PIPESTEM™ ACT
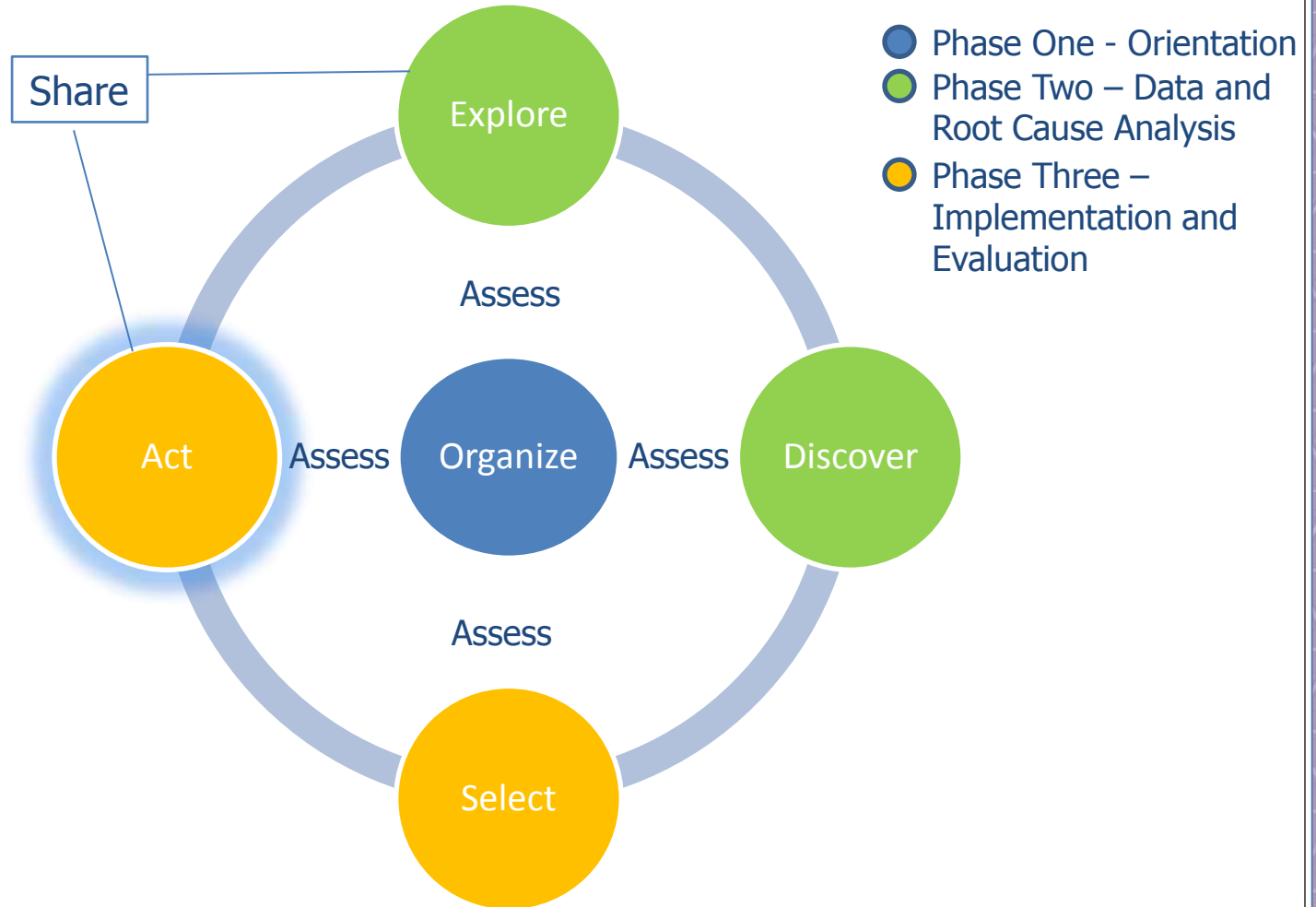
Program Improvement Process for Equity in Science, Technology, Engineering, and Math™

Where We Are

NAPE

Share → Explore

Assess

Act — Assess — Organize — Assess — Discover

Assess

Select

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

Formative vs. Summative

SMART Objectives

Evaluation Planning

Implementation Plan
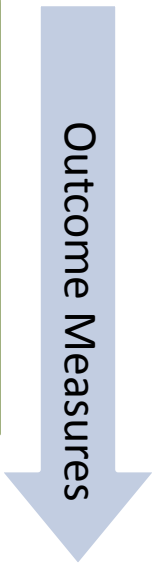
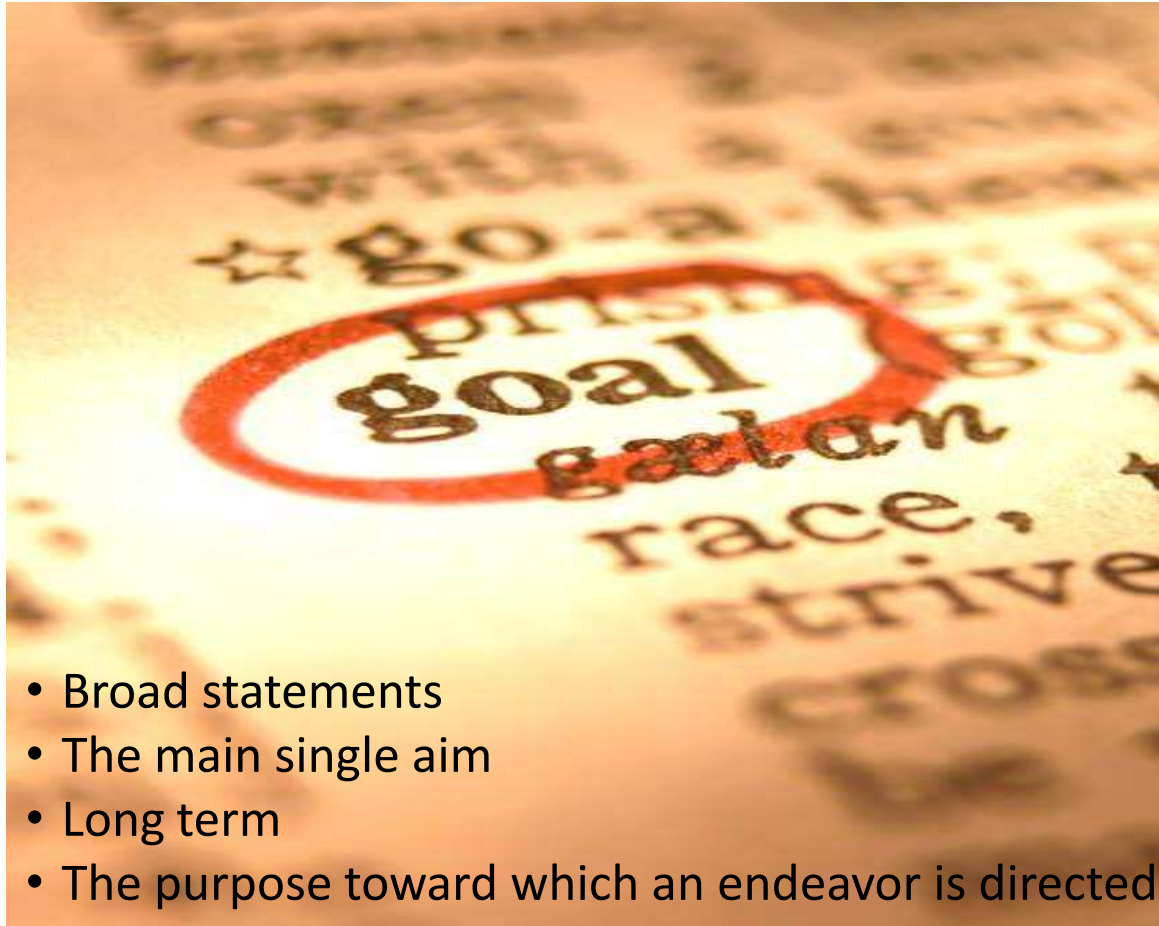Make sure your improvement strategy works **somewhere** before you attempt to apply it **everywhere**!

How well was the program implemented?

Process Measures

Formative Evaluation | Summative Evaluation

Outcome Measures

Did the program produce desired results?

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

N A P E

PIPESTEM Implementation Plan

PHASE THREE: Identify Goals and Strategies for Implementation

Select and Act: Develop Goals and Strategies for Implementation

Identify your overall goal as a measurable increase in one or more factors in the identified program(s) based on your Root Cause Analysis. Feel free to edit the sample text included in the Goal box. Describe your selected strategy or activity and break it down into manageable tasks. Your selected strategy may include multiple activities. If so then you can add more Strategy table blocks. Identify who will be responsible for completing each and task and by when. For each strategy/activity identify both process and outcome objective measures.

Goal: By date**, we will increase the percentage of female students in the** name of program **from** current participation or completion rate**% to** projected rate**%.**

Research or Evidence-Based Strategy	Tasks	Person(s) Responsible	Timeline	Evaluation Measures	
				Process/Formative Measures (P)	Outcome/Summative measures (O)
1.1 Strategy or activity planned	1.1 task one	name	completion date	enter measures	enter measures
	1.2 task two	name	completion date		
	1.3 task three	name	completion date		
	1.4 task four	name	completion date		
	1.5 task five	name	completion date		
	1.6 task six	name	completion date		
	1.7 task seven	name	completion date		
	1.8 task eight	name	completion date		

Use the Implementation Plan to develop a realistic goal.

Evaluation objectives must be SMART:

- ✓ <u>S</u>pecific
- ✓ <u>M</u>easurable
- ✓ <u>A</u>chievable
- ✓ <u>R</u>elevant
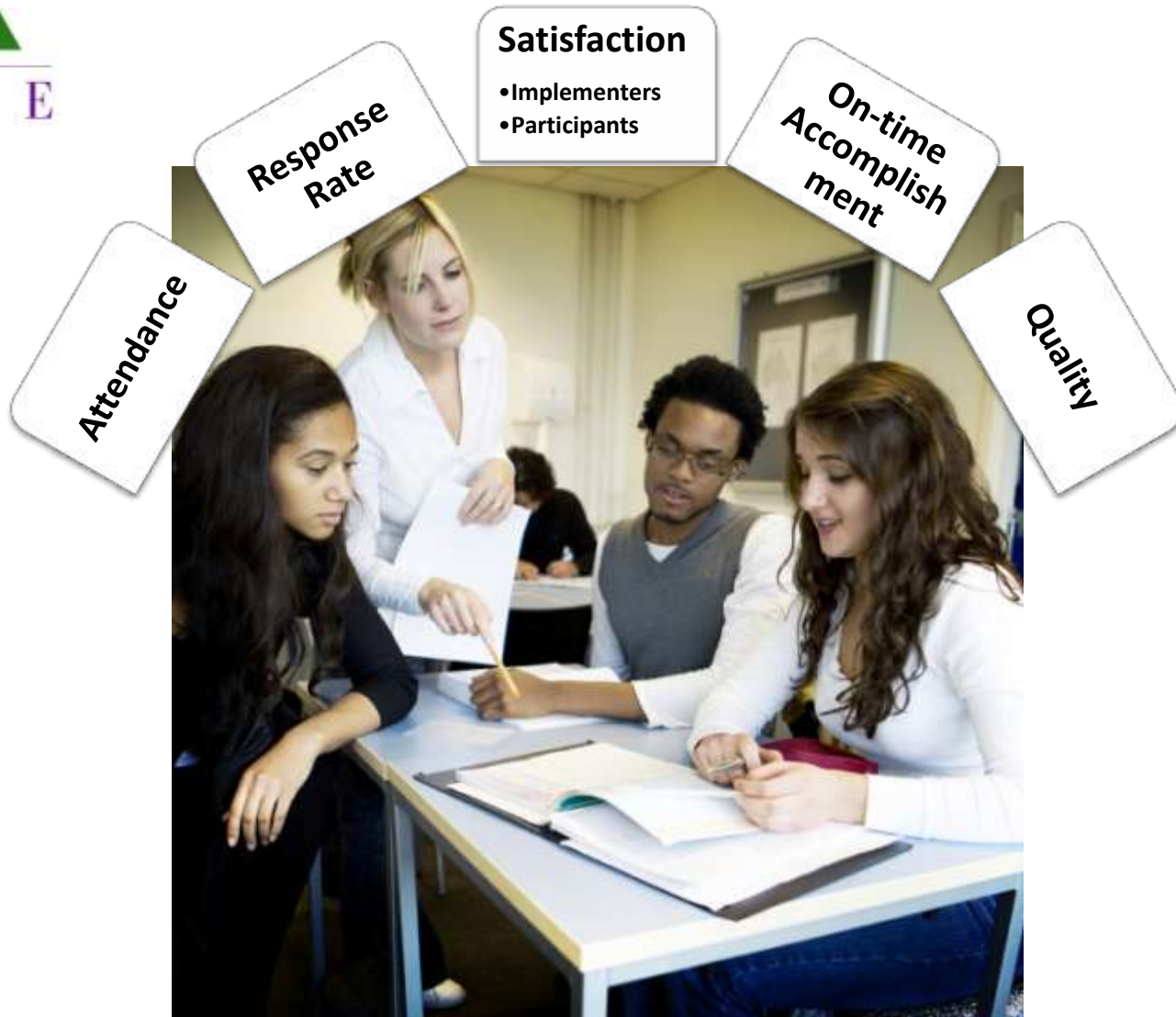- ✓ <u>T</u>ime-limited

What we all know and do well

Select Process Measures

Attendance

Response Rate

Satisfaction
- Implementers
- Participants

On-time Accomplishment

Quality

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

Process Measurement Tools

- Invitation/outreach records
- Registration/response records
- Attendance records
- Participant demographics
- Evaluation instrument
- Planning timeline

Develop a Process Evaluation Plan

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

PIPESTEM Implementation Plan

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Goal: By date, **we will increase the percentage of female students in the** name of program **from** current participation or completion rate **% to** projected rate **%.**

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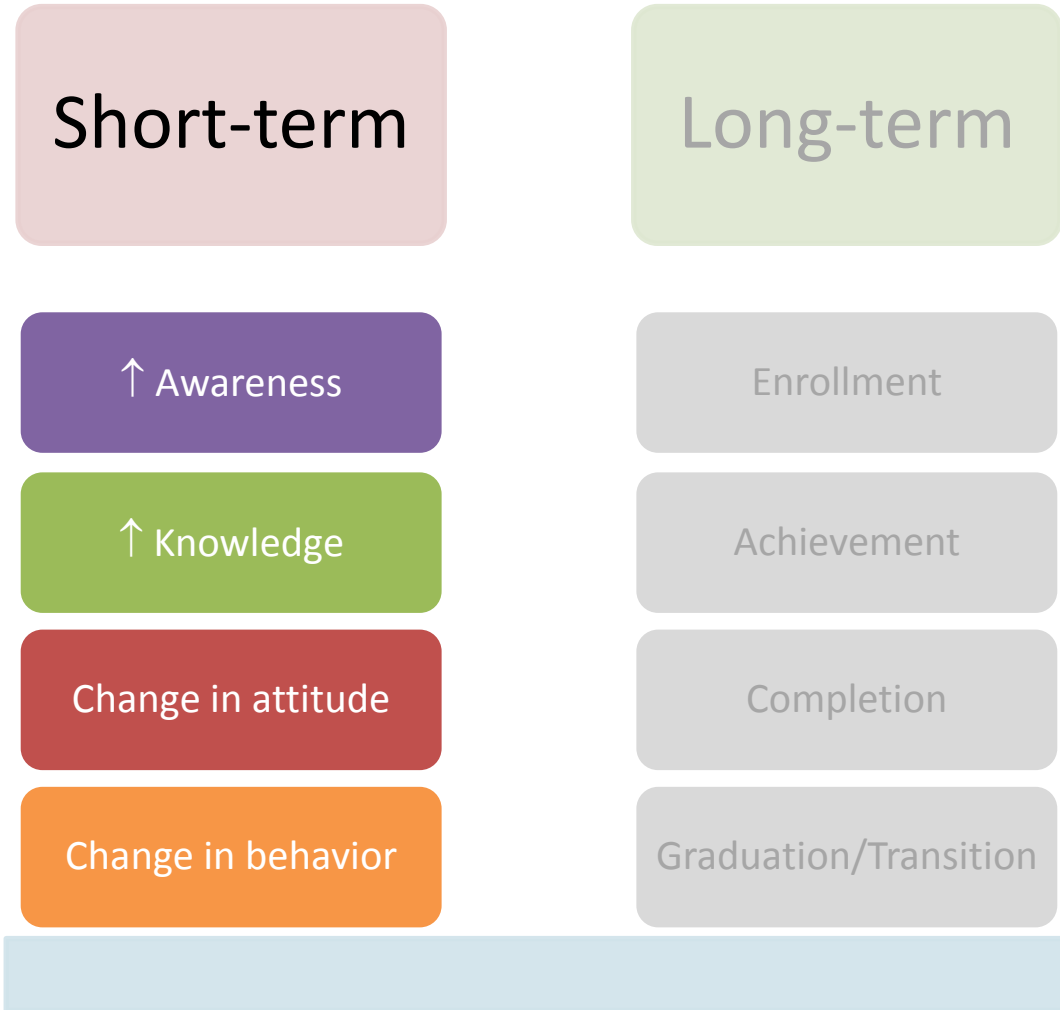Use the Implementation Plan to develop a process evaluation plan.

Summative (Outcome) Evaluation

The ultimate impact of our efforts: RESULTS

Select Short-Term Outcome Measures

Short-term	Long-term
↑ Awareness	Enrollment
↑ Knowledge	Achievement
Change in attitude	Completion
Change in behavior	Graduation/Transition

SMART Short-Term Outcome Objectives
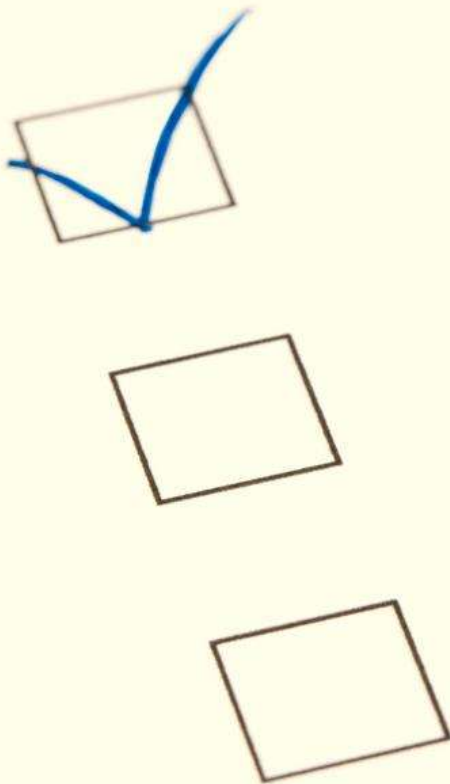
Are these objectives SMART?

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

- 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	Enrollment
↑ Knowledge	Achievement
Change in attitude	Completion
Change in behavior	Graduation/Transition

SMART Long-Term Outcome Objectives

Are these objectives SMART?

- ☐ **S**pecific
- ☐ **M**easurable
- ☐ **A**chievable
- ☐ **R**elevant
- ☐ **T**ime-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

Develop an Outcome Evaluation Plan

Objective	Method
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 after participating in *Focus Your Future* in April 2010.	Pre-post assessment
80% of parents will indicate an increased interest in their daughter enrolling in the PLTW program after the *Focus Your Future* event in April 2010.	Evaluation survey
40% of the *Focus Your Future* event participants will enroll in the *Introduction to Engineering Design Course* in the Fall of 2010 and each year following.	IED enrollment report disaggregated by FYF participants
80% of females will persist in the PLTW sequence of courses through 2012.	PLTW course completion data disaggregated by course and gender
Increase the completion of females in *Project Lead the Way* courses to 25% by 2012 (Perkins measure 6s2)	PLTW course completion report disaggregated by gender

NAPE

PIPESTEM Implementation Plan

PHASE THREE: Identify Goals and Strategies for Implementation

Select and Act: Develop Goals and Strategies for Implementation
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Use the Implementation Plan to complete the summative evaluation plan.

- [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](#)

Objective	Method	Result
75% of invitees will respond to the invitation by the RSVP date.	Response Rate	
60% of the invitees will attend the event.	Attendance Rate	
50% of the participants will bring at least one parent or guardian to the event.	Participant Demographics	
75% of the participants will score their satisfaction with the event as a 4 (very good) or 5 (excellent) on the exit evaluation instrument.	Evaluation 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.	Evaluation Survey	

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** of the performance problem?
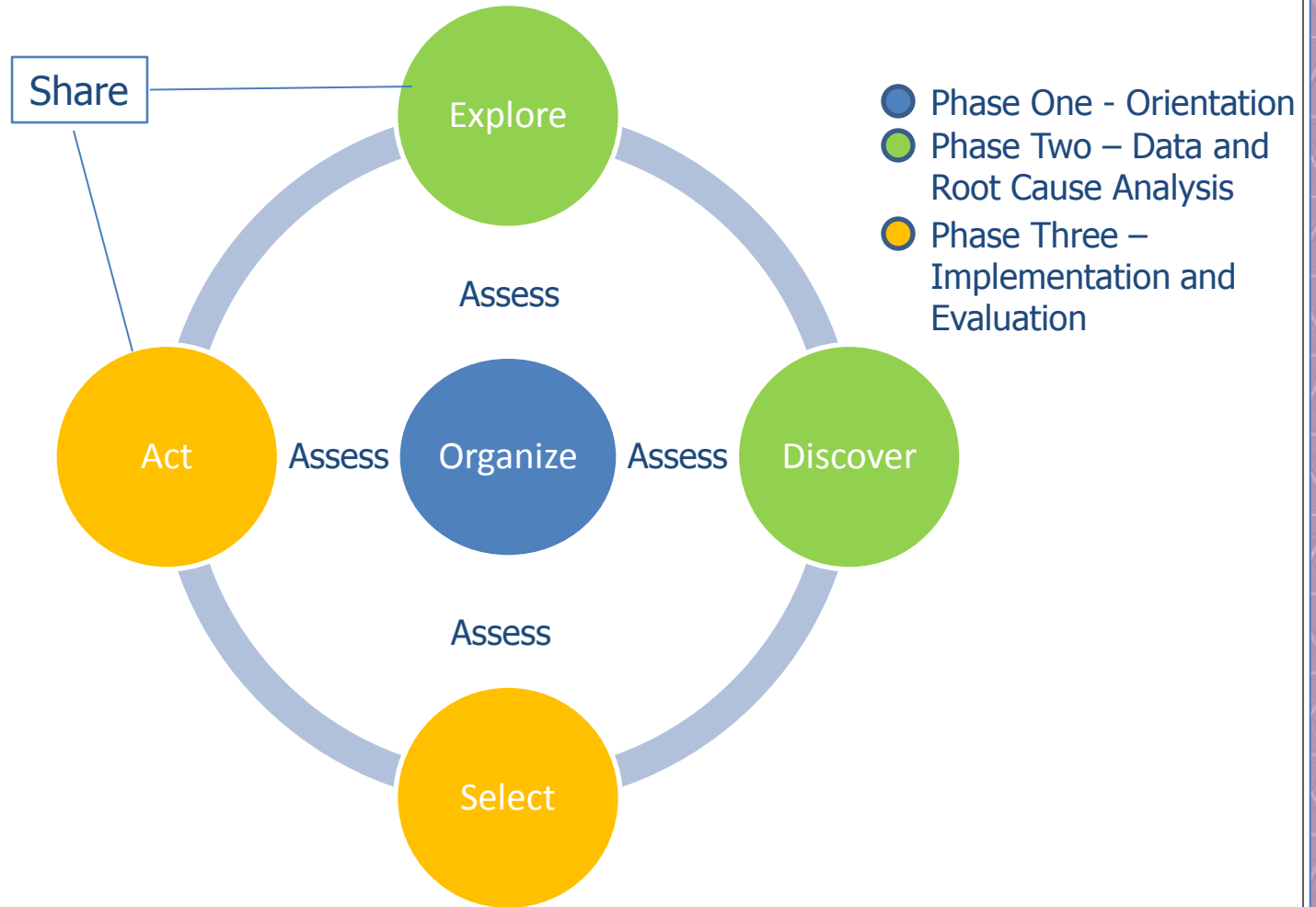
Did you **correctly implement** the strategy?

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

Did you select the **best solution**?

STEM Equity Pipeline
Program Improvement Process For Equity

Share

Explore

Assess

Act — Assess — Organize — Assess — Discover

Assess

Select

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

- Set realistic goals
- Measure both process and outcomes
- Develop short-term and long-term objectives
- Check for any required data
- Determine types of data needed: quantitative, qualitative, or both?
- Decide on data collection instrument(s)
- Develop an Evaluation Plan