

Root Causes

Affecting Student Preparation for Nontraditional Careers

Wyoming ACTE Conference

Workshop I

Monday, June 7, 2010



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
 - ❑ Direct cause (i.e. instructional practice)
 - ❑ Indirect cause (i.e. teacher training)
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How to Identify Root Causes

- 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
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Phase 1: Identify Potential Causes

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

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

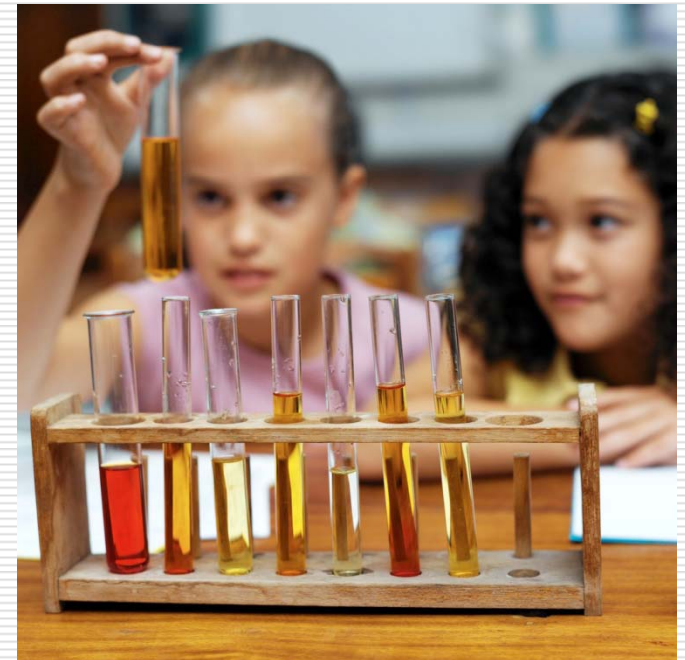


Career Guidance Materials and Practices

- 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
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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
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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
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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
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Media Representation

Chronicle of Higher Education
February 17, 2006
Full Page Ad: CDW-G

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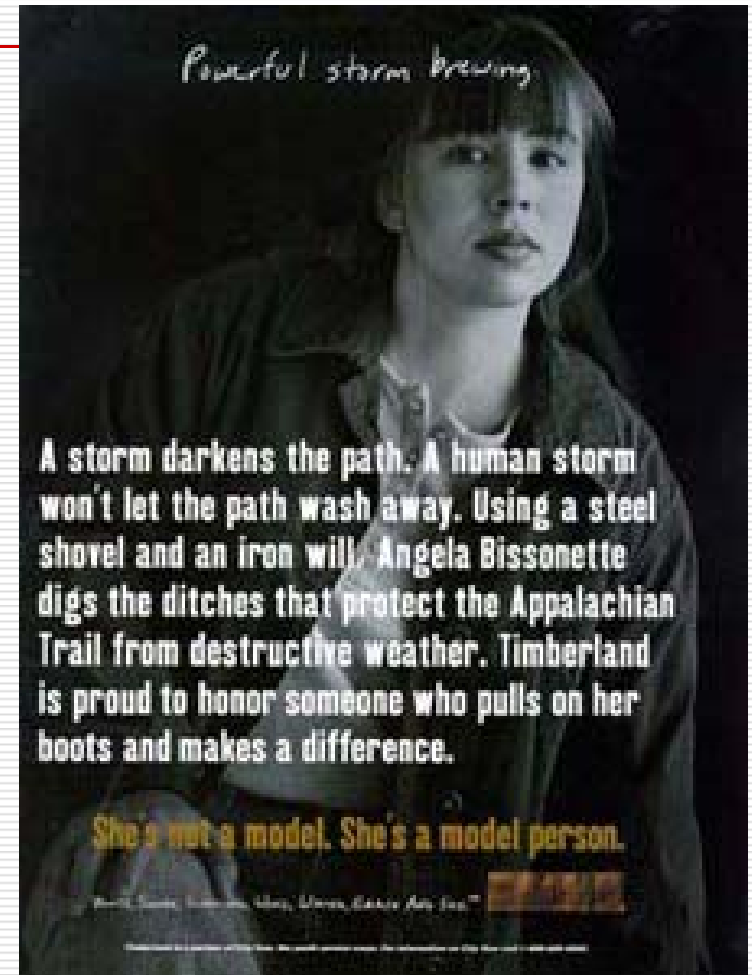


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Media Representation

- About-face.org



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

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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



Group Root Causes Activity

In groups of 5

- Review the root causes cards
 - Arrange the root causes by your group's sense of their impact and relationship to students in programs nontraditional by gender
 - Post the cards on the wall in whatever arrangement best fits your group's thinking
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Understand the Problem Before Seeking the Solution

- Conduct a root cause analysis
 - Conduct regular climate assessments
 - Interview students
 - Who drop out of nontraditional programs
 - who stay in nontraditional programs
 - Who never choose
 - Conduct focus groups with
 - Teachers of nontraditional programs
 - Parents
 - Business/Industry/Advisory committee members
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Resources available at
www.stemequitypipeline.org



- Survey Instruments
 - How to Conduct Interviews
 - How to Conduct Focus Groups
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Questions?



Contact Us

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