TITLE V/HSI-STEM EVALUATION FRAMEWORK

We conduct a comprehensive and rigorous three-stage review across all our evaluation projects, which is always customized to the project at hand.

Our objective is to review progress and interpret success from various aspects of the project. We ensure that analyses from data gathered during the three stages of review are integrated into a single assessment model.

OPERATIONAL REVIEW → OUTPUT MEASUREMENT → OUTCOMES ASSESSMENT

Review Model. In each stage, we gather answers to a series of questions through a variety of tools we adopt, including document reviews and observations; polls, surveys, and focus group interviews; as well as activities data available through the project (participation in workshops and student support services) and institutional data (enrollment, persistence, performance, graduation).

We also develop an online customized intake form to (a) assist the client in gathering and accessing pertinent project data; and (b) allow us to conduct statistical association and correlation studies. The latter help us determine characteristics of success and which activities or project components had, in greater likelihood, attributed to success and what can be gleaned from the experiences of students who have not been as successful as anticipated or desired.

Examples of questions in each phase appear in the table below, taken from an HIS-STEM grant project:

Evaluation Questions:
Are the following statements valid and to what extent?

1. Operational Review

Have implementation strategies been adopted as per Implementation Plan (in terms of actions taken, timeline, and lines of responsibility)? Are management, reporting structures, and input gathering activities been functional? Do the planning of gatekeeper courses, experiences, and services effectively address student needs? Are coordination, communication efforts, and collaborations adequate? Are professional development/training workshops well organized, relevant and applicable? Is the structured tutoring and advising program orderly and running smoothly?

2. Output Measurement

Each of the stated projected outputs has been tracked and been achieved for the anticipated period as stated.

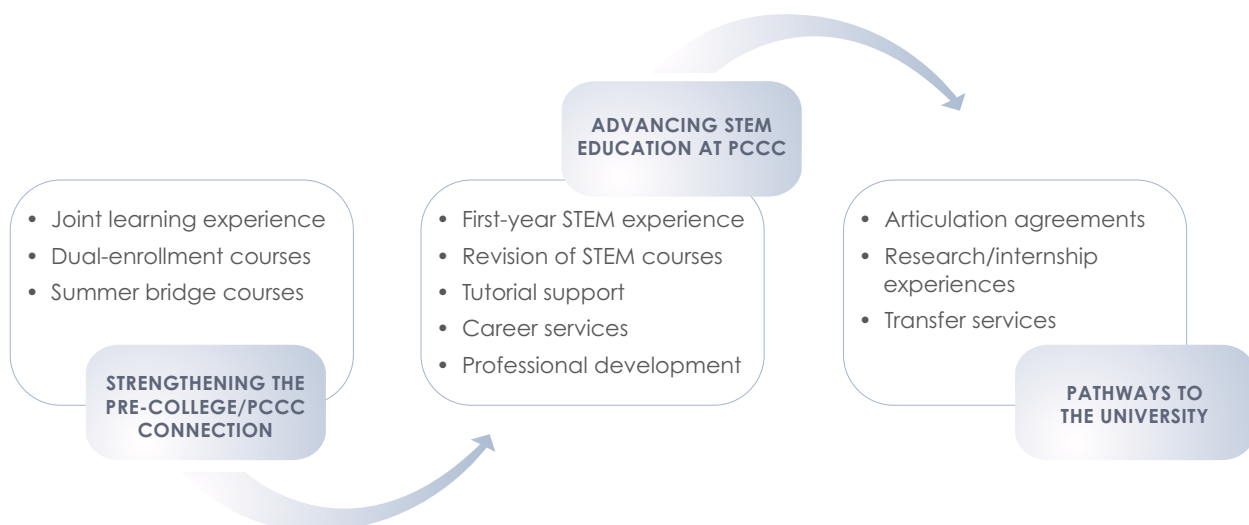If not, what has attributed to the shortcoming, and how it can be corrected?

3. Impact Assessment

Each of the projected outcomes has been met by the time proposed. If not, what has attributed to the shortcoming, and how it can be corrected?

Specifically, how many of the students served enrolled in STEM programs and continued their university studies in this area? What significant changes have been instituted by the College and will be sustained to enhance its ongoing outreach and service to its students?

Ultimately, has the College succeeded in improving the STEM pipeline and its flow for Hispanic/Latino students?

The evaluation tracks progress along significant elements of the project, as depicted in the sample diagram below.

ADVANCING STEM EDUCATION AT PCCC

- Joint learning experience
- Dual-enrollment courses
- Summer bridge courses

STRENGTHENING THE PRE-COLLEGE/PCCC CONNECTION

- First-year STEM experience
- Revision of STEM courses
- Tutorial support
- Career services
- Professional development

- Articulation agreements
- Research/internship experiences
- Transfer services

PATHWAYS TO THE UNIVERSITY

Focused attention is given during the evaluation project to proposed objectives and outcomes, which guide the analysis and all formative recommendations.

Goals

First line per bullet: Actual Output (Compare to Projected Output)
Second line: Actual Outcomes (Compare to Anticipated Outcome)

G1. Increase student enrollment in STEM programs.

\# high school students completing STEM program (Compare to 500)
% enrolling in college prep STEM course (Compare to 250)

\# HS students completing a dual enrollment course in a STEM area (Compare to 825)
% of those pursuing a postsecondary STEM degree program (Compare to 30%)

\# HS students completing a Summer Bridge Math program (Compare to 150)
% of those improving math proficiency by one instructional level (Compare to 80%)

\# HS students completing Summer Bridge STEM program (Compare to 120)
\# enrolled in a postsecondary STEM course (Compare to 60)

G2. Increase student completion rate for STEM degree requirements.

\# STEM majors completing 4 core courses for STEM major (Compare to 210 by Year 2)
% increase of fall-to-fall persistence rate (by Year 5) (Compare to 60%)

\# STEM majors receiving at least 100 hours of various services (Compare to 245)
% increase of STEM majors graduating in three years (Compare to 25%)

\# college/ high school faculty members completing 30 hours of professional development in hands-on, collaborative learning strategies (Compare to 150)
% of them demonstrating proficiency in using these tools (Compare to 75%)

G3. Increase student transfer rates to STEM fields at four-year institutions.

\# students benefiting from transfer counseling and internship/research (Compare to 263 by Year 2) | % increase in transfer rates (Compare to 25%)

\# of articulation agreements (Compare to 30) and # of dual admissions agreements (Compare to 5) created with four-year colleges or universities for STEM programs

Cohort Group Analysis. We follow students longitudinally throughout their experience to the extent possible (either as a full cohort, through performance data and perceptions surveys; or as a randomly selected sample).

We examine statistically the effects of activities and services, such as, joint learning experiences, mentoring, tutoring, reformed STEM courses on the three key outcomes of retention, graduation, and transfer to four-year institutions in STEM field of study. This would help identify and assess patterns and probabilities of success, where success is defined by achieving the proposed desired outcomes; i.e., which services or activities or student attributes could be associated with success with statistical significance. This study will greatly depend on the availability of enrollment and performance data, present and past, by student.

Where appropriate, we design randomized controlled studies, which represent the golden standard in the field. When no control groups are possible, we always work with to identify appropriate comparison groups within the institution or elsewhere.

A Collaboration. Our evaluation effort is objective, independent and data-driven. It often depends on a mixed-method approach. We prefer to engage in formative and summative reviews. Our work rarely takes place in vacuum: evaluation is not simply the responsibility of the external reviewers; we see it as a partnership with the project staff and institutional leadership and design it accordingly.

Excerpts of a Title V or HSI-STEM Evaluation Report are available upon request.

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It often depends on a mixed-method approach.

G R O U P i & i

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