



THE SUMMIT FOR EQUITY IN STEM:

Race to the Top Western Ohio Regional Project

Van Wert, High School

June 17, 2013

Dr. Ben Williams, Facilitator

Coordinator, Special Projects

Columbus State Community College



Welcome and Introductions



Introduce yourself by sharing:

- 1. What is your earliest memory of nontraditional gender roles in careers? *or***
- 2. What is your most recent memory of nontraditional gender roles in careers? *or***
- 3. What nontraditional career would you choose – and why?**



The Summit

- Examine district data and identify gaps in performance, participation, completion
- Be introduced to key research around root causes and how to develop evidence-based strategies to address issues
- Learn how to evaluate strategies for effectiveness and impact
- Develop a preliminary plan for your school/district



Overview

Time	Topic
25 minutes	Explore what we know from national trends
45 minutes	Review Nontraditional Career Preparation – Root Causes
45 minutes	Identify a Class/Program to Improve – and Discuss the Data (Implementation Plan, Section 1)
45 minutes	Identify Possible Root Causes for Under-enrollment/completion (Implementation Plan, Section 2)
45 minutes	Review Nontraditional Career Preparation - Strategies
30 minutes	Identify Strategies to Address Under-representation (Implementation Plan, Section 3)
45 minutes	Evaluation, Work planning and Next Steps



Who is NAPE?



Who is NAPE?

National Alliance for Partnerships in Equity

Professional Development: STEM Equity Pipeline

Provide tools and curricula for educators through conferences, presentations, webinars, and formal training

Research and Evaluation

Develop reports. Identify research-based promising practices. Provide input to others' research.

Technical Support

Develop tools and resources for education agencies. Provide consulting services. Offer expertise on issues pertaining to access, equity, and diversity.

Public Policy and Advocacy

Work with federal agencies. Educate legislators on career equity and diversity issues. Develop policy briefs. Alert membership to legislative or policy issues.



Professional Development for Educators: STEM (including CTE) Access, Equity, Diversity

STEM Equity Pipeline™

Program Improvement Process for Equity in STEM

Institutional program that improves enrollment, retention & completion of girls & under-represented populations in STEM courses

STEM Equity Teacher Training

Training teachers to use pedagogy that improves enrollment, retention & completion of girls & under-represented populations in STEM courses

STEM Equity Counselor Training

Coaching counselors to encourage girls and under-represented populations in STEM careers

Tools & Resources

Tools to support teachers' & counselors' learning and assist their students, e.g., camps, partner orgs, books

**The Education Foundation supports NAPE's professional development
LOB with funding and resources.**



- What do you **know** about nontraditional career preparation?
- What do you **want to know** about nontraditional career preparation?

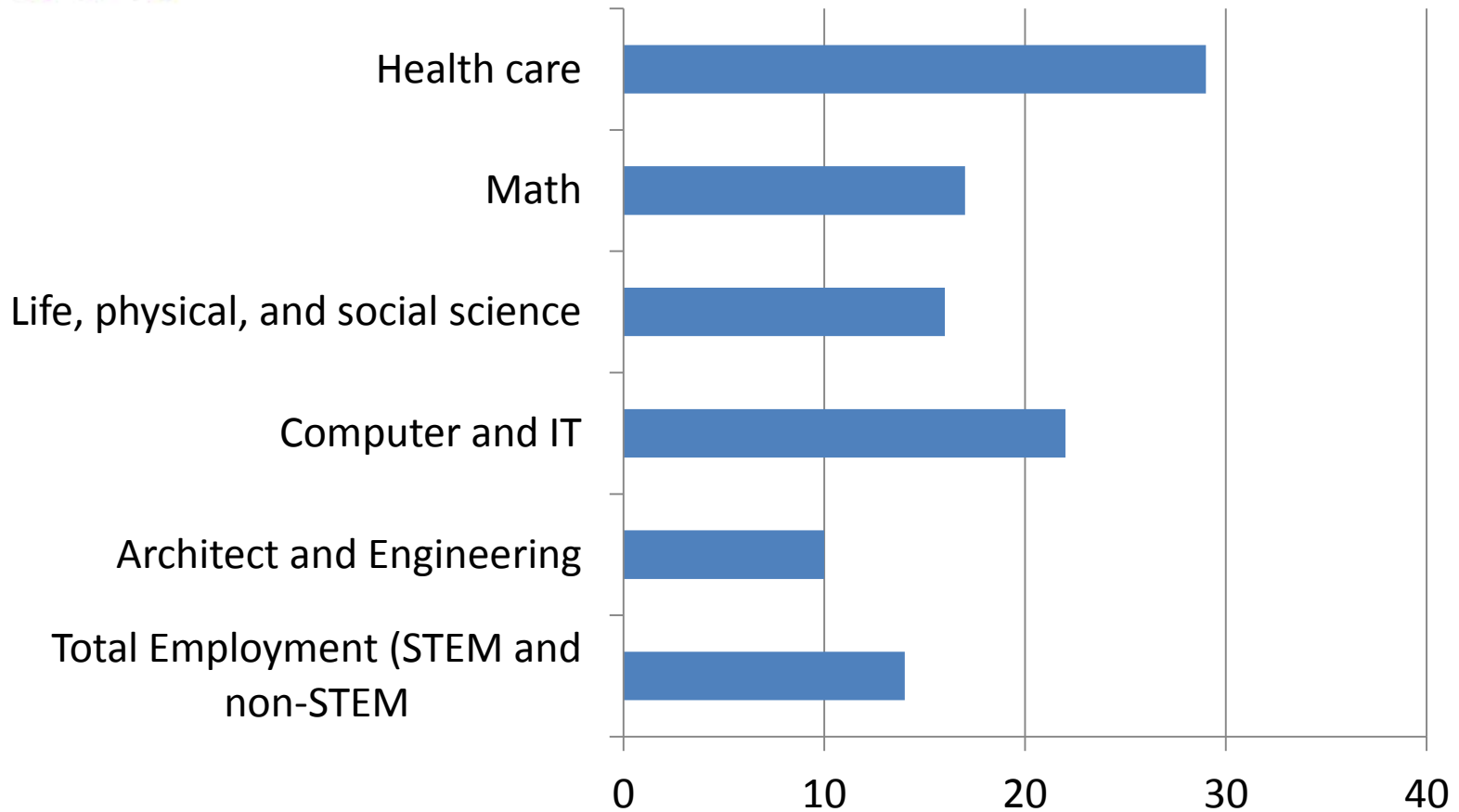




Why We still Care...



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



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



Opportunities across post-secondary pathways

For the next 47 million job openings:

- **33% will require a B.A. or better**
- **30% will require some college/ AA degree**
- **36% will require a HS degree or less**

From “Pathways to Prosperity to Report” Harvard University February 2011; Power Point Presentation by William Symonds, Project Director 11/30/10



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

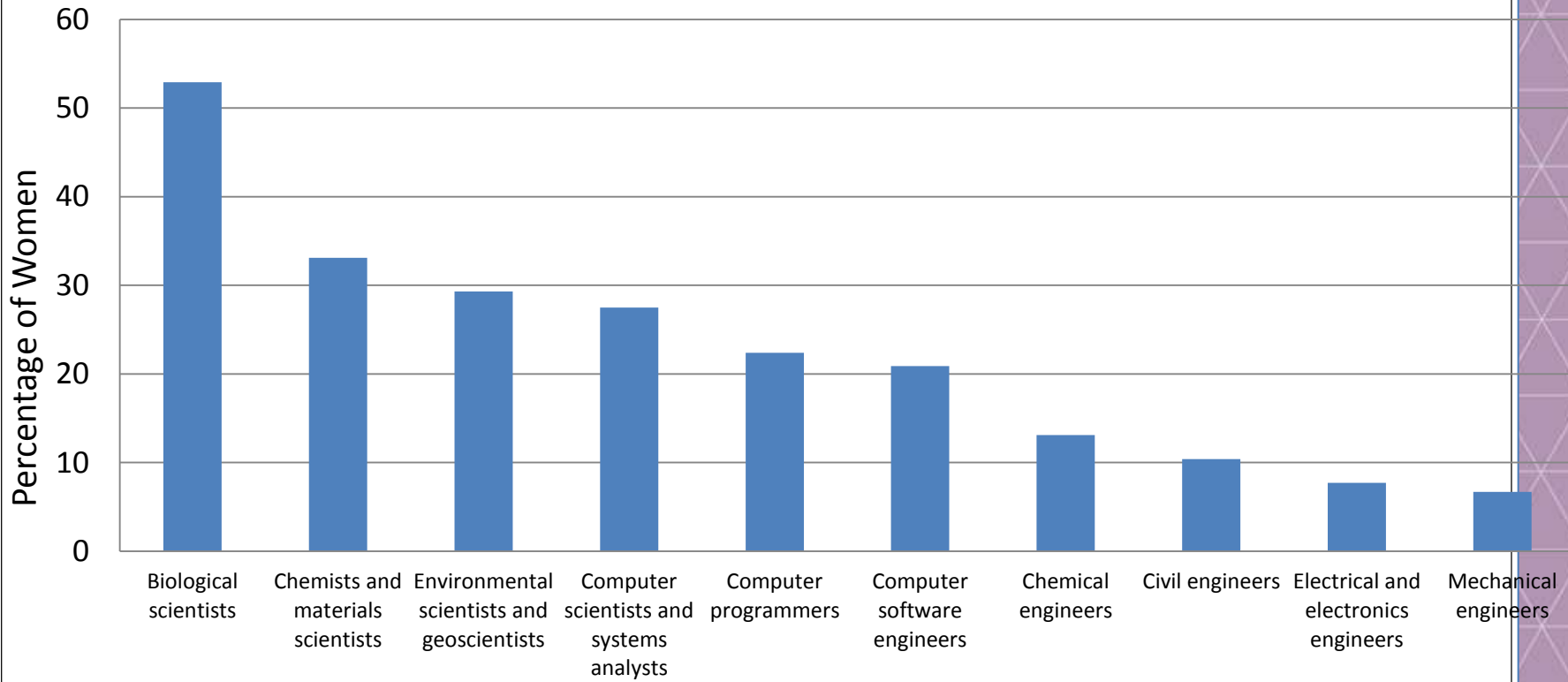
- 63 percent of Associate's degrees in STEM earn more than Bachelor's degrees in non-STEM occupations.
- 65 percent and 47 percent of Bachelor's degrees in STEM earn more than Master's degrees and Ph.D. in non-STEM respectively.
- Certificate holders in engineering earn more than Associate's degree-holders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

Source: The Georgetown University Center on Education and the Workforce (2011) . *STEM*.



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

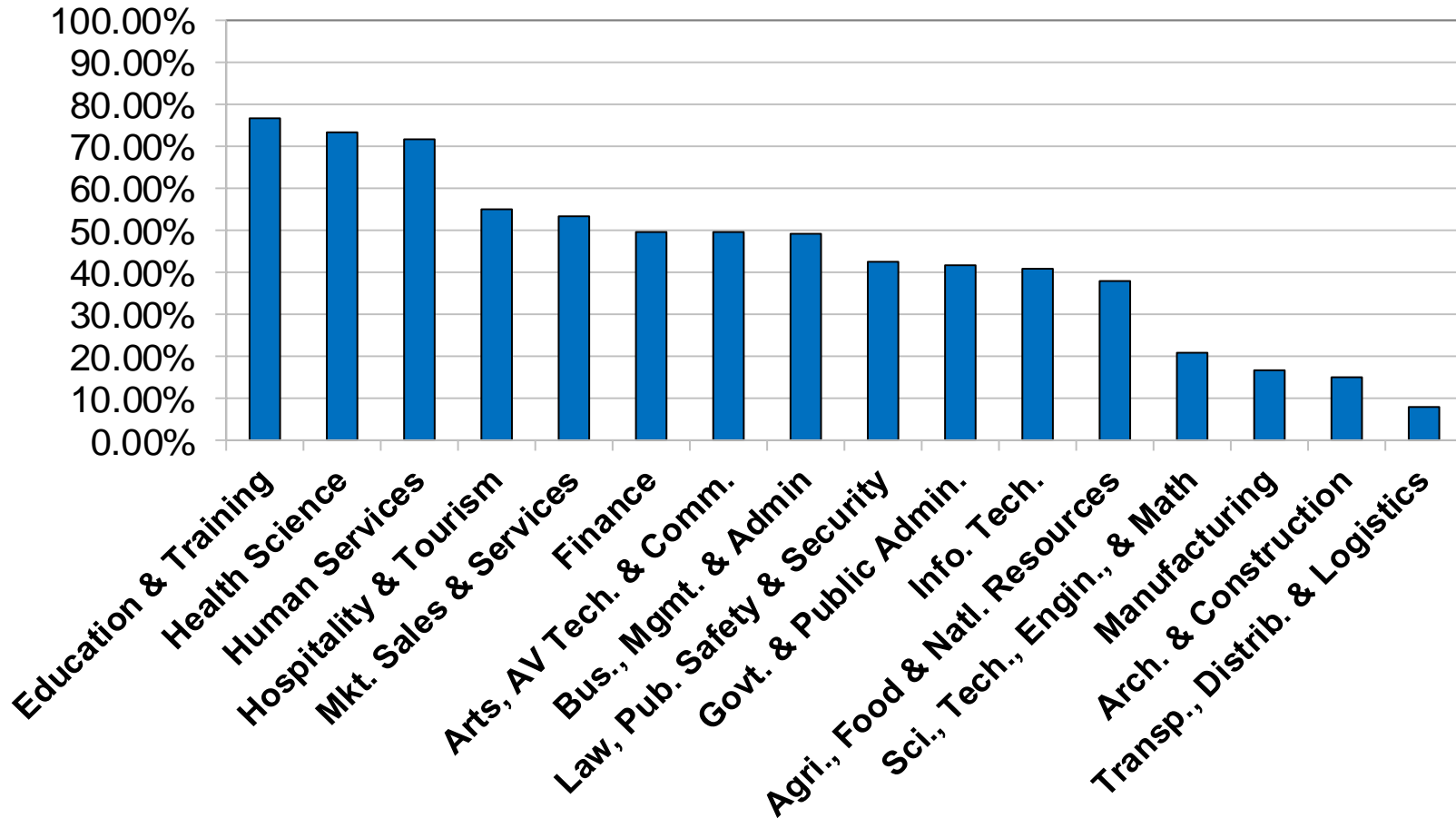
Percentage of Employed STEM Professionals Who Are Women, Selected Professions, 2008



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



Female Participation in Secondary Career and Technical Education 2009-10





Female Participation in Post-Secondary CTE Education 2009-10

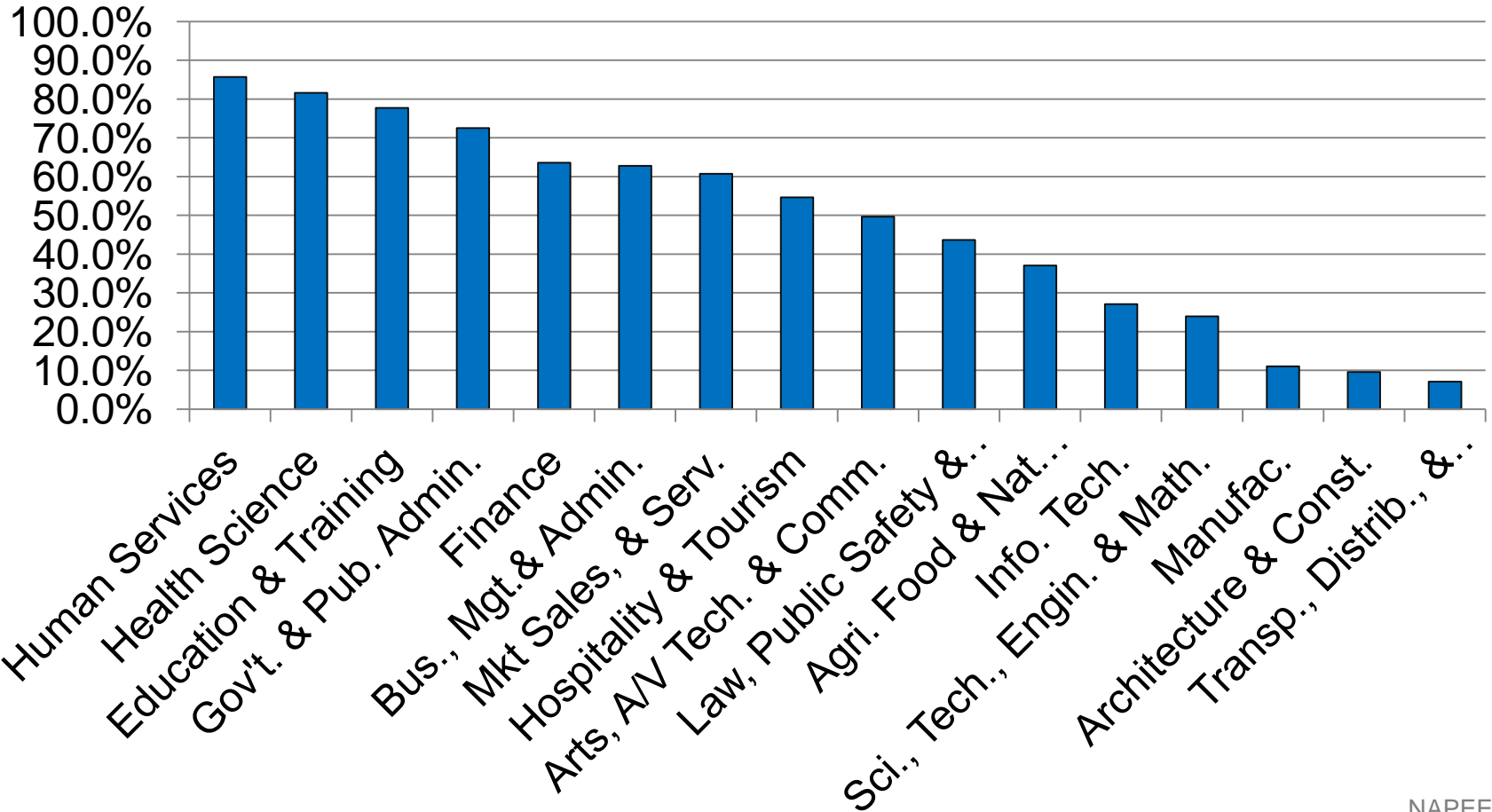
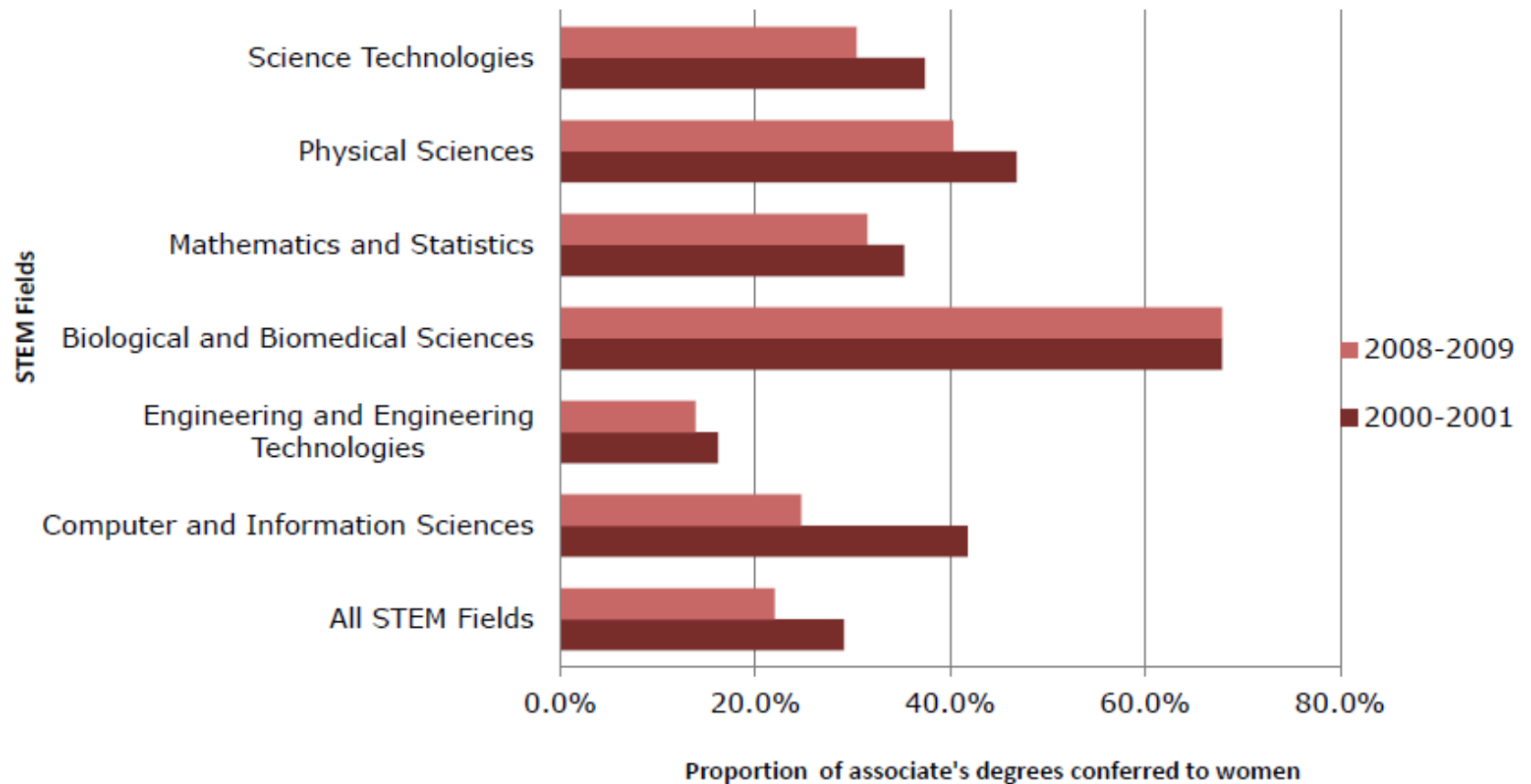


Figure 2. Percentage of Associate's Degrees Awarded to Women by STEM Field, 2000-2001 and 2008-09



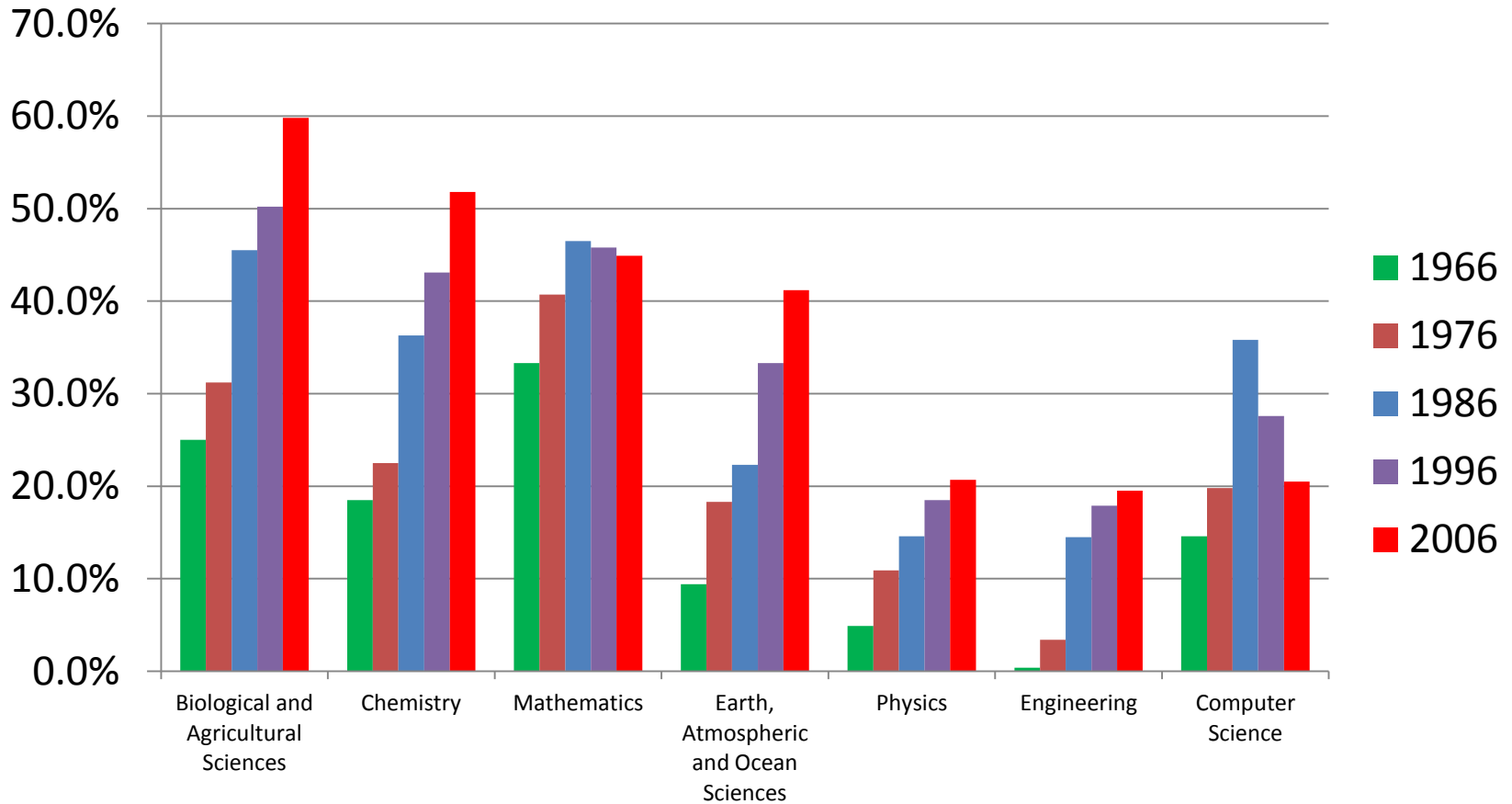
Source: U.S. Department of Education. National Center for Education Statistics. Postsecondary Awards



Women's Representation among STEM Bachelor's Degree Holders has Improved over Time but Varies by Field

NAPEE

Bachelor's Degrees Earned by Women in Selected Fields, 1966–2006



Source: National Science Foundation, Division of Science Resources Statistics, 2008, *Science and engineering degrees: 1966–2006* (Detailed Statistical Tables) (NSF 08-321) (Arlington, VA), Table 11, Author's analysis of Tables 34, 35, 38, & 39.

NAPEE ©

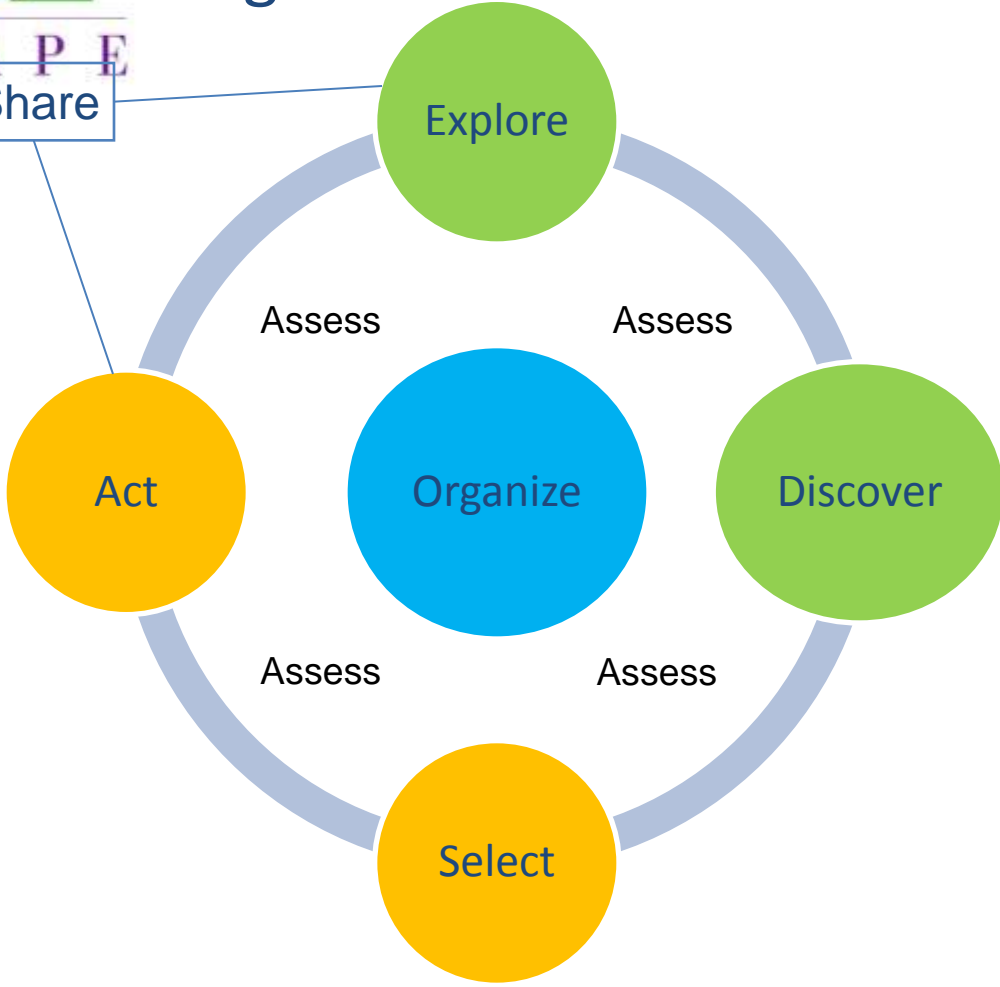





STEM Equity Pipeline Goals

- 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

STEM Equity Pipeline

Program Improvement Process For Equity™



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



Implementation Plan, Section 1

Select a Class/Program

What do you **know** and **want to know** about the program:

- Enrollment numbers, by gender
- Completion numbers, by gender
- Teacher/faculty (experience, reputation, approach toward equity)
- Student perceptions
- Family perceptions
- Labor market info, including salary, for pathway/program
- Pipeline data (gender enrollment of classes/programs before and after target)



Complete Section 1 of your implementation plan.



Review Nontraditional Career Preparation – Root Causes





Implementation Plan, Section 2

Identify Possible Root Causes

Create a visual image of the “root causes” that create barriers for nontraditional students in your identified class/program.

- Use pictures and the Root Cause cards
- “Flag,” “star,” or otherwise note the 1-3 root causes that are the biggest barriers to participation/completion for your nontraditional students – and make sure to note/write the evidence you have for your root cause hypotheses.

Complete Section 2 of your implementation plan.

ARE YOU MAN ENOUGH...

Greg Hill RN Chief of Clinical Nursing Instructor	Tony Wheeler RN, PhD Dean, School of Nursing Western CT U.S. Army	Paul Chavers RN, DNP Nurse Anesthetist 2:34 LA Resident	Richard Anderson RN Past Ambassador Nursery Nurse Decorated Vietnam Combat Medic & Nurse Reg. U.S. Army	Don Macgregor RN Retail Special Int. Nurse Navy Nurse	Walter Moore, D NP Executive Care Unit Nurse U.S. Navy Seal 1st Lt. Air	Bill Haddock RN Student Nurse 1st Degree Black Belt Karate	L. Don Brown RN Certifying Nurse Highly Right Pinstriped	Jason Scott Carter RN Student Nurse Basketball Player Forward
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...TO BE A NURSE?

If you want a career that demands intelligence, courage, and skill, and offers unlimited opportunity, consider nursing.

For information about careers in nursing, and educational and financial resources in Oregon, go to www.oregoncenterfor nursing.org



Review *Nontraditional Career Preparation – Strategies*

1. Individual review of *Nontraditional Career Preparation – Strategies*: Read the sections that pertain to the 1-3 root causes your team identified as barriers for nontraditional students in your targeted class/program. When you are done, list the strategies (**suggested in the research, that you are doing, and more!**) on the corresponding easel paper.
2. Gallery walk: Take a walk around the room and review all the strategies. Take a pen – and feel free to add strategies, suggestions, or related thoughts as you go. (for example, do you know a great male nurse who is willing to be a role model? – share his name and number!)





Review *Nontraditional Career Preparation* – *Strategies*

As a team, identify 1-2 strategies that you would like to implement this year. As you discuss the strategies, consider:

- How to build on existing/current initiatives or activities
- How the strategies specifically target under-represented students
- How the strategies will focus efforts and result in improved student outcomes



Complete Section 3 of
implementation plan



Implementation Plan

Work planning and next steps

Complete sections 4 and 5 of the Implementation Plan





Formative vs. Summative

SMART Objectives

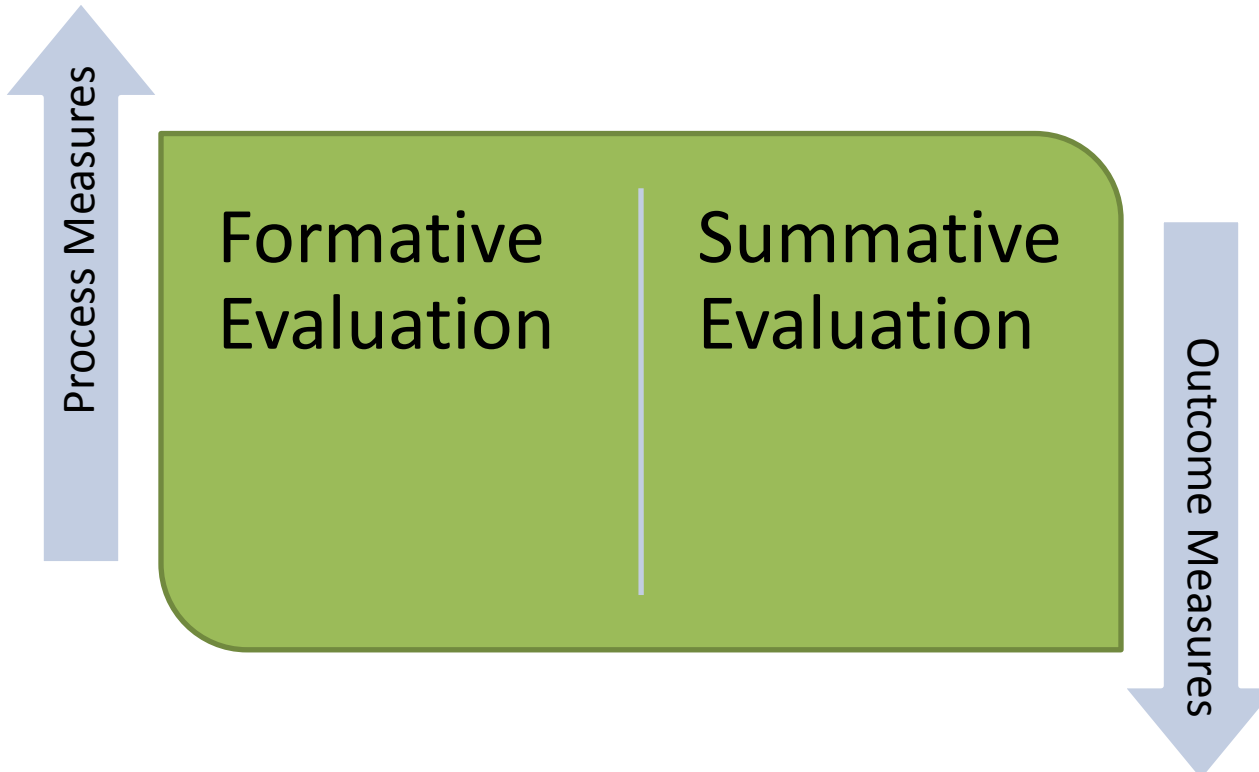
Evaluation Planning

Implementation Plan

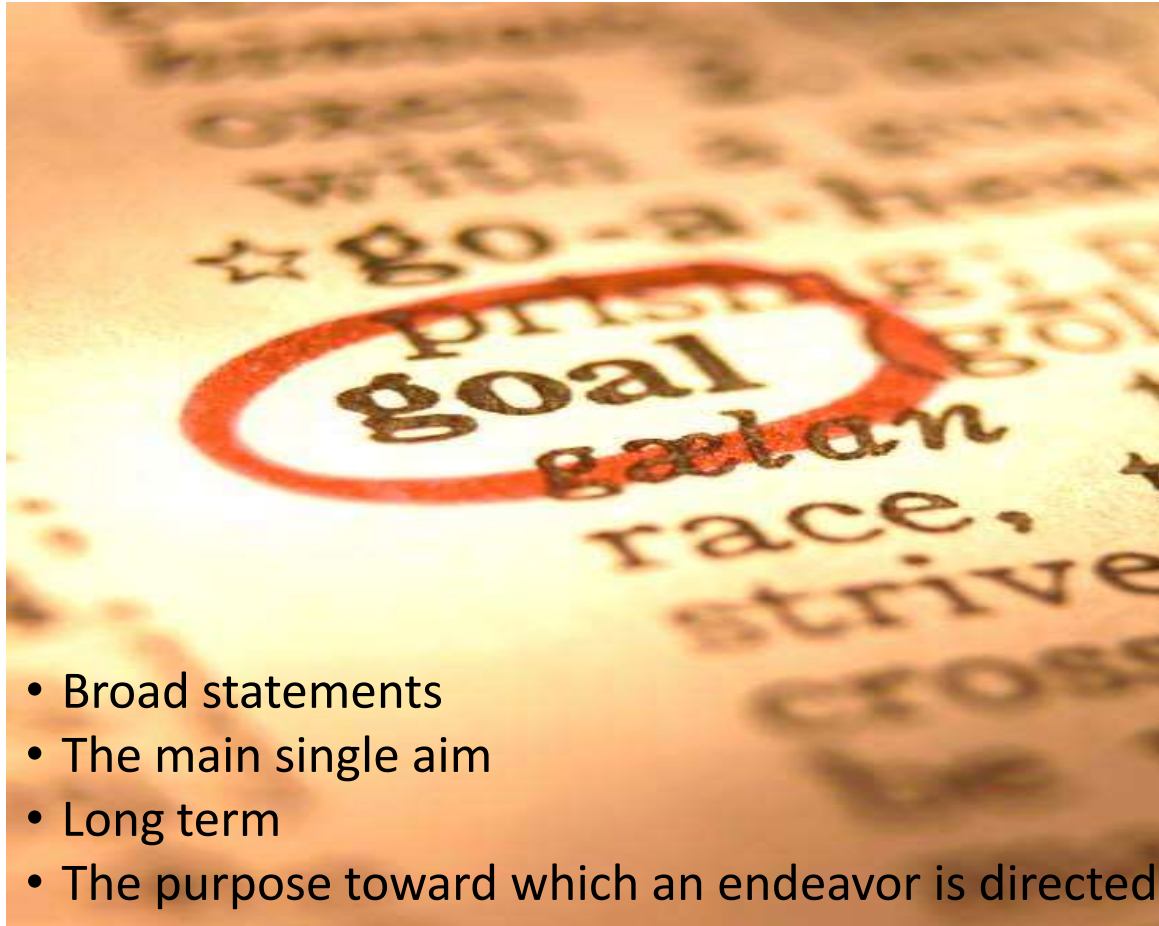


Types of Evaluations

How well was the program implemented?



Did the program produce desired results?



- Broad statements
- The main single aim
- Long term
- The purpose toward which an endeavor is directed



Write SMART Objectives

Evaluation objectives must be SMART:

- ✓ Specific
- ✓ Measurable
- ✓ Achievable
- ✓ Relevant
- ✓ Time-limited





Select Process Measures





Example SMART Process Objectives

1. 75% of invitees will respond to the invitation by the RSVP date
2. 60% of the invitees will attend the event
3. 50% of the participants will bring at least one parent or guardian to the event
4. 75% of the participants will score their satisfaction with the event as a 4 (very good) or 5 (excellent) on the exit evaluation instrument



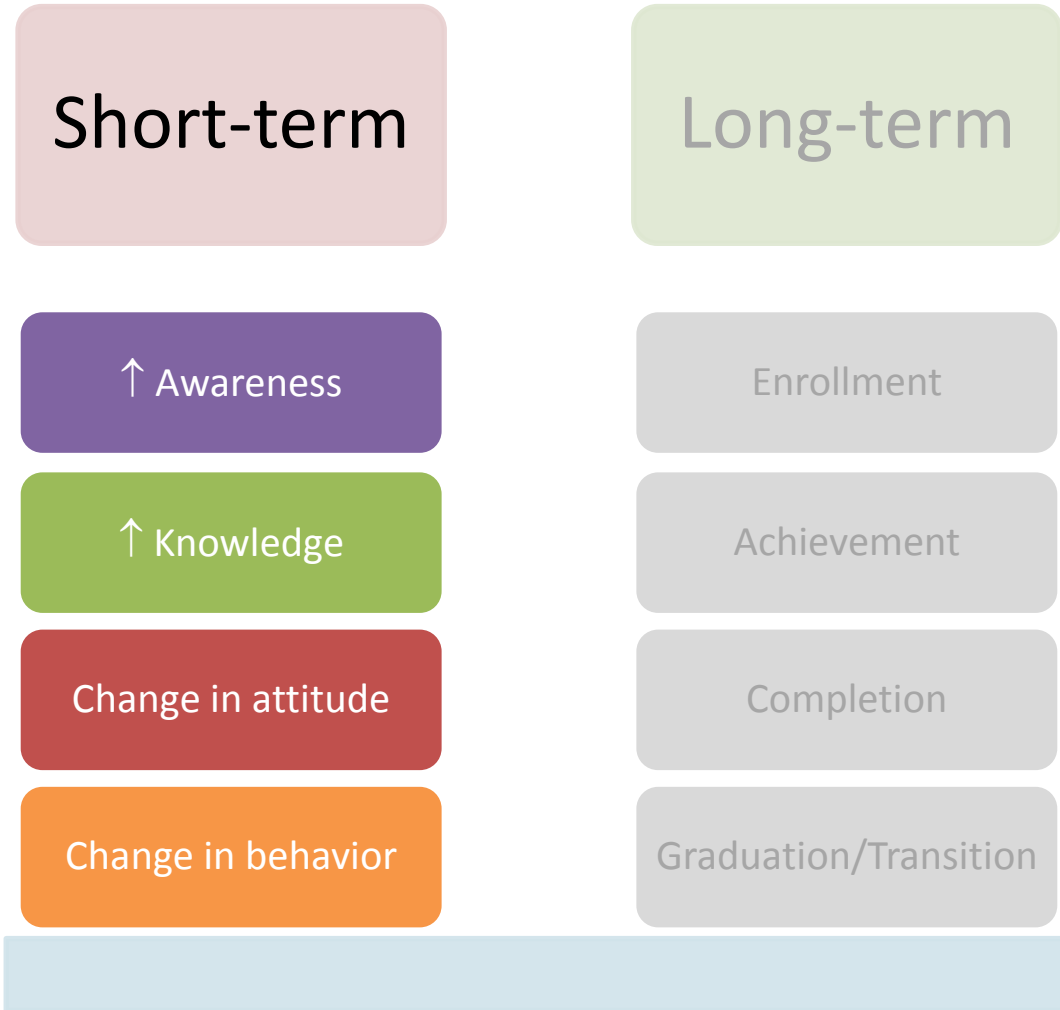
Summative (Outcome) Evaluation



The ultimate impact of our efforts: RESULTS



Select Short-Term Outcome Measures





SMART Short-Term Outcome Objectives

Are these objectives SMART?

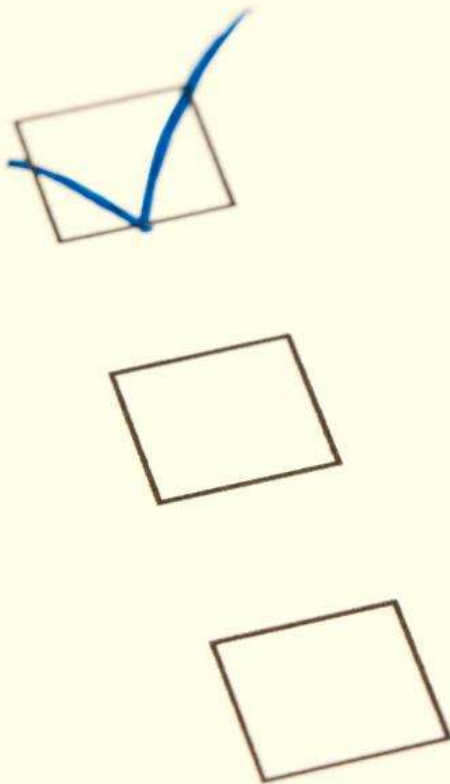
- Specific
- Measurable
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- 80% of participants in *Agri-women of Today* workshop will increase their knowledge of farm business practices as measured in pre-and post-workshop survey.
- After participating in *Focus Your Future* event 50% of the participating students will show a one point (on a 5-point likert scale) increase in their willingness to consider enrolling in the pre-engineering program at the high school.



Short-Term Measurement Tools



- Pre-post attitude assessment
- Pre-post knowledge assessment
 - Evaluation instrument
 - Post activity survey



Select Long-Term Outcome Measures

Short-term

Long-term

↑ Awareness

↑ Knowledge

Change in attitude

Change in behavior

Enrollment

Achievement

Completion

Graduation/Transition



SMART Long-Term Outcome Objectives

Are these objectives SMART?

- Specific
- Measurable
- Achievable
- Relevant
- Time-limited



- From FY12 to FY13, female enrollment in Ag 010101 will increase by 5 percentage points as measured by Overton Banner Data Collection System
- The participation rate of girls in the *Gateway to Technology* course at the middle school will increase by 5 percentage points the year following the implementation of the Focus Your Future event as measured by Perkins reported enrollment data



Long-Term Measurement Tools

Typically maintained by administration or institutional research office and reported to a funder, accrediting agency or system agency:

- Student level demographic data
- Attendance records
- Achievement records
- Graduation records
- Perkins core indicator data



Evaluation Resources

- [STEM Equity Pipeline Webinars](#)
 - May 21, 2008 Assessing Effectiveness: Do Your Program Activities Make a Difference?
 - June 16, 2008 Building Effective Program Assessments
- [Assessing Women and Men in Engineering](#)

Reporting Results





Analyze Initial Results

- Budget time for evaluation
- Use summary statistics
- Align results
- Disaggregate data
- Determine readiness for full implementation





What if the Strategy Didn't Work?

Did you correctly identify the **root cause**?

Did you **correctly implement** the strategy?

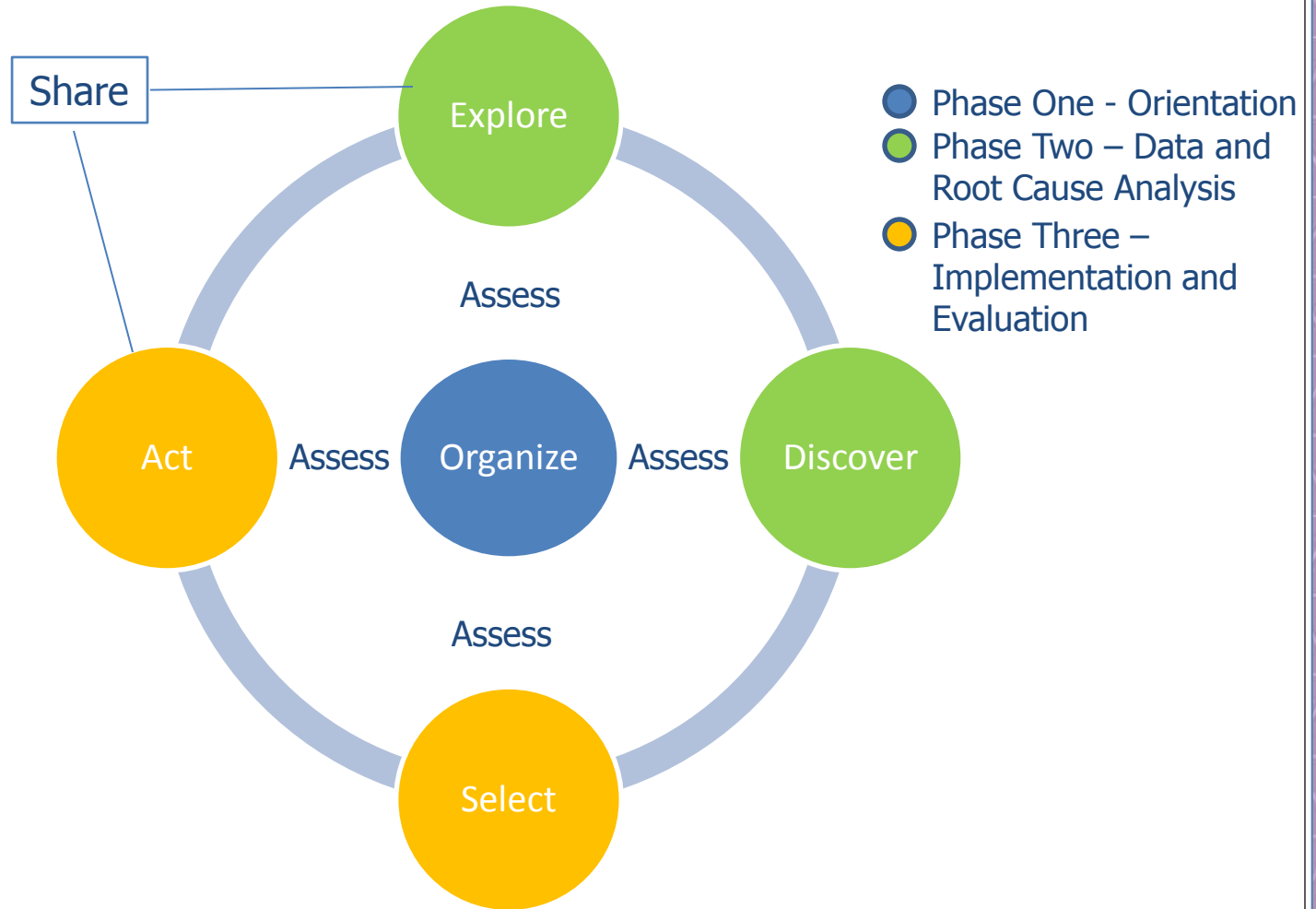


Did you give **enough time** before assessing results?

Did you select the **best solution**?



STEM Equity Pipeline Program Improvement Process For Equity





Closing

Reflecting on nontraditional career preparation





Join NAPE! Napequity.org





Questions? Contact Information

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<http://www.stemequitypipeline.org/StateTeams/OH.aspx>

National Alliance for Partnerships in Equity

www.stemequitypipeline.org

www.napequity.org