

# VISION

Building tomorrow's mathematicians, engineers and scientists...today

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## NATIONAL CHAMPIONS!

### Deming High School Repeats as MESA USA Winners

Nicholas Kunz & Rick Cole

The Deming High School Wildcats are repeat MESA USA national champions, once again winning the title in Philadelphia earlier this summer after a first place victory in Salt Lake City last year. Juniors Antoni Varela and David Velez have been on both championship teams, and were joined this year by junior Adrian Luna and freshman Adriana Darrow.

The 2017 MESA USA Engineering Challenge required student teams to build a prosthetic arm, while conforming to specific budget and weight restrictions. The device had to perform tasks such as relocating objects, throwing objects at a target, and screwing a nut onto a bolt through a wood board, while under the command of a microprocessor using Arduino computer programming. Each team was also required to write a techni-



Deming HS National Champions: Velez, Darrow, Varela, Luna

cal paper, create an academic poster and deliver a 10-minute oral presentation. The New Mexico teams competed against peers from MESA programs in Pennsylvania, Maryland, Utah, Colorado, Arizona, California, Oregon, Washington and Illinois.

Velez, who was captain of the 2016 championship team, said, "We entered the competition with one goal in mind - to defend our National Championship, and we did just that! Back-to-back National Champions - it's a dream come true."

The team, along with MESA middle school state champions from Chaparral MS, was selected to demonstrate

their devices at the New Mexico Public Education Department STEM Symposium in June, and received a standing ovation for their presentation. Interim PED Secretary Chris Ruszkowski praised the students as "exemplary and indicative of the progress New Mexico is making in achieving outstanding results in our public education."

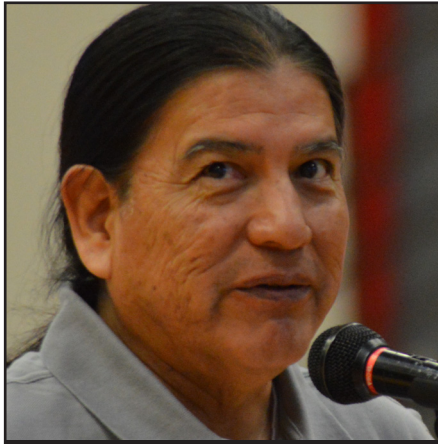
NM MESA Board Member TK O'Geary, who saw the presentation, added, "I had tears coming to my eyes because I was so proud of how these students performed. They demonstrated why MESA is so important to our state and makes such a difference in our kids' lives!"

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# Executive Director's Welcome

Toney Begay, NM MESA Executive Director



Hello, NM MESA advisors, students and supporters. Also those who happen to be reading this fall issue of our electronic newsletter.

NM MESA started the school year with several changes. The

biggest change is our reduction of regions from 7 to 6. In 2016, NM MESA received, along with numerous other organizations, a huge cut in funding. As a result, NM MESA had to cut schools throughout New Mexico. We shuffled several schools to create a six region organization. In time, NM MESA hopes to add schools and eventually add the seventh region again.

Once again, our schools have begun weekly preparation for the qualifying competition to represent New Mexico MESA at the national competition in Philadelphia, PA in June 2018. The MESA USA competition parameters and rules have changed this year, but it remains an Arduino-based engineering and computer science competition.

We're excited to announce that the 2017 NM MESA graduates are currently in their first year of college, and NM MESA has fulfilled its commitment to award graduates with a Loyalty Award to aid in their successful pursuit of a higher education degree. Over 150 MESA graduates received a monetary award. The total amount awarded exceeded \$130,000. We are very proud of these graduates and wish them the best.

Thank you to all NM MESA advisors, administrators, parents, corporations, the Governor's Office, State Legislators, individual donors, Board of Directors and the staff of NM MESA!



John Adams MS & Jimmy Carter MS at Valle de Oro

## *Regional Restructure condenses schools to six regions*

**Nicholas Kunz**

Following the recent departure of Central Outer Regional Coordinator Rick Cole, NM MESA has decided to re-draw statewide regional borders, decreasing its overall regions to six in total. The move comes at a time when MESA's administration is looking at long-term budgeting for the organization and is making careful plans for fiscal security long into the future.

"It was not an easy decision to make," explained NM MESA Deputy Director Ling Faith-Heuertz. "But we determined that this is a forward move so that we don't have to take any drastic cuts in the 2019 year depending on what the legislative session will yield for our financial support."

The following schools will transition to a new region: Sarracino MS to the SW Region and Regional Coordinator Terry Ramirez; Belen HS, Belen MS, Valencia HS, Valencia MS, Los Lunas HS and Los Lunas MS to the CI Region and RC Kim Allen-Scheerer; Atrisco Heritage HS, Ernie Pyle MS, Truman MS, Jimmy Carter MS, John Adams MS, West Mesa HS, Cibola HS, East Mountain HS, Taylor MS, Taft MS, and Jefferson MS to the NC region and Regional Coordinator Nicholas Kunz; Espanola Valley HS, Carlos F. Vigil MS, Mesa Vista HS, and Mesa Vista MS to the North Region and RC Alejandra Olivas. The West and Southeast Regions will remain unchanged.

"Working with the amazing advisors and students of the CO region has been so rewarding and inspiring," recalls Cole, whose last official day with NM MESA was July 28. "I am confident that much will be achieved in these schools in the upcoming year and beyond!"





Heuertz family in New York City. From left to right, John, Ling, Lily and Emma

Ling Faith-Heuertz, NM MESA's new Deputy Director, started work in February 2017. Ling has over eighteen years of non-profit experience working at the Arc of NM, a state chapter of the US Arc, which is a disabilities rights advocacy and education group. She managed a statewide guardianship program for individuals with developmental and intellectual disabilities.

Not a native New Mexican, Ling and her family moved from Nebraska to New Mexico for graduate school back in the late 1990s. She holds a bachelor's degrees in Mathematics and English Literature from the University of Nebraska and did her Master's work in Special Education at UNM. Her husband is a Doctor of Oriental Medicine and holds a practice in Albuquerque. Her oldest daughter is attending UNM in her second year in the College of Architecture, majoring in Urban Planning and Design, and her younger daughter is a junior at Sandia High School.

Ling has a passion for building community and devotes most of her free time to volunteering for other non-profits in arts and education as well as disability rights to help build stronger communities. A strong believer in leading by example, you can find her out and about on weekends helping at her daughter's school events or at one of the local arts organizations. We welcome Ling to NM MESA!

## Southwest Region News

*Terry Ramirez*

MESA's Southwest Region is off to an exciting and busy start this school year! During the summer the Southwest Region worked harder than ever, going to the MESA USA National Competition and bringing home a 1<sup>st</sup> place trophy in the High School competition and 2<sup>nd</sup> place in Middle School.

This year the Southwest Region will be attending fieldtrips to the Alliance for Minority Participation Conference and the Energy and Education Fair in October, New Mexico Institute of Mining and Technology in January and the Santa Fe Legislature in February. The region has decided to select two regional service learning projects for the year: Adoption of a troop deployed to Afghanistan with Holloman Airforce, and with *We Help Two* the region will be purchasing several legs for amputees around the globe and several water wells for schools in Africa! Also of note, Sarracino Middle School has returned to the Southwest Region. As always, New Mexico State University is very supportive of NM MESA. NMSU College of Engineering recently issued over \$16,000 in Scholarships to NM MESA students! Thank you NMSU Engineering!



# Central Inner Celebrates

Kim Allen Scheerer

The new regional restructure of NM MESA this summer meant that several schools along the middle Rio Grande valley were shuffled into the urban based Central Inner Region. We extend a big welcome to Valencia Middle and High School, Los Lunas Middle and High School and also, Belen Middle and High Schools!



CI MESA Students at Big Dream-NM

This restructure opens the doors to Central Inner participation and opportunities on the UNM Valencia campus, a branch of University of New Mexico's main campus. Thanks to former MESA advisor Creighton Edington, all Valencia County MESA schools have been welcomed by the UNM Valencia faculty, staff and students. With Arduino Playshops running from September through December, more than 250 MESA students will get the chance to experience coding, interact with UNM faculty and students, while also learning about campus programs and opportunities to prepare for college.

Central Inner MESA advisors have also been back at it and ready to learn with the start of the school year. The region hosted two professional development (PD) opportunities at local maker-

space QueLab! Advisors learned more about soldering, coding and local STEM resources. At each of the PD sessions, time is given for advisors to network with each other and the surrounding community – Special thanks to QueLab members for opening their doors. More info at [www.quelab.net](http://www.quelab.net)



Advisors Eric Duran and Isla Porras from Manzano HS try out some soldering at the CI QueLab Professional development

Upon the approach of autumn, the Central Inner region also got a chance to “dream big”, courtesy of the NM Museum of Natural History and Science and the American Association of Engineering Societies (AAES). Hundreds of middle and high school students were invited *Big Dream-NM*, where they traveled to the Museum to interact with local Engineering professionals, explore the museum, and experience the new interactive Wild Music exhibit. They also took seats in the IMAX theater for a viewing of the original IMAX documentary, *Dream Big: Engineering Our World*.



# From the Deputy Director's Desk

*Ling Faith-Heuertz*



To me this is the most exciting time of the year. I love fall. It brings with it not just the beginning of all the fun holidays, holiday foods, and pumpkin spice everything (as well as a new school year), but it also marks a time for change. It was a change for me when I came to NM MESA and I hope to help bring about positive changes for you all in my work with you. The most important thing to me is to build strong communities. I feel very fortunate to know that at NM MESA there are already really strong communities at your schools. I want to support that.

In the eight months that I have been with NM MESA I have had the privilege of traveling to many of your communities. My observation is that what makes NM MESA schools strong is that they are all communities of practice. Communities of Practice (CoP) was defined in 1993 by cognitive anthropologists Etienne Wenger and Jean Lave as “Group[s] of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.” The difference between a Community of Practice and a Community of Interest is the action taken. A Community of Interest is just that. It is a group of people who share the same interest and may informally talk about it, but a Community of Practice is a group of people who are committed to deepening their knowledge and learning base and are willing to learn from others, and to share their knowledge with others. Over the last two decades the evolution of Communities of Practice has shifted through the use of technology but the key fundamental idea remains that Communities of Practice exist and are learning communities.

We all work toward goals, whether it's moving toward high school graduation, improvement in our work, or personal life goals. My goal here is to help support our statewide MESA communities of practice. As we move forward I'm hoping I can strengthen our Community of Practice as a statewide organization.



*Española Valley High School MESA: A Community in Practice*



# NEUROSCIENCE IN THE NORTH CENTRAL REGION

*Nicholas Kunz*

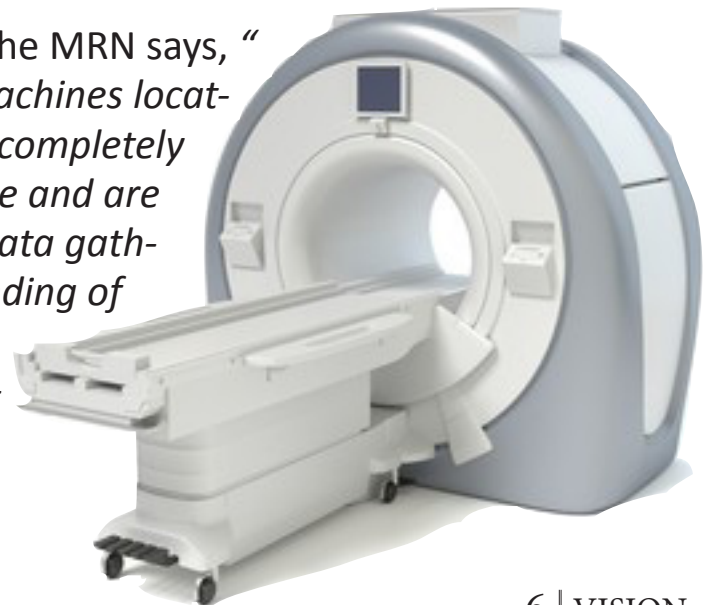
The North Central Region is in its second year partnering with The Mind Research Network (MRN) to bring presentations about neuroscience to MESA students. Funded by the National Science Foundation to study how the healthy brain develops, The Mind Research Network is a non-profit company that aims to advance the diagnosis and treatment of mental illness and other brain disorders.

Research assistants at MRN have been taking time to travel to NC Region schools in Albuquerque and Bernalillo to interact with students and talk about career paths related to neuroscience. Presenters also explain their current longitudinal study that uses two separate neuroimaging techniques, the MEG and MRI, tracking subjects' brain changes over a one year period. According to Dathan Gleichmann, a Research Assistant at MRN, "Our study provides a framework to then talk about the brain, the functions of different brain regions, and what each neuroimaging technique does." They also demonstrate some fun experiments that teach kids about the nervous system.

The funding presents an opportunity for Albuquerque to be represented in the scientific community and to participate in a large scale study that has not been done before. Their current work focuses on children between the ages of 9-14, tracking their brain development over a 2-4 year period.

The MRN is looking for additional subjects to participate in their study. Interested parents of children between the ages of 9 and 14 can call (505) 227-3199, or email [childstudy@mrn.org](mailto:childstudy@mrn.org).

Should parent and child agree to the study, the MRN says, "*They will be scanned by the MEG and MRI machines located at MRN, both are non-invasive scans and completely safe. Children are compensated for their time and are provided with an image of their brain. The data gathered will be used to gain a greater understanding of the changes brains undergo during adolescence. Also, the data can be used as a 'baseline' to compare the brains of children who have mental illness to children who do not.*"







## **Southeast Region Update**

*Betty Chancey*

- High school students from Alamogordo, New Mexico and surrounding communities participated in the first Cyber Patriot Camp July 31 – August 4, 2017. Cyber Patriot is a National Youth Cyber Education program created to inspire students and expose them to Cybersecurity careers, in addition to other STEM disciplines. The camp was free for area high school students thanks to an educational partnership agreement between Alamogordo Public Schools and the 704th Test Group (704 TG), who donated funds for the cost of the camp. Retired Air Force Chief Master Sergeant Patrick Tedford taught the class and Manny Klaassen, NM MESA Advisor at Alamogordo High School, was the camp coordinator. To learn more information about Cyber Patriot, visit [www.uscyberpatriot.org](http://www.uscyberpatriot.org)
- For the third consecutive year, Carlsbad High School won 1<sup>st</sup> place at the annual RoboRAVE International Competition. They earned more than double the points of the 2<sup>nd</sup> place winners!
- Goddard High School MESA students provided a week long STEM Camp for 4<sup>th</sup> through 6<sup>th</sup> grade students during July. Participants enjoyed “Hands on” STEM activities, speakers/presentations and competitions. It was a great week for both the young children and the high school MESA students!

## **West Region News** *Shawndean Smith*

Advisors and students are excited for this school year in MESA, and the West region has hit the ground running! This year all 12 schools in the West Region have an opportunity to attend some very exciting trips and activities around the state.

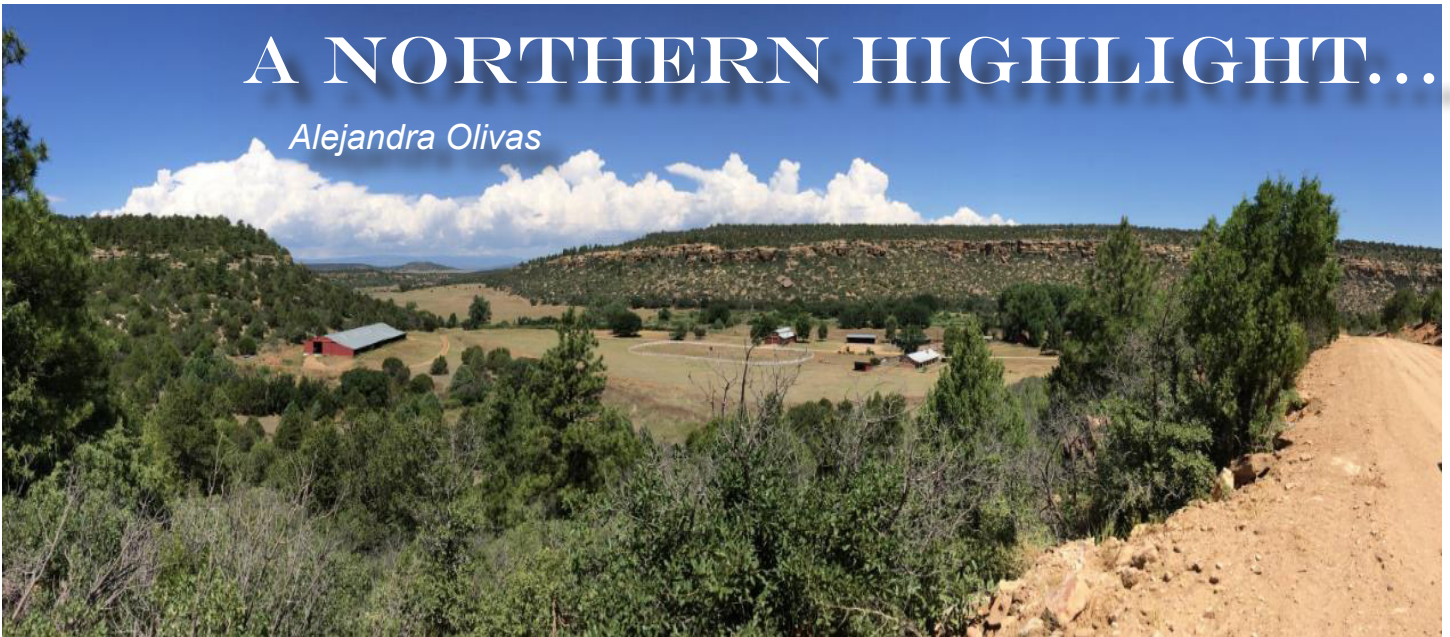
To kick off the year, high school students will attend some statewide events, including the two day Alliance for Minority Participation Conference in Las Cruces. They will have the opportunity to see the campus to get a feel for the college atmosphere, and examine high level scientific research. They will also visit the Energy and Education Fair in Artesia and hear from professionals in the energy industry.

Navajo Preparatory High School will host a STEM Exploration Day for local schools and has invited all West Region MESA schools. Students will take part in some great workshops and they will be able to meet local businesses for intern opportunities. Additionally, Dine College in Tsaile, AZ will soon be hosting their annual STEM Festival and have invited MESA students from the West Region to attend. This sensational event has many hands on activities and displays available to both middle school and high school students throughout the day.

Also happening in November and December, the West Region will be hosting Regional Rallies at each University/College in the West so students can see what each campus has to offer as far as programs and educational opportunities. Students will also get a chance to work on their MESA Day projects and display their progress. This semester will be very busy for the West region but it appears to be off to a great start as advisors are working hard to recruit students in their MESA Programs!

# A NORTHERN HIGHLIGHT...

*Alejandra Olivas*



*Rio Mora National Wildlife Refuge*

In September of 2012, Eugene and Clare Thaw donated their ranch to the U.S. Fish and Wildlife Service. They wanted their land to serve as a benefit to society. It became part of the Northern New Mexico National Wildlife Refuge System, and is now the Rio Mora National Wildlife Refuge. The Denver Zoological Foundation oversees the ranch for the U.S. Fish and Wildlife Service, and is responsible for meeting conservation goals and expanding research and educational programs that happen at the refuge. The Denver Zoo is doing an amazing job bringing educational programs to all local Northern schools as well as out of town schools.

NM MESA's North and North Central Region schools attended the September STEM Showdown event at the Rio Mora Wildlife Refuge. This event was a partnership between NM MESA, New Mexico Highlands University, Rio Mora NWR, Denver Zoo, Friends of Las Vegas NWR, and U.S. Fish and Wildlife Service. Students enjoyed a wide variety of hands-on STEM workshops, and a number of highlights included: Geospatial Science, Chi-Jung, Animal Resource Use, Algebra, Arroyo Restoration, Wildlife Camera Trapping, and much more.

Additionally, students participated in a sort of speed dating session to personally meet with local community STEM Professionals. Some of the professionals that students interacted with were: environmental scientist, fire ecologist, limnologist, herpetologist, wetland strategist, forest ecologist, geographer, ornithologist, microbiologist, among others. They also received information about different STEM careers

offered at New Mexico Highlands University. The ultimate goal was to inspire students to carefully select meaningful career paths when the time arrives. This experience enabled them to relate to STEM professionals and their work on a personal level, rather than in abstract terms.

Additional North Region accomplishments include, training of six new advisors in the New Advisor Training, participation in youth leaderships, STEM workshops, and teambuilding. October through November will be focused on more team building, college visits, learning computer science and preparing for Regional Rallies (learning Arduino or getting more practice). The North Region is currently awaiting some exciting fieldtrips such as: New Mexico Highlands University College Night, Ag Day at New Mexico State University in Las Cruces, and MathMovesU at the University of New Mexico.





MORE FROM RIO  
MORA NWR

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