Building Tomorrow's Mathematicians, Engineers and Scientists...Today!













Keep Up With Mesa!

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FROM THE EXECUTIVE DIRECTOR





Ya'at'eeh (Hello),

I am pleased to share the NM MESA 2017 annual report with you. 2016 – 2017 was our 34th year as a nonprofit organization. MESA has impacted thousands of students and teachers throughout its 34 year history. From its modest beginning in the early 80's, NM MESA is now the premier, pre-college, STEM program in New Mexico. Our teachers and students are the reason for our success and growth. The day-to-day work and commitment of NM MESA teachers and NM MESA staff is where "the rubber meets the road".

It's been a great outcome year for NM MESA students at the national stage. Our high school engineering team, from Deming HS, took the title of national champions for a second year in a row! Our middle school team from Chaparral Middle School out of Chaparral, NM placed second in the nation. These two schools competed against other MESA teams from California, Oregon, Maryland, Pennsylvania, Arizona, Washington and Utah. This accomplishment shows the outcome NM MESA strives for and works towards every day through its program offerings. We know we are successful, and making great strides academically, when members of our national teams are comprised of students from underrepresented populations, low socio-economic statuses, and rural villages/communities.

We are thankful to our students, schools, state legislators, corporate partners, federal congressional delegation and staff, universities, colleges, volunteers, individual donors and others for supporting our mission to "Empower and motivate New Mexico's culturally diverse students with science, technology, engineering, and math (STEM) enrichment."

NM MESA is the oldest pre-college STEM enrichment education program in New Mexico and we strive to maintain this standing, serve our customers, and engage our partners and other supporters to assist in the achievement of the state and national goal of growing the workforce and citizens of the future.

Sincerely,

Tony Begay Executive Director, NM MESA



PRESIDENT OF NM BOARD OF DIRECTORS





I would like to extend my sincere thanks and appreciation to the New Mexico Mathematics, Engineering, Science Achievement (MESA) program for their tireless work and dedication to the State's middle and high school students. The efforts of the MESA staff and the teachers who serve as MESA advisors in the schools across the state provide both opportunity and demonstrable success in advancing math, science, and engineering education in New Mexico.

Science, Technology, Engineering and Math (STEM) education is critical to developing a future workforce of innovators, researchers, and educators to address the most pressing technical challenges globally. New Mexico MESA is providing outstanding leadership in student development in preparation for future studies and careers in STEM fields. MESA students have consistently shown high achievement on state assessments as well as entering college prepared to begin their studies with no required remediation courses.

This past year, NM MESA was also excited to once again celebrate national success of two of our schools. Deming High School repeated as national champions at the MESA USA National Engineering Design competition in Philadelphia Pennsylvania. Chapparal Middle School was honored as national champion runner up at the same competition. We are very proud of their achievements and how they have represented themselves, their schools, and the State of New Mexico.

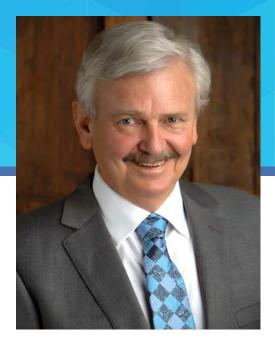
It is my honor and privilege to serve NM MESA as they continue as a premier STEM education program here in New Mexico.

Sincerely,

Jonathan Hawkins President, NM MESA Board of Directors



PRESIDENT OF NEW MEXICO TECH





I am very pleased to extend my sincere thanks and appreciation to the New Mexico Mathematics, Engineering, Science Achievement (MESA) program, for your contributions toward providing opportunities to our state's most promising middle school and high school students. From the board of directors to the staff, MESA stands as a vanquard in educational enrichment for our students in New Mexico.

As the 17th president of New Mexico Tech, I am proud to continue our partnership with MESA as we both work to ensure that future generations of New Mexicans are prepared for leadership roles in high-tech careers. In doing so, we encourage a strong academic foundation in the critical areas of mathematics, science and engineering. Many studies have shown that the United States is falling behind the rest of the world in math and science education. MESA is a model program for interesting New Mexico youth in these disciplines.

This year, Chaparral Middle School and Deming High School won the statewide competition and represented New Mexico at the national event. We congratulate them on their success at nationals! Deming High School won the national title – for the second consecutive year!

MESA has provided our state universities and colleges with some of the brightest students New Mexico has to offer. The seeds planted by MESA have propelled thousands of underserved students into productive careers and personal enrichment.

Once again, I commend the Mathematics, Engineering, Science Achievement program for standing as a beacon of achievement in the vital educational areas.

Sincerely,

Dr. Stephen G. Wells President, New Mexico Tech



WHO WE ARE

COMPETITION

STEM "Competitive activities for students that challenges their knowledge and understanding of STEM. These activities provide students with the chance to meet other students from around the state and nationally. It improves their problem solving and leadership skills.

- RoboRave
- Innoventure
- Supercomputing
- BEST Robotics
- CyberEChallenge
- Alternative Fuels Challenge
- NM Electric car challenge
- MESA Day

- MESA USA National Engineering Design Competition
- AFRL's STEM Challenge Flight
- UNM-PNM Statewide Mathematics Contest
- Envirothon
- Science Olympiad
- School Science Fair
- Explora



WORKSHOP/SPEAKER

Workshops held at the MESA school to help students and Advisors prepare for any STEM competitions, including MESA Day and MESA USA. These activities are also used to help enhance students' awareness of STEM careers, preparation for higher education or other related STEM or STEAM subjects.

- AMP event workshops
- Citizen Science
- Soilutions
- Park Ranger
- Animal Humane Society
- Math Moves U
- UNM Engineering
- NM Tech
- NMSU Agricultural Sciences
- Gear Up Careers
- Sandia Peak/Tram

- Kirkland Air Force Base Hispanic Heritage STEM Demonstration
- Catching the Dream
- NM Military Institute
- Coding 101
- MN Highlands University
- UNM Physics and Astronomy
- Natural History Museum
- Explora
- Sandia National Labs
- Los Alamos National Labs



FIELD TRIP

College Visit – A MESA planned trip to a college to learn about admissions requirements, the process in applying and their next steps toward higher education.

STEM Industry– Activities planned by the NM MESA Advisor, away from the school site in order for students to experience new or novel STEM related information and learning, in a hands-on environment.

SERVICE LEARNING

Activities planned by Advisors in which students' volunteer time and effort in projects benefitting their school or community. The emphasis is in growing and developing STEM leadership for the future in our students. Strong stewardship grows strong leaders.

- Food Drive
- LIMBS International
- Donations for Kenya
- Veterans Drive
- School Clean Up
- School Eco-Systems Project
- HS MESAs mentor MS MESA students
- Raised money for Animal Humane Society
- working with Senior Citizens
- Roswell Zoo improvements
- clean water projects
- Summer Reading Fiesta at Highlands University
- Blood Drive at the Rough Rider Rally
- Blood Drive at Heritage Days,

Other Activities that NM MESA Students participate in:

Fundraising

These activities provide students with the opportunity to earn funds for use in MESA related activities.

Leadership

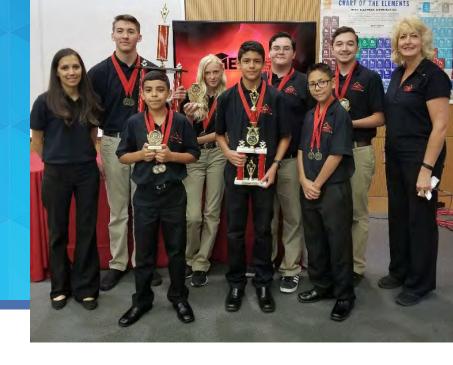
These activities expose students to opportunities to grow in his/her interpersonal, leadership and group communication skills.

Student Meetings – These recurring weekly meetings are student led and allow students to prepare for upcoming competitions, work on STEM related activities, and take care of typical club business.



*All activities listed are for College Visit and STEM Industry:

- NM Tech
- NM Highlands University
- New Mexico State University
- UNM
- New Mexico State Legislature
- Very Large Array
- Senior Incentive Field Trip to San Diego, California
- Tent Rocks
- Tech Convention at UNM
- Old Town STEAMventure with UNM Architecture College,
- STEM Discovery Day
- Math Moves U
- Explora
- ABQ Bio Park
- National Museum of Nuclear Science and History
- Hyde Memorial Park
- STEAM Day at the Railyards in Santa Fe
- NM Military Institute
- Sandia Peak
- National Youth Image Summit
- Tijeras Creek
- Rio Mora Wildlife Refuge



MESA SCHOOLS

WEST (11)

Mesa Alta JHS Crownpoint HS Crownpoint MS Gallup HS John F. Kennedy MS Miaymura HS Thoreau HS Tohatchi MS Grants HS Los Alamitos MS Navajo Preparatory HS

NORTH (10)

Robertson HS Memorial MS Mora HS Mora MS Santa Rosa HS Santa Rosa MS Anton Chico MS West Las Vegas HS West Las Vegas Valley JHS West Las Vegas MS

NORTH CENTRAL (10)

Bernalillo HS Bernalillo MS Cochiti MS Santo Domingo MS Española Valley HS Carlos F. Vigil MS Mesa Vista HS Mesa Vista MS Capshaw MS Tierra Encantada

CENTRAL OUTER (15)

Ernie Pyle Middle School Cibola HS Jimmy Carter MS West Mesa HS John Adams MS Truman MS Belen HS Belen MS Los Lunas HS Los Lunas MS Valencia HS Valencia MS Socorro HS Sarracino MS

Atrisco Heritage Academy

CENTRAL INNER (14)

Albuquerque High School Taylor Middle School Del Norte High School Garfield Middle School Manzano High School Jefferson Middle School nexGen Academy Kennedy Middle School Valley High School Taft Middle School East Mountain High School Van Buren Middle School

Amy Biehl High School

South Valley Academy

SOUTHWEST (13)

Cobre HS C.C. Snell MS Deming HS Deming MS Red Mountain MS Alta Vista Early College HS Chaparral MS Centennial HS Lynn MS Las Cruces HS Vista MS Mayfield HS Oñate HS

SOUTHEAST (14)

Alamogordo HS Holloman MS Mountain View (Alamogordo) MS Artesia HS Carlsbad HS Carlsbad 6th Grade Academy Carlsbad Intermediate School Portales HS Portales JHS Goddard HS Roswell HS Berrendo MS Ruidoso HS

Ruidoso MS



MESA REGIONS

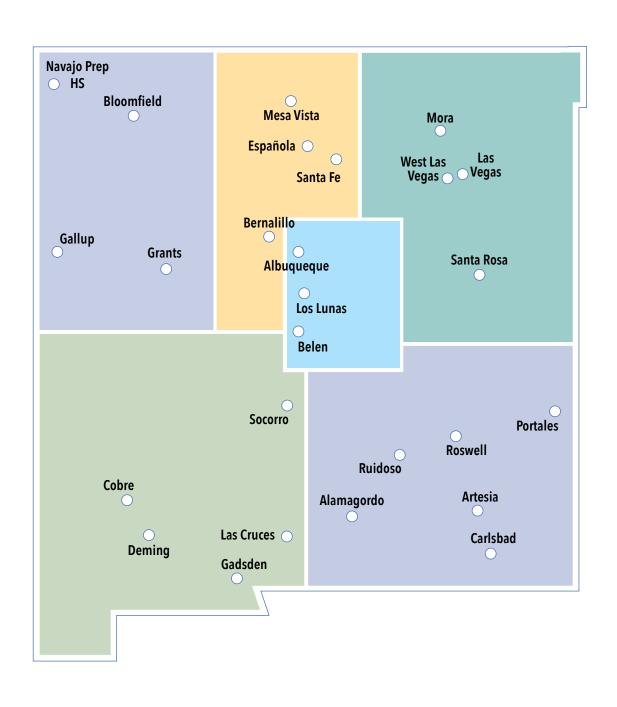
CENTRAL INNER: Albuquerque

CENTRAL OUTER: Albuquerque, Belen, Los Lunas, Socorro **NORTH CENTRAL:** Bernalillo, Espanola, Mesa Vista, Santa Fe

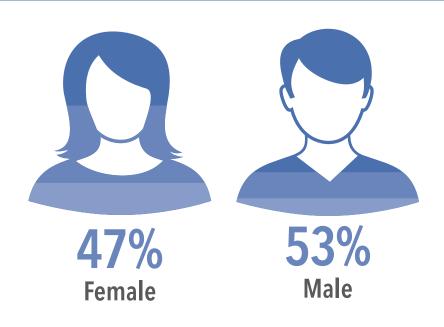
NORTH: Las Vegas, West Las Vegas, Mora, Springer

SOUTHEAST: Alamagordo, Artesia, Carlsbad, Portales, Roswell, Ruidoso

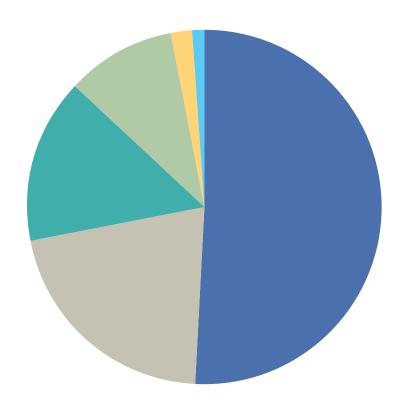
SOUTHWEST: Cobre, Deming, Gadsen, Las Cruces **WEST:** Bloomfield, Gallup, Grants, Navajo Prep



STUDENT DEMOGRAPHICS







STUDENT DIVERSITY

51% Hispanic (Spanish culture of origin)

15% Anglo (not Hispanic Origin)

10% American Indian or Alaskan Origin

2% Asian or Pacific Islander

1% Black (not Hispanic Origin)

21% Undeclared

Source: MESA Information Management System

COLLEGES ATTENDING

CNM	8
Dona Ana County CC	1
ENMU	13
Luna CC	1
NM Highlands	14
NMSU	34
NM Tech	15
UNM	43
Western NM University	2
Pima Medical Inst.	1
ASU	2
Bowling Green State Univ.	1
CA Poly Tech	1
Colorado College	1
Columbia University	1
Fort Lewis College	1
Harvard	1
New College of FL	1
Northern Arizona University	1

University of Arizona	2
UC San Diego	1
USAF Academy	1
UT Austin	1
Vanderbilt	1
Virginia Tech	1
Whittier College	1
Yale	1
Baylor State	1

MAJORS DECLARED

Purdue

Texas Tech Univ. Penn UC Berkley Univ. of So. Cal.

St. Edwards University

Accounting	1	Communications	1	Health Science	1	Emergency Medical Services	1
3	'	••••••	1		1		1
Aerospace and Mechanical		Computer Engineering	ı	Information Technology	I	Pharmacy	ı
Engineering	1	Computer Science	8	International Business	1	Physics	2
Animation and Digital Arts	2	Criminal Justice	3	Journalism	2	Political Science	2
Astrophysics	1	Dental Hygienist	1	Languages	1	Pre-Med	2
Automotive Technology	1	Economics	1	Liberal Arts	3	Pre-Law	1
Biochemistry	4	Education	4	Materials Engineering	3	Psychology	3
Biology	17	Electrical Engineering	9	Math	1	Public Health	1
Biomedical Engineering	1	Engineering	8	Mechanical Engineering	10	Radiologic Sciences	4
Biomedical Sciences	1	English	3	Media	1	Global Studies	1
Broadcasting Media	1	Environmental Science	5	Music Performance	1	Undeclared	8
Business	8	Fish and Wildlife	2	Music Production	1		
Chemical Engineering	5	Forestry	1	Neuroscience	1		
Chemistry	1	Finance	1	Nuclear Engineering	2		
Civil Engineering	2	General Studies	1	Nursing	7		

1

GRADE LEVEL

584 668 639 481 10TH 11TH 12TH 373 388 368

Source: MESA Information Management System





GEOGRAPHIC LOCATIONS



of NM MESA Students live in Rural area of New Mexico as defined by USDA – Economic Research Services



of NM MESA students reside in an Urban area

Source: MESA Information Management System

SENIOR ACADEMICS

AVERAGE SCORES FOR 2016 - 2017







ADVISOR STATISTICS

10.7 years average teaching experience of a MESA Advisor 4.5 years average length of service of a MESA Advisor

MALE 46% FEMALE 54%

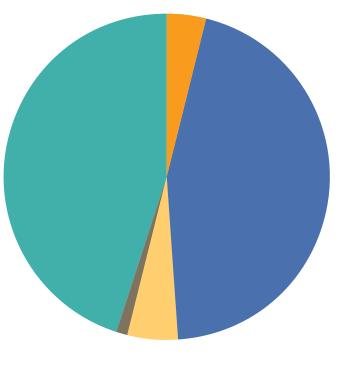
Source: MESA Information Management System







ADVISOR ETHNICITY

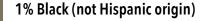












Source: MESA Information Management System

ADVISOR TESTIMONIALS

"WHAT WAS THE BEST THING ABOUT MESA THIS YEAR?"

"I think getting students involved with applied math and physics is incredibly important in getting students involved with academics in general. They see a purpose for learning the math in class because they can apply it to extra curricular activities we do in MESA."

"The best part of MESA this year was the Meow Wolf field trip. Students loved seeing how science and technology was incorporated into art and really enjoyed the prosthetic hand/arm exhibit there. It was very interactive and interesting for the students. A once in a life time experience for many."



"The students had a lot of opportunities to go out of town and have field trips. They also learned a lot about writing and presenting."

"Students participated in a variety of community service events which were affordable and gave them a sense of personal satisfaction and helped the community."

"Having my science students twice a day and seeing them work hard at a goal and grow."

MESA ACHIEVEMENTS and HIGHLIGHTS

The Senior Incentive Field Trip (SIFT) for this year was to San Diego, California. 24 seniors, 4 advisor chaperones form the NM MESA Programs statewide were selected to attend this annual activity.

New Mexico MES teams did very well at the 2017 MESA USA National Engineering Design Competition in Philadelphia, Pennsylvania. Chaparral Middle School placed second overall with a first in Design Efficiency and Object Relocation. Deming High School won first place overall making them the undefeated national champions for a second year in a row!

NM MESA students from Chaparral Middle School and Deming High School were the keynote speakers at the 4th Annual STEM Symposium hosted by NMPED.

NM MESA Students presented at the 2017 Alliance for Minority Participation Conference at New Mexico State University.

Over \$129,000 in Loyalty Awards were distributed in the Fall of 2017 to NM MESA seniors that graduated in the Spring of 2017.

STATEMENT OF FUNCTIONAL EXPENSES

	PROGRAM SERVICES	G&A	FUNDRAISING	TOTAL
Salaries	394,284	159,861	10,547	564,692
Taxes & Benefits	68,153	43,678	1,895	113,726
Field Trips	79,495			79,495
Professional/Consultant	4,776	53,565	11,111	69,452
Travel	56,797	17,956	433	75,186
Loyalty Awards	124,019			124,019
Training & Development	0	4,701		4,701
Program/Event Services	3,034	2,450		5,483
Supplies	19,815	3,190		23,005
Occupancy	0	4,810		4,810
Meetings & Conferences	2,884	0		2,884
Equipment Expenses	652	2,470		3,122
Telephone	11,852	9,793		21,645
School Activities	22,167	0		22,167
Other	56,132	25,866	213	82,212
TOTAL EXPENSES	844,059	328,341	24,200	1,196,599

STUDENT TESTIMONIALS

Christopher Gallegos - Atrisco Heritage Academy HS

For the last six or seven years I've done MESA. It has inspired me to not only go into the STEM based fields but to pursue scientific endeavors in order to benefit all of society. In more than one way MESA has inspired



me to do better academically and socially since science now is heavily team based. Mesa encouraged team based events such as the Robotic cars and the Prosthetic Arm Competition. MESA has also allowed me the benefit of discovering new things through the field trips, such as Artesia Oil and Gas Fair and the Senior Incentive Field trip. All in all MESA has allowed me to broaden my horizons as I complete high school and move into post-secondary education. MESA has also given me the benefit of meeting other high school MESA clubs and teams. It allows a broader and more varied approach to engineering problems due to the diversity of students that MESA has. That is what MESA has done for me.

Moses Esquibel - West Las Vegas High School

Coming from a rural town called Las Vegas, opportunities are not always there; however, through the MESA program it has opened a whole new door in my life. I have learned thoughout my six years of being in MESA that I love to construct and design things, which has pushed me to want to become an engineer of some sort. MESA has not only impacted my life as a whole but it has helped me to excel in other science and math classes at both the high school and college level. For example, when doing the prosthetic arm project, I learned a lot about the anatomy and physiology of the human arm; when I got into the section on the human arm in my Human Anatomy class (at Luna Community College) I was far more prepared than others because of MESA. I excelled in this chapter of the book. Thanks to MESA, it has set me on the right path to become a positive impact to society and has laid the stepping stones for my future endeavors.

Clarisa Casillas - Onate High School

MESA has impacted me by giving me the life skills I use today, such as leadership skills, team building skills, communication skills and problem solving. I had joined MESA when I was in the 7th grade at Vista Middle School, where I had an amazing teacher and amazing club members to work with. It was so much fun I didn't really see it as working through all the activities we did and preparing for competitions. I learned more about myself in this club, before I wasn't really one to take charge but over time I slowly began to lead my group and even became an officer in the 8th grade. I suppose not everyone has that experience but I did, and now I do take more initiative in making decisions throughout my life. Along with the leadership of course came my team building skills and learning to work with other people. If we didn't have a good team we wouldn't get a good outcome, so we learned to listen and compromise among teammates. But learning how to problem solve is my favorite skill I gained, It gives me a new way of thinking and just getting used to figuring things out on my own which is something I can use throughout my whole life. MESA was an incredible experience and I would encourage upcoming students to give it a try.

Brooklyn Aragon - West Las Vegas High School

Not only has MESA taught me the importance of teamwork, critical thinking, and leadership, it has helped me decide on my future. Without MESA I would never have had the opportunity to travel to the Office of the Medical Investigator and indulge in the world of pathology. The tour consisted of closed doors, peeking through windows, and not being able to touch anything. It may sound like a boring field trip, but for me it was my "wake up call". The mysterious machines, scary looking tools, and the ominous surgical lamps hanging over me were enough to send chills down my spine. AS the tour continued, I tried my hardest to stay in the front of the group so I could see everything. I asked so many questions the poor doctor's ears were about to fall off. The doctor showed us the room where they harvest bones for DNA testing. Of course we were not allowed to go inside the room; we could only peek through the small window. Although to an ordinary person a visit the Office of Medical Investigator would be horrific, I left the building feeling euphoric and amazed. I knew what I wanted to do with the rest of my life after that visit. Without MESA I would not know what the future holds, I would not even know what college I would want to attend. I owe MESA everything. Thank you.

Harley Bendzus - Portales High School

In deciding how to introduce my overall experience in New Mexico MESA, I figured that describing one of my favorite experiences would help me best explain the impact the club has had on me.

Walking into the Roundhouse in Santa Fe was one of the most exhilarating feelings in the world. Me and five other members of the Portales High MESA team were welcomed by a woman dressed in professional attire. "Welcome to the Capital", she said. The words sounded so finite being told to us juniors and freshman in high school. The building was cold, the walls and pillars made from marble. The center floor was a circle: you could see very floor above you, and the top of the building was capped by an imposing ceiling. As the woman showed the team and I to our seating among the other MESA teams, we all couldn't help but "ooh" and "awe" over the beautiful building.

After a long speech from the founder of MESA and a quick look around the building, we were welcomed into the Senate chamber. Rows of large chairs placed in front of desks labeled with Representatives and Senators names were the first objects I could see when coming around the entrance. The site would have been enough for me to leave home happy, but the group continued into the vast room. On the center of the wall in the semi-circle shaped room was the prodigious Great Seal of the State of New Mexico. The emblem was made from what looked like thick metal, maybe iron. I had never felt so auspicious. I put hard work into MESA. I endured stressful trials and errors when building projects, and spent time rationalizing my school work, sports and the club. In that moment it had all paid off.

Later I found myself standing in front of Stuart Ingle, the most respected legislator and senator of New Mexico. In all honesty, I expected to meet a conservative authoritarian. Even though he may be exactly that, I found that he was also really down to earth. He even let me take a picture of myself sitting in his chair! The team members and I all positioned ourselves in different poses, acting as though we were senators getting work done. Mr. Ingle laughed at our silliness and told us, "You are all enlivening kids." I was glad to know that we made his day during an event that made mine. After the "Meet and Greet" we headed over to the Representatives Chamber where they officially declared the day "National MESA Day". The entire commission and all the teams from around the state celebrated when the speaker's gavel hit its block. I was extremely blessed and fortunate to experience the occasion and the mesmerizing capital of my home state.

Experiences like the one I described above are what NM MESA is all about. Aside from introducing STEM related careers to all its students, MESA also brings joyful "ooh and aw" moments that none of its members could forget. In all, NM MESA has impacted my perspective. Now I truly believe that all things are possible, regardless of where you come from, your family's income or the clothes on your back. MESA provides a safe learning environment for kids to look beyond their home life, and into the future at what is possible.

Yoni Xiong - Carlsbad High School

MESA has furthered my interest in engineering. I have been a member of MESA for about 6 years, and leading as team leader of MESA USA and VEX Robotics has greatly influenced my plans for the future. Prior to participating in MESA, I detested group work and saw other members as liabilities. However, I soon realized the benefits of having different perspectives on a certain issue. Many more elements of a design can be addressed in a group than alone. One member may be structurally focused and point out flaws that the design-geared members fail to notice. I learned to delegate responsibilities based on a person's potential at a certain task and thus strengthened the team as a whole. For example, I wouldn't force a talented programmer to help design a new lift system for a robot. Every member on my teams would participate in the brainstorming process, but then the team would split and perform building, programming and documenting. I personally helped design, build, and document for the teams. Another skill I learned was planning and time management; many team members would have other responsibilities, so I would have to work around everyone's schedules. From leading teams, I have become more open to ideas and less stubborn. I plan to pursue electrical engineering in the future and leading teams has made me less wary about teamwork. In all, MESA has allowed me to experience and realize my interest in engineering.

DONORS





































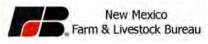








































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