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

Perkins Fall Meeting, Ohio

Ben Williams, Ph.D.,
Project Director, Ohio STEM Equity Pipeline™

September 24, 2013

Concerns of faculty and staff in Adult Education Programs

- Access
- Retention
- Technical Skill Attainment
- Job Placement
- Transition to other post-secondary programs

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 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://cew.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.

The Five Ways that pay along the way to the BA

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

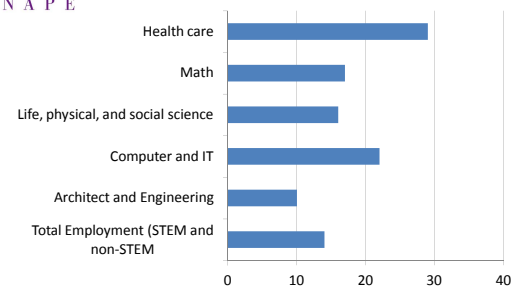
From Carnevale, A.P.; Jayasundera, T.; & Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce.

Fastest growing occupational clusters

- Healthcare
- 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



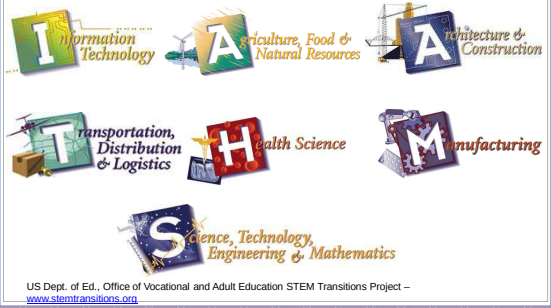
Source: Bureau of Labor Statistics. Chart 5. *Occupational Outlook Handbook, 2011-12 Edition.*

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. Found at* http://cew.georgetown.edu/STEM/.

How we define STEM



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

Activity

What number belongs in the blank?

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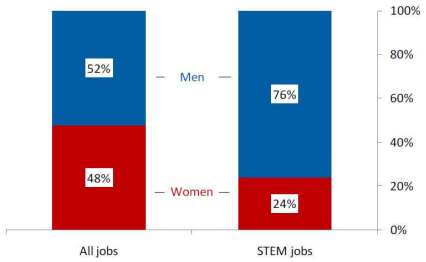
Figure 1. Gender Shares of Total and STEM Jobs, 2009



Source: ESA calculations from American Community Survey public-use microdata.
Note: Estimates are for employed persons age 16 and over.

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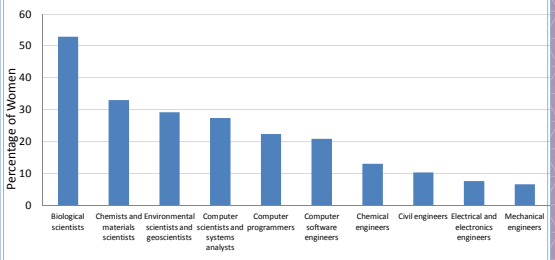
Gendered Participation in the STEM Workforce at the End of the Core Academic STEM Pipeline

Percentage of Employed STEM Professionals Who Are Women, Selected Professions, 2008



Source: U.S. Department of Labor, Bureau of Labor Statistics, 2009, *Women in the labor force: A databook* (Report 1018) (Washington, DC), Table 11.

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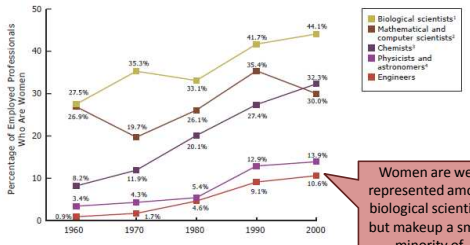
Women in Selected STEM Occupations, 1960-2000



Women are well represented among biological scientists but makeup a small minority of engineers.

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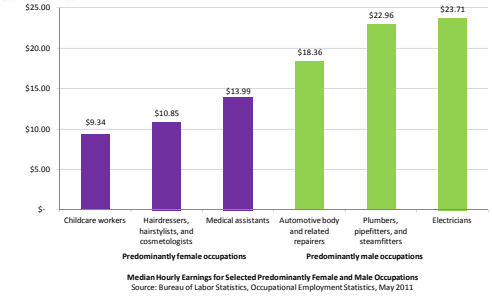
Women found in lower paying career preparation programs than men



Median Hourly Earnings for Selected Predominantly Female and Male Occupations
Source: Bureau of Labor Statistics, Occupational Employment Statistics, May 2011

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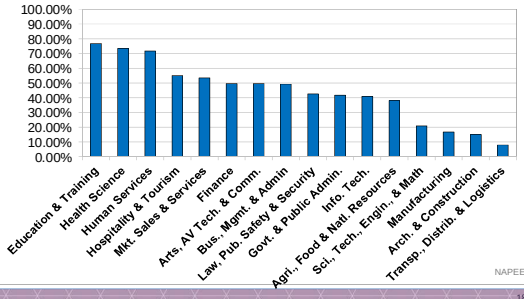
Female Participation in Secondary Career and Technical Education 2009-10



Female Participation in Post-Secondary CTE Education 2009-10

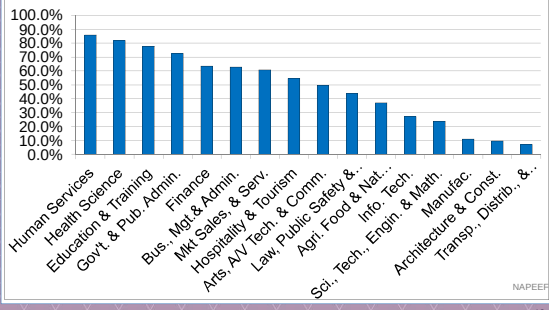
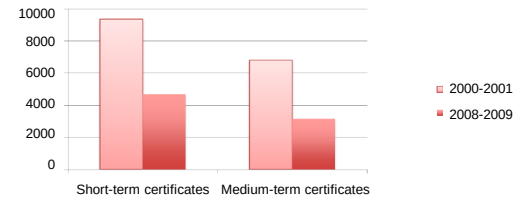


Figure 3. Women's Receipt of Occupational Certificates in STEM Fields, 2000-2001 and 2008-2009

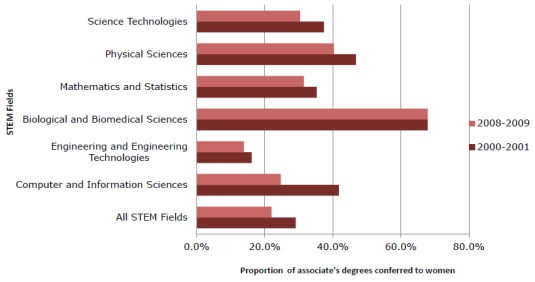


Source: U.S. Department of Education, National Center for Education Statistics. NCES2011-226

Student Parent Success Initiative

Institute for Women's Policy Research

Figure 2. Percentage of Associate's Degrees Awarded to Women by STEM Field, 2000-2001 and 2008-09



Source: U.S. Department of Education. National Center for Education Statistics. Postsecondary Awards

Who Is NAPE?

National Alliance for Partnerships in Equity

Professional Development	Research and Evaluation	Technical Support	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 LEAs. 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 policy issues.

NAPE's Professional Development Suite of STEM Equity Programs

STEM Equity Pipeline™

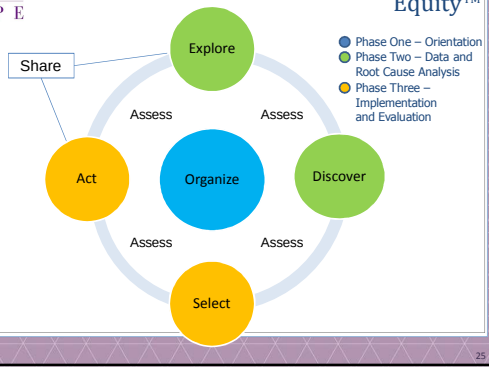
PIPE-STEM™ Project	STEM Equity Teacher Training	STEM Equity Counselor Training	Tools & Resources
Working with institutional leaders (administrators, dept heads, etc.) to improve enrollment, retention, and completion of girls and under-represented populations in STEM courses	Training teachers to use pedagogy that improves enrollment, retention, and completion of girls and under-represented populations in STEM courses	Coaching counselors to encourage girls and under-represented populations in STEM careers	Tools to support teachers' and counselors' learning and assist their students, e.g., camps, partner orgs, books

STEM Equity Pipeline™ Goals

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

HRD-1203121

Program Improvement Process for Equity™



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Ohio STEM Equity Pipeline

- 15 Collaborative Projects currently underway throughout the state:
  - Career Centers and CTE Programs
  - Adult Career Center(s)
  - Community Colleges and Four-Year Partners
  - Business & Industry
  - Middle Schools, in some cases
- Three types of Projects: Pilots, ODE Expansion Projects, Teams contracting directly with NAPE
- Use PIPE-STEM Model - see NAPE webpage at http://www.stemequitypipeline.org/

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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 is necessary

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Perkins Act Accountability

Core Indicators on Nontraditional CTE

- Participation in CTE programs preparing students for nontraditional fields
- Completion of CTE programs preparing students for nontraditional fields

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Data Collection Disaggregation required in Perkins IV

Gender	Race/Ethnicity	Special Populations
• Male • Female	• American Indian or Alaskan Native • Asian or Pacific Islander • Black, non-Hispanic • Hispanic • White/non-Hispanic	• Underrepresented gender students in a nontraditional CTE program • Single parent • Displaced homemaker • Limited English proficiency • Individuals with a disability • Economically disadvantaged

When are the intersections of equity important?

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Data Collection Recommended Analysis

Comparisons	Trends	Site Specific
• State performance level • Best performer in state • Selected peer benchmark • Set your own benchmark	• At least 2 years • Prefer 3-5 years	• Statewide • District • School/College • Programs

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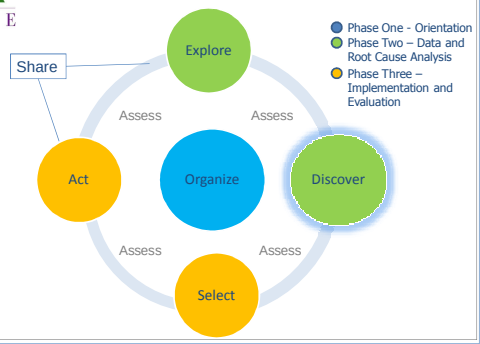
Where We Are



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What You'll Do

- Understand Research: • What do you expect to see?
- Identify Root Causes: • How do you develop hypotheses about gaps?
- Prioritize and Plan: • What strategies are you using?

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What are the "Root Causes"?

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

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

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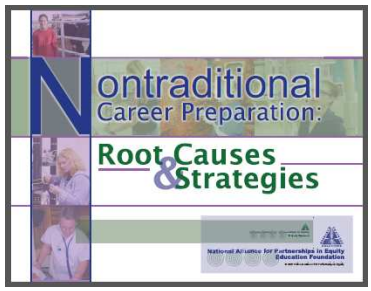
Summary of the Research



Authors: Lynn Reha, ICSPS; Mimi Lufkin, NAPE; Laurie Harrison, Foothill Associates

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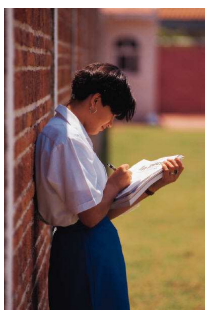
Activity



What are the root causes at your institution?

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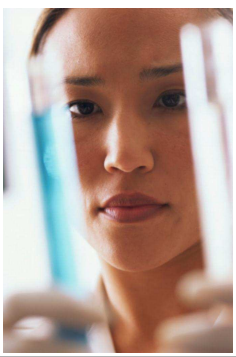
Confirming Your Hypotheses

1. **Search** for most direct and highest impact causes
2. **Employ** a systematic evidence-based process
3. **Formulate** and test theories or hypotheses
4. **Draw** on current research and evaluation
5. **Use** multiple methods and data sources

Likely to find multiple causes!



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Reflections

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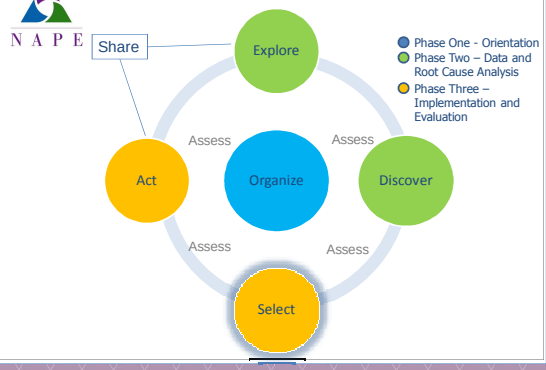
Where We Are



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What You'll Do: www.napequity.org

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Student Isolation

- Cohort of underrepresented students in a program is more likely to complete than a single individual
- Individuals more likely to
  - Have trouble integrating effectively into social structure
  - Suffer decreased performance
  - Drop out
- Schedule students in cohorts when possible

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Curriculum Materials

- Invisibility
- Stereotyping
- Imbalance/Selectivity
- Unreality
- Fragmentation/Isolation
- Linguistic Bias
- Cosmetic Bias
- Relevance

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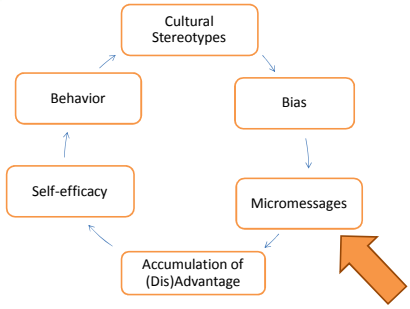
Micromessages: The Culture Wheel



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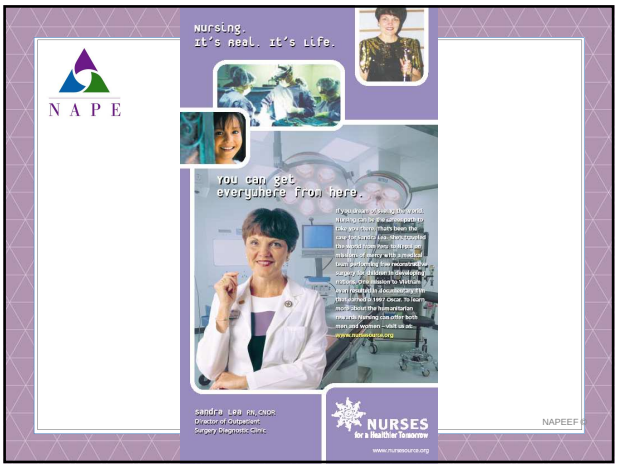
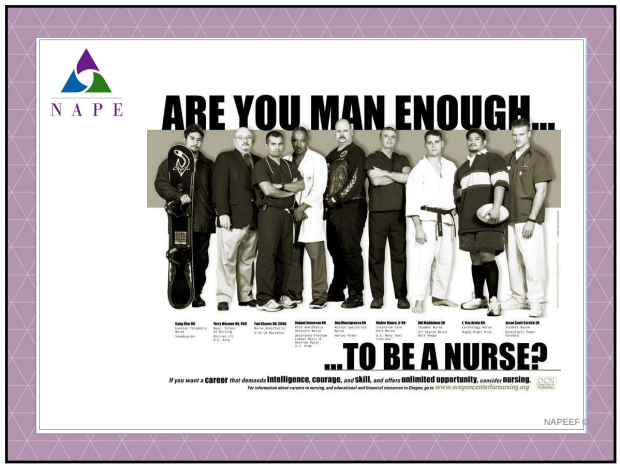
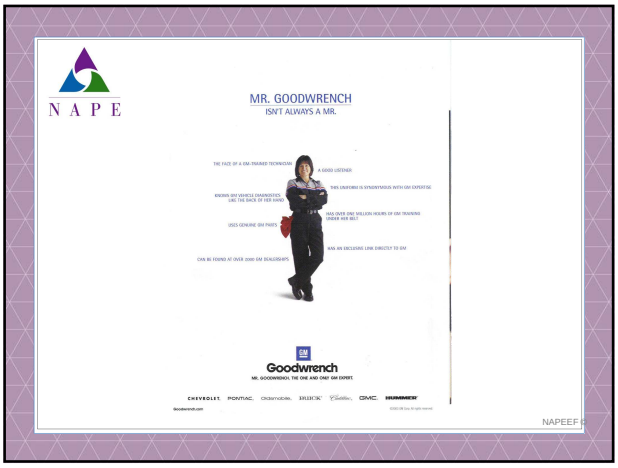






Nontraditional Role Models

- Strongest evidence in the research
- Need to see someone that looks like them in the career
- Family members are significant
- Teachers
- Mentors

Expand understanding of CTE

- Content Marketing
- Tell the authentic story of your students and their successes
- Use multi-media (break away from traditional advertising)
  - Facebook and Twitter
- Re-purpose and renew content
- Enlist partners in telling "the story of CTE"

From "Content marketing and the Future of CT Outreach" Shane Haggerty and Eric Leslie, Ohio ACTE Annual Conference, August 1, 2012

Recommendations to increase access for low income women and single parents

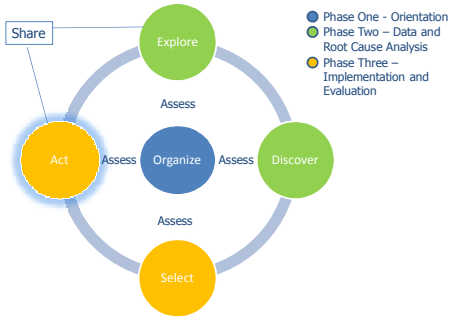
- Actively recruit women and student parents
- Provide financial supports and child care services
- Improve and expand developmental education
- Provide strong counseling, advising, and academic supports
- Create educational pathways
- Improve curricula and instruction

Source: Costello, C.B. (2012) *Increasing opportunities for low-income women and student parents in Science, Technology, Engineering, and Math at community colleges.* Washington, D.C.: Institute for Women's Policy Research.

Recognize credentials as key "touchstones" and help students to continue on

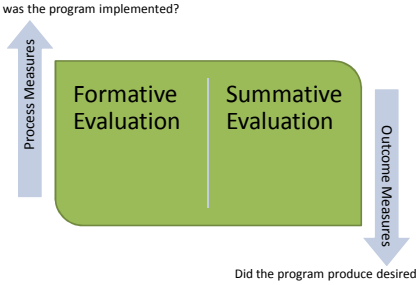
- Recognition of industry certification
- Adult articulation
- Stackable certificates
- Enhanced articulation opportunities to four-year programs through community colleges
- Reverse transfer

Where We Are



Types of Evaluations

How well was the program implemented?

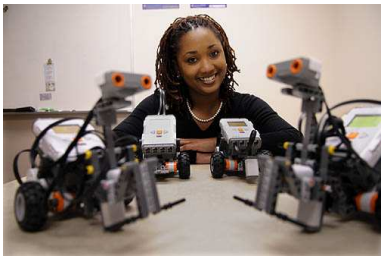


Did the program produce desired results?

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

Reflections? Q&A



Questions?

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