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2017-18 School-Year Program Evaluation: Accomplishments and Impact

Overview

Community Resources for Science increases opportunities for pre-Kindergarten through 8th grade students, particularly in low-income East Bay communities, to learn about the natural world through scientific and engineering explorations led by well-prepared teachers and enthusiastic STEM professionals. CRS Community Resources for Science nurtures a dynamic, expanding network, connecting East Bay teachers and students with scientists and engineers and with a constellation of well-aligned community institutions and organizations. By fostering connections and communications, and through direct services and training, CRS brings about lasting changes in teacher practices, school cultures, scientist engagement, collaborations, resulting in more opportunities for student inspiration, exploration, discovery, and learning.



Students investigate color changes in mystery liquids using ph indicator.

In the words of one CRS member teacher:

I never know from year to year what my class will be like... what their interests will be, their activity level, their ability to learn basic academic skills, etc. Yet I always know that my students will love science, and that I will be able to use science lessons to hook my students into the rest of the school curriculum. In 20 years of teaching, science has never failed me once with my students. It is the constant that keeps me, and frequently them, going from day-to-day and year-to-year...And this is why I am so grateful to CRS for providing lessons, advice, field trip opportunities, grant opportunities, and professional development. I use it all, and my students are the beneficiaries. – Oakland 3rd grade teacher

During the 2017-18 school year, a growing number of elementary school educators have continued to transform science teaching and learning in their classrooms. With support, more teachers are embracing new ways of helping their students develop the skills to explore, think critically, communicate, collaborate, and build deep understanding of natural phenomena such as earthquakes, magnetic forces, seed germination, solar eclipses, and life cycles of butterflies.



Empowering Teachers: Information, Connections, Support & Training

As a result of CRS support, teachers report they are more informed, skilled, motivated, and successful in increasing both the quantity and the quality of science learning experiences for students in their classrooms. Their students are engaged, curious, and inspired.



Celebrating Science Super Star teachers with books, classroom prizes, field trips, and more!

Educators Reflect on the Impact of CRS Support and Partnership in Strengthening their Science Teaching

I'm grateful for CRS and all they do for children and teachers! My teaching has improved and my resources have expanded thanks to the hard work of CRS staff! – Berkeley teacher

CRS is such a valuable resource for teachers! The Science Super Star program is the cherry on top. I look forward to the newsletter and list of PD's offered, especially during the summer months. I love hearing from students all the wonderful things they learned from the BASIS volunteers. I feel like I have a personal assistant eager to support me as an educator. Thank you CRS! – OUSD teacher

Science is so critical to the future of our students and our society, yet schools rarely give it the attention reading, writing, and math get. It is essential that those outside the school system continue to offer their expertise, support, and advocacy for science instruction.—WCCUSD teacher

CRS is an amazing organization. It has helped my students have a deeper understanding of science concepts, and it has helped me grow as a professional each year. Thank you! – Oakland teacher

I deeply appreciate the support CRS provides in order to enable teachers to give this vital and enriching experience to students. In order to adapt in our continually evolving world, all citizens must be scientifically literate. – Berkeley teacher

**This year, CRS served 1,750+ teachers
Impacting learning for over 43,000 students
across more than 140 East Bay schools**

**76 teachers earned recognition for Excellence
in Elementary Science Teaching**

We provide teachers with:

- *Invitations for free in-class scientist-led lessons
- *Personalized on-call science planning support
- *Timely information bulletins & online resources
- *Free Science Field Trips for Teachers events
- *Customized professional development

Program assessment data

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

- 95%** Taught more science after having BASIS in class lesson
- 88%** Became more enthusiastic about teaching science
- 85%** Increased time on science
- 82%** Added new lessons, field trips, learning experiences
- 80%** Became more confident in planning and teaching science
- 75%** Effectively connected science with math & language arts
- 75%** Implementing NGSS standards



Engaging Scientists & Engineers to Inspire and Lead Explorations

As a result of CRS support, scientists and engineers are well-prepared and confident as they head into classrooms to lead young learners in science and engineering investigations. We coach volunteers to develop skills in communicating their research and their passion for STEM, and prepare them to effectively teach while serving as role models. They inspire students to imagine their own futures and discover their own talents as they investigate magnets, circuits, plants, space, and more.



More than 16,500 K-8 students met and learned from 650+ scientists, engineers our education outreach programs

Bay Area Scientists in Schools (BASIS)

Free in-class lessons for grades K-8

600+ BASIS presentations

550+ STEM volunteers

16,000 students directly engaged

Be a Scientist, 7th Grade Mentoring

Mentors guide students through designing and conducting independent investigations in school.

140 scientist and engineer mentors

700+ students received individual support

Inspiration and Impact in Classrooms

This was a WONDERFUL experience for my students to talk to real scientists and they were beyond thrilled! I am always amazed how the BASIS visits energize my class. My students are made to feel safe to explore and learn because the scientists make them feel so comfortable and confident.
– 5th grade teacher

One of my favorite things is having my learners see women and people of color in science!! They reflect my classroom and that makes me happy & positive for our future!

Volunteering for BASIS is an empowering experience because it allows me to break down the stereotypes of people in STEM and share the magic of science with young, growing minds. – UC Berkeley grad student

I really felt like a scientist because I got to design my project all by myself. I enjoyed it because the scientists were there to support you and not to just do everything, but they helped out whenever you needed help. – 7th grader

One of my students - who often struggles greatly - really surprised me with a creative solution to a problem. His solution surprised everyone and raised a lot of new questions for the group - Why did that work? Can we do it too? It built my student's confidence and he has been doing better at staying on-task and focused. –Oakland teacher

Science Festivals & School Fairs

Pop-up science activities to engage and delight the whole family!

50+ STEM volunteers

Thousands of families participated!



As a result of opportunities to meet “real” scientist and engineer role models, students receive individual attention and deepen engagement and understanding. Teachers are able to observe their students as active learners, motivating them to do more science.

Impact on Student Learning and Science Exploration Opportunities

Thousands of children in Oakland, Berkeley, Richmond, and other East Bay communities have more opportunities to explore, make meaning, and build understanding of the world around them, because of the services that CRS provides for teachers and the in-class programs that directly engage young learners in science and engineering learning. Quantitative and qualitative data confirm that CRS programs and services continue to move the needle, increasing opportunities for young learners.



Teachers Reflect on Ways High Quality Science Learning Builds Student Skills in Critical Thinking

Students are really enjoying engineering problems. Focusing on real-world problems, as scientists do, has really motivated students. They are not just learning science facts in isolation, but they are trying to solve real-world issues. – OUSD Teacher

As I change my practice, students become more independent learners with skills to learn and explore instead of facts memorized. Students are producing more coherent writing. Students enjoy the science content which motivates them in other subject areas. – OUSD Teacher

The things I added to my science teaching practice this year have really allowed the kids to blossom in their listening, speaking, and writing skills. Sometimes they have so much to say and write in science that I have to add more time. Every kid is gaining more confidence in what they have to say and write. –4th grade teacher

BASIS Program Assessment Data

99+% Teachers were satisfied with their BASIS presentations & want more

96+% Teachers indicated their students:

- Grew more interested in science
- Asked thoughtful questions
- Learned science concepts
- Engaged in hands-on experiences
- Discussed their own ideas
- Connected learning to experiences in their lives, real world

90% of teachers indicated they:

- Observed students engaged and learning above their typical level
- Added more science as a result of BASIS visit
- Valued the opportunity for students to meet diverse STEM role models



Diverse 7th grade Be a Scientist mentors:

63% identify as person of color

56% identify as female

Connecting Teachers with a Wide Network of Partners & Resources

As a result of CRS collaboration with a network of over 200 science education organizations, informal education institutions, science centers, and academic research programs, the teachers we serve have access to, and timely information about, resources to help them “up their game” in science. With monthly email bulletins, quarterly comprehensive resource guides, curated online resources, and planning support available on-call, CRS lets teachers know about field trips, grants, lesson plans, material, events, trainings, and much more.



Twice each year, CRS hosts free **Science Field Trips for Teachers** at local science centers. Teachers have a chance to explore science topics such as dinosaurs, plants, space, ecology and more.

Events this year were held at **UC Berkeley Natural History Museums, and Chabot Space and Science Center**. Over 20 partner organizations participated in our Spring **Science Education Resource Fair**, providing teachers with one-stop access to a wide array of programs, training, and materials.

Teacher Reflections:

It makes me so happy that I regularly hear students say, “I love science!” I love teaching it and love infusing my students with an enthusiasm for it that I hope will remain with them for many years, maybe even a lifetime!

Thank you CRS for ALL that you do for science, for teachers, and for our future leaders! The annual CRS Science Super Star challenge is such a blast to participate in. I love spotlighting the work that my students are doing each year, not to mention getting my classroom library restocked with AH-mazing new reads! You ALL are Rockstars and I am very grateful for your resources and supports. I really appreciate the personal touch you put into everything you do! I look forward to many more years of collaboration!

Recently from your newsletter I found out about a couple of great opportunities. My class participated in the pilot project of Zoom Classroom with the Marine Mammal Center. We also did Skype a Scientist. Both sessions were amazing and I would never have found out about them without you. Many thanks!

Science was never my strongest subject in school. Consequently, I wasn't comfortable teaching it. However, after the (CRS training) over the summer, and follow-ups workshops throughout the year, I am much more confident teaching science. I used to avoid hands-on lessons, worried about managing the materials and children. Now, I embrace them. Children are much more engaged when they are active. I've also learned how to better integrate writing into the science curriculum, including having students draw diagrams and pictures. I now look forward to teaching science and wish I could find even more time for it.

CRS & BASIS scientists developed and presented lessons aligned to standards for grades K-8, on more than 75 topics, including:

Adapting to Survive: Predators & Prey

All About Volcanoes!

Balloon Rocket Cars

BioEngineering: Design A Pill Coating

Bioengineering: Unblock My Heart!

Birds: Evolution and Tools

Buoyancy: Who Sank the Boat?

Can We See Your DNA?

Card Tower Challenge!

Catapult Challenge!

Cells and Microscopes

Chemical Reactions

Chemistry of Water and Carbon Dioxide

Clorox Day of Science

Clouds Clouds Everywhere

CSI: Chromatography Science Investigation

Designing a Polymer

Dry Ice Explorations

Dry Ice Investigations

Earthquake Engineering

Earthquakes in your Backyard!

Electricity, Magnetism and the Wall Socket

Exploring Magnets

Exploring States of Matter

Eye didn't know that



Eye See It: Understanding How Eyes See

Feel Dead Brains

Finding the Perfect Fit! An

Introduction to Enzymes

Food to Poop!

Germs and Your Body

Glow in the Dark Science

Go With The Flow!

Good to the Bone

Graph Paper Programming

Green Polymers

Green Roofs

Head! Shoulders! Knees! &

(more) Bones!

Hear All About It!? Sound

Hidden Colors

Honey I

Engineered Our

Food

How Do My

Lungs Work?

Individual

Resource

Request

Involving

Dissolving

It came from a

single cell

It's just a phase!

Let's Get Brainy!

Magnet Mania!

Magnetic Mystery Planets

Materials and Structures

Microbes in Action!

Microorganisms: Good or Evil?

Ocean Ecosystems & You!

Oceans Are For Everyone!

Our Brains Sensing Our World

Paper Circuits

Plants Adapt to their Environments

Play With Your Food

Properties of Gak!

Renewable Energy & Climate

Change

Robots that Run

Secret Formulas

Sensing the World Around Us

Smell Me If You Can!

Soils are Diverse!

Squishy Circuits

States of Matter

States of Matter: Sublime Suds/

Ice Cream Science

The Brain in Our Daily Lives

The Spice of Life: Variation

Within Species

The Water Cycle

The Wonderful World of Water

Tooth Detectives: How Diet

Shapes Teeth!

Water in our Atmosphere:

Make It Rain!

Wildland Fire



Customized Support for Oakland Unified School District

Compared with neighboring districts that CRS serves, OUSD elementary teachers in 2017-18 reported a higher rate of teaching “at least some” science (80% vs 50% or less in neighboring districts). They also have been reporting a steadily increasing amount of time devoted to science & engineering each week.



**CRS served 1,042 OUSD teachers
In 65 Oakland schools**

Includes every district elementary school and several charter schools

**Bay Area Scientists in Schools teams presented 278 lessons in Oakland classrooms
Directly engaging 8,500+ students**

54 Oakland teachers earned recognition for excellence in elementary science teaching through the CRS Science Super Star Challenge.

This resulted in prizes, books, and most of all great learning experiences for over 1,500 students

Girls react to a test run of their marble & foam roller coaster, with a BASIS volunteer.

CRS supports teachers and students at the following Oakland schools:

Acorn Woodland Elementary
Allendale Elementary
Bella Vista Elementary
Bridges Academy at Melrose
Brookfield Village Elementary
Burckhalter Elementary
Carl B. Munck Elementary
Chabot Elementary
Cleveland Elementary
Coliseum College Prep
Community Day School
Community United

Crocker Highlands Elementary
East Oakland Pride Elementary School
Edna Brewer Middle
Emerson Elementary
EnCompass Academy
Esperanza Academy
Franklin Elementary
Fremont High School
Fruitvale Elementary
Futures Elementary
Garfield Elementary
Glenview Elementary
Global Family School

Grass Valley Elementary
Greenleaf Elementary
Hillcrest Elementary
Hoover Elementary
Horace Mann Elementary
Howard Elementary
International Community School
Joaquin Miller Elementary
Kaiser Elementary
Korematsu Discovery Academy
La Escuelita Elementary
Lafayette Elementary
Laurel Elementary
Lincoln Elementary
Madison Park Academy
Manzanita Community School
Manzanita SEED
Markham Elementary
Martin Luther King Jr.

Melrose Leadership Academy
Montclair Elementary
New Highland Academy
Parker Elementary
Peralta Elementary
Piedmont Avenue Elementary
Prescott Elementary
REACH Academy
Redwood Heights
RISE Community School
Sankofa Academy
Sequoia Elementary
Street Academy
Think College Now
Thornhill Elementary
Charters:
Learning Without Limits
Lighthouse Community
Roses in Concrete



It's been great to have BASIS scientists come in and work with students. CRS has always been very responsive when I ask for help with getting volunteers for Family Science & Engineering Nights. I can't imagine doing some of the things I do without their support and encouragement! BASIS lessons are highlights of the year for students, and the scientists are kind, knowledgeable and inspirational!