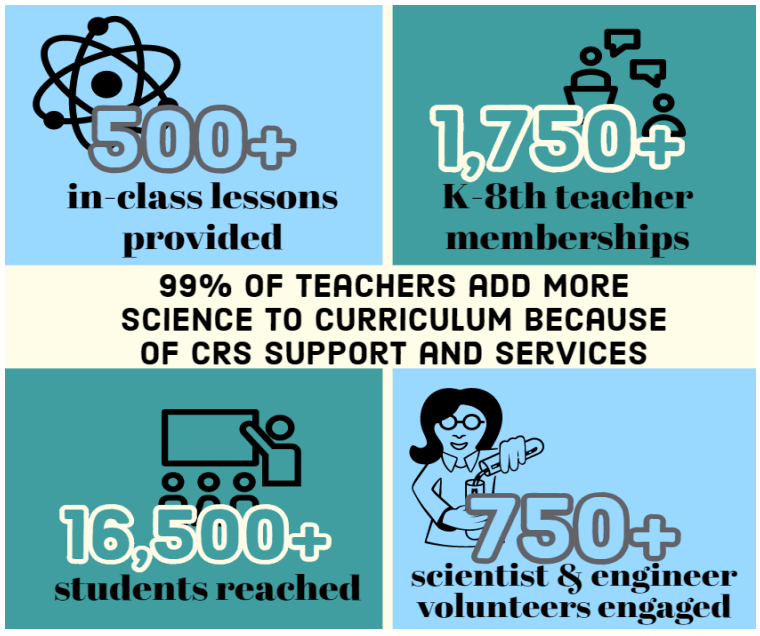

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