



Expanding access and success through equity in high skill and high wage career pathways

Dona Ana Community College, New Mexico
Faculty Professional Development Day
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September 13, 2013



Concerns of faculty and staff in community colleges

- Access
- Retention
- Technical Skill Attainment
- Credential, Certificate and Degree completion
- Successful transfer on to a baccalaureate
- Job Placement



Objectives


- Understand where the jobs are and opportunities in career-technical education and STEM pathways
- Explore gaps in the participation and pipeline of specific sub-groups of students
- Learn specific strategies for the classroom and in student services to retain and maximize the success of students
- Explore specific resources that you can use
- Walk away with 1-2 strategies that you can implement right away



The U.S. Economy will grow from 140 million to 165 million jobs by 2020:

- **55 million job openings in the economy through 2020**
- 24 million new jobs
- 31 million openings due to baby boomer retirements

Source: Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce. <http://cees.georgetown.edu/recovery2020/>




Opportunities across post-secondary pathways

For the next 55 million job openings (until 2020):

- 35% will require at least a bachelor's
- 30% will require some college or an associate's
- 36% will not require education beyond high school

Note: The US will fall short by 5,000,000 workers with post-secondary education – at the current production rate

Source: Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce.



40% of jobs leading to "middle class" incomes require up to and through an associates degree

"There are 29 million 'middle jobs'...that pay \$35,000 or more on average and don't require a Bachelor's degree."

From Carnevale, A.P.; Jayasundera, T.; & Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce.

Multiple Pathways into a career

Traditional 4-year Pathway:
 "Straight on to a bachelors"

- Can take general courses (up to first two years) at a community college
- Transfer to 4-year college for major coursework at junior level
- More "traditional" classroom learning, although on-line and other media also available

Career & Technical Pathway:
 "Work at the certificate or associates degree level with option for a bachelors down the road"

- Stackable certificates
- Articulated technical credits from secondary and adult programs
- Technical training for employment
- More "hands on" learning
- Many options for bachelors degree completion

What is CTE Today?
 (from www.acte.org)

- Average high school graduation rate for CTE students is 90.18% compared to ave. of 74.9%
- A person with a CTE-related associate or credential will earn on ave. between \$4,000-\$19,000 more than a person with a humanities associate
- 27 percent of people with less than an associate degree, including licenses and certificates, earn more than the average bachelor recipient

The Five Ways that pay along the way to the BA

- Certificates
- Employer-based Training
- Industry-based Certifications
- Apprenticeships
- Associate's Degrees

From Carnevale, A.P., Jayasundera, T., & Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce.

Fastest growing occupational clusters

- Healthcare
 - Make up 8 of the 20 fastest growing occupations (www.acte.org)
- Community services
- STEM (Science, Technology, Engineering, and Math)

From "Executive Summary" - Carnevale, A.P.; Smith, N.; & Strohl, J. (2013). Recovery: Job growth and education requirements through 2020. *Georgetown Public Policy Institute*. Georgetown Center on Education and the Workforce.

Projected Growth in Employment in Selected STEM Occupations, 2010-2020

Occupation	Projected Growth (%)
Health care	~30
Math	~18
Life, physical, and social science	~16
Computer and IT	~22
Architect and Engineering	~10
Total Employment (STEM and non-STEM)	~14

Source: Bureau of Labor Statistics. Chart 5. *Occupational Outlook Handbook, 2011-12 Edition*.

People with lower levels of education in STEM make more than people with higher levels of education in non-STEM.

- 63 percent of Associate's degrees in STEM earn more than Bachelor's degrees in non-STEM occupations.
- 65 percent and 47 percent of Bachelor's degrees in STEM earn more than Master's degrees and Ph.D. in non-STEM respectively.
- Certificate holders in engineering earn more than Associate's degree-holders in business and more than Bachelor's degree-holders in education.
- **Equity:** For women and racial and ethnic minorities, STEM is the best equal opportunity employer.
 - Although pay gaps exist between racial and ethnic minorities and Whites/Asians and women and men in STEM, they are smaller than in other occupations.

Source: Carnevale, A.P.; Smith, N.; & Melton, M. (2011). STEM. The Georgetown University Center on Education and the Workforce (2011). *STEM: Finalist at http://www.georgetown.edu/STEM/*.

Defining STEM

- Science, Technology, Engineering and Math
- Agriculture, Food and Natural Resources
- Health Science
- Information Technology
- Manufacturing
- Transportation, Distribution and Logistics
- Architecture and Construction

US Dept. of Ed., Office of Vocational and Adult Education STEM Transitions Project – www.stemtransitions.org

Career Clusters in New Mexico (STEM)
16 reduced to 7

- Arts and Entertainment
- Business Services
- **Communications and Information ***
- **Energy and Environmental Technologies ***
- **Engineering, Construction, Manufacturing and Agriculture ***
- **Health and Biosciences ***
- Hospitality and Tourism

Source: <http://cteworks.careertech.org/state-profile/details/new-mexico>

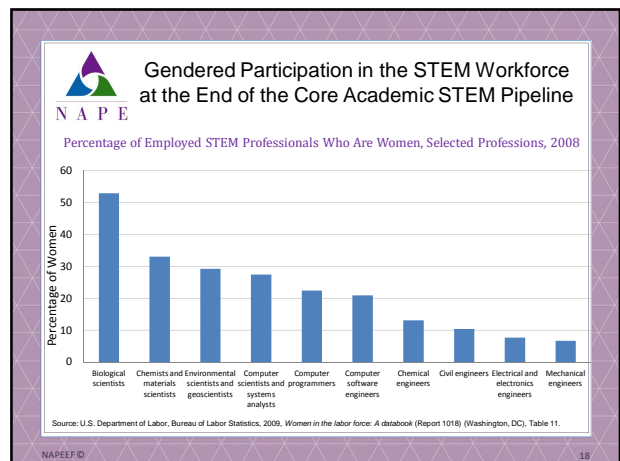
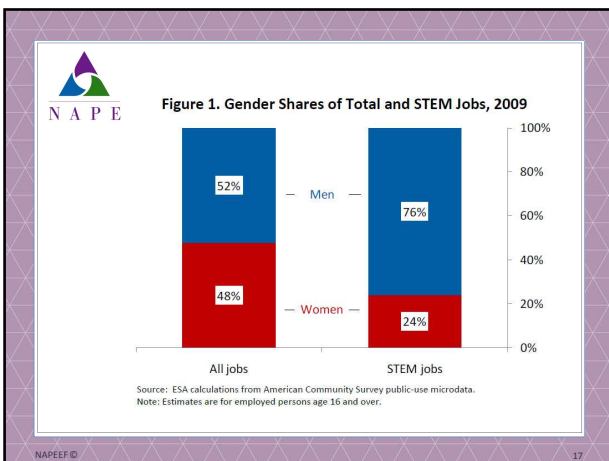
What are the highest paid fields that are also growing at a faster rate? 2004-2014

- Computer Software Engineers, Systems Software – \$87,510 (5.3% growth)
- Hydrologists – \$69,210 (3.1%)
- Sales Engineers – \$67,140 (4.0%)
- Computer Software Engineers, Applications – \$65,760 (4.2%)
- Network Systems & Data Communications Analysts – \$59,320 (4.7%)
- Financial Analysts – \$56,070 (2.8%)
- Network and Computer Systems Administrators – \$50,350 (3.3%)

Source: New Mexico Public Education Department (n.d.). *A guide to encouraging New Mexico students to participate in nontraditional careers.* <http://www.nmnontradcareers.com/non-traditional-careers.pdf>

ACTIVITY: Startling Statements

- Ask three people separately what they think the number is for your assigned statement.
- Average the three responses
- Be prepared to report out your range (highest and lowest response) and average of the three responses



Can you Define?

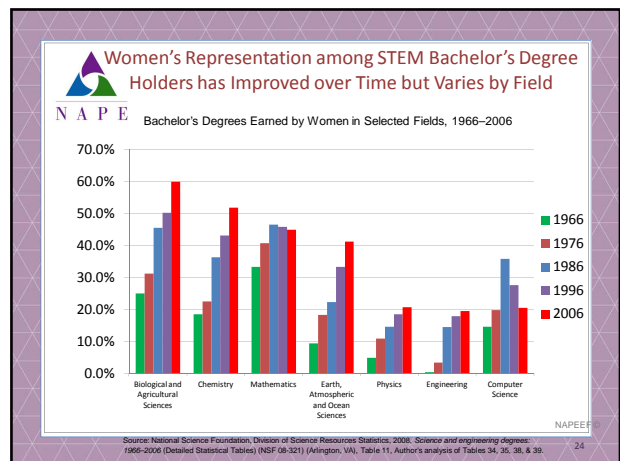
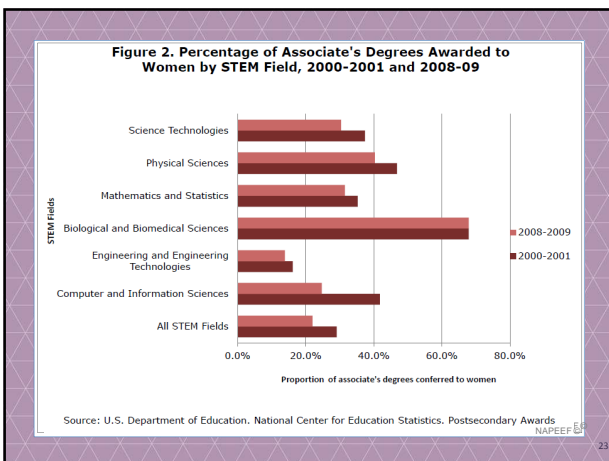
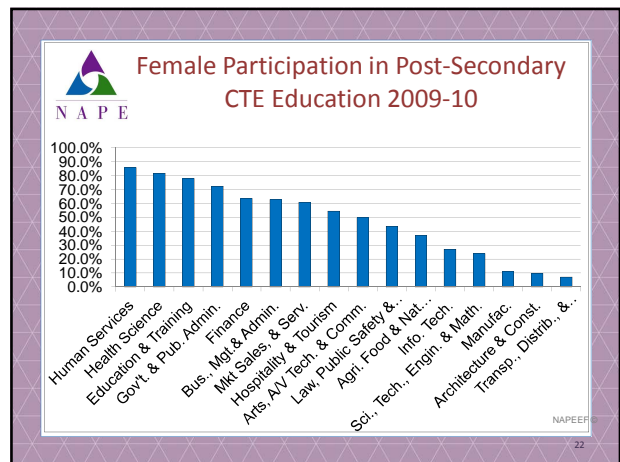
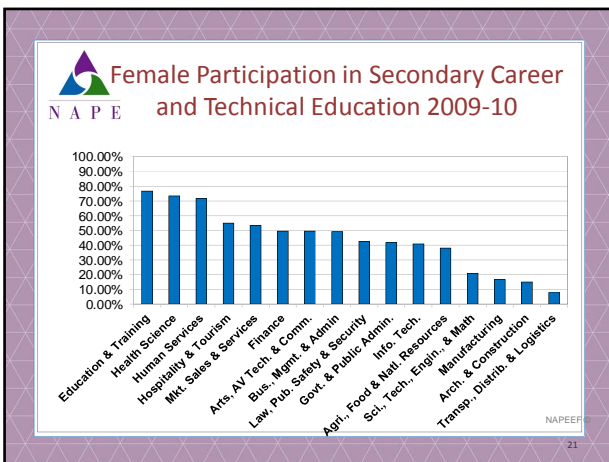
- Nontraditional Fields
- [Occupational] Gender (or sex) Segregation
- Under-represented

From The National Alliance for Partnerships in Equity's PIPE-STEM™ Curriculum 2013


New Mexico Facts to Consider

- Discrepancies when looking at intersection of gender and race/ethnicity (females & males)
 - White - \$29,500 and \$42,000
 - African American – \$24,300 and \$32,400
 - Native American - \$23,200 and 26,500
 - Hispanic - \$22,100 and \$27,600
 - Asian American \$33,100 and \$39,800
 - Two more more races/Other - \$27,600 and \$33,100

Source: New Mexico Public Education Department (n.d.). *A guide to encouraging New Mexico students to participate in nontraditional careers.*



Who is NAPE?




National Alliance for Partnerships in Equity

Professional Development	Research and Evaluation	Technical Assistance	Public Policy and Advocacy
Provide tools and curricula for educators through conferences, presentations, webinars, and formal training	Develop reports. Identify research-based promising practices. Provide input to others' research.	Develop tools and resources for SEA's and LEA's. Provide consulting services. Offer expertise on access, equity, and diversity issues.	Work with federal agencies. Educate legislators on equity and diversity issues. Develop policy briefs. Alert membership to policy issues.

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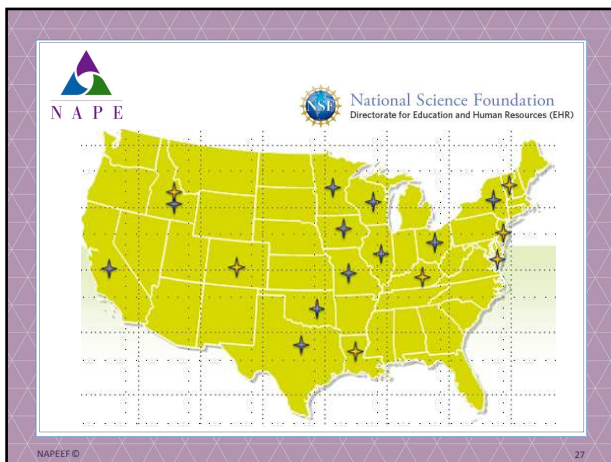
NAPE's Professional Development Suite of STEM Equity Programs




STEM Equity Pipeline™

Program Improvement Process for Equity in STEM	STEM Equity Teacher Training	STEM Equity Counselor Training	Tools & Resources
Institutional program that improves enrollment, retention & completion of girls & under-represented populations in STEM courses	Training teachers to use pedagogy that improves enrollment, retention & completion of girls & under-represented populations in STEM courses	Coaching counselors to encourage girls and under-represented populations in STEM careers	Tools to support teachers' & counselors' learning and assist their students, e.g., Replication materials, partner organizations, publications, model programs, curriculum

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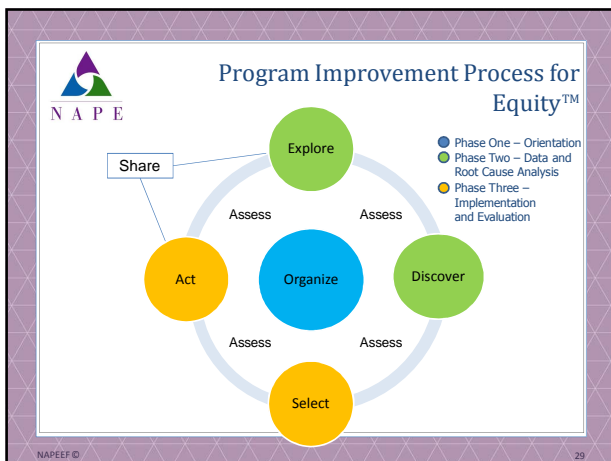


STEM Equity Pipeline Goals



- Build formal education's capacity to provide high quality professional development on gender equity in STEM education
- Institutionalize implemented strategies by connecting outcomes to existing accountability systems
- Broaden the commitment to gender equity in STEM education

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Carl D. Perkins (IV)



- Technical Skill Attainment
- Credential, Certificate or Degree
- Student Retention or Transfer
- Nontraditional Participation
- Nontraditional Completion

- If not 90% target, then a Performance Improvement Plan may be necessary

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What are the "Root Causes"?

NAPE

- Educational Environment
- Career Information
- Family Characteristics (Family Perceptions)
- Individual Factors
- Societal Issues

Source: Reha; Lutfkin, M.; & Harrison (2006). Nontraditional career preparation: Root causes and strategies. NAPE. www.stemesquitypipeline.org

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Reflections

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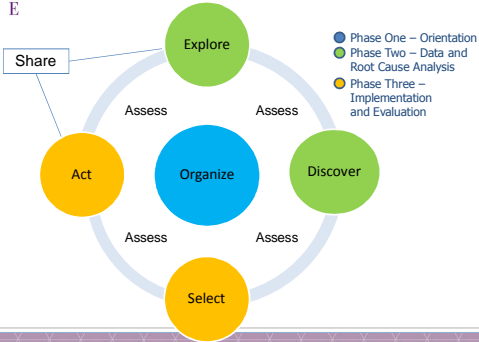
AN EFFECTIVE RESEARCH-BASED STRATEGY: NAPE'S MICROMESSAGING TO REACH AND TEACH EVERY STUDENT™

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The Teacher or Counselor as Scientist

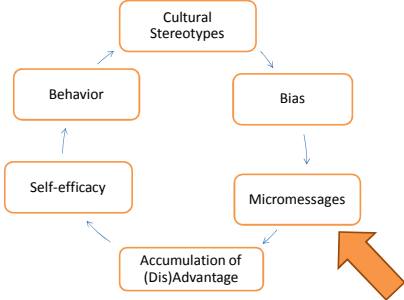
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Micromessages: The Culture Wheel

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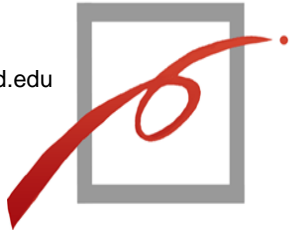


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Unconscious (or Implicit) Bias

Take the Implicit Association Test

www.implicit.harvard.edu






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Micromessaging

<p>Micromessages</p> <ul style="list-style-type: none"> Small, subtle, semi-conscious messages we send and receive when we interact with others 	<p>Micro-inequities</p> <ul style="list-style-type: none"> Negative micro-messages we send other people that cause them to feel devalued, slighted, discouraged, or excluded 	<p>Micro-affirmations</p> <ul style="list-style-type: none"> Positive micro-messages that cause people to feel valued, included, or encouraged 
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37

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Lands End Catalog 2012

super light, superhero tough

FeatherLights® reduce their school load by trimming weight off the pack. But what makes them really amazing is they do it without sacrificing durability, thanks to strategically placed 420D and 600D pack cloth. Lighter weight. Same awesome durability. **Guaranteed. Period.®**



38

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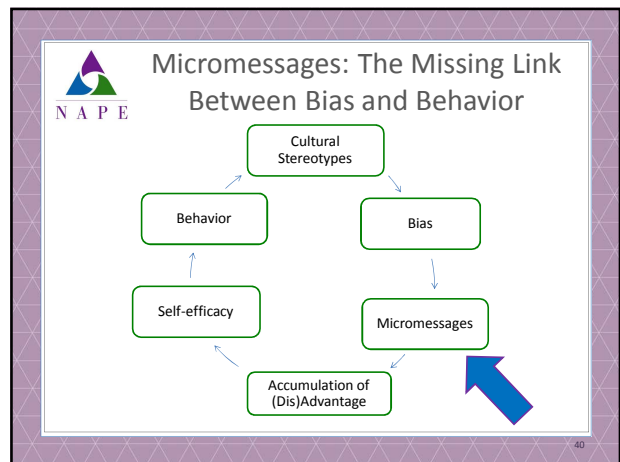
Lands End Catalog 2012

light as a feather, tough as long division

FeatherLights® reduce their school load by trimming weight off the pack. But what makes them really amazing is they do it without sacrificing durability, thanks to strategically placed 420D and 600D pack cloth. Lighter weight. Same awesome durability. **Guaranteed. Period.®**




39



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Micromessages Accumulate



41

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Review: Gender Bias Manifested in STEM Careers

1. Women remain underrepresented in scientific careers.
2. Girls who pursue STEM fields are still stigmatized, and harmful stereotypes persist.
3. Women's academic achievements in STEM still have not translated into workplace parity.
4. The culture of STEM fields too often creates circumstances that isolate and exclude girls and women.

42

Why Think About Micromessaging?

Intent
Teacher
Micro-messaging

Impact
Student
Performance

Small and seemingly insignificant behaviors may result in unfavorable learning outcomes.

Impact Is More Important Than Intent!

ALWAYS USE A "GROWTH MINDSET"

Growth Mindset Benefits

Fixed Mindset	Growth Mindset
Intelligence is static.	Intelligence can be developed.
Leads to a desire to <i>look smart</i> and therefore a tendency to	Leads to a desire to <i>learn</i> and therefore a tendency to
<ul style="list-style-type: none"> • avoid challenges • give up easily due to obstacles • see effort as fruitless • ignore useful feedback • be threatened by others' success 	<ul style="list-style-type: none"> • embrace challenges • persist despite obstacles • see effort as path to mastery • learn from criticism • be inspired by others' success

- Teach students that intellectual skills can be acquired.
- Praise students for effort.
- Highlight the struggle.
- Honors programs should send the message that they value growth and learning.

Equality


Equality often means that everybody gets the *same thing*, that everybody hypothetically has access to the same classes or the same opportunities.

The Trouble with Equality

The *trouble* with equality is that, if people are not starting on a level playing field, giving them the same thing maintains the inequality that already exists.

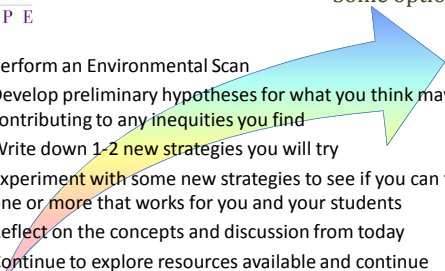
An Equity Approach

An *equity* approach considers disparities that exist and gives students what they need to address those disparities.


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Moving Forward – Some options...

- Perform an Environmental Scan
- Develop preliminary hypotheses for what you think may be contributing to any inequities you find
- Write down 1-2 new strategies you will try
- Experiment with some new strategies to see if you can find one or more that works for you and your students
- Reflect on the concepts and discussion from today
- Continue to explore resources available and continue discussions in your respective areas



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Helpful websites

- Career-Technical Education
 - www.acte.org
- Nontraditional Careers in New Mexico
 - <http://www.nmnontradcareers.com/non-traditional-careers.pdf>
- Equity in STEM
 - www.napequity.org
 - www.stemequitypipeline.org
 - www.changetheequation.org


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Reflections? Q&A



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Questions?

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