

MICHELLE RICHARDS-BABB, C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV 26506, and MARJORIE DARRAH, School of Mathematical and Data Sciences, West Virginia University, Morgantown, WV 26506. Refining STEM Student Support Through Systematic PDSA Cycles

Documenting the impact of STEM-education initiatives can be challenging, especially when improvements are incremental and embedded in students' daily academic experiences. Through NSF support of the statewide West Virginia *First2* Network, our institution has centered its change efforts around a series of Plan–Do–Study–Act (PDSA) cycles designed to test, refine, and scale strategies that support STEM student success. This iterative, semi-experimental methodology—commonly used in quality-improvement work—provides a structured process for generating evidence, learning from each cycle, and adjusting subsequent interventions. Using the PDSA framework, we have implemented multiple cycles targeting factors known to influence students' sense of belonging and persistence in STEM. Across cycles, we have tested approaches to elevating student voice (e.g., structured reflection activities and student-led feedback processes), enhancing student–instructor interactions (e.g., anonymous metacognitive reporting in chemistry courses, instructor panels, and targeted opportunity messaging), and strengthening peer engagement (e.g., peer tutoring models and chemistry outreach activities). Each cycle involves systematic planning, rapid testing within STEM courses or co-curricular settings, analysis of resulting student and faculty feedback, and revision of the intervention for subsequent rounds. This presentation will showcase how specific PDSA cycles have shaped the development, assessment, and iterative improvement of these STEM-focused practices. Preliminary analyses indicate that repeated PDSA iterations are producing measurable benefits for students, instructors, and the chemistry department. Collectively, these results illustrate the value of PDSA-driven, evidence-based experimentation as a practical mechanism for continuously improving students' experiences in STEM courses and majors.