

ON PAGES 2 & 3

NORTHERN CALIFORNIA

Butte College students vie for \$90,000 grant by using rice hulls as energy source ♦ Cinthia Hidalgo considered leaving school at Chico State after a bout of homesickness ♦ Pete Zavala, 35-year-old father of three working in the warehouse industry, assumed he'd always have a job he didn't enjoy . . .

ON PAGES 4 & 5

CENTRAL CALIFORNIA

MESA or senior prom? ♦ From Pasadena to Santa Cruz to Antarctica—one student's journey for science ♦ Science expo energizes more than 700 middle and high school students ♦ Through perseverance and MESA, a new start in life . . .



COURTESY MARIO CASTELLANOS

ON PAGES 6 & 7

SOUTHERN CALIFORNIA

Dissatisfied with career track, one student returns home and finds MESA ♦ San Diego students defy physics by walking on water ♦ MESA Day projects spark interest in engineering for UCLA grad student . . .



COURTESY UDIJAK NTUK

Students benefit from MESA collaborations statewide

CONFERENCE COLLABORATIONS WITH professional science and engineering organizations this past October have resulted in added benefits for MESA students at all educational levels. The collaborations also helped deepen partnerships with groups that have similar goals and serve similar student populations.

"These partnerships provide important opportunities for MESA students to network, learn from working professionals, and develop skills for STEM success," said MESA Statewide Program Operations Director Juanita Muñoz-Torres.

In addition to attending the Society of Hispanic Professional Engineers (SHPE) conference in Anaheim last October, students from MESA Schools Program centers at UC Irvine and CSU Long Beach hosted college tours for high school students. The two centers also brought 150 MESA middle and high school students to the SHPE pre-college event.



JESUS BARROT

The Mexican American Engineers and Scientists (MAES) conference was held last October in Oakland, in conjunction with the MESA Student Leadership Conference (See page 8) so MESA community college and four-year college students could attend both events.

COLLABORATIONS
Continued on page 8

MESA college campuses receive grants

OVER A THIRD of California community college campuses with MESA centers have received multi-million dollar federal grants to improve academic success for Hispanic students in science, technology, engineering and math (STEM) fields.

Three of these grants will be directed by MESA leaders at the campuses: Jose Hernandez at Napa Valley College, Cassandra Hernandez-Vives at San Joaquin Delta Community College, and Armando Rivera-Figueroa at East Los Angeles Community College. The grants were awarded by the U.S. Department of Education's Hispanic-Serving Institutions (HSI) program.

Grant amounts vary by campus but the average five-year award is close to \$4 million. Most funding will update buildings and equipment and provide for additional academic resources.

Some grants that aren't directed by MESA staff members may still result in benefits for MESA. For example, the grant awarded to Los Medanos College in Pittsburg will fully fund the campus MESA program. The Los Medanos MESA program currently receives no state monies and operates solely through internal campus funds.

"It's gratifying that the Department of Education sees the need to increase funding to ensure success of Latino students in STEM," said Tiffany Reardon, MESA assistant statewide director of Program Operations. "We're excited about the new opportunities that will be made available to MESA students through this grant." ♦

For alum, it's all about giving back to MESA

ARON SHEPPARD WANTS to give back. Sheppard remembers being introduced to college engineering majors while he was a MESA high school student in Sacramento. He enjoyed the MESA Day competitions and through MESA, decided that engineering was what he wanted to do.

"That initial exposure, that introduction to engineering I got from MESA, gave me a blueprint for what to do in high school and college," Sheppard said.

Now after earning a degree in industrial technology from Cal Poly San Luis Obispo and working for AT&T for 13 years, Sheppard takes time to help mentor students who were just like him at that age.

Sheppard, who maintains internet infrastructures for AT&T's large company clients, recently volunteered at the MESA Student Leadership Conference held in Oakland (See page 8). MESA community college and four-year college students from

around the state attended the event to gain professional development and leadership skills directly from industry. Sheppard held mock interviews with students and gave them feedback.

Sheppard said the experience was rewarding.

"I have to help (MESA students) the way I was helped," the 39-year-old said. "They need to know it's not square to be intelligent, to do well. They have to see they

"MESA gave me a blueprint for high school and college."

are just like me and they can make it." ♦



Butte students to compete in national research challenge

A TEAM OF FOUR MESA students will present their research findings to expert scientists in Washington, DC this spring as part of an invitation-only US Environmental Protection Agency competition.

The Butte College MESA program was awarded \$15,000 for the students to participate in the contest which tasks teams to design sustainable solutions to environmental challenges.

Butte is the only community college among 45 institutions—including Purdue, Princeton and Cornell—selected for the EPA's "People, Prosperity and the Planet" competition.

Civil engineering major Jesus Flores, electrical engineering major Robert Nava, mechanical engineering major Bryce Rhodes and Butte transfer and current CSU Chico civil engineering major Luis Vazquez comprise the MESA Butte team. They researched and developed a productive use of agricultural waste by using rice hulls as alternative building materials.

The MESA team is led by Butte faculty and will present the project to a judging panel of the American Association for the Advancement of Science in the nation's capitol. The winning team will receive \$90,000 to implement the project.

"This applied research has the potential to impact not only the students involved but the Butte College campus and our community at large," said Butte MESA director Nena Anguiano. ♦

Special showcase days for students

TWO UNIVERSITIES HELD special events for MESA community college students in a bid to show off their campuses to MESA's prospective transfers in science, technology, engineering and math (STEM) studies. More than 100 MESA students from over 20 Northern California community colleges visited UC Berkeley and UC Davis campuses during two targeted special campus events last fall.

The students received focused presentations on course selection, transfer courses and the application process. Students also toured labs and research areas of each campus. UC Davis is the number one transfer destination of MESA community college students and UC Berkeley is the third most popular transfer campus. Of MESA community college students who transfer to four-year institutions, 100 percent enroll as STEM majors. ♦

Forest Service engineer credits MESA with success

CINTHIA HIDALGO CREDITS MESA with everything positive leading up to her current position.

"MESA was involved with everything that I have now," says the civil engineer for the US Forest Service.

Hidalgo first encountered MESA as a freshman at CSU Chico. She intended to be a math major, but after learning about engineering through MESA, she decided that field was a better fit.

Hidalgo, who is the first in her family to go to college, had left the Imperial Valley in Southern California to attend Chico. She wanted to get out of her comfort zone and away from family issues.

When her parents first heard she was going to be an engineer they weren't pleased—they preferred she pursue a more "feminine" career. Hidalgo considered moving back after a bout of

homesickness, but the support from MESA made her feel like she had a northern California family, so she stayed.

"(MESA director) Paul (Villegas) helped me realize I wanted to leave for the wrong reasons," she said. "Through

MESA I got all the help and support I needed."

MESA helped Hidalgo find scholarships and Villegas gave her a job at the MESA center. She learned about an internship in the Plumas National Forest through MESA and even

got help with interviewing for the job. She parlayed the internship into the job she's now had for two years.

Hidalgo is responsible for keeping the forest—70 miles east of Chico—accessible to the public through the design and maintenance of bridges, roads and other infrastructure. She said the job is perfect for her interest in transportation systems and being outdoors. ♦

"Through MESA I got all the help and support I needed."



COURTESY CINTHIA HIDALGO

MESA bolsters student to pursue technical passion

PETE ZAVALA NEVER thought he'd attend college.

The 35-year-old father of three worked in the warehouse industry for years and assumed he'd always have a job he didn't enjoy.

Zavala eventually drew the nerve to quit his job, though, and start taking classes at Solano College. He found MESA shortly after and his life has been on the rise ever since.

"I credit MESA so much because even though I started school I had no confidence I could do it," he said.

Through support and a lot of mock interviews from MESA director Mostafa Ghous, Zavala got a job at the college's IT department. He began to conquer his fear of interviews and through a recommendation by Ghous landed an internship at Copart, Inc, an auto auction web site.

Three months into the six-month internship they offered him the full-time job as a software quality insurance engineer he still holds today.

He also began working part time as an audio engineer for a Fairfield youth center, helping kids make and record music. In his spare time he does web design for non-profits. Zavala said all the leads on jobs and scholarships came from MESA.

Zavala earned certificates in computer forensics, computer investigations and computer information security while at Solano College.

His full- and part-time jobs and three children keep him busy, but Zavala said his next goal is to earn a bachelor's degree.

"I'm the first in my family to go to college and it feels great because I never saw it coming." ♦



MESA or prom? Student goes out on a limb

FOR TAMMY LEE the choice was easy: senior prom or MESA.

The now freshman at CSU Fresno said picking between the prom and competing in the prosthetic arm challenge at the MESA Day regionals at Cal Poly SLO was a no-brainer.

Lee and her competition partner, Irina Kuchkovskaya, had won first place at the local preliminary round of MESA Day at her high school, a hands-on competition of various engineering and science projects for middle and senior high school MESA students throughout the state.

"It wasn't a hard choice," Lee said. "We had to represent our school and we did very well."

*"It wasn't a hard choice.
We had to
represent our school and
we did well."*

Lee also enjoyed visiting the Cal Poly campus and spending the night at Pismo Beach with her team. It was the first time she saw the ocean.

"MESA helps me tremendously because some of the concepts I didn't clearly understand, but when I did the prosthetic arm and the heart models it became so clear," she said.

Lee has been involved with MESA since 7th grade and is the first in her family to go to college. The mechanical engineering major said she continues to help out with the MESA pre-college program on campus and still applies the concepts she learned from MESA in her college courses. ♦

MESA prepares researcher for life among penguins

PALOMA LOPEZ TRANSFERRED from Pasadena City College in 2009 to UC Santa Cruz as a biochemistry major. She conducted a three-month scientific research trip to Antarctica in fall of 2011. Through the MESA program at Pasadena, Lopez made contacts during conferences that led to the research gig. She worked with Dr. John Prisco, a biology professor at the University of Montana, who studies life associated with Antarctic ice and its relationship to global change and astrobiology. While in Antarctica, Lopez—who was raised in the tropical city of Cuernavaca, Mexico—answered a few questions for MESA via email.

Q: How did MESA help you?

A: MESA offered me a community of people that I could identify with ethnically as well as academically, which provided me the moral support I needed. MESA offered me access to different events and conferences that informed me about opportunities in science. Those two factors provided me with the information, strength and inspiration to follow my passion through biology.

Q: How is the research?

A: The research is going great! The field work here is intense. We are either doing pre-sample work, sampling or processing samples from four different lakes. I wake up every day feeling excited and eager about what I am doing. This experience has definitely strengthened my passion for field biology.

Q: Have you acclimated to the Antarctic climate?

A: The first days were the most difficult. I had never been around this much ice before in my life!

Q: Where would you be without MESA?

A: I'm not sure where I'd be without MESA. Maybe I'd be doing something similar, but it would have been a much harder path.

Q: What does MESA mean to you?

A: MESA is the door to many opportunities to succeed in school, but more than that, in college MESA became the family that I needed to succeed in school. ♦

PHOTOS COURTESY PALOMA LOPEZ



Science expo kindles student interest

More than 700 Central California middle and high school MESA students were energized about math and science during a science, technology, engineering and math (STEM) expo last fall. The full day of activities included NASA robotics, the science behind motors and airplanes, presentations from a Smithsonian conservation biologist and sea animal demonstrations. The expo, held at Oxnard College, was a collaboration between the host college, the University of California Santa Barbara MESA program and the Oxnard Union School District. MESA students from Channel Islands, Hueneme, Oxnard, Pacific and Rio high schools and Frank, Fremont and Haydock Intermediate schools participated. More than 40 teachers, faculty and college students volunteered, including MESA Engineering Program students from UC Santa Barbara. The event was funded by a Title V Hispanic Serving Institutions STEM grant from the US Department of Education. UCSB's MESA pre-college program serves about 900 students from 15 schools in the Santa Barbara and Ventura counties. ♦



PHOTOS COURTESY MARIO CASTELLANOS

Through perseverance and MESA, a new start in life

AS A CHILD Ken Peltcher would wire brakelights on his bicycle and dissect gadgets. He wanted to be an inventor.

Yet after graduating high school his father talked him into taking a job as a corrections officer with LA County Sheriff's Office. He witnessed violence and racism; he became depressed. Peltcher started drinking.

Peltcher finally quit his job against his family's wishes. He buckled down at Pasadena College where he'd been going on and off for years.

Then he found MESA.

"A lot of things weren't going well for me. I had lost my motivation to live because I didn't like what I was doing with my life," he said. "I was trying to get my life on track and MESA really helped with that."

"It was comforting because then I wasn't lost. I finally felt like I wasn't lost."

The road Peltcher has taken since discovering MESA is still difficult. The 30-year-old started in one of the lowest level math classes offered at Pasadena City College and he struggled to learn the concepts. Peltcher continued to have

a contentious relationship with his father because Ken had quit a good-paying job. He was constantly angry.

With guidance from the MESA director, Peltcher kept his anger in check, used the MESA center as a safe place to study, and was tested for learning disorders. Peltcher discovered he had a processing deficit, causing him to encode the information coming into his brain—especially numbers—slower than most people.

"It was yet another bump in the road, but (then-MESA director) Juan Carlos Morales believed in me and thought I could still do it."

So Peltcher labored through math classes with the help of MESA tutors and excruciatingly long study hours.

"Sometimes I'd be up all night," he said. "It got pretty gnarly at times going to class with the same clothes you had on the day before, but, hey, the homework was done."

After seven grueling years . . .

To finish the story, scan the code or go to mesa.ucop.edu/news/peltcher.html



Liberal arts to chemical engineering: MESA helps student hit his stride

ELEVEN YEARS AGO, at the age of 22, Uduak Ntuk was dissatisfied. He was playing college football in Texas, but he didn't feel like he was making progress in life.

Ntuk knew that engineering was a high-paying career, so as a young father and husband, he returned to his home state of California and started at CSU Long Beach in 2000.

At CSULB Ntuk heard about MESA from other students. With the program's help he transitioned from taking liberal arts

courses to navigating engineering classes as a chemical engineering major.

Ntuk's life was extremely busy at the time. He was juggling college, work, rearing a toddler and caring for his disabled father. But MESA helped Ntuk organize his

life to achieve his goal of graduating as an engineer. With help from MESA he earned scholarships, became involved with organizations such as National Association of Black Engineers and found internships.

"MESA helped me feel not so alone in class," Ntuk said. "It was a support group and a way to leverage best practices from other engineering students who could relate to the challenges I was facing."

Ntuk's dedication paid off. He worked at the CSULB MESA center as an academic advisor to

lower division students. He studied abroad in China and London. Through conferences—and with mock interview training from MESA—he landed internships at General Electric and Chevron. The Chevron stint led to full-time jobs after he attained his

coveted chemical engineering degree. By then Ntuk had hit his stride, earning a master's degree in petroleum

"MESA helped me feel not so alone."



COURTESY UDUAK NTUK

Ntuk taught students in Nigeria about gravity and other science and engineering topics during a guest teaching trip.

engineering from University of Southern California while working at Chevron.

"I feel indebted to MESA for the opportunities it gave to me," he said. "A (science, technology, engineering and math) career path can lift people out of poverty and into comfortable living wage jobs like no other."

Today Ntuk is as busy as ever. He is a petroleum engineer for the city of Long Beach. He's an industry advisory board member for the USC Center for Engineering Diversity and a board member of a youth council and charter school in the Long Beach area. ♦

MESA advisor training

MORE THAN 120 MESA advisors gained hands-on professional development on keeping students engaged in math and science. Middle and high school teachers served by the UC Irvine, UC Los Angeles, UC Riverside, San Diego State, Imperial Valley and Chapman University MESA centers participated in the October training at Chapman.

Advisors—all from low-performing schools—worked on projects they took back to their students for design, building and testing. The projects, including mousetrap cars, windmills and gliders, are part of an integral component of MESA's pre-college program. The hands-on activities reinforce math and science concepts students learn in class and spark early interest in those fields. ♦



COURTESY YONNA HAMMERSCHMITT

USS Lincoln tour

MESA STUDENTS FROM CSULA and East Los Angeles and Rio Hondo colleges were invited to tour the USS Lincoln supercarrier. The ship was docked as part of Los Angeles Navy Week and 20 MESA students who attended were given special access to areas the general public could not view. ♦



COURTESY T. FOX



COURTESY WILLIE HARRIS

Student's eyes on the prize

WHEN HIS FATHER died a year ago and the entire CSULA MESA center showed up at the funeral, Willie Harris realized how important the program was to him.

"They're like my family," he said of the staff. "They make me want to go to school. They showed me they really care and I love MESA for that."

The 24-year-old electrical engineering major started attending MESA Saturday academies in third grade and continued going to them when his middle school didn't have a MESA program.

While at Crenshaw High School, Harris' team won first place in the egg drop challenge during a MESA Day competition, but academics wasn't popular on campus.

Harris said it was commonplace for students at his high school to graduate but not attend college. He played football and a few colleges offered him athletic scholarships but Harris chose the academic route.

"I looked at my environment and wanted my life to be different," he said. "MESA planted that seed. I don't know if I'd be in engineering or even in college if I didn't have MESA."

Choosing academics paid off for Harris. He has held internships and part-time positions at San Diego Gas and Electric and the LA Department of Water and Power.

As the first in his family to go to college, Harris's goal is to inspire his nieces, nephews and cousins to take academics seriously.

"My family is really excited for me. After my father passed I believe it's even more important for me to finish (college) and finish amazingly," he said. "Someday I could invent something incredible that could change the world. I know I'm capable and MESA taught me that. So I'm going to bring as many people with me as I can." ♦

San Diego students walk on water

SAN DIEGO MESA students attempted to defy physics during a recent engineering competition. More than 80 students from the San Diego MESA Alliance—Southwestern and San Diego City colleges and San Diego State University pre-college and college programs—participated in the Walk on Water contest. Teams were tasked with building buoyancy shoes that would allow them to "walk" on the surface of a pool.

Teams were awarded for fastest shoes, most creative shoes and best use of recycled materials. Opportunities for MESA students to work on real-world, hands-on projects reinforce concepts learned in the classroom. High school students also got the chance to interact with college students majoring in math-based disciplines. MESA students from San Pasqual, Mark Twain and Crawford high schools competed in the event. ♦



PHOTOS COURTESY ERIC PANNUNIAN

MESA alum pays it forward

DIEGO VILLASENOR TAUGHT Luis Heinecke that someone with a background like his could be successful.

Heinecke, a MESA student at Central Union High School in El Centro, listened to Imperial Valley MESA alum Villasenor give a speech about his accomplishments.

The 23-year-old Villasenor was involved with MESA at Southwest High School for two years. He earned a computer science degree from UC Riverside and will complete a master's degree this year in computer science from UCLA. A summer internship at Microsoft will lead to a full-time position after graduation.

Villasenor said his experiences building engineering projects for MESA Day competitions encouraged him in classroom learning.

"It got me more motivated to do better in classes because it taught me that what I was learning in, say, calculus, I could actually apply," he said.

Neither of Villasenor's parents went to college so he didn't think about it before joining MESA. Now, he makes it a point to set an example for younger MESA students in the UC Riverside MESA pre-college program.

"I didn't have an example at home. MESA became that example, so now I want to give back."

So when Heinecke heard Villasenor's story he was struck by their commonalities.

"Diego came from a rough background and didn't have support and he still became really successful," Heinecke said. "It makes me more confident that I can make it too."

Heinecke has been with MESA for two years. He also wants to be a computer science major and is waiting to hear from colleges.

Heinecke, who will be the first in his family to go to college, said hands-on MESA Day projects motivated him as well, and job shadowing showed him college was an attainable goal. ♦

"MESA got me more motivated to do better in classes."

NEWS BRIEFS

≡ HIGHLIGHT ON MESA AND WOMEN'S STEM SUCCESS

MESA has been chosen to be highlighted in a report on best practices for women's STEM success in community colleges. The report, by the Washington, DC-based American Association of University Women (AAUW), evaluated MESA's community college program as a leading effective method in helping female students successfully transfer in science, technology, engineering and math (STEM) fields. The report is scheduled for release in spring 2012. AAUW is a non-profit organization with more than 100,000 members at more than 1,000 chapters.

≡ MESA EXECUTIVE DIRECTOR ON US HISPANIC STEM BOARD

MESA California Executive Director Oscar Porter has been selected to serve as a member of the US Hispanic STEM Initiative board of directors. The initiative's goal is to form strategic collaborations to maximize positive outcomes for Latino STEM students. It is a component of the National Association for Hispanic Education advisory committee with ties to the White House Office of Science and Technology.

≡ MESA ELAC ON UNIVISION

The East Los Angeles College MESA program was highlighted on a Univision television spot last fall and was met with a strong community response. The piece featured students whose lives were impacted by MESA. "We received more than 300 calls of people asking how to join the program or simply thanking us for

helping the community move forward," said ELAC MESA director Armando Rivera-Figueroa. "It was amazing to see that kind of community response, which only further exemplifies the need for higher education programs such as MESA, which meet that community need."

≡ STATEWIDE MESA UNDERGRADUATE STUDENT LEADERSHIP CONFERENCE

More than 150 MESA undergraduate students gained leadership training directly from industry representatives this fall. The MESA Student Leadership Conference was sponsored by Pacific Gas and Electric, San Diego Gas and Electric, Southern California Gas Company, Vanir Construction Management Group and Sacramento Municipal Utilities District. The conference included industry workshops, networking opportunities and mock interviews for MESA engineering and computer science students from across the state. Twenty-five university and community college campuses were represented at the event, which was coordinated to complement the conference for the Society of Mexican American Scientists and Engineers (MAES) (See page 1).



COLLABORATIONS

Continued from page 1

The complementary events allowed MESA students to attend MAES workshops and the Career Fair, and board the aircraft carrier USS Hornet for a gala reception. Also, the 150 middle school MESA students participated in a day of hands-on math and science activities.

The Society for Advancement of Chicanos and Native Americans in Science (SACNAS) conference in San Jose featured a community college day attended by 150 California MESA students. ♦



Principal Investigators

Warren J. Baker, *President Emeritus, Cal Poly San Luis Obispo*
Dr. Henry T. Yang, *Chancellor, UC Santa Barbara*

Chair, Board of Directors

Joseph M. Rivera, *Southern California Gas Company*

Executive Director Oscar Porter

Communications Director Teri Lee

Editor, MESA News Danielle McNamara

Design & Layout Seventeenth Street Studios

MESA's website can be reached at mesa.ucop.edu

MESA News is published by the MESA Statewide Office, University of California, Office of the President, 300 Lakeside Drive, 7th Floor, Oakland, California, 94612-3550, (510) 987-9337.

MESA (Mathematics, Engineering, Science Achievement) serves educationally disadvantaged students with an emphasis, to the extent possible by law, on students from groups with low rates of college eligibility, so they can excel in math and science and attain math-based degrees from four-year institutions. MESA is administered by the University of California. For a free subscription to MESA News, send your name and address to MESA, Attention: Marilyn Baker, or via email to marilyn.baker@ucop.edu.

MESA is a registered service mark of The Regents of The University of California.

MESA produces a weekly e-newsletter. To subscribe, e-mail us at mesa_news@ucop.edu.