

Program Improvement Process for Equity in STEM – PIPE-STEM™

The Program Improvement Process for Equity in STEM (PIPE-STEM) is a five-module training program on a continuous improvement process to address equity in science, technology, engineering and math (STEM), customized by the National Alliance for Partnerships in Equity to specifically address gender equity in career and technical education. By the end of PIPE-STEM, participants are able to:

- Identify gendered differences in STEM participation and performance, and benchmark local STEM data with regional, state, and national data.
- Explain the research concerning girls' and women's underrepresentation in scientific, engineering, technological and mathematical (STEM) fields.
- Implement and evaluate research-based activities and instruction that will improve girls' achievement in, retention in, and completion of STEM courses.
- Enhance the achievement, participation and retention levels, and completion rates of diverse groups of girls in STEM courses.

ORGANIZE. This module focuses on the development of a local leadership team who will lead the implementation of the program improvement process at their school. This module includes suggestions for team members, samples of outreach communication and meeting agendas, and information on the data the team will need to gather for the EXPLORE module. When using PIPE-STEM as a state level project this module also includes how to form a State Leadership Team and identify pilot sites for implementation.

EXPLORE. In this module, participants analyze national, state and school/college gendered performance in STEM by comparing performance levels between schools/ colleges, student populations, and programs over time. Participants will use summary statistics and basic graphs and charts to document performance gaps, based on gender, and identify improvement priorities.

DISCOVER. Next, participants add to their analysis of performance data and use additional information and methods to determine the most important and most direct causes of gendered performance gaps that can be addressed by improvement strategies and specific solutions.

Participants are encouraged to use multiple methods to identify and evaluate potential causes and select a few critical root causes as the focus of improvement efforts.

SELECT. Participants identify and evaluate potential solutions to gendered performance gaps, including both improvement strategies and program models, by reviewing and evaluating the underlying logic of these solutions and the empirical evidence of their effectiveness in achieving performance results.

ACT. Participants explore practical yet rigorous methods and tools for evaluating solutions before full implementation at the state or institutional levels and then develop plans to implement research-based strategies for program improvement.

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