

VISION



“Building tomorrow’s mathematicians, engineers and scientists...today!”

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Photo by Rick Cole

Participants in the 2016 NM MESA SIFT to Washington D.C. pose in front of the U.S. Capitol, just one of many inspiring destinations visited in four full days.

The Good and the Bad

Hello, from the New Mexico Mathematics, Engineering, Science and Achievement (NM MESA)!

We are excited to inform you of our success and achievement with our NM MESA students, teachers, staff and Board of Directors. These past months have been very busy for the schools and our MESA students. They have completed parts of



Photo by Rick Cole

NM Executive Director Toney Begay challenges students at the 2016 MESA Day competition.

Truly, DC SIFT is a Gift!

Rick Cole

CO Regional Coordinator

During the last week of April, Washington D.C. was a little spicier than usual. Not because a new chef was in town experimenting with recipes, but because 28 high school seniors and seven adults descended on the city from New Mexico as a part of the 2016 NM MESA Senior Incentive Field Trip (SIFT) giving “sabor de Nuevo Mexico (New Mexican flavor)” to the many social venues in the Capitol.

The journey began early Monday, April 25, at the Albuquerque Sunport where NM MESA State Events Coordinator Anita Gonzales mustered all the travelers after two months of preparation. For most of the participants, this was going to be their first visit to Washington. For some, it was about to be their first airplane flight. As for me, I had been to Washington D.C. three times, but the last time was in the spring of 2001 before some memorial sites had been built and before the terrorist attacks and the subsequent change in security at so many of our Capitol’s iconic tourist sites. And although I had been to some of the sites listed in the itinerary, others I had never visited and I could hardly wait to see these historic spots.

Fortunately, the flights to Kansas City and then Reagan National Airport in Virginia were smooth and relaxing before the MESA crew began their memorable ad-

ventures. The first stop was dinner at the Crystal City Shops, a mall in Arlington, Virginia. This was followed by a tour of the Arlington National Cemetery where West Mesa HS MESA Advisor Luisa Castillo began to showcase her knowledge of D.C. area historic sites. Castillo guided the group to key cemetery locations including the gravesites of John Kennedy, Jacqueline Kennedy Onassis and Robert Kennedy and the memorials to the crews of the Challenger and Columbia space shuttles. She also timed her tour so that the group got to witness the changing of the guard at the Tomb of the Unknown Soldier. The precise choreography and attention to exact detail of the guards is a fitting tribute to honor all who have given the ultimate sacrifice in defending the USA. And seeing the thousands of grave stones in such a beautifully manicured park brought a lump to my throat.

The group also did a driving tour around the United States Marine Corp Iwo Jima Memorial which is stunning in its scope and artistry. Patriotic fervor was a natural response for me as I have studied the battle of Iwo Jima extensively. Anyone who had a camera or cell phone was flashing pictures of this majestic sculpture.

A quick check-in to the hotel was followed by an invigorating evening walk to the inspiring Martin Luther King Jr., Franklin Delano Roosevelt and Thomas Jeffer-

son Memorials. The weather was ideal for such an evening tour and it proved to be a great finish to the first day.

I began the next day with an uplifting pre-sunrise, five-mile run along the water front in South Washington and met the rest of the crew for breakfast before heading to the National Building Museum. There the students were engaged in designing and constructing a miniature house which could withstand a simulated earthquake. The students did well as all constructed homes survived the earthquakes.

After touring the museum, the SIFTers moved on to the dazzling exhibits and activities within the Smithsonian Air and Space Museum and the National Archives before heading to the Kennedy Center for dinner and a theatrical performance of the long-running play, “Shear Madness.” The play was not only entertaining but unique in how spectators interacted with the actors during the play. Riding the subway back to our hotel was adventurous as it involved quickly changing trains at precise times. NOTE: Luisa Castillo was impeccable as our guide underground on the subway or above ground amongst our many venues. Her help was essential to the smooth flow and the overall enjoyment of our tours.

Day Three featured another pre-sunrise

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See 2016 SIFT Memories

the NM MESA requirements as students, teachers and schools. Along with the academic requirements set by the state of New Mexico, our students competed in our state championship engineering and science competitions in February and March. Not only that, ten MESA teams competed at the state level to qualify to represent NM MESA at the national engineering design challenge at the MESA USA level.

Other not too exciting news is NM MESA’s state funding was cut by 7%. Many agencies and programs received similar funding cuts. But NM MESA is not deterred in meeting its mission and stands ready to partner with NM Higher Education Department in the mutual goals of service delivery and fiscal constraint. This funding cut will affect NM MESA’s service to schools, teachers and students. NM MESA is currently adjusting its fiscal budget to balance for the next fiscal year. It’s disheartening, but we hope the economy will improve and our funding returns to a level where we can provide the same amount of quality service to our schools, teachers, students and numerous partners, collaborators, and supporters including community members and parents next year.

We are “Making Tomorrow Today”.

Thank you.

Toney Begay

Executive Director

New Mexico MESA, Inc.



Photo by Rick Cole

During the SIFT, West Mesa HS students Gladys Robles, Karla Vasquez, Ariana Astorga and Brenda Salas build a house frame designed to withstand an earthquake.

Check inside for the following articles -

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Cibola Girls Win It All!

Smart, Savvy, Tight Friendships and Wearing Pink Hats – Trademarks of the 2016 MESA State Champions

Rick Cole

CO Regional Coordinator

Nine months ago nobody knew about Cibola High School Team #3, not even the four girls who would eventually join together to become the team. Now, they are known for many things – academic prowess, competitive skill, efficient teamwork, bubbly laughter and pink hats. However, beyond these noteworthy traits, they are most highly regarded as the 2016 New Mexico MESA Day champions.

Their journey to a state title is a dream come true from visions that did not coalesce until December, 2015, just three months before MESA Day. Indeed, the members of CHS Team #3 – seniors Michelle Burke and Sophia Zuanich, sophomore Bailey Dodson and freshman Savannah Garcia – are newcomers to MESA compared to most of the teams they beat. Burke and Zuanich are two-year members of MESA while Dodson and Garcia are rookies. By comparison, state runner-up Mayfield HS team #1 has 18 years of combined experience. Deming HS Team #1, which won the MESA USA state qualifier event last month, has 19 years between its members. How then did four relative newcomers earn the greatest prize and highest honor in state MESA competitions?

“We like each other and working together never seemed like a chore,” explained Burke, who is called “Mom” by her CHS MESA colleagues because of her innate ability to nurture, organize and gently discipline all at the same time.

“Working together felt more like party fun,” added Zuanich, who leads the International Club at CHS. She ought to know. As the IC President, it is her task to create a festive atmosphere celebrating the various international cultures represented among foreign exchange students at CHS.

This very social atmosphere developed the relationships and interdependence that made four hours every Sunday afternoon for nine consecutive weeks methodically efficient. The team was able to build prototypes, re-design components, write and re-write code, practice and re-practice competition routines with productivity that opposing teams could not match in many months of collaboration. They divided duties and combined efforts as needed and

they all studied corporately and independently to prepare for the on-site event: MESA FUNDamentals – Environmental Careers, Sustainability Supermarket and Syntax Charades.

The results of this “sisterhood” teamwork resulted in a remarkably balanced performance that bested 109 other teams in MESA Day. Granted, CHS Team placed fifth overall in the prosthetic arm but trailed Deming #1 and Mayfield #1 by only 12 and seven points respectively. They then blasted Deming #1 by 74 points and Mayfield #1 by 26 points in FUNDamentals to claim complete dominance in overall scoring. The resounding state championship triumph was the first for Cibola HS and the

simply bonded.

“We were holding hands while Bailey did the distance accuracy toss,” noted Zuanich.

“And we were holding hands while the awards were being announced,” added Garcia.

The emotional support complemented the methodical planning, abundant practice and intensely competitive focus the team demonstrated in scoring highest on object relocation and just one point below highest on distance accuracy. The team demonstrated that girls from diverse backgrounds with relatively little experience could achieve the pinnacle of MESA success with “chemistry,” the chemistry of

The team also adopted their trademark pink hats in conjunction with developing a cap with a chinstrap to actuate the prosthetic arm. Since there was going to be a cap, the decision was made for the whole team to wear caps and pink was chosen to emphasize the perky and distinctly feminine nature of the team.

Burke joined MESA as a junior after friends encouraged her to take a look at the program at a school club fair. Graduating with a 4.2 GPA and a host of AP courses under her belt, Burke, who was vice-president

of the CHS MESA club, brought leadership, a proven work ethic, knowledge on a broad range of subjects and articulate communication skills to the team. She was born in Panama as the youngest of four siblings to an American military father and Panamanian mother. She possesses a deep faith in God and will be attending UNM next year majoring in business.

Zuanich joined MESA with Burke. She hails from Massachusetts and lived in California before moving to New Mexico before her sixth-grade year at Taylor MS. Zuanich is also an honors student who also leans toward attending UNM. The social butterfly is perpetually playful and brings a unique charm to the sisterhood.

Dodson, born in Belgium to military parents, is the “energizer bunny” of the troop as she posts straight A’s while competing in varsity tennis, bowling and golf and serves with the CHS Key Club. She is a newly inducted member of the National Honor Society and will be the CHS MESA President next year.

Garcia may be the youngest of the team but had the most experience in computer coding as she taught herself code through on-line studies with the Khan Academy two years ago. In fact, the former LBJ Middle School student had completed a number of engineering projects using code prior to high school. She is also passionate about Volkswagen vans, having grown up traveling and camping in various VW vans and even learning to do some mechanical work on the vehicles.

Because Burke and Zuanich are graduating CHS, this particular sisterhood is the shining light of NM MESA for only one year. However, Dodson and Garcia are already laying the foundation for another dominating CHS team next year.

“Maybe we’ll have purple hats next year,” quipped Dodson.



Photo submitted by Bailey Dodson

Cibola High School Team #3, the 2016 NM MESA Day State Champions, radiate the joy of triumph as they display their clean sweep at the Central MESA Day Regional Contest at UNM March 2. The team of (left to right) Sophia Zuanich, Michelle Burke, Bailey Dodson and Savannah Garcia, won first place in prosthetic arm, FUNDamentals and overall scoring enroute to winning the overall state championship.

first for an all-girls team.

“We placed second at the regional rally by just two-tenths of a point,” noted Burke.

“We knew that if we really applied ourselves, we could win state. And we did!”

The focused effort enabled the team to post near perfect scores in certain components of the FUNDamentals. Their communication during competition was precise yet spirited and cheerful. When emotions got intense, they

human relationships.

“We pinpointed what we wanted to do, committed to work and then had fun doing it,” Burke explained. “We also learned to be resourceful. For example, at the Rally during lunch in the (Zoo) Cafe, we made emergency modifications using a shoe lace, binder clip and hair tie and it almost worked well enough to get us first place.”





Photo by Rick Cole

Hoisting the second-place trophy at the MESA USA State Qualifier Championship in April, Mayfield HS Team #1 notches yet another strong finish at a MESA competition. The team consists of (from left to right) Lachlan Boyd, Tim Trujillo, Kevin Brooks, Jacob Hammond and Advisor Kaelin Redmond.

Trojan Scientists Competitive Again *Record-Setting Mayfield HS Team #1 is State Runner-Up in both MESA Day and MESA USA*

Rick Cole

CO Regional Coordinator

Few teams have had as much success in MESA competitions as Mayfield High School Team #1. Not only have they been dominating contests since middle school, they placed fourth overall at the 2015 MESA USA National Championship – the highest achievement of any NM high school team in the 33-year history of NM MESA.

“Placing at Nationals was great,” explained sophomore Tim Trujillo. “It motivated us to work extra hard to go back

to Nationals. Last year we qualified for nationals and we were surprised. But this year, we have been very focused in our project time.”

The four members of Mayfield HS #1 include Trujillo, fellow sophomore Kevin Brooks, and juniors Jacob Hammond and Lachlan Boyd. They spent virtually every Wednesday night working together between October and April in seeking a slot for MESA USA. The team finished second at MESA Day to Cibola HS Team #3 (featured in an article on page 2) and second at the MESA USA qualifier meet to rival Deming HS Team #1.

The rivalry between Deming and Mayfield is intense but friendly. Deming team leader David Velez credits Mayfield in the team’s technical paper as an “inspiration for success.”

But even though the Trojan scientists are not travelling to Ogden, Utah in June for the 2016 MESA USA National Championship, they are dedicated to working together again next year when they will seek to regain a berth on the national stage.

That is only one of many aspirations for this very ambitious foursome. Besides MESA, Boyd is a leader in the Mayfield JROTC program, plays in the school

marching band and has also contributed to the Trojan varsity tennis program. Brooks is also in band, on the bowling team and the Mayfield Moon Buggy team, another STEM-based competition. Trujillo joins Brooks on the bowling team and Moon Buggy team but is also active in the school choir and has personal voice lessons. Hammond is the President of the Class of 2017 and the Mayfield National Honor Society in addition to running cross country, playing tennis and serving as the Drum Major for the award-winning Trojan marching band.

Being busy does not deter these aspiring engineers from pursuing excellence in MESA. Indeed, they so enjoy working together that it is worth the extra effort to work as both colleagues and friends.

“We do everything as a team,” explained Brooks about how friendship influenced their work. “We all worked together to get ideas. We then decided who would lead which tasks – design, construction, testing, the technical paper. We shared ideas and helped each other every step of the way.”

Such teamwork is repeatedly shown to be integral to MESA success. Similarly, virtually every professional engineering endeavor is completed by a team of engineers and technicians. To Boyd, that is the best part of being active in MESA.

“Learning how to work with others is the best,” noted Boyd. “I really enjoy seeing how well we can work together.”

Brooks thoroughly enjoys the camaraderie, but chooses learning as the greatest benefit to MESA participation.

“I like seeing the progression of technology. I think it’s really cool to solve an actual problem with a solution that could really help people.”

“I’m proud of having so many experiences while participating in MESA,” added Trujillo. “To get to go to state and nationals, work with LIMBS and use 3-D printing are awesome.”

“Understanding the engineering process – the good, the bad and the ugly – is really worthwhile,” noted Hammond. “And learning to write a technical paper and present our work to professional engineers is very gratifying.”

The team credits their families, Vista MS MESA Advisors Josh Wisner and Rebecca Fuentes, Mayfield Advisor Kaelin Redmond and MESA RC Terry Ramirez to being instrumental in their success. Since they are all underclassmen with intact support systems, continued success is likely.

“We’re not gonna stop till we get this (national championship) done,” emphasized Boyd.

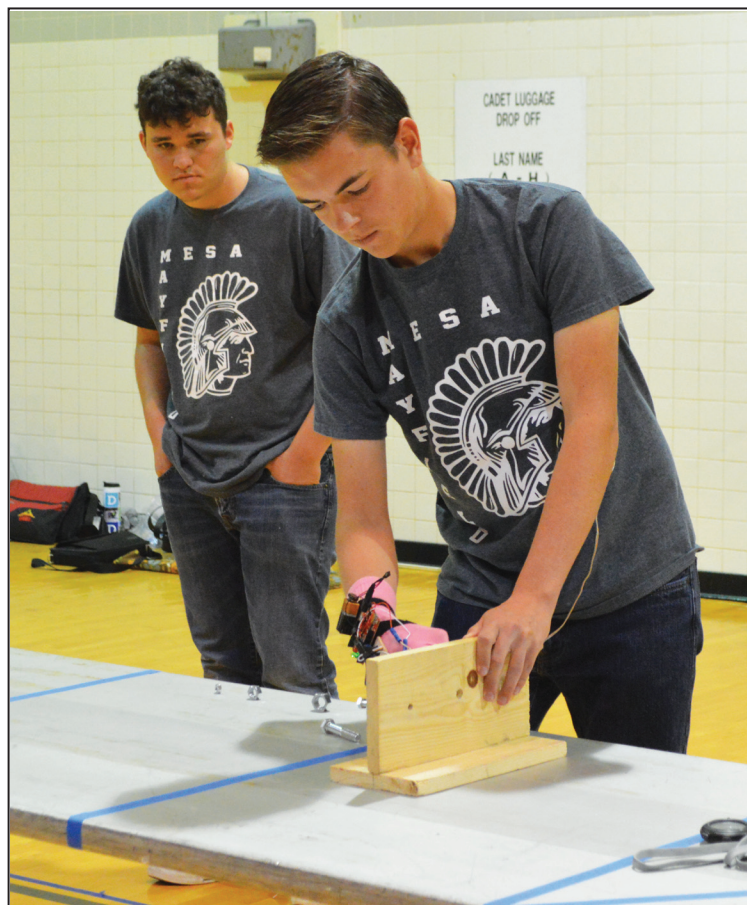


Photos by Rick Cole
Mayfield HS junior Lachlan Boyd, left, and fellow junior and teammate Jacob Hammond, right, both use the team prosthetic arm in the dexterity component of the MESA USA State Qualifier Championship April 22 at the New Mexico Military Institute. The combined efforts of Boyd and Hammond enabled the Trojans to score third in the event behind Deming and Carlsbad respectively.

The Trojan scientists won the presentation component and earned runner-up status after compiling 342.43 points compared to champion Deming, which tallied 423.33.

Carlsbad earned third place after winning two components - technical paper and display poster. Deming won the distance accuracy, object relocation, dexterity and design efficiency divisions.

Mayfield returns all four team members to try and earn the state title in 2017 after winning it last year. The format will be different next year as “winner takes all” at MESA Day.



John Davis Life Quest: Order from Chaos

Rick Cole

CO Regional Coordinator

Some people have a life story that reads like a melodramatic movie script. John Davis, who resigned as the NM MESA Information Technology Manager last month, is one such person.

Indeed, John's life is so full of triumph and tragedy, change and more change, incredible successes and heartbreaking losses that he could be the 21st century version of some archetypical Shakespearean character. Few have experienced such a wide range of soul-stirring events and yet emerged so optimistic about life. Such is the nature and character of he, who for 30 months, maintained the network, fixed the equipment and upgraded the systems that make NM MESA's computer system "state of the art" and marvelously efficient.

"I like to bring order to chaos," smiled John. "I like to take something that needs some work, fix it, make it better and then make it great."

John emphasizes that this applies not only to work but to his personal life, although he concedes his personal life has been chaotic to say the least. However, always the optimist, John dwells on the order that comes from the chaos.

"I am so blessed, and I thank God for all that I have in my life," reflects John. "I praise the Lord for each and every day. I don't know where I'm going, but I'm excited."

Such a proclamation of peace is all the more noteworthy considering John made the statement as his second marriage was ending in divorce and he moved to Tucson, AZ without a job or a home to call his own. However, challenging circumstances have never dampened the spirit or diminished the zest of this "bear of a man" over the course of 54 years of life.

John was born in St. Louis, Missouri to a pair of free spirits who moved three times before John was in the first grade. John's dad earned a PhD in mathematics at Washington University, before completing a stint as a post-doc instructor at the University of California Berkeley in the midst of the social turbulence that was the 1960s. The elder Mr. Davis grew a pony tail and became a professor of mathematics at the University of New Mexico while announcing motocross races on the weekend. As a result of his dad's passion for motorcycles, John was riding dirt bikes across Albuquerque mesas while learning as a student at Osuna Elementary School.

However, life in the fast lane took a radical change of direction and pace for John when his parents divorced while he was in the fourth grade. Over the next few years John would see his dad in the summer, but his mother took him and his siblings to live in Colorado, where she remarried and the family settled into a Buddhist monastery, Marpa House, in Boulder.

"The monastery was a converted frat house and each family had their own room," explained John. "I met a lot of neat people there, got connected to a group of poets and started tending bar when I was 16. Needless to say, I wasn't into school as much as I could be."

John's Mom, Carol Garcia, died from bone cancer just a month after John graduated from high school. Her death hit John hard and he began playing a lot of foosball to get his mind off losing his mom.

"Concentrating on moving the balls and strategizing how to score points took my mind off the moment," reflected John. "I played so much that I got good enough to enter tournaments and over the years kept working my way up the foosball circuits until I made top 50 in the world."

John's interest in foosball led to getting a job doing electrical work. But he soon realized he needed certification as a licensed electrician to make a living at the vocation. So, he moved to Albuquerque to be close to dad and earned an electrician certification at TVI (Technical Vocational Institute, the previous name of Central New Mexico Community College). John then returned to Boulder and ran arcades in Boulder where he could parlay his love of foosball, pinball and related games with his knowledge of electronics.

Shortly thereafter John was driving between Boulder and Albuquerque when he fell asleep at the wheel near Pecos, NM and ran his '69 Saab off the road in a high-speed, single car accident that put him in UNM Hospital for a month.

"I broke my back, several ribs, my pelvis and bruised a lung," recalled John. "I turned 20 lying on a hospital bed. I didn't like it at the time, but in the long run, that experience taught me to appreciate life."

When he recovered, he worked multiple jobs and lived out of an automobile so that he could save money to move to Tucson and go to college. Eventually he made the move, attended Pima Community College and landed a job with Digital Electronics building circuit boards and related electronic devices. But John was laid off when the job market in electronics went soft in the mid-80s.

However, through a lead from a friend, John quickly got a new job as he was hired on the spot to be door man for an upscale night club. Being a quick learner and amiable, John advanced from good door man to better bar tender to valuable club manager. This venture became John's single longest stint at a job as he worked there six years. It was there he met and married his first wife, Priscilla. His oldest daughter Lindsey was born during this time and brought some stability to a chaotic and hectic schedule. But eventually the all-consuming demands of running a night club led to a conflict in conscience and John simply quit.

He moved the family to San Diego where he worked in a Kinko's franchise and another night club, where he quickly became manager when the owners learned of his reputation as a "manager" from his previous bosses.

"The owners made it clear that my job was to make as much money as possible," explained John. "But again, I saw how this kind of place just ruined people's lives and I couldn't keep doing it. I had to leave."

John not only left the "dark side," he actually began working with light as he landed a job in sales with 3-M Lighting. He accrued more than a million dollars sales during the first year. However, trouble brewed at home as Priscilla moved out and took Lindsey and new daughter Briana. So, John moved to St. Paul, MN with 3-M where he headed up a manufacturing facility that doubled production in six months. This was followed by a move to Des Moines, Iowa where he headed up a new 3-M facility there that was soon outpacing the St. Paul plant. This was repeated in Fargo, ND and Atlanta, GA before John finally felt such angst about being separated from his family that he returned to Tucson.

Efforts to reconcile with Priscilla were unsuccessful and John moved to Pittsburgh, PA to work with Energy Solutions International, formerly 3-M Lighting. However, because ESI was merging with Northern States Power, John was managing natural gas supplies. This evolved into a stint in California where John had an epiphany that his legacy was to be a great father.

So, he returned to Tucson again where he did spend an increasing amount of time with his daughters while working a series

of jobs as title courier, printer, mechanical draftsman and teaching computer science at New Horizons, even though he had no college degree in the field.

"I just had the ability to understand computers," John said. "I learned quickly, communicated what I knew and just loved teaching. But my contract expired and I went to work for a 'temp' agency."

This led to a job with an animal pharmaceutical company which led to employment with the Southern Arizona Center Against Sexual Assault (SACASA). He began by doing data support but became IT Manager, Facilities Manager and Audits Manager.

However, he was laid off because of a merger and went to work for Compass Health Care (an organization devoted primarily to alcoholic rehabilitation) where his management skills led to a 15% reduction in overhead expenses.

"Once you go non-profit, you never go back," chuckled John. "I love working where the emphasis is on service rather than on how much money is made."

At this time, Lindsey and Brianna, now 16 and 14 respectively, moved in with John

John resigned with MESA to return to Tucson and again build relationships with his daughter, Briana, a new granddaughter and extended family.

"I will really miss MESA," said John. "I benefited so much from seeing how such a small team (12 employees) can do the work of a big team. MESA is efficient and smooth with an emphasis on teamwork between the staff, teachers and students. It is the first non-profit for which I have worked that was pro-active rather than reactionary. It was refreshing and inspiring."

"I hope my legacy with MESA is one of open, caring, professional IT help. Technology is ever changing and we have to help people make the changes as smoothly and efficiently as possible."

"Oh bless John!" exclaims SE Regional Coordinator Betty Chancey. "I have called him so many times with so many issues and he has always been so helpful. It could be about software, or it could be about equipment, but John would figure out what the problem was and what to do about it."

"John and I would tease each other a lot, but he was so good to work with," added NM MESA Deputy Director Linda



:Photo by Rick Cole

Former NM MESA Information Technology Manager John Davis answers another phone call about yet another technical issue confronting a MESA stakeholder. Davis is known for his ability to work on solving the problem until it is indeed solved. The watermark behind the article is a profile of John in the midst of active discussion with MESA colleagues on how to address various computer concerns confronting staff, advisors and students. Brainstorming is a John Davis forte.

full time and he was able to guide them through the crucial high school years.

A Facebook connection with Cristi Chapman of Albuquerque led to a romance, a wedding in a bowling alley and eventually establishing a new home in Albuquerque. At first John worked remotely for Compass, but eventually applied for and landed a job as the IT Manager for NM MESA. Thirty months of great success on the job were not matched by joy in the marriage. The second divorce prompted John to once again prioritize his family and that is why

Andrews. "I was really impressed with his ability to create new ways of doing things. He could think outside the box."

Truly, John's attitude brought order to where there could so easily be much chaos. Comments about John from other MESA staff and many advisors have been consistently positive in reflecting upon his contributions to MESA. In retrospect of past performances, we trust that he will bring order to a new career and family as he begins a new chapter in his Shakespearean adventure.



Photo by Kim Allen Scheerer

T-shirt fashions highlighted the CI Spring RAM at Cocina Azul. Following a bountiful feast and informative meeting, Valley High School MESA advisors Missy Mick, Seeri Grube and Michael Goodrich celebrate “Most Fashionable MESA T-shirt” and “Best Teamwork” awards in the restaurant parking lot.

CI Spring Highlights: Workshop, Meeting and Baseball

Kim Allen Scheerer
CI Regional Coordinator

As the school year transitions its stressful, but exciting, wind down into summer, the MESA Central Inner region is reminded of the good times this Spring. Highlights include the ‘Engineering the Elements’ event at UNM, our third Regional Advisory Meeting (RAM) and our second annual Isotopes STEAM adventure!

Showing strong collaboration with UNM’s School of Engineering’s (SOE) Student Services program, MESA’s Central Inner region partnered with the student diversity groups of the National Society for Black Engineers (NSBE) and the Hispanics in Engineering & Sciences Organization (HESO) to bring STEM to the masses. This event, hosted at Centennial Engineering Center, wrangled more than 175 3rd-12th grade students for a day of ‘elemental’ fun! The day started with a warm welcome from the UNM Provost Chaouki Abdallah and then students had the opportunity to participate in various workshops that revolved around the design process. Elements of education included: fire, water, air and earth. Students created hot air balloons, solar ovens, marshmallow blowguns and explored the wisdom of water. They also fueled their engineering experiences with a tasty pasta and pizza lunch and ice cream experiment. Finally, our more

“mature” and college-ready high school students experienced a UNM student lead panel, a fabulous physics presentation by Dr. Dunlap, water gun creation competition and tours of several of the University labs.

Our Central Inner teachers had a fun and collegial competition as well this Spring. After an interactive tour of Friedman Recycling, we awarded several inspiring trophies amongst our team of teaching professionals at our third and final RAM of the year. Awards included the following: ‘Highest GPA’ (determined from cumulative Loyalty Award points for qualifying seniors) to Albuquerque High School advisors Liz Alvarado and Jimmy Phillips. ‘Best Teamwork’ to Valley High School advisors Serri Grube, Michael X. Goodrich and Missy Mick, who also took home the ‘Most Fashionable MESA t-shirt’ award (see photo). Aleli Colon of Van Buren Middle School earned herself the ‘Most Dedicated Advisor’ award for her tireless effort of connecting her students with the world around them.

Finally, we finished our 2015-2016 MESA delights with our 2nd annual trip to Isotopes Park for a Spring matinee game on May 9th. Bringing together the geometry of the ballfield, the speed of the pitch and crack of the bat with some peanuts and cracker jacks seems like just the perfect finale to a splendid year!

North Region “Builds” Creativity, Leadership

Alejandra Carmona-Cruz
NO Regional Coordinator

Incorporating computer programming into MESA Day competition certainly challenged the North Region students, but nonetheless gave students the opportunity to learn computer programming in relation to engineering a prosthetic arm. Teachers might have had nightmares about Arduino for months, but they certainly provided support and a place for students to explore and learn.

After MESA Day many North schools have continued activities such as leadership, service learning projects, end-of-the-year field trips, non-Mesa competitions and various workshops. One leadership workshop was conducted in April at Team in Action of Santa Fe Community College. Peñasco Middle and High School, Santa Rosa High School, West Las Vegas High and Middle School and Anton Chico and Memorial Middle Schools attended the Challenge Ropes Course. There they demonstrated their tenacity as well as leadership

skills. As part of the Challenge Course, the students and teachers participated in several low ropes and one high ropes course. The students gained valuable experiences working in teams with their peers in difficult situations. Santa Fe Community College definitely has one of the best ropes courses in NM!

Other regional activities since MESA Day include –

- 1) Santa Rosa Middle School MESA students working non-stop with their advisor Gary Pearsons on building trebuchets. Students have worked on all the design and engineering such as: measuring, installing wheels, repairing counterweight systems, building release mechanisms, drilling and sawing. They launched potatoes to test trebuchet functionality.
- 2) Another school that has also been quite busy inventing and creating has been West Las Vegas High School. These MESA students built a “student friendly” desk and took it to the Innoventure Competition in May.

Many Achievements for SE Region MESA Programs

Betty Chancey
SE Regional Coordinator

Once again, the SE Region NM MESA programs had a very busy and rewarding spring semester. Since January 1st, SE Region schools received recognition for participation in the following competitions and fieldtrips :

- SE Rally (Prepares students for the state-wide MESA Day competition) – (Arm Event results)
- * Carlsbad HS #1 – 1st Place, Ruidoso HS #5 – 2nd Place, Ruidoso #4 – 3rd Place
- * Carlsbad 6th Grade Academy #3 – 1st Place, Carlsbad Int. #1 – 2nd Place and Portales Jr. High #3 – 3rd Place
- Legislative Fieldtrip
- Regional Science Olympiad (Ruidoso HS, Mt. View MS Roswell &, Goddard HS)
- Vex Robotics (Carlsbad HS)

- MESA Day Statewide Competition
- Carlsbad Intermediate School’s teams won 1st and 3rd Place Overall & in the MESA USA Qualifying event they won 1st, 2nd and 3rd Place.
- Carlsbad HS won
- SUPER COMPUTING in Los Alamos
- * Portales HS students win 2nd Place Overall at Los Alamos Super Computing Challenge and won the Technical Writing Award as well. Please see web page pictures, etc.
- MESA USA State Competition
- UNM PNM State Math Competition
- Roswell Zoo improvements, water chemistry, macroinvertebrates & filtering plants (Ruidoso MESA club)
- Other News: Nathan Christensen – (Carlsbad High School Senior) is the recipient of the \$10,000 Devon Achievement Award.

West Schools Do New Activities

Shawndeana Smith
West Regional Coordinator

It’s been a busy school year for the West Region. Like many MESA schools around the state, the West region schools are involved in so many great programs and competitions from mid spring to the end of the school year.

The semester started off with a series of Rallies set up in different, convenient locations for the West schools. The Rallies were held at San Juan College, NMSU Grants, and at Navajo Technical College in Crownpoint. At each Rally, students were able to engage with campus departments, staff and students. They had the opportunity to get hands on learning with 3D printers, robots, computer simulations, horticulture practices and much more. There was also an opportunity for the students to practice with their prosthetic hands and ask questions in regards to the MESA Day Competition. Although the arm was a challenge to build and program for many students and advisors, there were still quite a few teams who



Shawndeana Smith

were able to design, build and complete a functioning arm for competition. There is no doubt that the West Region will be top contenders at the 2017 MESA Day Competition.

Along with MESA Day, the West schools were also involved with other competitions around the state. For instance, they participated in the Air Force Research Lab Flight Challenge in Albuquerque, The Technology Student Association Conference in Los Lunas, The Supercomputing Challenge in Albuquerque, RoboRave International in Albuquerque, and much more. We also had our Grants High School students attend the First Robotics Competition in California

this year. The West Region concluded with one final Regional Advisor Meeting in Gallup in May followed by a round of final site visits before school ended. It has been a pleasure to work with some fabulous advisors and students this year. As always, the West Region is looking forward to a rodeo summer and then another great year of MESA learning and fun. Count on the West to set pace in 2017!

North Central Region Works on Working

Nicholas Kunz
NC Regional Coordinator

As spring has made its way to New Mexico, students and advisors from NM MESA’s North Central Region have been working hard. In early January, students began the semester with preparation for the MESA Day competition. Schools that participated in MESA Day in Las Vegas had a great time and everyone was successful.

But what is a MESA program to do after mid-February when MESA Day is over? As it turns out, MESA Day is only one small part of the STEM enrichment that programs in the North Central Region experience. Spring time means it’s time to get to work!

Regional Service learning projects continued at the Tesuque Agricultural Initiative, led by plant geneticist Emigdio Ballon. The farm can always use help with the endless work needed to maintain the crops, and they value the opportunity to teach young people about the science of what they do every day on their 40 acres. Early spring work consisted primarily of preparing the land for planting. Students cleaned out dried remnants of medicinal herb

plants, pruned and cleared branches from the apple orchard, helped build a foundation for a new greenhouse, made rows for garlic and participated in seed sprouting workshops with Mr. Ballon.

As an alternative to participation in MESA Day, Pecos High School elected to produce a rocket competition at their school. Students worked to build and test different models, while learning about the physics of rocket flight and improving the efficiency of their product. The morning of the competition brought a blue sky and mild sunshine while the students launched their rockets from the baseball field. An unexpected adventure came when the group trekked around an old Pecos graveyard and into the forest to retrieve the spent rockets.

To conclude the school year, students completed another Regional Service Learning project, working with the Railway Stewards to help maintain Santa Fe’s iconic Railway Park and also visited the newly opened Meow Wolf Museum to explore the intersection of the artistry and technology in STEM projects. Stay tuned and check out the next edition of this newsletter for an update on their experiences.

2016 SIFT Memories from Washington

run, this time in a light rain. Breakfast at the hotel was delicious and nutritious before we went to the Department of Energy headquarters for a meeting with Deputy Director Dottie Harris, who announced that DOE will be providing a grant to NM MESA for Loyalty Award funding. Ms. Harris and her staff also demonstrated a device that can be attached to a cell phone camera and be subsequently used as a microscope. This venture was followed by lunch at the Capitol Cafeteria and visits with NM Legislators Martin Heinrich, Ben Ray Lujan, Michelle Grisham and Tom Udall before touring the U.S. Supreme Court, the Lincoln Memorial, the Korean War Memorial, the Vietnam Veterans Memorial and the World War II Memorial. Lots of pictures were taken at these memorable meetings and venues

before celebrating the day's achievements with a tasty dinner at the Washington D.C. Hard Rock Café.

The final day did not include an early morning run as we had to load up our luggage on a tour bus, eat breakfast and begin our tour by 7:00 a.m. The day's itinerary included a visit to the White House Visitor Center, a walk to view the White House (in the rain) and a visit to the fascinating National Museum of Health and Medicine, which is the best museum of its kind I have ever visited. Lunch at Pacci's Pizzeria climaxed the morning and our itinerary as we then proceeded to the airport for our return journey.

"I really gained an appreciation of how historical our Capitol is," explained Alan Tirado of Onate High School. "It was a fun

trip yet we learned so much; it was better than being in school!"

"I like the play (Shear Madness) the best," added Gladys Robles of West Mesa High School. "That is one of the funniest things I have ever seen. I laughed till I hurt!"

"Washington is an amazing place," commented Brianna Pacheco of Mora High School. "There are so many people and they are all in a rush. I am glad I live in Mora where it's not so crowded and so peaceful."

"It is always a challenge for a teacher to miss four days of school," explained Mike Boyle, shop teacher, coach and MESA Advisor at Robertson High School. "But it was so worth it to come on this trip and see what we got to see."

"This was a unique SIFT," noted Gonzales. "There was more emphasis on historical sites as well as STEM activities. We also had the unique opportunity to meet with our legislators. It will definitely stand out as a very special and memorable SIFT."

As a MESA Regional Coordinator blessed to help coordinate the trip, the journey made apparent to me how important SIFT is as a milestone experience for students. It is truly something they will remember all their lives and it is also an experience that helps show them there is so much beauty, so much opportunity, so many neat people and so many memories to be made beyond New Mexico. In that regard, the SIFT is truly a gift!



Photos by Rick Cole

(Clockwise from upper left) Sergio Juarez of Alta Vista Early College High School poses in front of classic aircraft at the Air and Space Museum; Department of Energy Deputy Director Dottie Harris interacts with students attaching a microscope device to their cell phone cameras; West Mesa HS students Brenda Salas, Ariana Astorga, Karla Vasquez and Gladys Robles learn "Freedom is not free" at the Korean War Memorial; U.S. Senator Martin Heinrich discusses STEM issues with SIFT students; WMHS student Brenda Salas takes a picture of a skull with a large bullet hole at the National Museum of Health and Medicine.



2016 MESA Day: Three Regional Events Comprise One State Championship

Alejandra Carmona-Cruz
Terry Ramirez
Kim Allen Scheerer
Regional Coordinators

This year, NM MESA staged three MESA Day Competitions in three different locations - Las Vegas, Las Cruces and Albuquerque. Students competed in the same contests with the same rules but on different days depending on their region.

North - North Central

The very first MESA Day covered the North and North Central regions and took place February 18 at New Mexico Highlands University in Las Vegas. At this Northern competition, approximately 150 students and 43 teachers attended from both regions.

It was an honor and delight for three NM MESA female students to commence the Northern Area MESA Day with a beautiful rendition of the National Anthem! NM MESA is fortunate to have such brilliant and talented students in the program. The three singers were Evelyn Juarez from Espanola Valley High School, Mariah Garza of Mora HS and Oksana Herrera of West Las Vegas HS. Interested individuals can watch a video of them singing the National Anthem on the NM MESA YouTube channel. Furthermore, these young women’s harmonious singing set the tone for the competition in the North.

This event might have been small in numbers but not in quality. The stakes were high but students pushed through the challenge and their dedication showed that day. The student teams competed in the prepared design event Prosthetic Arm 2.0, which entailed engineering a prosthetic arm controlled with Arduino programming. The on-site event, also known as FUNDamentals, consisted of three different challenges: Syntax Charades, Environmental Careers and Sustainability Supermarket. For each event student teams had to meet an objective, ranging from being familiar with Arduino programming language to being able to identify the job characteristics of an Aquaculture Manager.

Thanks to more than two dozen volunteers that came to help run each event.

Southeast and Southwest

Students from the Southwest and Southeast regions competed in the South MESA Day at NMSU February 22. Mayfield High School Team #1 won overall first place in the high school division for the South MESA Day and second place in the entire state. Carlsbad Intermediate School Team #3 won first place overall in the middle school bracket as well as

first place for the state. The South MESA Day event was the largest of the three events held this year with over 500 students competing. Students and advisors also got to enjoy many “downtime” Discovery Fair exhibitors to get lots of useful information and have fun engaging with STEM professionals.

CI, CO and West

The third and final MESA Day was hosted at the University of New Mexico’s (UNM) Student Union Building in early March. Bringing together students from

que weather complemented with several interactive options from the Museum of Natural History, the Energy on the Move team, Talking Talons and the Albuquerque Astronomical Society. Students had the opportunity to visit and learn from an array of guest presenters and community volunteers.

High school students from these three regions started their morning with the festivities of the FUNDamentals. As a presenter in the Supermarket Sustainability, it was awesome to see the students really getting into the conversation and content of the various activities. I heard debate about



Photo by Rick Cole

Carlsbad High School Team #1 focus their efforts on completing a competitive task in the FUNDamentals portion of the South MESA Day. The four girls tallied a 41st place finish in FUNDamentals but fourth in the Prosthetic Arm 2.0 to record a fifth place mark in the overall MESA Day standings. The team also finished third at the MESA USA State Qualifier, winning two events in the process.

the Central Inner (CI), Central Outer (CO) and West regions created an exciting vibe with lots of creative competition. The day kicked off with enthusiasm as the buses rolled on to campus and the ballroom filled with eager students.

Middle school students started their rotation in prosthetic arm competition, with many students feeling the pressure of competing and the excitement of a culminating event. Moving through the object relocation and distance accuracy tasks in the morning took the pressure off to enjoy the FUNDamentals sessions including Environmental Careers Challenge, Supermarket Sustainability and Syntax Charades in the afternoon. Students were excited to move through the rotations, chatting happily about what their team could accomplish and how best to do it. Taylor Middle School Team #1 won all-around honors for their performance.

Lunchtime, hosted by Dion’s Pizza, was enjoyed outdoors in the sunny Albuquerque weather complemented with several interactive options from the Museum of Natural History, the Energy on the Move team, Talking Talons and the Albuquerque Astronomical Society. Students had the opportunity to visit and learn from an array of guest presenters and community volunteers. High school students from these three regions started their morning with the festivities of the FUNDamentals. As a presenter in the Supermarket Sustainability, it was awesome to see the students really getting into the conversation and content of the various activities. I heard debate about



Photo by Rick Cole

Carmen Griego of Santa Rosa Middle School competes in the Object Relocation at the North-North Central MESA Day.

Finalists Selected for the Guenther Advisor Achievement Award

Nicholas Kunz
NC Regional Coordinator

NM MESA’s Advisor Achievement Committee has selected five finalists for consideration for the Dr. Arthur H. Guenther Advisor Achievement Award. Selection of award recipients is based on performance and is designed to reward excellence and leadership. Finalists were determined after the committee’s review of specific selection criteria as well as submitted advisor nomination forms.

The five finalists are: Luisa Castillo, West Mesa High School; Serri Grube, Valley High School; Rebecca Merrill, Gallup High School; Leah Olivas, Carlsbad Intermediate School; and Monika Tso, Hiroshi Miyamura High School

Selection of the two final awardees will be done after all MESA activities have ended for the 2015-2016 academic year. Selected advisors and their schools will be recognized formally and publicly by NM MESA as recipients of the award. Advisors will receive a cash award of \$100 from NM MESA.

Dr. Arthur H. Guenther created New Mexico MESA in 1982. As a research professor of electrical and computer engineering, professor of physics and astronomy at UNM, and Chief Scientist at the Air Force Research Library, he was an advisor and mentor to hundreds of graduate students and a science and technology advisor to the Governor of New Mexico. He wanted to influence the lives of high school students in New Mexico who were interested in a bright future in STEM careers, so he worked with university representatives and state and federal government officials to bring the MESA program to New Mexico. He subsequently spent many years working as a MESA Board Member and Board Member Emeritus.

NM MESA has established the Dr. Arthur H. Guenther Advisor Achievement Award with the expressed goal of honoring the legacy of Dr. Guenther, while simultaneously recognizing the productive and important work done by MESA advisors who perpetuate Dr. Guenther’s vision each year. Congratulations to this year’s finalists! The winner will be announced on the NM MESA website (www.nmmesa.org) and the summer publication of Vision, the NM MESA newsletter.

Loyalty Award Update

John Davis
IT Manager

It has been said that “The journey is its own reward” and that is true for all students participating in MESA, but we go even farther by offering students a Loyalty Award for up to \$1,000 upon graduation and enrolling in college.

This year, NM MESA will surpass the \$2,000,000 mark in awards given to NM MESA students. Since 1992, NM MESA has awarded money to students that attain certain levels of participation and academic success while involved in the MESA program. This money is not only an incentive for the students to participate and thrive in the MESA program but also to reward them for their achievements earned along the way.

This year there are 131 students that met the criteria and deadlines for a total amount of over \$102,000 and an average Loyalty Award amount of \$782 per student. Yes, the journey is its own reward and the destination for these students is *greatness!*

Overall Middle School Results

Team	Points
1 Carlsbad Inte. School Team 3	294.43
2 Taylor MS Team 1	292.19
3 Carlsbad Inter. School Team 5	276.20
4 Lynn MS Team 2	265.73
5 Mora MS Team 1	264.25
6 Taylor MS Team 2	263.29
7 Jefferson MS Team 1	263.26
8 Lynn MS Team 5	262.20
9 CC Snell MS Team 4	257.58
10 Carlsbad 6th Acad. Team 5	253.49

Overall High School Results

Team	Points
1 Cibola HS Team 3	352.77
2 Mayfield HS Team1	333.88
3 nexGen Academy Team 1	326.28
4 Cibola HS Team 1	306.02
5 Carlsbad HS Team 1	304.47
6 Deming HS Team 2	295.14
7 Deming HS Team 1	290.13
8 South Valley Academy Team 1	276.51
9 Portales HS Team 2	274.14
10 nexGen Academy Team 2	271.64

Darius Gallegos-The Young Man with a Plan

Nicholas Kunz

NC Regional Coordinator

Darius Gallegos has spent his entire school career in Mesa Vista. He is a MESA all-star. A 16 year-old in 10th grade, he is a grounding force in his school's MESA program and continues to drive them forward. I sat with Darius at a picnic table in the courtyard of his school on a windy spring day with patches of clouds periodically stealing our sunlight. Darius's earnest smile is catching as he remembers the first day we met back in 2014 at the North Central Regional Rally.

It was early in his 7th grade year at Mesa Vista Middle School that Darius first learned of MESA. He happened to meet Mr. Victor Jaramillo, one of MESA's most senior advisors, who asked Darius if he'd like to sign up for MESA. At his first MESA meeting, Darius learned about the planned engineering projects and other activities on tap for the year and knew he would love it.

He would soon be assigned to a group of four other students, with whom he still remains today. They do everything together. "After our first year together, we decided to call ourselves 'The Dream Team'" Darius recalls. And the members of The Dream Team are friends. Any time they are working on a MESA project, they are

learning and laughing together. During his 7th grade year in 2013, they won second place overall in the MESA USA competition, followed by a second place overall win the following year. While they won 4th place overall at MESA USA last year, they won first place in the dexterity event and also participated in MESA Day,

notching eighth place overall among over 200 teams. Darius has big plans for the future. He will continue with MESA through his senior year of high school. He has served as MESA President in past years and plans to run again next year, and if elected, will implement some of his growing ideas for interesting trips and activities.

And college is a definite. He is looking at the engineering degree programs at UNM and NM Tech, which will prepare him for a career in Mechanical Engineering. Sitting in the dappled afternoon sunlight, Darius makes it clear that he wouldn't have learned about engineering, nor would he have formulated such clear goals for the future without the influence of MESA. "MESA inspires me to bring out my creativity and craftsmanship," explained Gallegos. "I owe a lot of thanks to my school, my advisors, my mother and soon-to-be father".



Darius Gallegos - Mesa Vista HS

Three-Year MESA President to Attend Embry Riddle

Shawndeana Smith

West Regional Coordinator

Jefferson Bahe is a 2016 Honor graduate of Gallup High School. He has been an active member of GHS MESA and has been President for the past three years.

This year he was one of the seniors chosen to attend the 2016 Senior Incentive Field Trip to Washington DC. He has also been an active member of the National Honor Society as Vice President, the GHS swim team, and the GHS Dine' Club. He has done internships for Southwest Youth Services, DePauli Engineering and Surveying, and the Upward Bound program.

Jefferson has been accepted and plans to attend Embry Riddle Aeronautical University in Prescott, Arizona to study mechanical engineering and hopefully pursue a career in robotics. He was a finalist for the Dan-



Jefferson Bahe at the White House

iels Scholarship and has been awarded the GATES Millennium Scholarship, Presidential Scholarship at Embry Riddle and the NM MESA Loyalty Award. He is currently applying for the Chief Manuelito Scholarship. He was also invited to apply to the National Society of High School Scholars.

Jefferson wishes to recognize his 5th grade teacher Marie Susanne Mercado for her help and encouragement in helping him become interested in pursuing math in school. He would also like to recognize Ms. Merrill, his MESA Advisor, for her help and encouragement in his pursuit of the engineering field and Mrs. DePauli for her support and encouragement in pursuing higher level classes and applying for scholarships. He would mostly like to thank his parents for their support and encouragement throughout his life in every endeavor he has achieved.

NM MESA Embraces Science and Music in Nashville

Linda Andrews

Deputy Director

New Mexico invaded Tennessee during the first week of April, 2016, when NM MESA staff attended the annual National Science Teachers' Association (NSTA) Conference in Nashville. The city was humming with a dynamic beat as thousands of teachers attended sessions and walked on the country and western wild

side in Music City. NM MESA staff returned home with scores of ideas for activities for school programs. Many new vendors displayed their wares and provided a medley of ideas as well. It was impossible to come away without new and exciting things to do related to science! The trip reminded us of the many innovations in science education, and provided bonding time for the MESA staff.



Photo submitted by Alissa Wells

The restored 100-year old adobe home near Mora that former Texan Alissa Wells now calls home.

Wells doing "Well" as Mora MESA Advisor

Alejandra Carmona Cruz

NO Regional Advisor

Mora Middle School MESA Advisor Alissa Wells is as excited about teaching as she is gardening or digging salamanders out of the wall of her historic adobe home.

"I will be having a salamander specialist come and present to my students next week" recalled Wells earlier this spring. "I dug salamanders out of the wall of my adobe home the other night."

Alissa just completed her third year teaching at Mora Middle School. She moved from Forth Worth, Texas three years ago, but loves living in Mora and has adapted well to her new home. Alissa taught science at Fossil Hill Middle School in Fort Worth for seven years before moving to Mora. She now has a full decade of science-teaching experience.

Alissa states, "My family has owned property in Mora for 15+ years, and once we fixed up a 100 year old adobe home, I quit my job and moved here."

Alissa moved to Mora in hope that she could make a living for herself. "I love gardening and became a member of Los

de Mora Local Growers Cooperative after moving because I believed I could support myself as a farmer."

She is grateful the science teacher position at Mora Middle school became available and she can still be a farmer on a much smaller scale.

"This summer I am adding two bee hives to the farm and cannot wait to have my own honey."

Like honey, working with MESA has been sweet but "stingingly" tough at times. Regardless, Alissa was certainly determined to get her students involved and learning. She provided a space where her students could explore, struggle, and learn to program a prosthetic arm.

"If they want to go to competition, they will have to work as a team. I will provide the classroom and be there to help, but I will not do the work for them."

This is exactly what helped her teams be successful at MESA Day. Alissa brought two teams to competition and all students in the program learned Arduino and built arms. The two teams that attended competition placed first and third overall respectively.



Photo submitted by Alissa Wells

Mora MS MESA teacher Alissa Wells is passionate about gardening and teaching.

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