

Nontraditional Initiatives in Georgia



MIMI LUFKIN
NATIONAL ALLIANCE FOR PARTNERSHIPS IN
EQUITY

National Alliance for Partnerships in Equity



MISSION

The National Alliance for Partnerships in Equity (NAPE) is a consortium of state and local agencies, corporations, and national organizations that collaborate to create equitable and diverse classrooms and workplaces where there are no barriers to opportunities.

Special Populations



- **Single parents, single pregnant women**
- **Displaced homemakers**
- **Students pursuing nontraditional careers**
- **Economically disadvantaged, including foster children**
- **Limited English proficient**
- **Students with disabilities**

Nontraditional Careers



The term `non-traditional fields' means occupations or fields of work, including careers in computer science, technology, and other current and emerging high skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work.

(From Perkins IV)

STEM 
Equity
pipeline



**EXPANDING OPTIONS FOR
WOMEN AND GIRLS IN
SCIENCE, TECHNOLOGY,
ENGINEERING AND MATH**

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

Defining STEM



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



"Expanding Options for Women and Girls in Science, Technology, Engineering and Math"



- Home
- About Us
- Contact Us
- Experts
- State Teams
- Resources
- Professional Development



Register to Participate

Upcoming Events

NAPE Website

NAPE Ed Foundation Website



Upcoming Events

For more events go to the [STEM Equity Pipeline Calendar](#)

- November 16, 2010** Georgia Onsite Pilot Site Meeting
[\(More Information\)](#)
- November 17, 2010**
11:00AM - 7:00PM EST
Virtual Tech Forum
[\(More Information\)](#)
- November 18, 2010** WEPAN webinar series: ENGAGE Research-based Strategies to Retain Undergraduates in Engineering
[\(More Information\)](#)
- November 30 - December 3, 2010** CA Perkins JSPAC Conference: A Decade of Growth; A Decade of Goals!
Sheraton Grand, Sacramento, CA
NAPE CEO Mimi Lufkin will present
[\(More Information\)](#)
- December 2, 2010** A Project Lead The Way Conference for Counselors and Teachers: Cultivating the STEM Pipeline, One Student at a Time
Keynote address by Mimi Lufkin, CEO, NAPE
[\(More Information\)](#)
- December 2 - 4, 2010** ACTE 2010 Convention
Presentation by Mimi Lufkin, CEO, NAPE & Claudia Morrell, COO, NAPE on Green-Collar Careers: Opportunities in Environmentally Responsible Occupations

Search



State Teams

- 5 states in year one

- California
- Missouri
- Illinois
- Oklahoma
- Wisconsin

- 2 states in year two

- Iowa
- Minnesota

- 2 States in year three

- New Hampshire
- Ohio

- 2 States in year four

- Georgia
- Texas

Georgia Pilot Sites



- **Heart of Georgia Technical College**
 - Electronic and Computer Engineering Technology
- **Atlanta Technical College**
 - Avionics/Aviation Maintenance Technology
- **Middle Georgia Technical College**
 - Aircraft Structural Technology
 - Aviation Maintenance Technology
- **Augusta Technical College**
 - Electronic and Computer Engineering Technology
 - Mechanical Engineering Technology
 - Nuclear Engineering Technology

Professional Development



- **Formal education community**
 - In-school programs
 - Teacher-based
 - Academic and Career and Technical Education STEM educators
- **Train the trainer process**
- **Imbed the knowledge in existing professional development mechanisms**

Accountability



- Using existing accountability systems to inform program improvement efforts
 - Perkins nontraditional measures for participation and completion in STEM related career cluster programs of study
 - Student achievement data in STEM
 - Student course taking behaviors in STEM

Outreach



- Increasing awareness of the need for diversifying the STEM workforce pipeline
 - Gender and
 - ✦ Race/Ethnicity
 - ✦ Disability
- Creating collaborations with others to leverage the impact of the work



Document Performance Results



GOAL: Understand the problem completely before you seek solutions

How do you analyze performance data?

What questions should be addressed?

What tools and methods can be used to present and analyze data?

How should data quality problems be considered in analyzing data?

Data Collection

Disaggregation required in Perkins IV



- ***Gender***

- Male
- Female

- ***Race/Ethnicity***

- American Indian or Alaskan Native
- Asian or Pacific Islander
- Black, non-Hispanic
- Hispanic
- White- non-Hispanic

- ***Special Population***

- Underrepresented gender students in a nontraditional CTE program
- Single Parent
- Displaced Homemaker
- Limited English Proficiency
- Individuals with a Disability
- Economically Disadvantaged

Recommended Analyses

Comparisons

- State performance level
- Best performer in state
- Selected peer benchmark
- Set your own benchmark

Trends

- At least 2 yrs
- Prefer 3-5 yrs

Site specific

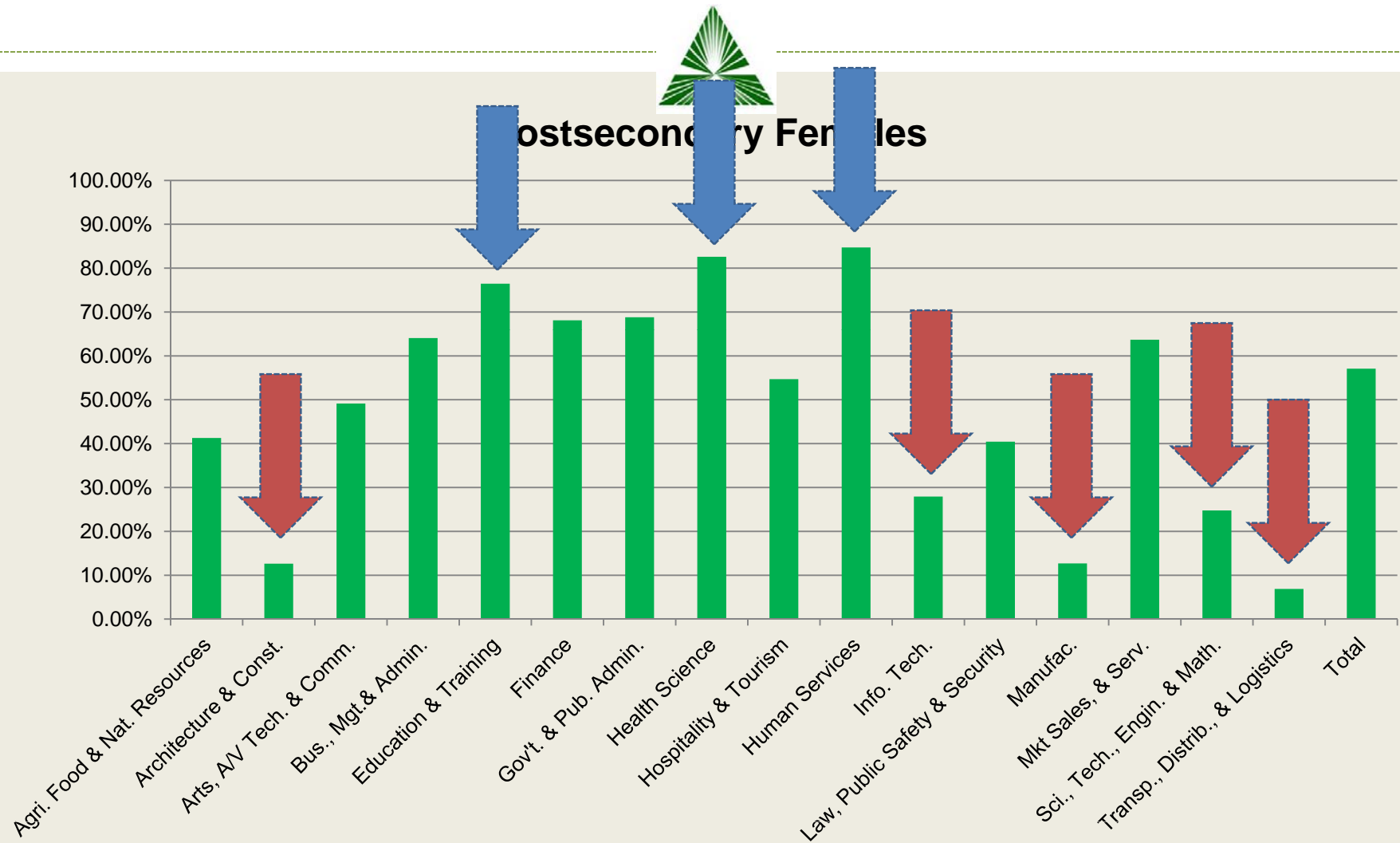
- Statewide
- District
- School/College
- Programs

What do these data tell us?

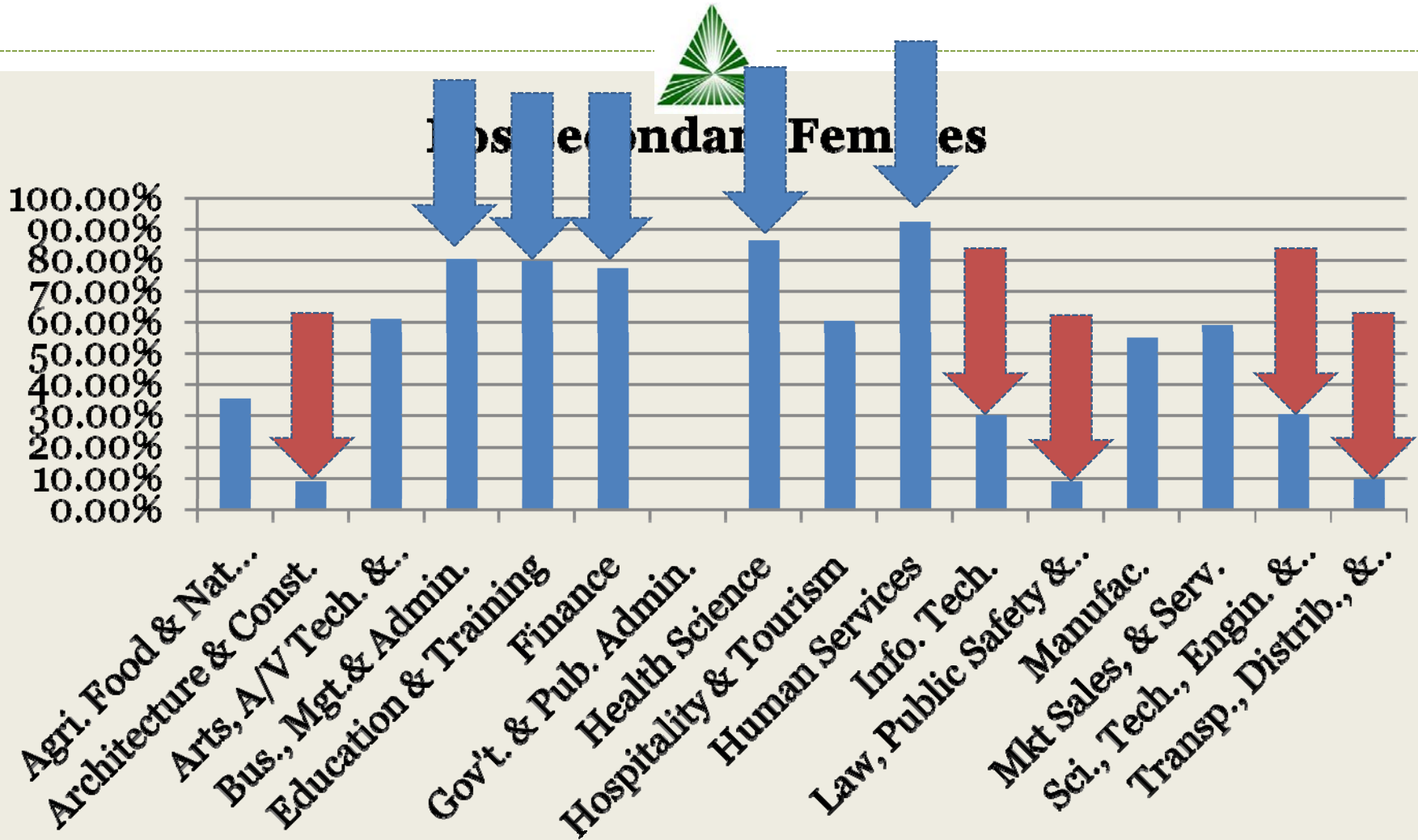


- Indicates trends over time
- Highlights potential data quality issues
- Identifies gaps in performance between
 - Student groups – gender, race/ethnicity, special populations
 - Programs
- Generates additional questions that need to be answered before implementing a solution

National Concentrators in CTE 2008-09



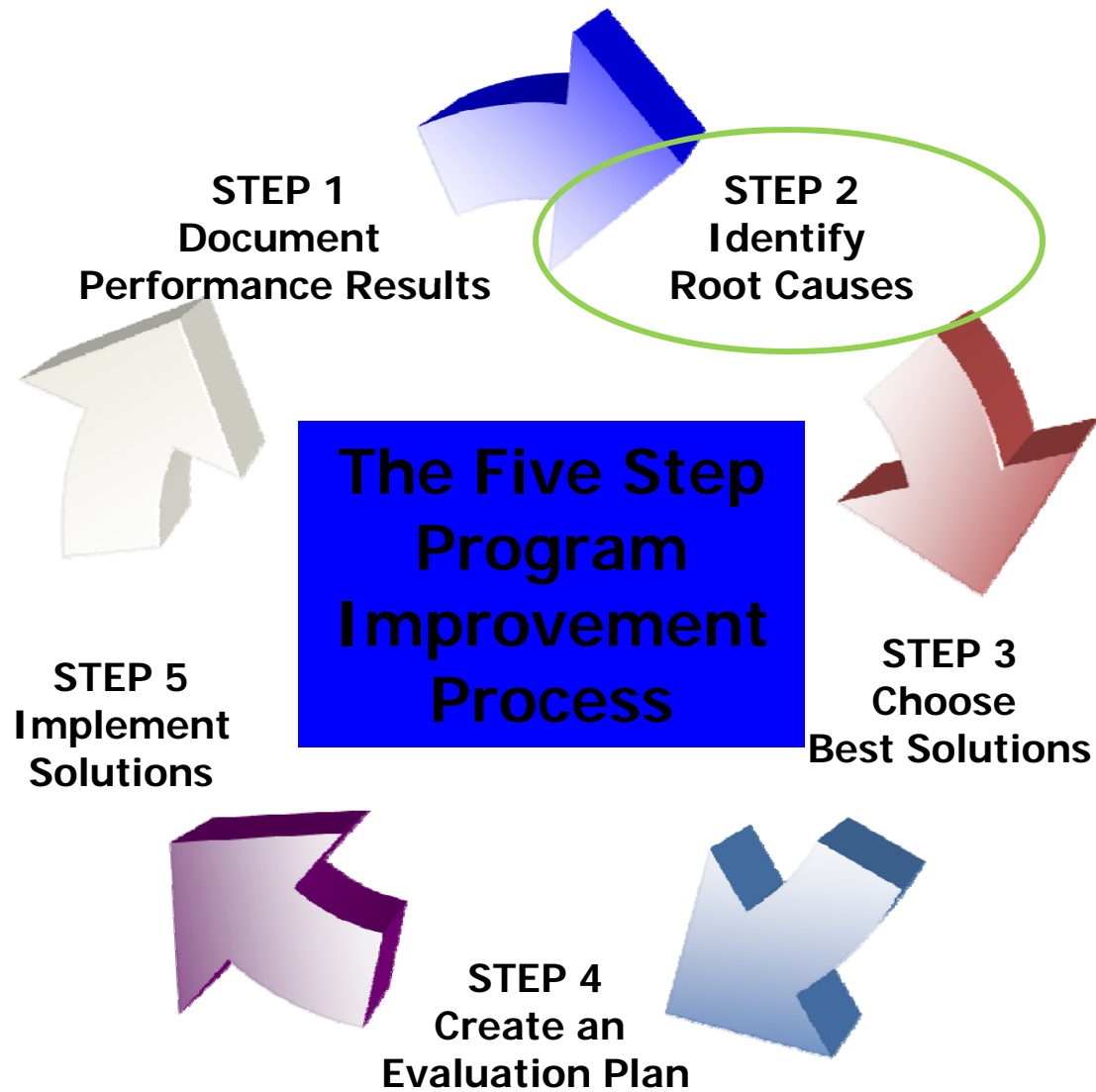
Georgia Concentrators in CTE 2008-09



Case Study



**What Performance Data
should they review to help
them identify their problem?**



Why Search for Root Causes?



- Keep from fixating on the “silver bullet” strategy
- Identify the conditions or factors that cause or permit a performance gap to occur
- Search for most direct and highest impact causes
- Employ a systematic evidence-based process
- Formulate and test theories or hypotheses
- Draw on current research and evaluation
- Use multiple methods and data sources
- Likely to find multiple causes

Root Cause Action Research Strategies



- **Review Research Literature**
- **Review Program/Institutional Evaluations and Effectiveness Reviews**
- **Conduct Focus Groups**
- **Peer Benchmarking**
- **Interviews & Surveys**
- **Brainstorm**

Review Research Summary



- *“Nontraditional Career Preparation: Root Causes and Strategies”*
- Authors: Lynn Reha, ICSPS; Mimi Lufkin, NAPE; Laurie Harrison, Foothill Associates
- Online version and downloadable document available at www.napequity.org

Academic Proficiency



- **Very predictive for women**
- **Not as predictive for men**
- **Societal stereotypes about women's lack of ability in math and science negatively affect performance – stereotype threat**
- **Women may have poorly developed spatial and visualization skills**

Access to and Participation in STEM



- Shrinking gender gap in performance on national assessments in math and science between boys and girls
- Still significant gaps when looking at gender AND race/ethnicity or socio-economic status
- Girls not translating their academic success in STEM to careers in STEM

Curriculum Materials



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



Instructional Strategies



- Questioning level and wait time
- Student/teacher interaction and feedback
- Classroom management
- Cooperative learning design
- Expectations and assessment

Classroom Climate



- Fair treatment
- Sexual harassment not tolerated or ignored
- Supportive learning environment
- Subtle messages
- Classroom location on campus
- Physical environment



Student Isolation



- Cohort of underrepresented students in a program are more likely to complete than a single individual
- Individuals more likely to
 - ✦ Have trouble integrating effectively in to social structure
 - ✦ Suffer decreased performance
 - ✦ Drop out

School Climate



- Nontraditional faculty and staff
- Acceptable behavior in hallways, cafeteria, school events, busses, etc.
- Administration and staff support and encouragement
- Extracurricular activities
 - ✦ Clubs, After School Program
 - ✦ Competitions
 - ✦ Summer Camp



Support Services



- Tutoring
- Child care
- Transportation
- Financial Aid
- Books, Equipment, Tools, Clothing
- Tuition
- Modification of Curriculum, Equipment
- Student/Teacher Aides
- More



Career Guidance Materials and Practices



- More than just brochures and posters
- Get beyond the images
- Beware of subtle messages
- Use of interest inventories
 - ✦ For men, interest precedes self-confidence, but for women self-confidence precedes interest
- Lack of understanding of careers
- Wage earnings information

Early Exposure



- Most students pursuing a nontraditional career have had a friend or family member influence them
- Spark an interest that would otherwise not be evident
- Informal experiences supported by formal experiences
- The earlier the better



Techno Bag Exercise



Occupational Perception



- **Job Satisfaction**
- **Career Family Balance**
- **Wage Potential**
- **Career Purpose**



Family Characteristics and Engagement



- Parents are the #1 influence of student college major and career choice
- Negative messages from people with emotional influence difficult to overcome
- Family role models
- Lower socioeconomic males more likely to chose nontraditional careers
- Upper socioeconomic females more likely to chose nontraditional careers

Self-efficacy



○ Attribution Theory

- ✦ Girls more likely to attribute success to external factors and failure to internal factors

○ Stereotype Threat

- ✦ Being at risk of confirming a negative stereotype

○ Locus of Control

- ✦ When students feel they are in control of their lives and their futures they are more likely to select nontraditional options

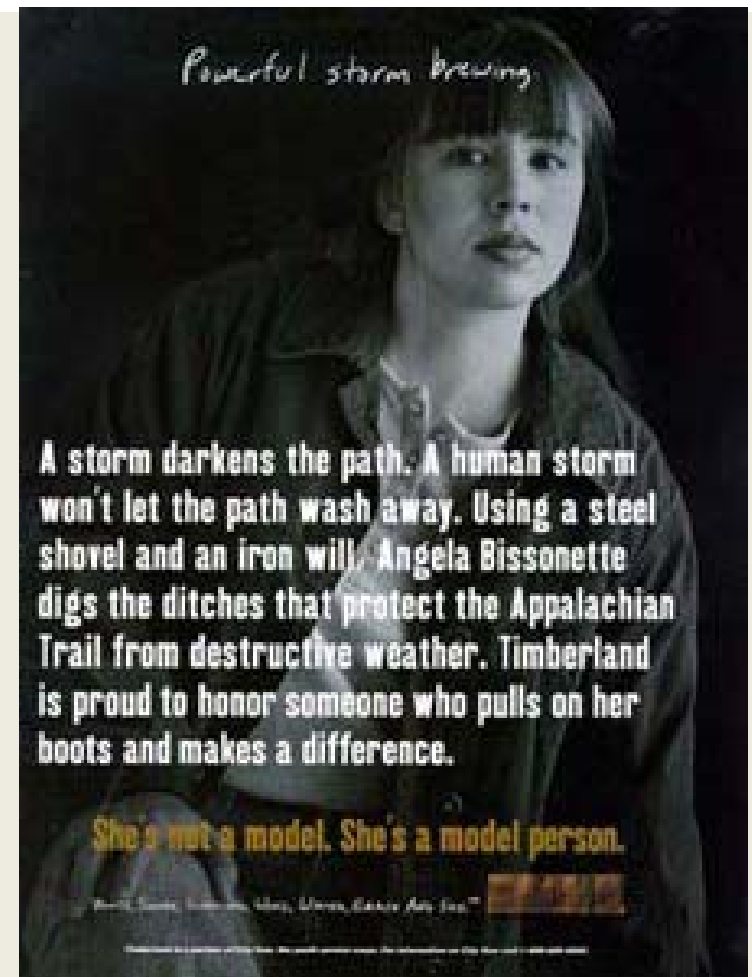
Social Attitudes



- **Bias and Discrimination**
 - **Gender schema**
 - ✦ Assumptions about gender from birth on
 - **Accumulative Advantage**
 - ✦ Members of a disadvantaged group have to accumulate more than 1% advantage to be considered the same as the advantaged group
 - **Implicit bias**
 - ✦ Unconscious associations

Media Representation

○ About-face.org



A storm darkens the path. A human storm won't let the path wash away. Using a steel shovel and an iron will, Angela Bissonette digs the ditches that protect the Appalachian Trail from destructive weather. Timberland is proud to honor someone who pulls on her boots and makes a difference.

She's not a model. She's a model person.

© 2005 Timberland. All rights reserved. Timberland, the Timberland logo and the Timberland tree are trademarks of Timberland.

Student Attitudes/Peer Influence



- Adolescent social norms
- Fear of “looking dumb”
- Girls more concerned about appearances than boys
- Men more reference group independent
- Peer harassment or support
- Critical mass



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



Individual Root Causes Activity

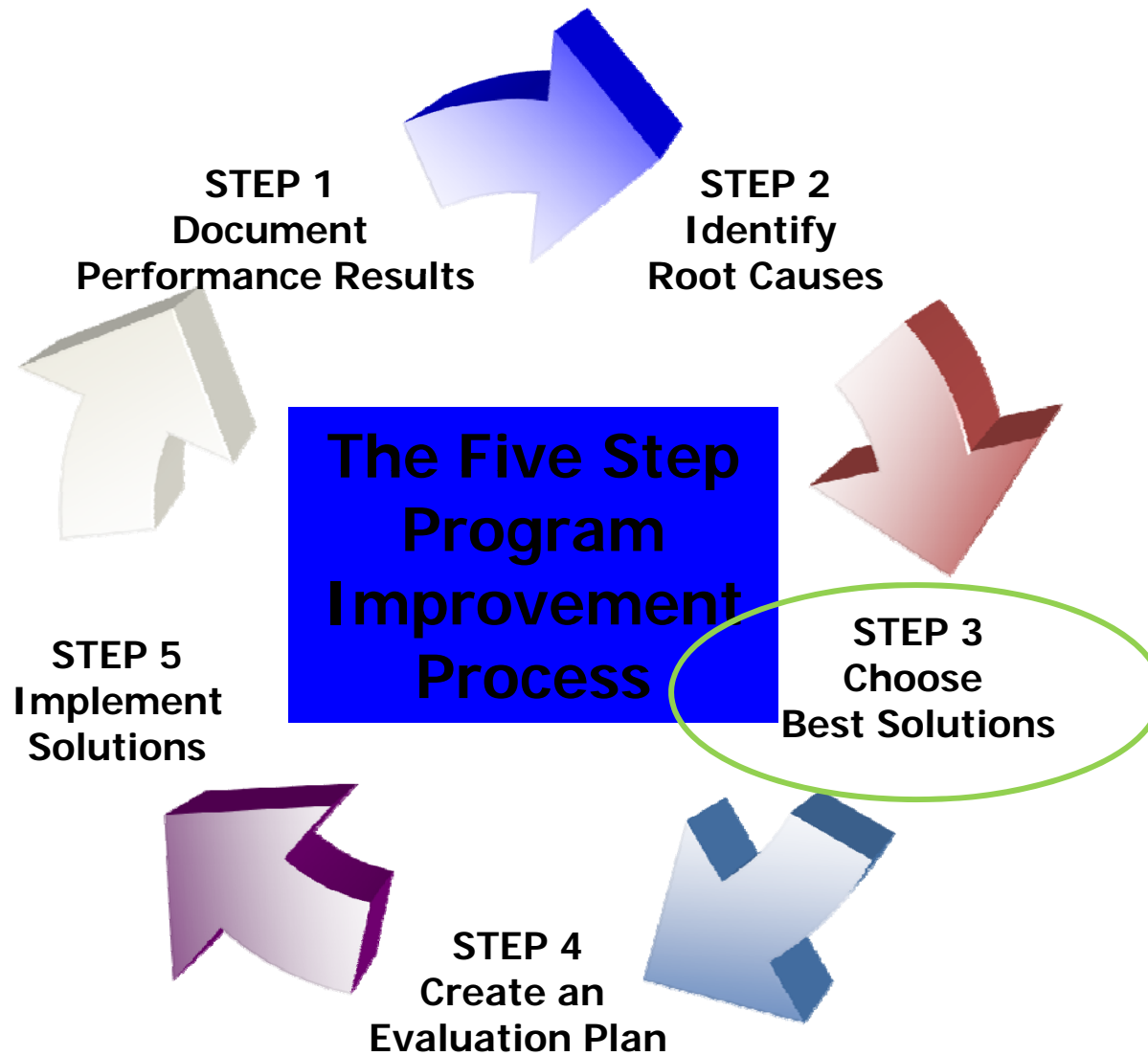


- Place a sticker on the poster identifying the two most significant root causes that you have observed for students entering programs nontraditional for their gender
- Write any additional root causes that have not been identified and place it on the “other root causes” poster

Case Study



What root cause research strategies should they implement?



Choose Best Solutions



Don't be too quick to adopt best practices before getting the facts straight

- **How do you identify possible strategies and model practices?**
- **How do you evaluate strategies and models?**
- **How do you compare and assess alternative solutions and make a decision?**

Assess and Compare Alternative Strategies



- **Sound Theory**
- **Strong Evidence**
- **Costs/Time of Further Testing**
- **Resources**
- **Stakeholder Support**
- **Failure is Expensive**
- **Select a Full Range of Choices**

Identify Potential Strategies and Models



- Review What Others Propose
 - NSF- [New Formulas for America's Workforce](#)
 - AAUW – [Why so Few?](#)
- Benchmark Peers and Leading Performers
 - [Programs and Practices That Work](#)
- Develop Your Own Solutions

Review Research Summary



- *“Nontraditional Career Preparation: Root Causes and Strategies”*
- **Authors: Lynn Reha, ICSPS; Mimi Lufkin, NAPE; Laurie Harrison, Foothill Associates**

Case Study



**What strategies could they
implement to increase
participation of females?**





Questions?



Mimi Lufkin

Executive Director

National Alliance for Partnerships in Equity

P.O. Box 369

Cochranville, PA 19330

610-593-8038 phone

610-593-7283 fax

mimilufkin@napequity.org



**National Alliance for
Partnerships in Equity**