

MEEC



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MOJAVE ENVIRONMENTAL EDUCATION CONSORTIUM

ENVIRETREAT 2016 PROVIDES UNIQUE TEACHER TRAINING IN MOJAVE DESERT

MEEC's 2016 EnviRetreat was held on November 16th and 17th with five specially selected teachers taking part in the two-day event, which introduced them to a host of environmentally relevant educational sites.



Above: Teachers overlook Elementis Specialties' open pit mine in Newberry Springs

The annual EnviRetreat Conference is designed to promote quality STEM based environmental education learning in a "place-based" environment, with this year's event being held at numerous sites throughout Newberry Springs and the area surrounding Las Vegas. The following teachers were selected to participate in the event: Monica Coughlin, Twentynine Palms Elementary School, Twentynine Palms; Pamela Chaires, Granite Hills High School, Apple Valley; Livia Machado, Daisy Gibson School, Palmdale; Venessa Smith, Excelsior Charter School, Victorville; Jamie Van Hill, Ranchero Middle School, Hesperia.

The educators started their first day at the Mojave Desert Air Quality Management District in Victorville, where they departed for Newberry Springs. Their visit to Newberry Springs included a tour of the Hector Mine, owned and operated by Elementis Specialties. Production and Quality Control Manager Joyce Pulliam-Fitzgerald guided the teachers on a tour of the mine where they learned about the geological requirements necessary to produce Hectorite, the rare earth mineral that is mined from the site. The teachers also visited an area near the Mojave River which over the past 25 years produced a large "sand blow," resulting in over 40 homes being abandoned and destroyed. The constantly shifting sand has almost entirely buried the surrounding structures and land, making the area uninhabitable. It was an eye opening experience at how the environment is able to reclaim previously high quality agricultural land.

From there, the teachers headed back on to Interstate 15 to continue their way towards their afternoon and evening destinations in Las Vegas, NV. There, the teachers visited

Clark County Wetlands Park for a private guided tour of the 2,900-acres of water, trails and trees along the Las Vegas Wash. The wetlands park offered teachers the chance to see the conservation and water recycling efforts that the county and the Wetland Park nonprofit have put into action.

The group ended the first day by attending a reception at The Orleans Hotel sponsored by the California Desert Air Working Group, which was simultaneously hosting its annual conference at the hotel. Proceeds from the annual CDAWG conference, which is sponsored by the Mojave Desert Air Quality Management District, directly benefit MEEC. The reception provided teachers with the opportunity to network with MEEC sponsors and supporters as well as other environmental industry professionals. The evening came to a close with a relaxing dinner at Alder and Birch Steak House and enjoying personal time at The Orleans Hotel.

The second day of EnviRetreat began with a hearty breakfast at Fuddruckers before the group departed for Hoover Dam. The teachers toured the engineering marvel where they learned about the history of its construction and the generation of power that the Colorado River provides to California, Nevada and Arizona. After departing Hoover Dam, the teachers viewed a more recent engineering feat located in the Nevada Desert.

The Seven Magic Mountains art installation stands tall and bright along the 15 free-way and provided teachers with a real world example of STEAM (Science, Technology, Engineering Arts, and Math). The group departed the installation for the journey south back to Victorville. The teachers shared their experiences and reflected on the two-days of adventure and were already excited to get back into their classroom and share the information with their students and colleagues.



Above: Teachers attending EnviRetreat 2017: Back row (l-r)- Jamie Van Hill, Venessa Smith and Pamela Chaires. Front Row: Monica Coughlin and Livia Machado.



**The Mojave Environmental Education Consortium
Invites you to check us out & "Like" us on Facebook!**



Teachers Trek through Mojave National Preserve during MEEC's First "Geology of the Mojave" Teacher Workshop

Twenty teachers gathered early in the morning to start their adventure into the Mojave National Preserve as part of MEEC's first "Geology of the Mojave" teacher workshop on October 29th and 30th, 2016. The Boeing-funded workshop took teachers on a two-day excursion to locations within the Preserve that showcased many of the unique geological features of the Mojave Desert and surrounding areas.

The first stop for the select group of educators was Afton Canyon. Located just outside of Barstow, teachers listened as USGS Geologist David Miller shared with them the contributing factors that led to the canyon's formation. Miller shared topographical maps of the area and pointed out features such as the remains of sand bars, ancient lagoon locations and the lake depth that can be seen along the canyon walls.

Teachers continued to follow the path of the Mojave River and paid a visit to the Desert Studies Center in Zzyzx. Staff from the Center provided a tour of the landmark and spoke about the conservation efforts of the Mohave Tui Chub. The Mojave Tui Chub is the only fish native to the Mojave River and is listed on the State's Endangered Species list. From there, the group loaded into vans and headed into the Preserve.



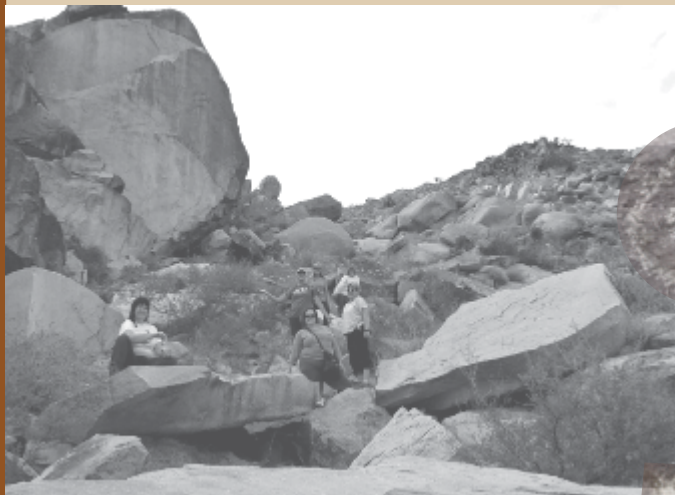
Above: David Miller, USGS (left) shares a topographical map of Afton Canyon and the nearby areas.



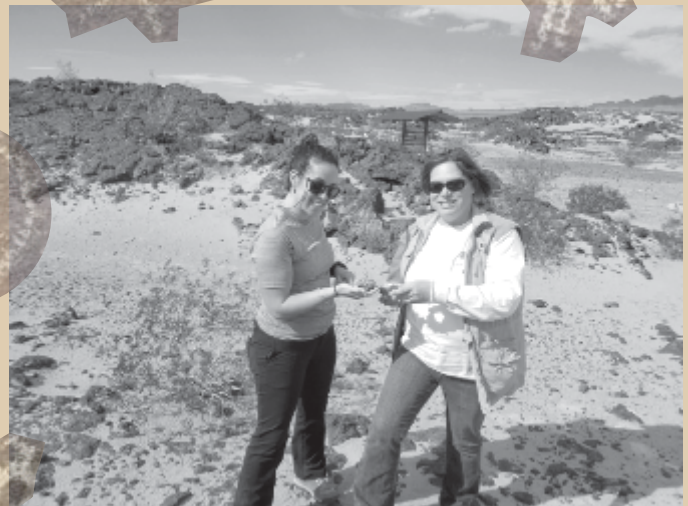
Above: "Geology of the Mojave" teachers explore the inside of a lava tube in the Mojave National Preserve.

Inside the Preserve, teachers hiked inside a lava tube as they learned about the volcanic history of the region and the vital role it played in shaping the Mojave Desert into what we see today. The teachers continued their drive through the Preserve which allowed the teachers to see prominent features that included the Kelso Dunes, Cima Dome, and a Joshua Tree forest. The teachers capped off their first day with a relaxing dinner and evening at The Aquarius Hotel in Laughlin, NV.

Day two of the workshop began early as teachers left the hotel and made their way to Grapevine Canyon. While exploring the area, teachers learned about the mineral composites of the surrounding rocks and how the changing fault lines resulted in the formation of the canyon and a nearby lake. The predominant features at Grapevine Canyon are the hundreds of petroglyphs that can be walked up to and explored throughout the canyon. After they had hiked the canyon, the group made their way over to Amboy Crater. One of the youngest examples of volcanic activity in the Mojave Desert, the cinder cone provided a striking backdrop for a picnic lunch discussion before the group made the journey home.



Above: A group of teachers pause for a photo during their exploration of Grapevine Canyon.



Above: Venessa Smith and Gena Leming examine lava samples at Amboy Crater.

Boeing Workshop Introduces Teachers to STEM Service-Learning

Teachers throughout the High Desert kicked off the school year by learning how to incorporate STEM and STEM Service-Learning into daily classroom activities with their students. Funded by The Boeing Company, three teacher workshops were held throughout the High Desert in Victorville, Palmdale and Twentynine Palms.

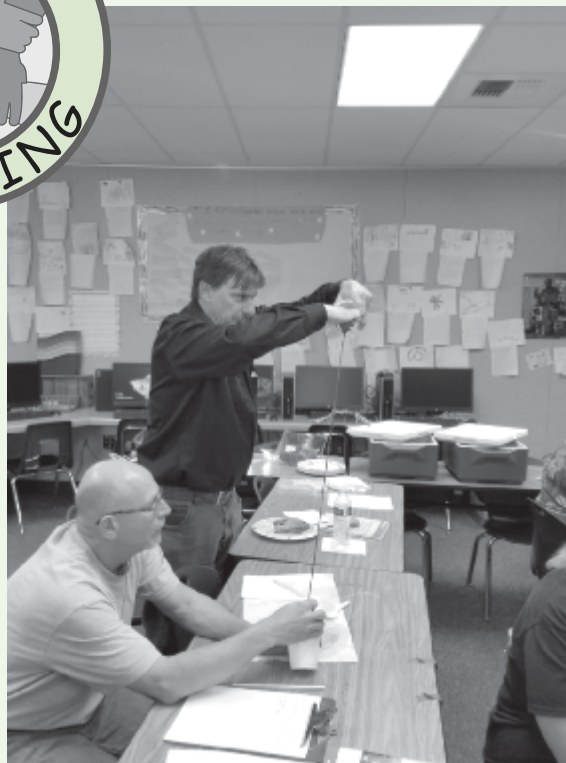
Workshop facilitator James Stockdale provided teachers with hands-on activities designed to challenge their students in Science, Technology, Engineering and Math. As many school districts begin to incorporate Next Generation Science Standards into their lessons, James lead a collaborative discussion on how to build upon the activities to incorporate many of the

Crosscutting Concepts that can be found in the NGSS framework, in addition to the ways to expand the activities to meet Common Core and multiple subject needs.

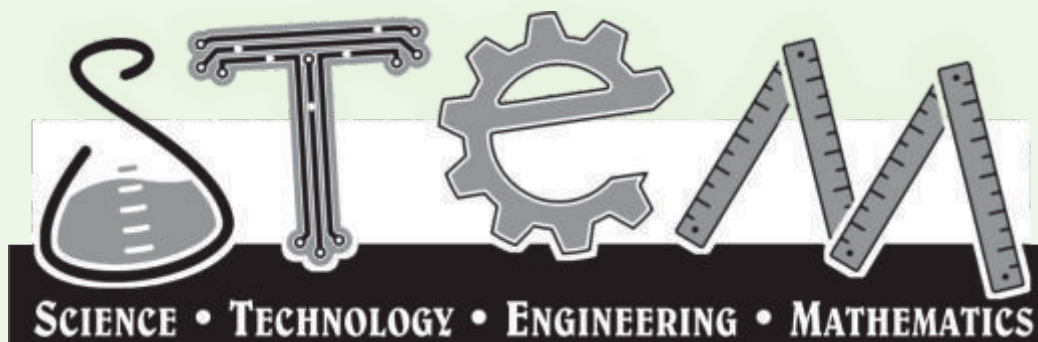
As coordinator of the award-winning Digital Design Engineering Academy at Knight High School in Lancaster, James has been successful in incorporating Service-Learning/Project-Based Learning with hundreds of high school students. Using his first-hand knowledge, he was able to share with the attendees the tools that have worked for him when engaging students in standards-based service-learning projects.



Above: Teachers utilize engineering principles to connect STEM lessons with NGSS Crosscutting Concepts during the Victorville workshop.



Above: Hands-on activities allow Morongo Valley teachers to further develop their STEM classroom lessons.





TEACHER

FEATURE:



Valeria Kimmel-Oliva

Valerie Kimmel-Oliva serves as MEEC's Teacher Ambassador at Desert Knolls Elementary School in Apple Valley and shares the many amazing opportunities that MEEC has to offer with her fellow teachers and students. Valerie says, "This is my third year as a MEEC Ambassador, and the Environmental bug is catching! I have team teachers who are now going to Forestry Institute Teachers/Project Learning Tree workshops. All of our teachers were trained in the use on EEI-Environmental Education Initiative Curriculum, as we hosted a professional development last September. Our Kindergarten teachers have written grants, and are establishing a mega-Kinder Garden." Through the hard work of the students that Valerie oversees, they grew a fabulous fall garden, with a variety of flowers, vegetables and herbs. Many of the seeds, plants and tools, used to establish and maintain the garden at Desert Knolls were funded through grants offered by MEEC.

The 2016-17 school year started early for Valerie. She attend two trainings: one with the FIT certification at Humboldt State University, and Key Issues Institute, in Keystone, Colorado, sponsored through a MEEC scholarship. "Both institutes provide me with classroom tools and hands-on experiences to help educate my students on Forestry issues, sustainable practices, water conservation and land management," Valerie said of her experiences.

Summer of 2016 brought good news to Desert Knolls, where Valerie teaches STEP grades 1-5, and is an advisor for the GATE club. Desert Knolls was selected as the 2016 School of the Year for Recycling at the annual Recycling and Recovery State Convention. "It was quite an honor, as we have been establishing our program through sustainable practices – many of which I have learned after attending MEEC sponsored workshops. Composting, energy, solar and gardens in every classroom to name a few," she said about receiving the award on behalf of the school and her students hard work.

"I feel extremely fortunate to live and work in the service area of MEEC," Valerie added. "I have grown both personally and professionally by actively engaging in the variety of trainings, workshops, and activities that MEEC has to offer. I believe that MEEC is a hidden gem in the desert, and I can't express enough what a positive impact it has had on me. My advice to others; get involved! Sign-up and attend a workshop. Once you do, you'll be hooked!"

High Desert Teachers Attend Key Issues Institute

The Mojave Environmental Education Consortium is proud to announce an exciting opportunity for Grade K-12 teachers to earn a full scholarship to attend The Key Issues Institute, a one-of-a-kind professional development workshop in Keystone, Colorado which integrates STEM, environmental education and experiential techniques each summer!



This once-in-a-lifetime educational opportunity is made possible by the Antelope Valley Air Quality Management District, Lockheed Martin, the Los Angeles County Sanitation Districts and MEEC. In 2017, three Antelope Valley teachers and one teacher from the San Bernardino County High Desert or Riverside County's Blythe region will be chosen to partake in the Keystone Science School's interdisciplinary five-day STEM workshop, which equips educators with the skills and confidence to explore local and global environmental issues with their students. Best of all, Key Issues is aligned to national education standards, including Common Core and Next Generation Science Standards!

Using Colorado's spectacular ecosystems as its setting, Key Issues combines classroom time with outdoor exploration of the natural environment. Lessons include lab testing, outdoor water testing and indoor lecture periods. In addition to enjoying professional networking opportunities with teachers from across the country, each participant receives a customized Lab-Aids kit to take back to his/her classroom. Airfare, training, lodging and meals are included as part of the scholarship recipient's award and participants may select to attend one of two sessions held between June 21 and July 24, 2016.

The deadline for submitting application packages is Tuesday, April 25. Applications are available online only at

<https://campscui.active.com/orgs/KeystoneScienceSchool5#/selectSessions/1822303>

When completing your online application package, please select "MEEC" as your Sponsor, in order to be considered for one of MEEC's four scholarships.

For more information please contact MEEC Executive Board Chair Violette Roberts at (760) 245-1661, ext. 6104, or via e-mail at vroberts@mdaqmd.ca.gov.



SPONSOR SPOTLIGHT: High Desert Power Project

The High Desert Power Project is a combined cycle natural gas power plant located in Victorville, California, capable of producing 830 MW of electrical power, enough for 830,000 homes. The HDPP uses Combined-Cycle Gas Turbines (CCGT) to produce power, comprising three gas turbines and a steam turbine. It was named Power Magazine's 2003 Plant of the Year because of HDPP's "innovative approaches to project partnering, air emissions offsetting, and water management. "The plant utilizes state-of-the-art pollution control equipment to minimize air emissions, and an innovative Zero Liquid Discharge that reduces water consumption by approximately 20 percent compared to many traditional plants. High Desert's electric generating technology is based on clean burning, natural gas-fired combustion turbines. Waste heat from these turbines is recycled by Heat Recovery Steam Generators which feed a separate steam turbine to produce additional power. This is the most energy efficient with the least polluting type of fossil fuel power plants of this size.



Above: HDPP's natural gas combustion turbine generator. This 3 Oxidation catalyst and duct burner helps reduce the facility's air emissions.

The plant has been a sponsor of MEEC since 2008 is proud to be a part of the advancement of STEM-based curriculum. Environmental stewardship and community involvement are important aspects of operating a power plant. In addition to their support of MEEC, employees annually donate over 250 hours of service to local community and charitable projects.

Solar Oven Cook-Off Workshops Sizzle

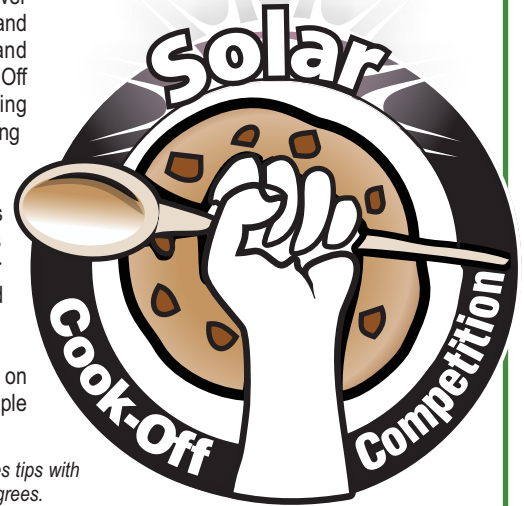


On February 2nd and 7th, MEEC presented its first ever "Solar Oven Cook-Off" Workshops in Victorville and Palmdale. Designed to introduce the rules and guidelines of the annual cook-off competition, Solar Cook-Off Champion/Advisor John Kell shared with the attending teachers insider tips on building a solar oven and keeping students engaged during the planning process.

Participating advisors had the opportunity to ask questions about the registration process and receive insider tips about what building materials work best and each teacher also came away with a working solar oven that can be used to introduce solar cooking to their students.

The 5th Annual Solar Oven Cook-Off will take place on Saturday, May 13th at the Victor Valley Museum in Apple Valley.

Left: John Kell, three-time winning solar cook-off advisor, shares tips with teachers on how to build a solar cooker that can reach up to 400 degrees.



**REGISTRATION NOW
OPEN FOR THE
5TH ANNUAL SOLAR
OVEN COOK-OFF!**

Applications are now available for the 5th Annual "Solar Cook-Off Challenge!" The deadline to submit applications and student forms is, Friday, April 28th at 4:00 PM! This is an amazing event for your students to not only try out their STEM construction skills, but their culinary skills as well! **BIG CASH PRIZES AVAILABLE!**

This event provides students in grades 4-12 the perfect opportunity to utilize their STEM and critical thinking skills working as a team to design, build, and create a solar cooker and winning recipe. At the Solar Oven Challenge, teams will demonstrate the performance of their solar cookers by creating an original dish(es) of food for the challenge. Three awards will be given in each age division for the **BEST OVEN DESIGN** and **TOP RECIPES**. Grade Divisions are: 4-6; 7-9; and 10-12.

Awards are:

Construction: 1st: \$250 2nd: \$150; 3rd: \$75

Recipe: 1st: \$200 2nd: \$100; 3rd: \$50

A total of \$2,475 in Prizes will be awarded!!!! We are looking forward to a huge event this year!

Once again, through MEEC's ongoing partnership with San Bernardino County First District Supervisor Robert Lovingood, we will be hosting the event at the Victor Valley Museum located in Apple Valley on Saturday, May 13. Students and team advisors will be admitted to the Museum free of charge.

This is one sizzling hot event that you won't want your students to miss out on! Applications and forms are available for download on our website at: <http://meeconline.com/solar-oven-cook-off/>. Applications submitted must include all signed Student Forms and Detailed Recipe(s) (including instructions.) **NO EXCEPTIONS.** Applications submitted without student forms and recipes will not be accepted. Construction forms are due at event Registration.

For more information on this event, please contact event coordinator Christie Robinson at (760) 245-1661 ext. 6101 or email at christier@mdaqmd.ca.gov



Range Camp Scholarships Available for High School Students

The 33rd Annual Range and Natural Resources Camp will be taking place June 18-23, 2017 at the beautiful Elkus Youth Ranch in Half Moon Bay, California. The camp offers students between the ages of 15-18 the opportunity to work with peers from throughout the state and is designed to offer an appreciation of the extent, importance and value of California's rangelands and natural resources. Range Camp fosters an appreciation for several fields of applied science and management through interaction with university faculty and experienced professionals in classroom and field activities.

Students will address the importance of such topics as plant identification, livestock production, wildlife management, forestry, fire ecology, geology, soils, water resources, rangeland ecosystems, and technologies used in natural resource science and management.

At the end of the week, students will be evaluated on their understanding of the materials, with the top two scoring campers being awarded an all-expense-paid trip to represent California and the Pacific Islands at The Society for Range Management's High School Youth Forum (HSYF) held in conjunction with its national science meeting. The third highest scoring camper will be invited to attend as well, but will need to find other means of paying for the trip. Delegates must still be in high school through February 2018.

MEEC is offering four student scholarships that will be awarded to attend Range Camp this summer. Scholarships include tuition (\$450) and roundtrip airfare up to \$350 per person. To apply, students must be enrolled in a school located within the MEEC boundaries of San Bernardino County's High Desert Region, the Antelope Valley or Riverside County's Blythe Region and be age 15-18 by the start date of camp. The deadline for application submission to MEEC is April 28th at 4:00 PM.

Applications are available on our website at: <http://meeconline.com/scholarships/2017-student-range-camp-scholarships-now-available/>. APPLICATION, PHOTO RELEASE AND COMMITMENT FORM MUST BE SUBMITTED TO MEEC IN ORDER TO BE CONSIDERED FOR THE SCHOLARSHIP. ANY APPLICATIONS DIRECTLY SUBMITTED TO RANGE CAMP CANNOT BE GUARANTEED TO BE CONSIDERED FOR THE SCHOLARSHIP.

Lockheed's Video Contest Promotes Sustainable Design

MEEC Sponsor Lockheed Martin challenged High Desert students with the task of becoming reporters to explore the many ways that people in their communities are working towards making the Mojave Desert more "sustainable by design." To this end, students from grades 3-12 interviewed teachers, family members and businesses on their efforts to protect and preserve the environment. Videos highlighted gardening and recycling at schools, renewable energy and green architecture.



Winners of the video contest received gift card prizes valued at \$200, \$150 and \$75 for their efforts in addition to a SolarTab solar electronics charger valued at a \$130 from Lockheed Martin.

"Sustainable by Design" Essay Contest Winners were:

Grades 3-5: Carley Lawhead, Galileo Academy, Victorville;
Giovanni Lopez, Village Elementary School, Victorville;
Layla Dippold, Desert Knolls Elementary School, Apple Valley

Grades 4-8: Ben Sutton, Mountain View Charter School, Wrightwood;
Mattea Barnett, Jay Childress, Daniel Hall, Zion Pate, Devin Predomo and Dayna Purnell, iLead Lancaster Charter School;
Lancaster, Nayelli Berumen, Ruben Gonzalez and Alejandra Mariscal, Gibson School, Palmdale

Grades 9-12: Gillian Chatfelter, SOAR High School, Palmdale;
Emmanuel Ogunrinde, University Preparatory, Victorville;
Marlene Escobedo, Highland High School, Palmdale

Fantabulous Feedback

Letters from MEEC's "Fans"

"MEEC is the best nonprofit out there engaging students in the world around them! Thanks for all you do for our student's environmental literacy!"

Paul Longshore
Galileo Academy, Victorville

"MEEC provides so many unique opportunities for High Desert teachers. It's such a great organization and has provided me with curriculum, place based learning opportunities, unique teacher workshops, supplies, and so much more. I am thankful for MEEC!"

Venessa Smith
Excelsior High School, Victorville

"MEEC is an awesome resource and supporter of teachers – Thanks for all you do!"

Cathy Andre
Brentwood Elementary School, Victorville

"MEEC is a great organization that richly contributes to enriching environmental awareness through exciting field trips, competitions, celebrations, and more in such a fun and inspiring way! A mind blowing organization! Thank you so much!"

Ronda Tremblay
Superintendent, Baker USD

3M Oak Hills Sponsors EEI Workshop

On October 20th, 25 teachers gathered at the Victor Valley Museum for a free workshop on the California Education and the Environment Initiative. The workshop, presented by MEEC sponsor 3M Oak Hills, provided teachers with the opportunity to learn how to incorporate the free standards-based curriculum into their classrooms. The EEI curriculum combines multiple subjects with hands on activities that promote environmental literacy to California students.



Above: Educators explore exhibits at the Victor Valley Museum during 3M's teacher workshop.

Attendees who arrived early were able to explore the Victor Valley Museum before the workshop. The Victor Valley Museum is also a host site for MEEC's EnviroBus Buck Transportation Grant program and offered the attendees a glimpse at the cultural and natural heritage of the High Desert. Teachers also learned how to incorporate local resources, such as the Museum, when teaching EEI.

All attendees walked away with a "golden ticket" that allowed them to order a free classroom set of EEI curriculum of their choosing!

SoCal Gas Awards MEEC \$10,000 Grant

On January 11th, SoCal Gas presented MEEC with a \$10,000 check towards furthering the development of MEEC's Environmental Education and STEM (Science, Technology, Engineering and Math) Service-Learning efforts through programs such as its annual Youth Environmental Leadership Conference, Solar Oven Cook-Off Competition and Environmental High School Scholarships.



Left: Brad Poirez, (left) Executive Director of the Mojave Desert AQMD - MEEC's lead agency - thanks Kristine Scott for SoCal Gas' generous contribution.



CARDINATOR'S CORNER

The Maker Movement

3-D printers, laser cutters and vacuum formers – high tech tools that are some of the core components to any makerspace. "Makerspaces" are areas that provide students with hands-on, creative ways for students to design, experiment and invent as they engage in science, engineering and tinkering. The possibilities of what your students can do in a makerspace range greatly and can include cardboard construction, woodworking and robotics. As the Maker Movement develops and grows, our schools may soon start seeing these types of tools becoming staples in STEM and science labs as they slowly begin transitioning into makerspace.

I know what you're thinking ... "I'd love to do that, but we just don't have a budget for that right now." I'm here to help change that way of thinking because what many people don't realize is that the idea that you need a lot of money to start a makerspace is simply a myth. All you need is a vision, creativity, and resourcefulness. It may take more effort and elbow grease, but you can start a makerspace even with a zero balance in your budget. Just thinking of the sense of empowerment that your students will feel experiencing Maker Education will make it all worth it.

First things first. Share your vision with EVERYONE! The more you share, the more people (fellow educators, parents, students and community members) around you become just as excited about the Maker Movement and the more support you could receive for your vision.



Once you have spread the word, seek out donations and work with what you already have. While you may not get a 3D printer, many families, friends and colleagues may have extra craft supplies, old Legos or blocks that they are willing to send your way. Don't discount the value of recyclable items either. Cardboard boxes and plastic bottles can be combined with glue and tape to make some impressive projects during a Maker lesson.

One of the biggest things to remember is that the Maker Movement and makerspaces are about nurturing creativity and innovation – not about having a lot of fancy gadgets. "Tinkering" helps to encourage your students to problem solve, communicate and design solutions to real world problems. Who knows – maybe one of your maker lessons may ignite a student's passion to become the next great aerospace engineer, "green" architect or inventor to develop a new gadget that helps conserve our natural resources.



S. Murray
Samantha Murray
MEEC Program Specialist



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- Omya, Inc
- Rio Tinto Minerals
- Sanitation Districts of Los Angeles County
- TetraTech
- Victor Valley Transit Authority
- Victor Valley Wastewater Reclamation Authority

SILVER

- Adelanto District Teachers Association
- Town of Apple Valley

BRONZE

- Antelope Valley Resource Conservation District
- City of Barstow
- City of Hesperia
- Helendale CSD
- Verdant Environmental

