The AIMS²(HSI-STEM Grant)
CSU Northridge, Glendale CC, College of the Canyons

CSUN
COLLEGE OF
ENGINEERING AND
COMPUTER SCIENCE

S. K. Ramesh, Jan Swinton, Gloria Melara, Vidya Nandikolla

Sep 12, 2015

09/12/15

CAHSI Summit-San Juan, Puerto Rico

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•*AIMS² Cohort: Photo Courtesy Armando*

AGENDA

- ## Self Introductions of Panelists - All

The CSU, Northridge Engineering and Computer Science HSI-STEM Initiative is funded by the United States Department of Education FY 2011 Title III, Part F, Hispanic-Serving Institutions (HSI) STEM and Articulation Programs cooperative arrangement development five-year grant, Award Number P031C110031, CFDA Number 84.031C is a collaborative project lead by the College of Engineering and Computer Science, in partnership with Glendale Community College (GCC) and the College of the Canyons (COC).

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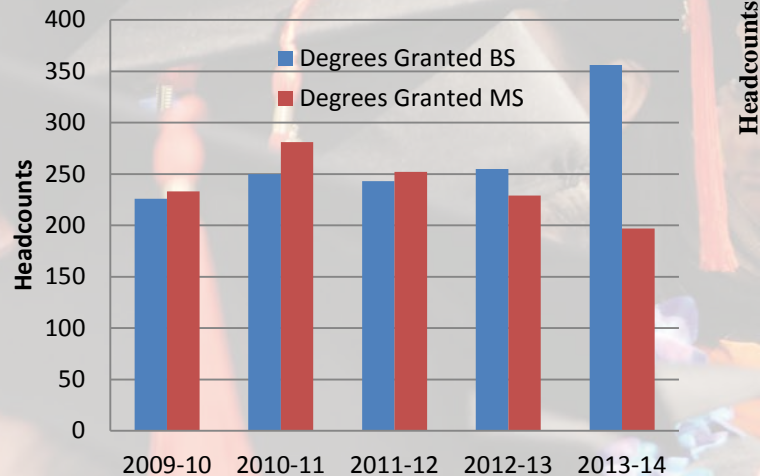- Closing Comments - Ramesh

Student Success is our #1Priority

FASTEST-GROWING UNDERGRADUATE ENGINEERING SCHOOLS: 2005 TO 2008

	School	Growth in Bachelor's Degrees*	B.S. Degrees: 2008	B.S. Degrees: 2005
1.	California State U., Northridge	96%	190	97
2.	South Dakota State University	82%	162	89
3.	California State U., Long Beach	70%	350	206
4.	University of Texas, Arlington	59%	295	186
5.	Univ. of California, Riverside	57%	182	116
6.	City College of the CUNY	54%	249	162
7.	SUNY — Binghamton	49%	218	146
8.	University of Connecticut	44%	272	189
9.	Syracuse University	43%	173	121
10.	George Mason University	42%	317	224

*excluding all computer science
Schools must have awarded at least 75 B.S. degrees in 2005. 215 schools met this criterion.
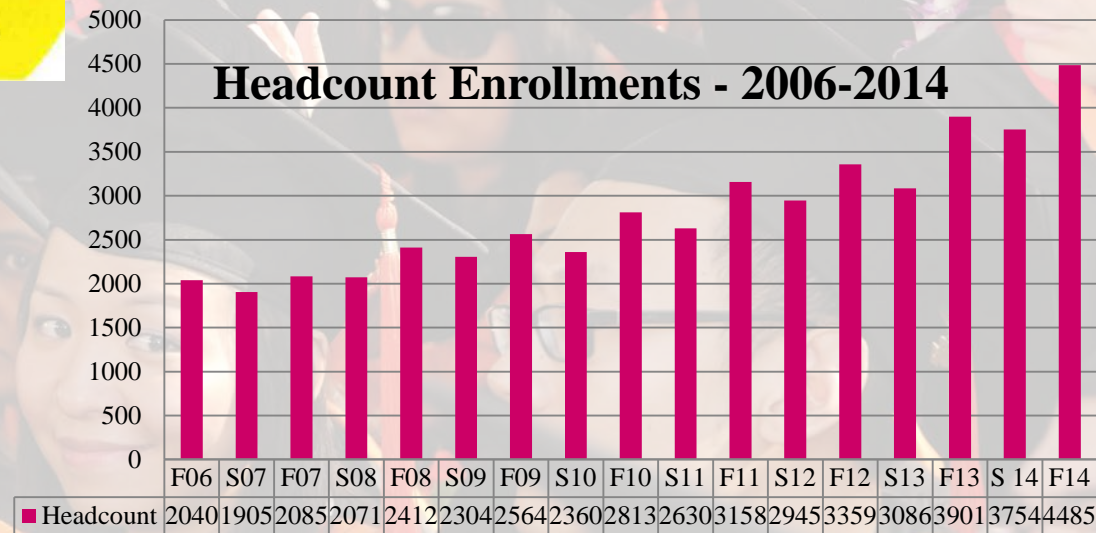
CSUN's undergraduate engineering programs were recognized for being the fastest growing in the nation in the 3 years from '05-'08 (96% growth)- ASEE March 2010

Degrees Granted

- Degrees Granted BS
- Degrees Granted MS

	2009-10	2010-11	2011-12	2012-13	2013-14

Headcount Enrollments - 2006-2014

	F06	S07	F07	S08	F08	S09	F09	S10	F10	S11	F11	S12	F12	S13	F13	S 14	F14
Headcount	2040	1905	2085	2071	2412	2304	2564	2360	2813	2630	3158	2945	3359	3086	3901	3754	4485

Areas of Strength

- **Energy**
- **Materials**
- **Manufacturing**
- **Robotics**
- **Communications**
- **Software Engineering**
- **Entrepreneurship**

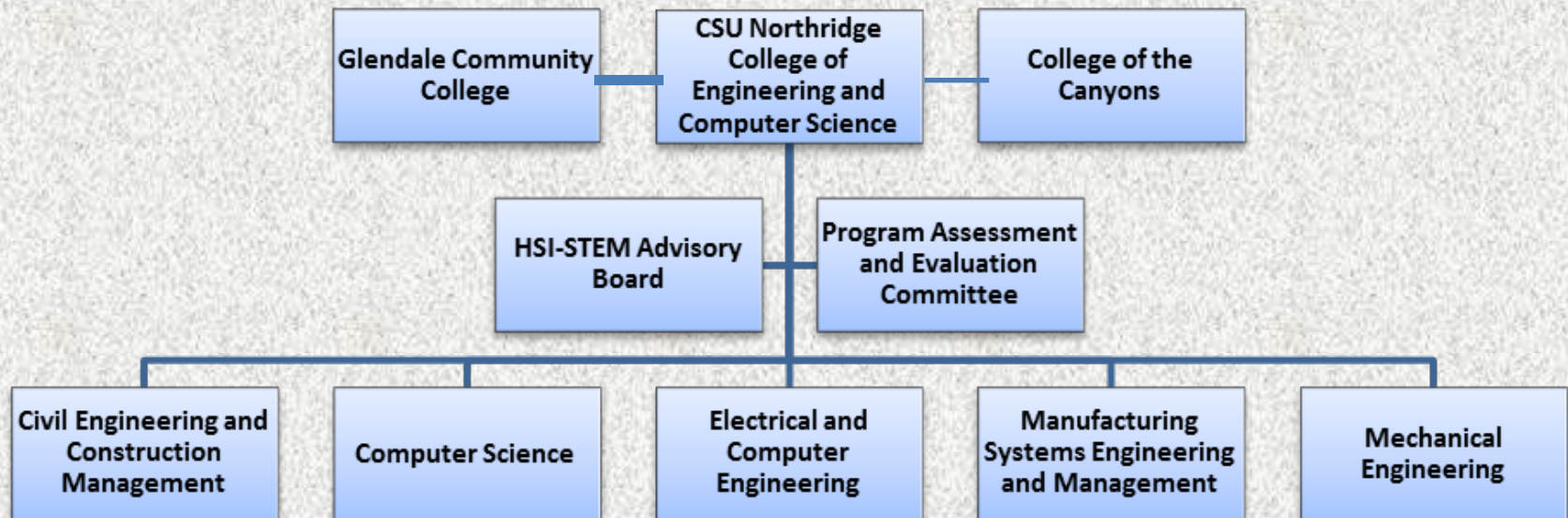*Approximately $ 2.5 M/year in Grants & Contracts*

College Profile

- **4,900 students (750 graduate) in five departments**
- **9 Undergraduate and 9 Graduate Degree Programs**
- **Approx. 550 graduates/year with almost 50 % receiving Masters degrees**
- **62 T/TT faculty including 27 new hires from 2011-15**
- **College-Based Centers**
  - **Ernie Schaeffer Center for Entrepreneurship and Innovation**
  - **Center for Engineering and Computer Science Research and Education**
  - **Energy Research Center**

AIMS²
Attract, Inspire, Mentor and Support Students

	CSU Northridge College of Engineering and Computer Science	
Glendale Community College		College of the Canyons

HSI-STEM Advisory Board	Program Assessment and Evaluation Committee

Civil Engineering and Construction Management	Computer Science	Electrical and Computer Engineering	Manufacturing Systems Engineering and Management	Mechanical Engineering

The AIMS² Project Team
Attract, Inspire, Mentor, and Support Students

Faculty and Staff from the College of the Canyons, Glendale CC, & the College of Engineering and Computer Science, CSUN

Goals and Objectives

- To increase the number of Hispanic and low-income students who successfully transfer from Glendale Community College (GCC), and College of the Canyons (COC) to California State University, Northridge, to pursue majors in Engineering and/or Computer Science.

- To increase the number of Hispanic and low-income students who join CSUN as upper division transfer students and graduate with degrees from one of the undergraduate programs in the College of Engineering and Computer Science.

- To develop a model, seamless and sustainable transfer program to assist Hispanic and low-income students to successfully transfer from GCC and COC to California State University, Northridge where they will complete their studies in Engineering and/or Computer Science.

Project Activities

- Tutoring to improve student performance in preparatory Math and Science courses.
- Advising and tracking of students in cohort
- Work closely with faculty and staff in feeder community colleges to develop seamless articulation agreements, especially for students transferring from 2 year colleges to CSUN.
- Create a mobile digital environment with Tablet PCs , iPad's, and appropriate software, so that the project team can work with the cohorts to enhance communication, engagement, collaboration and creativity, and instant learning assessment.
- Expand Facilitated Academic Workshops (FAW) in required introductory courses and key upper division courses offered by the college's programs
- Faculty/Peer mentoring and career advising of students in the cohort
- College wide events focused on careers and jobs such as the biannual Tech Fest events held in February and September.
- Provide students with opportunities to work on hands-on projects and research activities that encourage them to stay connected with their majors

Nuts and Bolts

- All cohort students meet regularly as a group with faculty mentor and peer mentor from their respective program

- All cohort students maintain an online journal using Moodle with submissions required on a monthly basis – responses to prompts and additional information

- All faculty mentors maintain an online journal with submissions required once/semester

- Lead project faculty from GCC, COC and CSUN meet regularly to address gaps in articulation agreements and <u>collaboratively develop curriculum to address gaps</u>

- Monthly meetings of the entire team to review progress on key project measures and activities.

- Annual meeting with External Advisory Committee

- Bi-annual gathering of the cohorts at partner colleges to promote interaction

• Cohort 5

External Advisory Committee

- Ms. Rupa Dachere, Codechix
- Ms. Roslyn Soto, JPL
- Dr. Vaughn Cable, JPL
- Mr. Luis Carbajo, IEEE LA Council Vice Chair
- Ms. Linda Friedman, Northrop Grumman, Woodland Hills
- Mr. Neal Gaborno, Raytheon
- Mr. Bill James, Avery James Inc.,
- Prof. Miguel Macias, Emeritus faculty CSUN
- Mr. Tony Magee, PWR
- Mr. Michael Medina, Hill International, San Diego
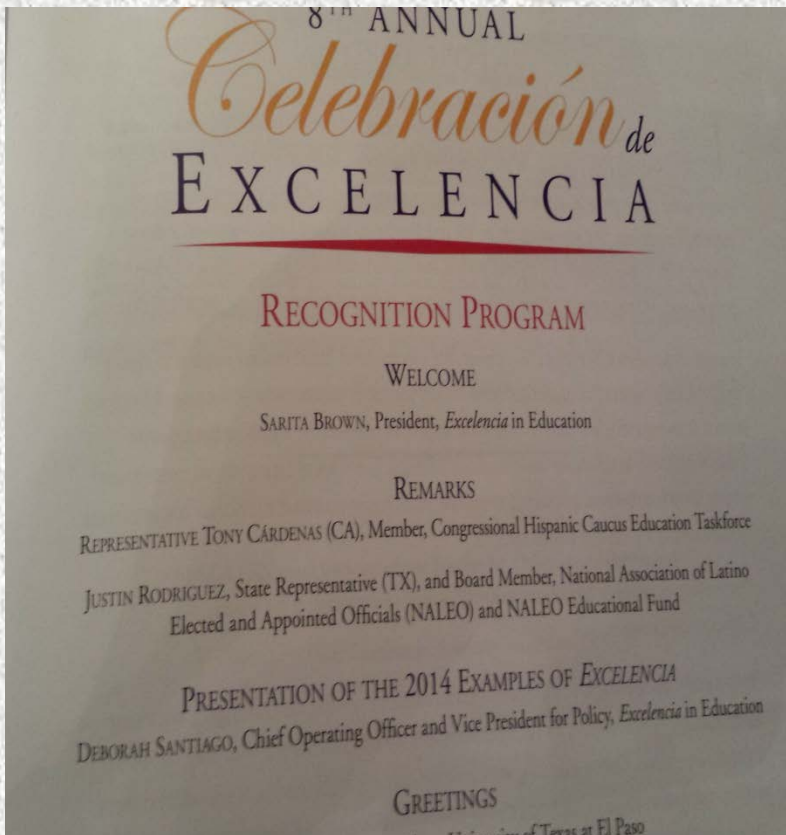- Dr. Rick Ratcliffe, Dean emeritus CSUN

Students served to date

- Since January 2012 we have served a total of over 200 students in three cohorts (approximately 67 % Latino/a). This includes first-time transfer students at CSUN, and students who transferred from our partner institutions at GCC, and COC.

Celebracion de Excelencia:9/30/14

"This year's Examples of *Excelencia* and finalists are at the forefront of meeting the challenge of improving higher educational achievement for Latino students," said **Sarita Brown, president of *Excelencia* in Education**. "No longer should policymakers and institutional leaders ask how to improve college success for Latinos – we have the largest accumulation of proven examples and tested strategies that show them how. Today's question is do leaders have the will to put these practices into action."

- **U.S. Rep. Tony Cárdenas (San Fernando Valley, Calif.)** brought greetings on behalf of the Congressional Hispanic Caucus. He congratulated *Excelencia* in Education and the Examples of Excelencia program, highlighting the California State University, Northridge's Engineering and Computer Science HSI-STEM Initiative, an institution from his congressional district who received recognition as an Honorable Mention in the bachelor's degree category. Cárdenas urged the audience never to pass up an opportunity to mentor Latino students toward success.

See more at: http://www.edexcelencia.org/media/press-releases/excelencia-announces-top-programs-increasing-latino-student-success

Excelencia Foundation Recognition:9/30/14

Anwar, Ramesh, Sarah, Richard (above)
Richard, Bruno, Anwar, Ramesh (below)

Congressman Cardenas' remarks
President Sarita Brown looks on

https://www.youtube.com/watch?v=l0Fzz-1t78s&list=PLi-dqTm4tmeeG9SabKxNd75UJl4s3UHBK&index=3

White House STEM Workshop

- CSUN hosted one of the four national workshops on October 7, 2014

- Focused on College Opportunity and broadening participation in STEM

- Supported by the Helmsley Trust and the White House OSTP

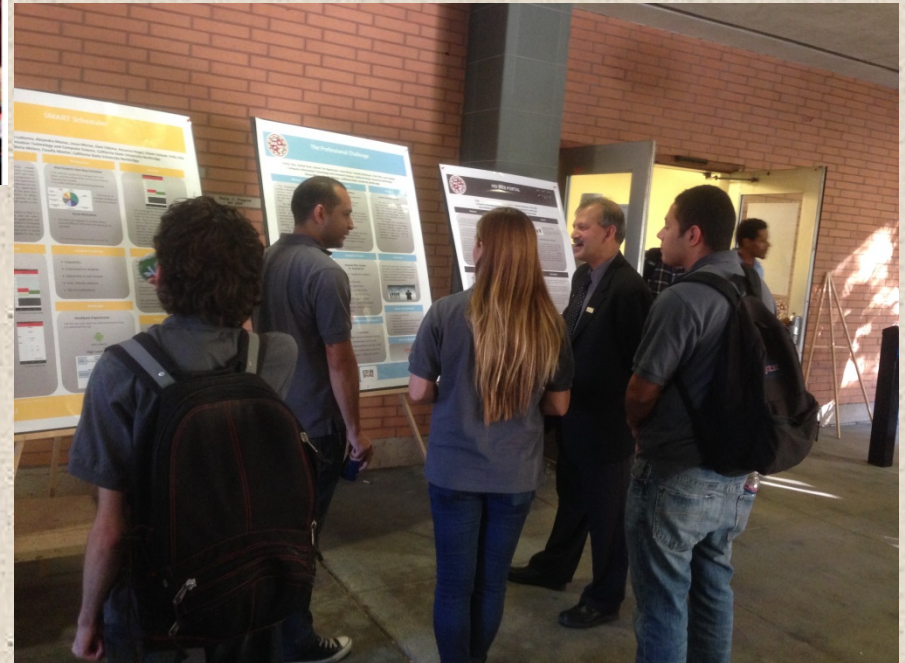- President Harrison invited to White House STEM Summit on December 4, 2014

CAHSI Summit-San Juan, Puerto Rico

Student-Faculty Interaction

Conclusions on Performance to date

- In general, advising, activities, workshops, and faculty research are project strengths

- Overall, frequent and consistent student-faculty interaction tends to have the strongest effects on student experiences

- Finally, peer interaction in the form of peer mentoring and tutoring appear to have strong, positive effects on student transitions, learning

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Glendale Community College
AIMS²

GCC Program Profile

- A total of 51 low-income (98% BOG eligible) GCC STEM students participated in the AIMS^2 program (2012-present)

- Cohort 1 (*n*=13), Cohort 2 (*n*=13), Cohort 3 (*n*=11), Cohort 4 (*n*=14)

- Female (*n*=20), Male (*n*=31)

- Average GPA amongst all 4 cohorts is 3.11 vs. 2.6 (comparison group)

- Majors included: Computer Science, Physics, Aerospace, Civil, Computer, Electrical, Manufacturing, Mechanical, and Structural Engineering.

- Thus far, 28 students have transferred to: **CSUN** (*n*=17), **Cal Poly Pomona** (*n*=5), **UC Berkeley** (*n*=3), **CSULA** (*n*=1), UC Irvine (n=1) & **UC Santa Barbara** (n=1)

Performance by Cohort

Cohort	Spr 12	Fall 12	Spr 13	Fall 13	Spr 14	Fall 14	Spr 15
1	**2.91** (n=13)	**3.05** (n=12)	**2.95** (n=10)	**2.11** (n=7)	*M*=11.71 units carried		
2		**3.09** (n=13)	**3.00** (n=13)	**3.09** (n=11)	**3.36** (n=10)	*M*= 12.84 units carried	
3			**3.38** (n=8)	**3.43** (n=11)	**3.14** (n=10)	**2.74** (n=10)	*M*=12.83 units
4				*M*=11.22 units carried		**2.83** (n=14)	**2.67** (n=14)
Comparison groups							
1	**2.58** (n=14,828)	**2.57** (n=14,962)	**2.59** (n=15,085)	**2.59** (n=14,549)	*M*= 7.86 units carried		
2		**2.57** (n=14,962)	**2.59** (n=15,085)	**2.59** (n=14,543)	**2.63** (n=14,115)	*M*= 7.83 units carried	
3			**2.59** (n=15,036)	**2.59** (n=14,549)	**2.63** (n=14,115)	**2.59** (n=15,036)	*M*=7.88 units
4				M=7.91 units carried		**2.59** (n=15,036)	**2.63** (n= 14,054)

Closing the GAP: GCC/CSUN Articulation Agreements Enhanced

CSUN Course Name/#	Course Title	GCC Course Name/#	Course Title
CIT 101/L	CIT Fundamentals w/lab	CS/IS 101	Intro to Computer Info Systems
CIT 160/L	Internet Technologies w/lab	CS/IS 260	Intro to Website Development
COMP 108	Orientation to Computer Science	CS/IS 112	Intro to Programming using JAVA
COMP 122/L	Computer Architecture & Assembly Language	CS/IS 165	Computer Architecture & Assembly Language
ME 186/L	Computer-Aided Design w/lab	ENGR 111	Solid Works Applications
CE 240/L	Engineering Statics	ENGR 152	Engineering Mechanics-Statics
ECE 240/L	Electrical Engineering Fundamentals	ENGR 140	Electrical Engineering Fundamentals (pending)
MSE 227/L	Engineering Materials w/lab	ENGR 146	Engineering Materials (pending)
ME 209	Programming for Mechanical Engineers	Engr 156	Programming & Problem Solving in MATLAB

Project Activities

- Naval Air Base (San Diego)
- Burbank Water & Power
- JBL/Harman field trip
- Great Minds in STEM Conf
- CSUN Speed Mentoring
- SHPE National Conference
- Calif. Science Museum
- Golden Road Brewery
- CSUN Research Program
- Jet Manufacturing Firm
- Jet Propulsion Lab (JPL)
- Latinas in STEM conf
- Society of Women Engineers Conference
- CSUN Tech Fest
- IPAD trainings
- Boeing field trip

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Support Model

- Collaboration CSUN and CC faculty:
  - Facilitating a channel for face to face discussion on curriculum issues among CSUN and CC faculty teaching transferable courses.
    - Promote discussion on learning outcomes, resources, and best practice
    - Build trust to create further collaboration
    - Challenges to overcome

"What if we don't change at all ... and something magical just happens?"

Support Model

- Collaboration with CC faculty:
  - Facilitate a channel for face to face discussion on curriculum issues among CSUN and CC faculty teaching transferable courses.
  - Success on articulation
    - Avoids waste of resources
    - Avoids confusion
    - Facilitates advising
    - Faster track to graduate

Computer Science

CCSC Consortium for Computing Sciences in Colleges

The 7th CCSC South Western Region Conference
March 14-15, 2014

California State University
Northridge

- **21 students in computer science**
  - 8 students have graduated Spring 15
    - 6 students on professional jobs
    - 2 students continue higher education
  - 10 students plan to graduate Fall or Spring 16
  - 3 students plan to graduate Spring 17

Synergistic Activities: AAC&U TIDES Grant

- Ani Nahapetian, and Gloria Melara (Comp. Sci), and Ric Elviso (Music)

- "Learning to Code by Making Music: The Introduction of Computer Science Coursework with World Music Applications for the Retention of Underrepresented Students in STEM", 3 Year, $ 300 K award –July 2014

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Student Development

- Undergraduate research
  - Multidisciplinary team
  - Other Teams: Mechanical, Electrical, Computer, Civil, Management, Manufacturing, Biomedical engineering teams
- Student support
- Career preparation

Student Development

- Multidisciplinary undergraduate research

- Autonomous Drone

Student Support

- Student mentor

- Student tutors

- Weekly/biweekly meetings

- Meetings via appointments

- Advising

- Maintain minimum requirements for scholarship

Career Preparation

- Resume Workshops
- Tech Fest preparation / Career Day
- Research Presentations
- Attending conferences
- Conference / poster publications
- Nov 12th – AIMS^2 Research Symposium

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WHITE HOUSE INITIATIVE
on EDUCATIONAL EXCELLENCE for HISPANICS
25 Years of Fulfilling America's Future

CSUN
COLLEGE OF
ENGINEERING AND
COMPUTER SCIENCE

Dear Colleague,

On behalf of the White House Initiative on Educational Excellence for Hispanics (Initiative), thank you for answering the call for Bright Spots in Hispanic Education.

I am pleased to notify you that the Bright Spot nomination you submitted has been accepted for recognition through the Initiative's Anniversary Year of Action. Your Bright Spot will be publicly recognized on Tuesday, September 15, 2015 and will be included in the Initiative's first-ever National Bright Spots in Hispanic Education online catalogue. We will be in touch by the end of this week with amplification tools and resources, but please hold off in publicly announcing the acceptance of your Bright Spot (i.e., emails, press, social media) until we provide additional guidance.

Congratulations and thank you for your leadership, dedication and steadfast commitment to the Hispanic community. I look forward to celebrating the tremendous progress Hispanic students have made in education over the last 25 years and recognize the leaders, parents and educators who have supported them along the way.

Thank you,

/s/

Alejandra Ceja
Executive Director
White House Initiative on Educational Excellence for Hispanics

Thank you for your attention!

Questions?

Project URL:
http://www.ecs.csun.edu/aims2

Jacaranda Hall- Courtesy Prof. Steven Stepanek