

A “Universally Designed” Environment to Advance Hispanics

Ann Q. Gates

The University of Texas at El Paso

Microsoft Research

Faculty Summit
2015

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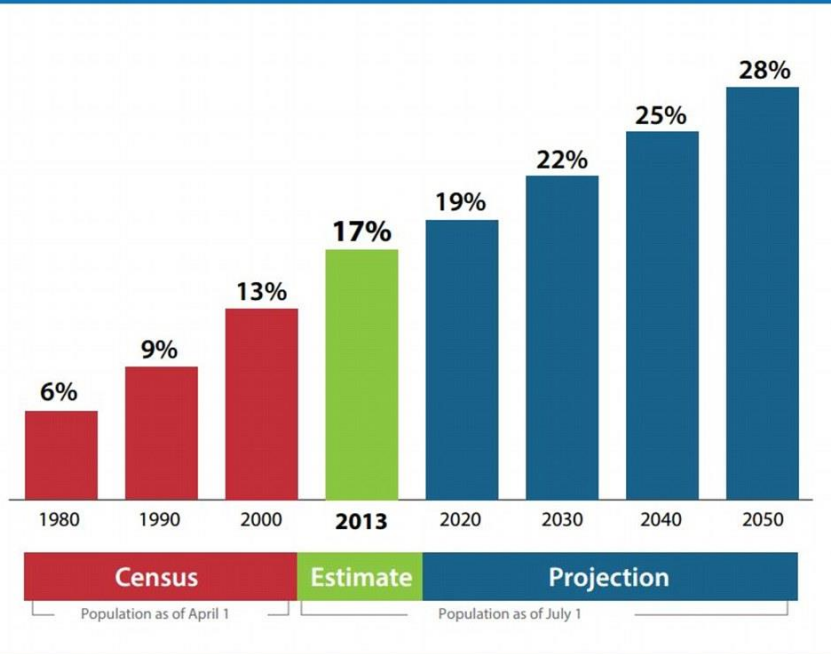


Theme

Strategies for creating an environment and culture that support Hispanic student success and advance higher-education accessibility

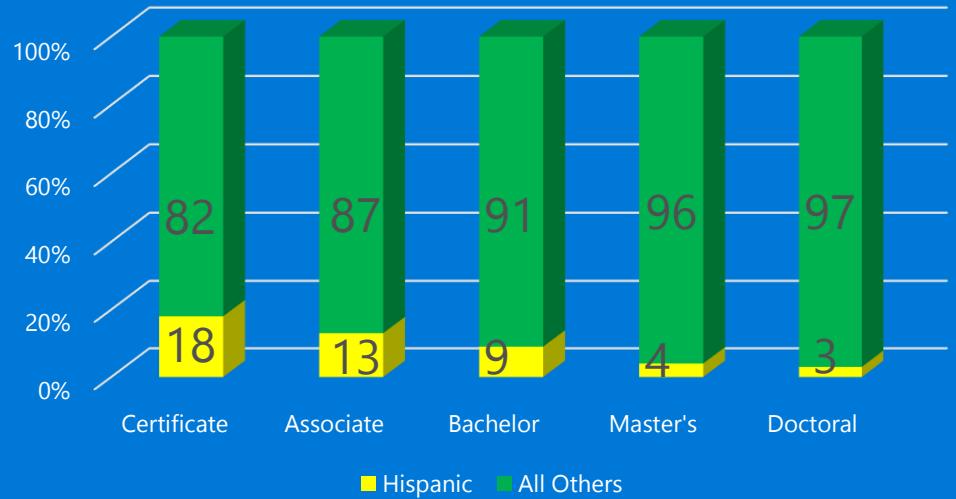
Changing Nation

Percent Hispanic of the U.S. Population: 1980-2050



Representation of Hispanics and All Others Earning Credentials in STEM: 2013

Excelencia in Education

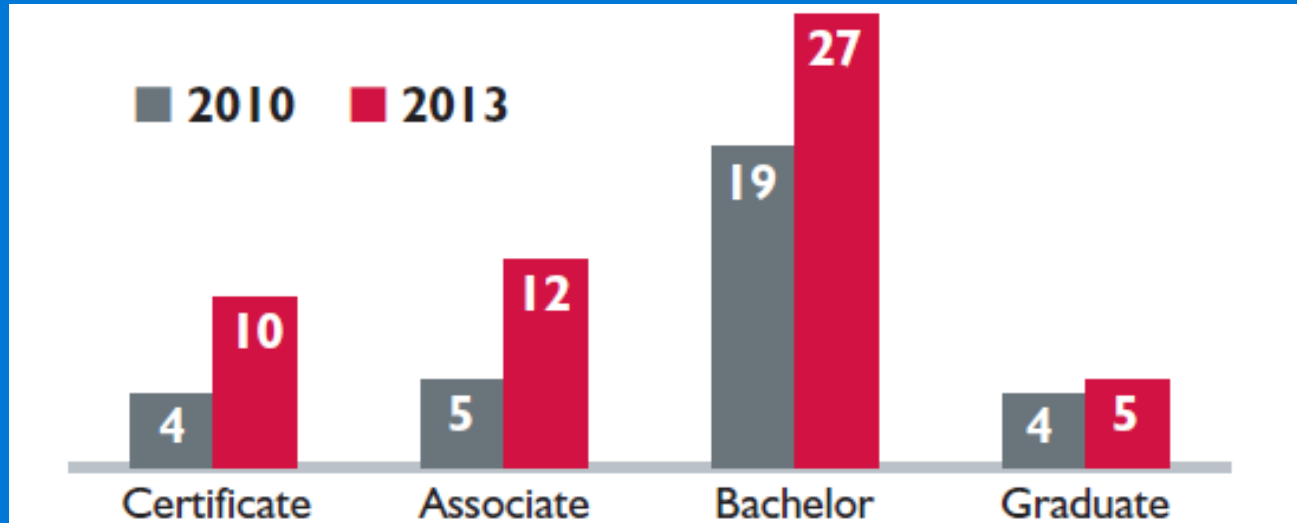


United States
Census
Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

Sources: 1980 to 2000 Decennial Censuses;
July 1, 2013, Population Estimates;
2012 National Population Projections.

Total Number of STEM Credentials Earned by Hispanics by Academic Level (thousands)



Source: *Excelencia* in Education analysis of the U.S. Department of Education, National Center for Education Statistics, IPEDS, 2009-10 and 2012-13, Completions Surveys.

UTEP's Strategies

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Student Demographics

80% of students are Hispanic

60% of graduates are the first in their families to earn a bachelor's degree

Nearly 50% are Pell Grant recipients

More than 50% are from families in the lowest income quartile (<\$34,315)

One-third report a family income of \$20,000 or less



Image from UTEP stock

UTEP's Mission: Access and Excellence



Image from UTEP stock

Largest producer of Mexican-American STEM graduates in the nation

Third among U.S. universities in awarding to Hispanics

- Bachelor's degrees

- Master's degrees

- Doctoral degrees

Among the top 10 in preparing Hispanic students for success in completing doctoral degrees

UTEP's Overall Strategies

Pre-college preparation
Financial aid and scholarships
Academic and career advising
Flexible classes and scheduling
Enriched and expanded programs
Data-driven strategies
Classroom strategies centered on student success



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Strategies of the Computing Alliance of Hispanic-Serving Institutions

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CORE PURPOSE

Create a unified voice to consolidate the strengths, resources, and concerns of HSIs and other groups committed to increasing the number of Hispanics in all computing areas.



CAHSI Strategies

Promote dialog

Promote social
science network

Promote initiatives

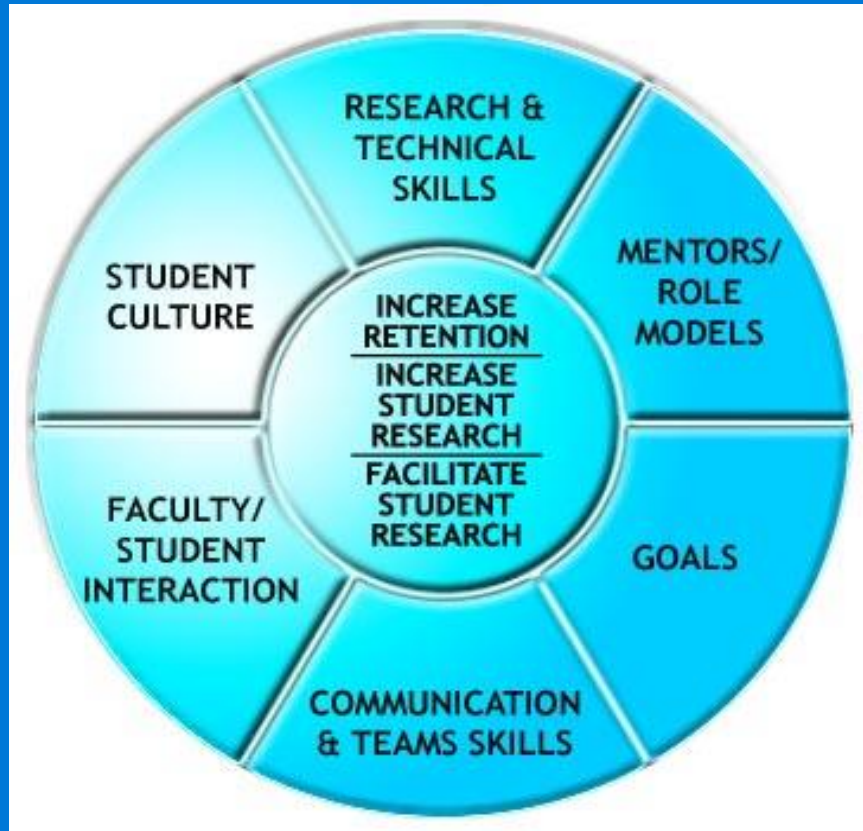
CS0
Peer-Leaders
Student Advocates

Affinity Research
Groups
Mentor-Grad
Fellow-Net

Development
Workshops
Faculty Advocates



Effective Practice: ARG



Affinity Research Groups in Practice: Apprenticing Students in Research

Elsa Q. Villa,^a Kerrie Kaphari,^b Ann Q. Gates,^a
Heather Thiry,^c and Sarah Hug^c

^aUniversity of Texas at El Paso, ^bUniversity of Washington,
^cUniversity of Colorado Boulder

Abstract

Background The affinity research group (ARG) model is a set of practices built on a cooperative team framework to support the creation and maintenance of dynamic and inclusive research groups in which students learn and apply the knowledge and skills required for research and cooperative work. Using situated learning theory, we conducted a qualitative study of current and former ARG members to understand the potential of the ARG for preparing students for graduate school and professional research careers.

Purpose Our study investigated how the ARG model influenced students, particularly those from underrepresented groups, in becoming researchers and practicing computer scientists.

Design/Method We employed multiple data collection methods, including individual and focus group interviews and participant observation, to investigate whether this model had lasting effects and sustainability beyond the time students spent in an ARG.

Results Using themes emerging from our data analysis, we can explain how students become contributing members of ARGs, group identity and cohesiveness are formed, members learn collaboratively, members participate in larger professional communities, and participants' identities are transformed from student to researcher.

Conclusions Findings suggest that the structural and procedural elements of ARGs support students' growth and development as researchers and their gradual socialization into broader computer science research and professional communities through legitimate peripheral participation and immersion in situated practice.

Keywords communities of practice; cooperative learning; undergraduate research

Introduction

Increasing the number of qualified graduates in science, technology, engineering, and mathematics (STEM) is a growing and urgent need for the United States (Committee on Science, Engineering, and Public Policy, 2007; PCAST Report, 2007). A multitude of initiatives target this need by focusing on the retention of students in the sciences, but few of these initiatives serve higher education institutions across departments. There is

Highlights

INCREASING UNDERGRADUATE DEGREE ATTAINMENT

- Increased completion rate of Hispanic students by 10%.
- Graduates Hispanic students at nearly 10 times the national rate of Hispanic baccalaureates in computing.

GRADUATING HIGHER RATES OF WOMEN WITH MASTER'S DEGREES

- An increase of 62% since 2006 of women MS graduates

CONTRIBUTING TO THE POOL OF HISPANIC DOCTORAL COMPUTER SCIENTISTS

- In 2013, 14 PhDs were granted to Hispanic CS students from the mainland U.S.
- CAHSI U.S. mainland schools conferred three of those.

Call to Action

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Recommended Actions by Employers (Excelencia in Education)



Image from fatcow.com

Partner with institutions to target student in **K-12** and create **knowledge about opportunities**

Provide **internship** and **fellowship** opportunities to Hispanic students

Provide **mentoring** between employees and local Hispanic university students

Recruit employees from institutions where Hispanics graduate

Engage the Hispanic Community!

Become involved in increasing access to computing ...
It is critical for the health of the country



CAHSI Summit 2015

September 10-12, 2015

Caribe Hilton

San Juan, Puerto Rico

Student-Development Workshops • Faculty Sessions
Student Research Posters • Round-Table Discussion
Innovation Sessions • Cyber-Security Competition

<http://cahsi.org>

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Santiago, D., Taylor, M., & E. Galdeano (2015). *Finding Your Workforce: Latinos in Science, Technology, Engineering, and Mathematics*, Excelencia In Education.

