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


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

The Five Ways that pay along the way to the BA

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

Fastest growing occupational clusters

- Healthcare
- Community services
- STEM (Science, Technology, Engineering, and Math)

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

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2010-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care</td>
<td>15%</td>
</tr>
<tr>
<td>Math</td>
<td>13%</td>
</tr>
<tr>
<td>Life, physical, and social science</td>
<td>11%</td>
</tr>
<tr>
<td>Computer and IT</td>
<td>10%</td>
</tr>
<tr>
<td>Architect and Engineering</td>
<td>10%</td>
</tr>
<tr>
<td>Total Employment (STEM and non-STEM)</td>
<td>10%</td>
</tr>
</tbody>
</table>

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/Americas and women and men in STEM, they are smaller than in other occupations.

How we define STEM

Activity

What number belongs in the blank?
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

Women in Selected STEM Occupations, 1960-2000

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

Women found in lower paying career preparation programs than men

Female Participation in Secondary Career and Technical Education 2009-10

Women in the labor force: A databook (Report 1018) (Washington, DC), Table 11.
Female Participation in Post-Secondary CTE Education 2009-10

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

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

Who Is NAPE?

National Alliance for Partnerships in Equity

STEM Equity Pipeline™ Project

STEM Equity Counselor Training

Tools & Resources

• 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
Program Improvement Process for Equity™

Phase One – Orientation
Phase Two – Data and Root Cause Analysis
Phase Three – Implementation and Evaluation

Explore
Assess
Organize
Discover
Select

Assess
Assess
Assess
Assess

Phase Two

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/

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

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

Data Collection

Disaggregation required in Perkins IV

Gender
- Male
- Female

Race/Ethnicity
- American Indian or Alaska Native
- Asian or Pacific Islander
- Black, non-Hispanic
- Hispanic
- White, non-Hispanic

Special Populations
- Underrepresented gender students in a nontraditional/CTE program
- Single parent
- Step parent
- Grandparent
- Foster parent
- Senior citizen
- Individual with a disability
- Economically disadvantaged

When are the intersections of equity important?

Data Collection Recommended Analysis

Comparisons
- State performance level
- Best performers in state
- Selected peer benchmark
- Set your own benchmark
- At least 2 years
- Three to five years

Trends
- Statewide
- District
- School/College
- Programs
**What are the “Root Causes”?**

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


**Summary of the Research**

**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!
What You’ll Do: www.napequity.org

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

Curriculum Materials
- Invisibility
- Stereotyping
- Imbalance/Selectivity
- Unreality
- Fragmentation/isolation
- Linguistic Bias
- Cosmetic Bias
- Relevance

Micromessages:
The Culture Wheel

Student Isolation
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”

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

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

Types of Evaluations

- Formative Evaluation
- Summative Evaluation

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?

Ben Williams, Ph.D.
Coordinator, Special Projects
Project Director, Ohio STEM Equity Pipeline™
Columbus State Community College

bwilli03@csc.edu

National Alliance for Partnerships in Equity Education Foundation

www.napequity.org

www.stemequitypipeline.org