



CO-AMP Commentary

2011/2012



LOUIS STOKES COLORADO ALLIANCE FOR MINORITY PARTICIPATION

CO-AMP Develops Problems-Based Learning Intervention Study

Based on evidence that minority students do not perform as well in math classes as non-minority students, CO-AMP developed a study at Colorado State University-Fort Collins. The purpose of the study was to understand the status of minority STEM students in math and identify risk and protective factors in math success, and then prepare a math study to be pilot-tested in conjunction with the PACE math module program in pre-calculus (computer-based program). The study began at CSU's Key Academic Communities with predominately minority student populations. Key Communities are highly diverse first and second year residential learning communities designed to assist students with their transition to and through the university with the goal of increasing retention and academic performance, encouraging campus and community involvement, and promoting diversity awareness.

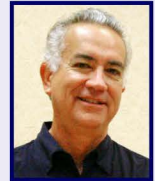
Evaluation of the study consisted of whether students met their weekly math requirements, their grades in the math modules, and eventually how they performed in Calculus I. Students in the intervention were compared to Key Community students who were not in the intervention, matched on gender and ACT scores, and to a second group of non-Key Community students.

Results demonstrated that being in a Key Community during the freshman year decreases the odds of failing a math course, reduces the number of math courses not passed with a C (or better) and shows continued positive effects on successfully completing Calculus I. As a result of this study, CO-AMP has begun providing evidence-based recommendations to its fifteen partner institutions throughout Colorado to enhance successful math skill-building programs. Through this research and future planned projects, CO-AMP has grown a robust network of site coordinators who continue to sustain their passion for minority students while understanding the changing landscape of higher education.

CO-AMP LEADERSHIP



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Principal Investigator



Dr. Ernest Chavez
Co-Principal Investigator and Program Director

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MSU Denver

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Research Coordinator



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Data Manager



Dr. Rose Shaw
External Evaluator



Erin Whipple
Program Support

Colorado Alliance for Minority Participation

<http://coamp.colostate.edu/>





THREE 2-YEAR COLLEGES JOIN CO-AMP

CO-AMP welcomed Community College of Denver (CCD), Otero Junior College (OJC), and Pueblo Community College (PCC) as partner institutions. All three are Hispanic Serving Institutions (HSI).

CCD is the only HSI in the Denver-metro area, and the leading point of entry to higher education for the City and County of Denver. CCD counts more than 200 business/education partnerships for engaging students in internships and career opportunities. With over 13,000 students, CCD offers more than 125 programs that prepare students for a career, job advancement, or transfer to a 4-year school. CCD is a Member of the American Association of Community Colleges and the Hispanic Association of Colleges and Universities (HACU).



Otero Junior College is an HSI with more than 1,500 students enrolled in 25 degree programs. Over 97% of OJC students are employed upon graduation or transfer to 4-year colleges or universities. OJC maintains transfer agreements with Colorado colleges and universities to facilitate the transferability of its academic programs. Recently, OJC received \$2 million in Title V funds as an HSI 2-year institution to increase student academic success, retention, transfer, and graduation rates; improve professional development activities for faculty and staff; and to improve access to technology support. OJC sponsors an International Relations organization that celebrates and promotes cultural diversity on campus.

Pueblo Community College is an HSI and 2-year comprehensive community college offering a broad range of general, personal, vocational, and technical education programs, as well as providing two-year transfer programs to qualified students for admission to 4-year colleges and universities. Offering more than 50 certificate and Associate Degree programs across two campuses, PCC serves more than 1,700 students every year. PCC is accredited by The Higher Learning Commission (a member of the North Central Association of colleges and schools), and a member of the Colorado Community College System, the fastest-growing educational system in Colorado.





CO-AMP COMMENTARY

BRIDGE TO THE DOCTORATE: Student News



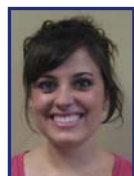
Kerri Hickenbottom

Kerri Hickenbottom received several awards and honors including the Environmental Protection Agency Science to Achieve Results (STAR) Fellowship, the Gordon Research Conference (GRC) Carl Storm Underrepresented Minority Fellowship, a National Science Foundation Graduate Research Fellowship Honorable Mention, and a Ford Foundation Predoctoral Fellowship Honorable Mention. Hickenbottom submitted a patent application with Dr. T.Y. Cath titled, "Methods for Sustainable Membrane Distillation Concentration of Hypersaline Streams."



Shay Robinson

Shay Robinson completed research in the Colorado Fuel Cell Center (CFCC) focusing on the development of the protonic ceramic performance testing effort for CoorsTek's newly developed material, BCZY27. Robinson also traveled to the European Fuel Cell Forum in Lucerne, Switzerland in June 2012 to present his work.



Andrea Casias

Andrea Casias received Best in Metallurgical & Materials Engineering at the 2012 Conference on Earth and Energy Research (CEER) in Golden, CO.



Margarite Parker

Margarite Parker attended the 12th International Conference of Microreaction Technology at the University of Lyon, France to expand her understanding of research on the micro scale. She states, "It was fascinating to learn about the various projects going on in this field from all over the world and to be able to open ties for future collaboration."



Susana Macias

Susana Macias traveled to Tucson, AZ to research mines for her project involving assessing biodegradability of substrates used for the passive biological treatment of mining influenced by water. Macias was also a guest speaker at the 2012 Society for Mining, Metallurgy, and Exploration (SME) Conference in Seattle, WA.



Brendan Geels

David Walter presented his research at the American Physical Society (APS) Four Corners Conference at the University of Arizona in Oct. 2011, and at the annual Stewardship Science Academic Alliances (SSAA) meeting at Lawrence Livermore National Laboratory in Livermore, CA.



David Walter

Brendan Geels presented at the Machinery Failure Prevention Technology (MFPT) Conference in Dayton, OH. Geels also attended the World Renewable Energy Forum (WREF) in Denver, CO and presented at a seminar for the Center for Research and Education in Wind (CREW) at Colorado State University—Fort Collins.



Mario Saldana

Meghan McGuire conducted research on perfluoroalkyl substance (PFAS) contamination due to Aqueous Film-Forming Foam (AFFF) usage and conducted field sampling at a research location in South Dakota.



Meghan McGuire

Mario Saldana designed and built an exhaust system for an engine in the thermal conversion lab at Colorado School of Mines, and ran laminar flame experiments to characterize flame speeds. In addition, Saldana designed and built a pressure-tight assembly involving glass to metal sealing, and specified and built the controls systems for use in the study of chemical kinetics of fuels.



Manuel Montano

Daniel Cano presented a poster at the Colorado School of Mines Conference on Earth and Energy Research, March 2012, titled, "Anthropomorphic Adaptation and Control of a Mechanically Variable Stiffness Joint, Engineering (Systems)."



Daniel Cano

Manuel Montano presented, "Heteroaggregation between Quantum Dots and Hematite Colloids: Implications for Nanomaterial Fate, Chemistry & Geochemistry," at the Colorado School of Mines Conference on Earth and Energy Research, March 2012.



Joseph Maestas

Joseph Maestas presented, "Nonlinear acoustic pulse propagation in a range dependent underwater environment," at the Colorado School of Mines Conference on Earth and Energy Research, March 2012. Maestas is also a recipient of the American Council of Engineering Companies of Colorado scholarship.



CO-AMP STUDENT NEWS



CO-AMP students from Trinidad State Junior College, Onorio Franco, Jr. (team captain, left) and Edgar Meraz (programmer, right) worked to design, create and build SPAR, a robot entry for the 2012 Robotics Challenge held at the Great Sand Dunes National Park and Preserve. SPAR has whiskers, a compass, a beacon, and a tilt sensor.

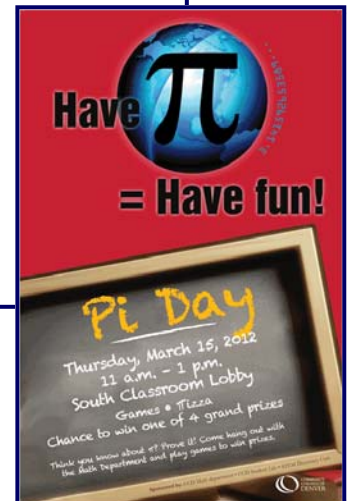


TSJC Student receives 2nd Place Award at Colorado Space Grant Consortium

CO-AMP student Onorio Franco, Jr., also received 2nd Place honors at the 2012 Colorado Space Grant Consortium's Research Symposium in Boulder, Colorado in April. Franco presented his research paper which took 2nd Place in the state. His team's demonstration table also won the People's Choice Award (this team won the award last year, as well). Out of 22 papers submitted, 18 were accepted for presentation with no other community colleges accepted to present except TSJC.



CO-AMP at Community College of Denver celebrated Pi Day on March 15, 2012 (Pi Day = 3.14, March 14) with the collaboration of the Math and Science Department, Office of Student Life and STEM Discovery Student Organization. There were multiple activities for students to engage and experience mathematics and learn how math can be used beyond the classroom. Exhibits at Pi Day highlighted hands-on science experiments with other exhibits having a career focus. Two guest speakers (a Ceramics Engineer and a Chemical Engineer) talked about their professions, the products they develop, and the connection between education and career.



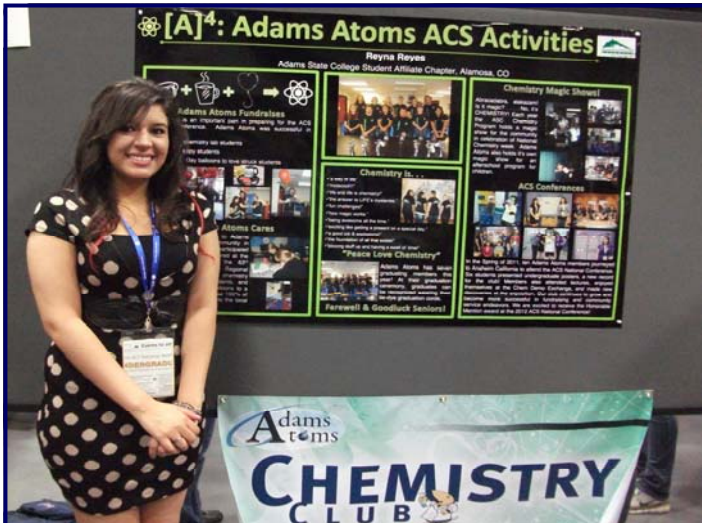


CO-AMP COMMENTARY

CO-AMP STUDENT NEWS (continued)



University of Colorado at Colorado Springs (UCCS) CO-AMP students toured corporate facilities in the Colorado Springs area (Aerospace Corporation and Northrop Grumman) and also had opportunities to meet recruiters for internships and employment.



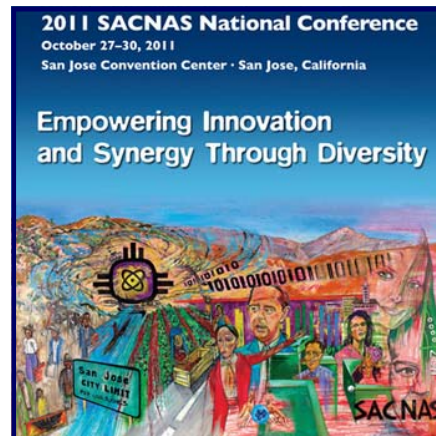
CO-AMP students from Adams State University attended the American Chemical Society National meeting, "Chemistry of Life" in San Diego, CA, March 23-27, 2012. Students participated in technical sessions that showcased ways in which chemistry addresses significant human and social issues. Reyna Reyes (above left), President of Adams Atoms displays her poster at the ACS Conference. Adams Atoms is a chemistry club dedicated to chemistry related activities, tutoring, community service/outreach, and fundraising. Stephanie Savage (above right) demonstrates an activity using hydrophobic interactions at the ChemDemo Exchange during the ACS meeting. A wide array of continuing education opportunities including short courses, divisional and professional workshops, and exposition workshops were also available to CO-AMP students. The meeting's multi-disciplinary symposia provided an opportunity to educate attendees about the chemistry of cells, organs, systems, DNA, drugs, proteins, surfaces, materials, fuel, and energy.



CO-AMP STUDENT NEWS (continued)

CSU SACNAS Receives Chapter of the Year Award for Fifth Straight Year

For the fifth year in a row, the society of scientists dedicated to Advancing Hispanics/Chicanos and Native Americans in Science, or SACNAS, has honored Colorado State University with another major award. Colorado State is one of only eight chapters out of 60 nationwide to be recognized with the Role Model Chapter Award for its Outstanding Chapter and Regional Leadership. The chapter is managed in the College of Natural Sciences by Arlene Nededog, director of Undergraduate Retention Programs and CO-AMP Site Coordinator. The award was based on numerous factors including: extensive analysis of the chapter's annual report and the types of activities accomplished. The chapter was also recognized for, among other accomplishments, leadership development and overall cohesiveness of the chapter, the chapter's extensive facilitation of the Rocky Mountain Regional Meeting, mentoring and tutoring with the Colorado Science and Engineering Fair and the Triunfo/Triumph Leadership Program, a partnership that matches undergraduate CSU tutors with underserved K-12 students in the Poudre School District, and involvement and funding support of Colorado Alliance for Minority Participation. "The committee was especially impressed with how the chapter connected and partnered with various departments and programs within CSU and with other SACNAS chapters in Colorado. 'Your example has made the Colorado group an outstanding and unique chapter - one that we look forward to learning more from,' said Tanya Beat, program manager for the national SACNAS organization. "The chapter and Ms. Nededog's team continue to be honored for their tireless work to encourage ethnically diverse students to pursue advanced degrees in science and engineering and to prepare them for leadership in research and teaching careers," said Colorado State Provost and CO-AMP PI, Dr. Rick Miranda. "We are delighted with this most deserved recognition."



The chapter was formally recognized at the SACNAS National Conference in San Jose, California in October 2011.



CO-AMP Site Coordinator, Arlene Nededog Honored with National Award for Steering Diverse Groups into Science Degrees

Arlene Nededog, who has spent her 27-year career at CSU-Fort Collins recruiting and mentoring diverse student groups, has been honored with a national award from the organization Advancing Hispanics/Chicanos and Native Americans in Science (SACNAS). Nededog, who is currently CO-AMP Site Coordinator and director of Undergraduate Retention Programs for the College of Natural Sciences, received the 2012 SACNAS Distinguished Service to Society Award at the October annual conference. Nededog has served as chairwoman and representative for the university's Multicultural Commission and has presented numerous cross-cultural communication workshops for various departments and organizations. She developed a retention plan for the Minority Student Resource Center, the Student Hispanic Honor Society, and a networking program linking women interested in science with female faculty. She also facilitates academic success groups targeting minority students. She is a past recipient of the CSU Minority Distinguished Service Award.





CO-AMP COMMENTARY

INTERNATIONAL CONNECTIONS: CO-AMP Students Travel to Ecuador, Laos, and Africa

Andrea Dailey, a student in the engineering program at Fort Lewis College, Durango, participated in the Engineers Without Borders (EWB) program in Ecuador in 2011. As part of this experience, Dailey worked on the design of water supply projects and traveled to help construct the systems for the communities of Guadalupe and Gallo Rumi located in the Andean highlands of central Ecuador. Dailey was surprised to find many similarities between the indigenous culture of Ecuador and her own Navajo culture. This was her first trip outside the Four Corners region of the Southwest and it had a dramatic impact on her world view and the positive impact she, as an engineer, can have when volunteering to help others.



Fort Lewis CO-AMP engineering student, Autumn Miller, worked on Engineers Without Borders (EWB) water supply projects in Laos and Ecuador. In the Hmong village of Ban Pakhom, Miller helped teach school-aged children about the importance of hand washing to improve health. She has conducted several engineering as-built surveys, performed water quality testing and constructed concrete tanks. The hands-on EWB engineering experiences have played an important part in her decision to become an engineer.



Rachel Medina, a student in the geosciences program at Fort Lewis College, Durango, worked on water projects in both Laos and Ecuador as part of the Engineers Without Borders (EWB) program sponsored by COAMP. She gained hands on experience in GPS mapping and running work crews who were constructing water tap stands. In the bigger picture,



these intercultural experiences combined with the technical projects deepened her commitment to the sciences and her motivation to help the needy. Rachel has taken on leadership roles and is the club president this academic year.



ADAMS STATE STUDENT EXPLORES TANZANIA AND KENYA

Nathaniel Samora, Adams State University student participated in a 2-week study in Tanzania and Kenya (May 22 - June 6, 2012) that explored the rich natural history of East Africa. This international experience was supported by New York University (NYU) and was taught by Dr. Timothy Armstrong who teaches biology, ecology, anatomy, environmental sciences, fisheries and wildlife management as well as several other courses at Adams State University. Samora observed the wildlife found in different habitats including wetlands, forests, and open savannahs. The international experience focused on the ecology of the organisms observed, their interactions, and their impact on their environment. During the trip, Samora had the opportunity to meet some of the traditional cultures still found in East Africa, discuss their relationship with wildlife, and meet with local conservation leaders to learn more about ongoing efforts to conserve the area's unique wildlife.





Steering Committee Meetings

Winter Meeting at University of Colorado — Denver

February 17, 2012

The Winter CO-AMP Steering Committee meeting was hosted by Dr. Khushnur Dadabhoy of University of Colorado Denver, on February 17, 2012. CO-AMP members were welcomed by Dr. Raul Cardenas, Associate Vice Chancellor for Student Affairs at UC Denver. Dr. Ernest Chavez, Co-PI, led a discussion on CO-AMP's role in addressing the critical need for a new generation of scientists and engineers, as well as outlining CO-AMP's goals and objectives for the coming years. Dr. Cheryl Beseler, CO-AMP Research Coordinator, presented a "Synopsis of Preliminary Math Study findings: The role of mathematics and how CO-AMP partners are addressing the mathematics challenge." The meeting was concluded with four breakout groups discussing math skills issues from the perspective of 2-year and 4-year institutions.



University of Colorado
Denver | Anschutz Medical Campus



Spring Meeting at Colorado State University

May 18, 2012



The CO-AMP Governing Board Meeting was hosted by Colorado State University - Fort Collins, on May 18, 2012. CO-AMP members were welcomed by Dr. Rick Miranda, Provost and Executive Vice President of CSU-Fort Collins and CO-AMP Principal Investigator. Dr. Ernest Chavez, Co-PI, led a discussion on national trends in minority education and CO-AMP's focus for broadening participation research. Dr. Gloria Crisp (left) from the University of Texas at San Antonio was the featured guest speaker. Dr. Crisp's presentation was titled: "Factors influencing the success of undergraduate STEM and non-STEM majors attending Hispanic Serving Institutions: Implications for policy and practice." Connie Novicoff from Metropolitan State University of Denver was a special guest and presented, "The Math Peer Study Program at Metropolitan State."



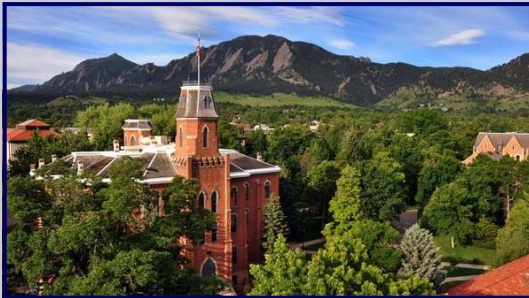


CO-AMP COMMENTARY

Announcements!

STEERING COMMITTEE MEETING

November 2, 2012
Hosted by Dave Aragon
and Dr. LaRuth McAfee
University of Colorado—Boulder



Featured Guest Speaker:



Dr. John Rand
Program Director, LSAMP/TCUP
Education and Human Resources Directorate
National Science Foundation

CONTACT CO-AMP!

**Colorado Alliance
for Minority Participation**

<http://coamp.colostate.edu/>

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CO-AMP LEADERSHIP NEWS:

Dave Aragon, CO-AMP Management Team member and Assistant to the Vice Chancellor of Academic Affairs at University of Colorado Boulder, was recently named President of Colorado Mathematics, Engineering, Science Achievement (CMESA). CMESA's mission is to enable and increase the number of historically underrepresented and economically disadvantaged students throughout Colorado by preparing, motivating, and providing the necessary support systems and skills for them to complete high school, attend college, and successfully pursue careers in Science, Technology, Engineering, and Mathematics (STEM) fields. CMESA partners with teachers, school districts, universities/colleges, administrators and industry representatives to provide a proven academic enrichment program for K-12 students throughout the state. Since its inception, Colorado MESA has served over 40,000 students primarily with before-and-after-school STEM programs. Colorado is one of ten states nationwide that is part of the MESA USA network. Congratulations, Dave!





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CO-AMP COMMENTARY

Serving Colorado and the Four Corners Region

The map shows Colorado and parts of Utah, Arizona, and New Mexico. It highlights several tribal lands: Ute Mountain Ute Tribe, Navajo Nation, Southern Ute Tribe, and Jicarilla Apache Tribe. Major universities and colleges are labeled across the state, including Fort Collins (Colorado State University), Sterling (Northeastern Junior College), Boulder (University of Colorado - Boulder), Greeley (Aims Community College), Golden (Colorado School of Mines), Denver (University of Colorado - Denver, Metro State University of Denver, Community College of Denver), Colorado Springs (University of Colorado - Colorado Springs), Pueblo (Colorado State University - Pueblo, Pueblo Community College), La Junta (Otero Junior College), Durango (Fort Lewis College), Alamosa (Adams State University), and Trinidad (Trinidad State Junior College). Surrounding the map are logos for Adams State University, Aims Community College, Trinidad State Junior College, UCCS, Colorado State University, Community College of Denver, Pueblo Community College, Otero Junior College, Metropolitan State University of Denver, Colorado State University Pueblo, Colorado State University at Boulder, NJC, and Fort Lewis College. At the top are the Great Seal of the Ute Mountain Ute Tribe, the Great Seal of the Southern Ute Tribe, the Great Seal of the Jicarilla Apache Tribe, and the Great Seal of the Navajo Nation. At the bottom is the Colorado School of Mines logo.

UNIVERSITY OF COLORADO DENVER

CO-AMP Industry Partners

A grid of industry partner logos. The logos include: Ball Aerospace, Hewlett-Packard (HP), NREL National Renewable Energy Laboratory, Boeing, IBM, AMD, El Paso Corporation, Eastman Kodak, Leprino Foods, and Kodak.

Note from the Principal Investigator:

Dear CO-AMP Colleagues and Friends,

CO-AMP continues to be an innovative consortium that strives to increase the quality of education for underrepresented minorities in STEM fields and has built an infrastructure for collaborative programs and activities. On August 1, 2011 CO-AMP began its next five-year phase of operation. Three 2-Year colleges (all Hispanic Serving Institutions) joined CO-AMP's other twelve institutions of higher education as part of the National Science Foundation's framework of colleges and universities that comprise the Louis Stokes-Alliance for Minority Participation network. We are pleased to welcome Community College of Denver, Otero Junior College and Pueblo Community College to the CO-AMP alliance! Currently, all seven Hispanic Serving Institutions in Colorado are members of CO-AMP.

Throughout our sixteen-year history, the total number of STEM underrepresented graduates at partner institutions has increased by 135%, from 215 at baseline (1995) to 505 in 2011-12. Likewise, over the life of the program, the number of underrepresented students enrolled in STEM programs rose from 1,922 students (1996) to this year's figure of 6,424 students (234% increase). Our goal is to continue to protect and assure the institutionalization of educational programming for minorities in STEM fields by integrating those students into college life; developing early faculty advising and mentoring; communicating the needs and issues to CO-AMP members; and increasing communication of effective programming across partner institutions, especially by region in the state.

It is with great pleasure that we share our 2011-2012 newsletter, *CO-AMP Commentary*, which highlights some of our accomplishments and the impact that has been felt, not only within Colorado, but also nationally and internationally. Although it is impossible to feature every success, it is our hope that this publication will serve as a resource, as well as a tribute, to our dedicated individuals who through commitment and tireless effort sustain their passion for CO-AMP students by increasing the number of activities and growing the number of students involved in the program.



Dr. Rick Miranda
*Principal Investigator of
CO-AMP and
CSU Provost/Executive
Vice-President*

Dr. Rick Miranda