Exploring Improvement Science in Education: Promoting College Access in Fresno Unified School District

Jorge Aguilar, Michelle Nayfack and Susan Bush-Mecenas

California's Local Control Funding Formula (LCFF) requires districts to report multiple measures of student performance that reflect success in the goal of preparing students for college, career, and citizenship. As they engage in the Local Control Accountability Plan (LCAP) process, they are expected to use state and local indicator data from California's School Dashboard[i] to monitor student progress. When Dashboard indicators identify student subgroups as low performing or low growth, districts are encouraged to engage in a process of continuous improvement to develop strategies and then monitor their effectiveness.[ii] At this early stage of implementation, education leaders have an opportunity to learn from early adopters who are already using continuous improvement principles. In this case study, we share how Fresno Unified School District (FUSD) developed and utilized its data dashboard and the principles of Improvement Science to increase college access for their students, in partnership with the University of California, Merced.

California's new accountability and continuous improvement framework relies on district and school leaders using multiple measures of school performance to identify where change is needed, and to monitor carefully the development, testing, and evaluation of improvement strategies over time. This process of continuous improvement requires that local leaders have access to research-based evidence and strategies that they can implement in their schools and opportunities to learn from one another about what works, under which conditions, and for which students. PACE's series of Continuous Improvement Briefs aims to support education leaders at all levels in learning how to improve the performance of their schools and students.

PACE
Policy Analysis for California Education
CORE-PACE RESEARCH PARTNERSHIP

June 2017

Fresno's Aim: Increase Student Awareness About Postsecondary Choices

Since 2009 FUSD has invested in a robust data dashboard to support its school improvement work. The Fresno School Quality Improvement (SQII) and Targeted Action Index is made up of 75 indicators including standardized test performance, English Learner re-designation, measures of student growth mindset, measures of school climate, and college enrollment.[iii]

Using this data dashboard, the district's Equity and Access team found evidence that many students were eligible to apply to a variety of California's colleges and universities, but most of them applied to just one. This pattern persisted even among the district's low-income students, for whom college application fees for up to four California State University (CSU) campuses and four University of California (UC) campuses were waived.

> **"Fresno's Equity and Access team found that many students were eligible to apply to a variety of California's colleges and universities, but most of them applied to just one.**

The FUSD team recognized this as an equity, access, and social justice issue that violated the district's guiding principle: "All students are given an equal opportunity to graduate with the greatest number of postsecondary choices from the widest array of options."

Identifying and understanding this issue was the start. To resolve it, the team in Fresno searched for an approach to system improvement that could accelerate their efforts. They ultimately landed on Improvement Science. The Improvement Science framework, first used in the health care sector, is now being applied in education systems. It is defined by six principles:[iv]

1) Identify specific problems
2) Focus on key participants
3) Attend to variation in performance (what works, for whom, under what set of conditions)
4) Reflect upon the existing system that is designed to produce current outcomes (systems thinking)
5) Measure processes and outcomes to assess the efficacy of strategies
6) Utilize rapid Plan-Do-Study-Act (PDSA) cycles to promote quick improvement

The Improvement Science framework helps districts understand how to focus on specific problems, introduce small measureable changes, measure the impact of these changes, and determine whether and when these changes create true improvements that should be spread more widely across the system.

> **"Improvement Science helps districts focus on specific problems, introduce small measureable changes, measure the impact of these changes, and determine whether these changes create true improvements.**

FUSD is a leader in using the principles of Improvement Science to help solve problems of practice. Multiple teams within FUSD's central office are committed to applying some or all of these principles to their work. In this case study, we detail how the Equity and Access team has used the district's data system and a locally developed online tool to plan for and test improvements that were designed to increase the number of eligible high school students applying to multiple California colleges and universities.

Identifying Specific Problems and Focusing on Key Participants

Determining how to move forward in solving their problem of college access presented an opportunity for the Equity and Access team to think differently about how school districts normally approach the change process. Rather than jump directly into testing potential solutions, a team of data analysts turned first to existing district data to understand what was happening with their college-eligible students.

Using eight years of historical data from FUSD's data dashboard and data retrieved from the National Student Clearinghouse, the Equity and Access team created a set of student academic profiles. Each profile included a list of colleges that were likely to accept a FUSD student with similar academic characteristics. Next, the FUSD team used their data dashboard to compare these profiles to current student data. This allowed them to identify eligible students who were not applying to CSU and UC universities where they likely would be accepted.

Attending to Variation in Performance and Reflecting on the Existing System

Before developing and testing specific solutions to this problem, the Fresno team sought to understand the problem as it was experienced by the user, in this case the District's college-eligible students. The Equity and Access team worked closely with school counselors to understand the experiences of their students. They interviewed students to document (a) why certain students applied to more colleges than others and (b) what interventions had already been tried by counselors. This allowed district leaders to understand the variation in performance across schools, as well as challenges and opportunities for improvement. Afterwards, the team identified the following set of root causes that could help explain existing college application patterns in FUSD:

- The district had never communicated to its students about which specific colleges and universities matched their academic profiles.
- School staff and counselors did not have detailed knowledge about institutions of higher education outside of the Fresno area because most attended local colleges themselves.
- School counselors had limited time to meet with students individually to discuss college plans.
- Students and their parents had little knowledge about institutions of higher education outside of the area, and lacked crucial information about financial aid, application waivers, and other policies designed to help low-income students.

The Equity and Access team identified one root cause to focus on: the lack of students' awareness of their matched college options based on their academic profiles.

Using PDSA Cycles and Measuring Processes and Outcomes to Assess Improvement

Continuous improvement requires the measurement of processes and outcomes to determine whether tests of change are producing actual improvements to the performance problem. The goal was to increase the number of college-eligible students applying to CSUs and UCs that matched their academic profiles. The Equity and Access team relied on their own online tool, the Cycle of Continuous Improvement Learning and Competency Tool, to provide structure to the entire improvement process. This tool helped the team operationalize all six principles of Improvement Science and demonstrate that they were acquiring the skills and expertise necessary to translate Improvement Science into practice.

The Cycle of Continuous Improvement Learning and Competency Tool, which is still in the testing stage, helped Fresno execute their Plan-Do-Study-Act model by creating a road map with detailed instructions for team members. The tool also served as a hub for documentation.

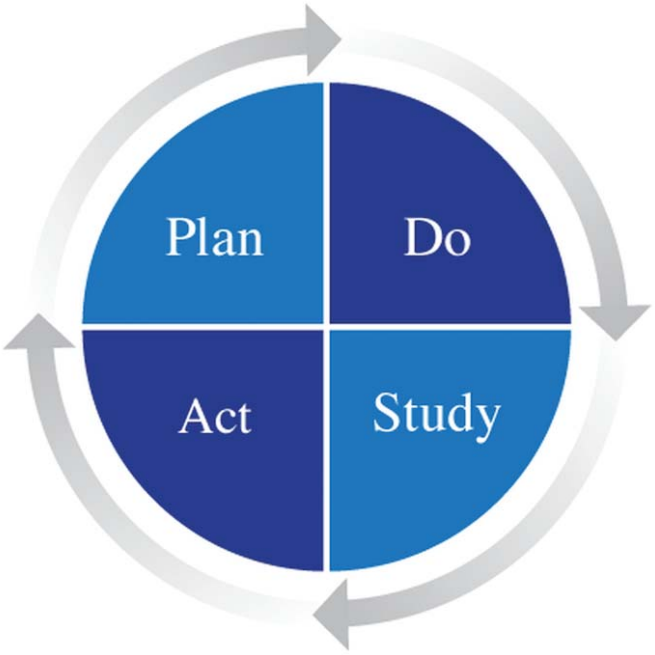

Figure 1: Plan-Do-Study-Act Cycle of Improvement

Beginning with the Plan phase, the Fresno team developed an intervention by creating individualized "I Am Ready" packets for every senior who qualified to apply to CSU and UC campuses. This packet was intended to increase students' awareness of their individual college eligibility. These packets were mailed to current students who had been identified using course-taking, A–G, SAT/ACT, and other data as good matches to the alumni profiles of students who had already been accepted to a wide range of CSUs and UCs.

During the Do phase, the team developed and assembled the college packets, which provided specialized information about the students' matched campuses based on their academic profiles. The packets also included application fee waiver information and a form to give to their school counselor to set up an appointment to discuss college applications.

To support this effort, school counselors underwent two days of training to learn more about various CSU and UC campuses and student eligibility. The entire Do process was in contrast to typical counseling practice, in which counselors met with students to discuss course-taking and to provide college application resources in a much less comprehensive fashion and usually only in response to student request.

Measurement and data collection were embedded into each step of the Do process. Counselors documented where students were applying as well as their reasons for not applying to eligible campuses. They documented the number of students who set up counseling appointments using the forms included in the packets. This data served as leading process indicators in the Cycle of Continuous Improvement Learning and Competency Tool (e.g., how many students used the form to schedule a counseling appointment?) and were used to inform future improvement efforts (e.g., what reasons did students give for not applying?).

> "Sending "I Am Ready" packets and encouraging students to have conversations about them with school counselors helped to increase the number of students applying to UC/CSU outside of Fresno more than 50 percent.

After the Do cycle, the FUSD team engaged in Study. They asked themselves whether their data showed an improvement in the performance problem. The team also studied their implementation of each component of their change idea and documented concrete examples of why specific components did not get implemented. Reasons included an inability to prioritize the work, a lack of clarity around the task or the knowledge and skills to complete it, and a lack of funds or decision-making authority to complete the task. These insights helped to improve the change idea the following year.

After reviewing all of the evidence on their graduating students, the Equity and Access team determined that the packet idea was successful. Sending these packets and encouraging students to have follow-up conversations about them with school counselors helped to increase the number of students applying to CSU/UC outside of Fresno from 382 to 578, an increase of over 50 percent. Reviewing the implementation and effects of this change idea as a whole, the team agreed to adopt this intervention with some modifications. As a next step, the Fresno team is building upon their early success by continuing to use Improvement Science and their Cycle of Continuous Improvement Learning and Competency Tool to address barriers to college matriculation. Next, they are hoping to develop and test interventions that will counteract the "summer melt" phenomenon that often results in lower college attendance by students who are admitted and intending to enroll at a college/university.

Lessons Learned: Implementing Continuous Improvement at Scale

The team in Fresno had some early wins in using the principles of Improvement Science to boost college access, but they have far more work to do to make dramatic changes within the district. The team acknowledges that true continuous improvement requires a culture change within districts, as it requires a level of discipline and rigor that is not yet the norm in education environments. The Equity and Access team has learned a great deal about building staff capacity to engage in continuous improvement initiatives.

Define What Your Team or District Means by "Continuous Improvement"

The Fresno team learned that there was not a common language or definition or continuous improvement across their team. This lack of consensus caused staff to feel as though they were doing continuous improvement even when they were not adhering to the principles that the team was trying to adopt. This created a number of problems for the team, the largest of which was that staff often wanted to adopt new terminology without actually changing their existing practices. The Equity and Access team used the principles of Improvement Science to apply a disciplined and rigorous methodology to their work. They developed the Cycle of Continuous Improvement Learning and Competency Tool as a way to develop a shared language and structure across their own team and future district teams. The tool holds the team accountable to their own change ideas and facilitates the implementation of principles of continuous improvement that they have agreed will help determine whether they have improved their system over time.

Anchor All Work Around the Problem of Practice

Doing so provides structure and discipline. It tempers the desire to implement solutions without demonstrating a solid base of understanding of: (a) the problem being solved; (b) academic, technical, and/or clinical expertise that informs the problem being solved; or (c) a working theory of improvement for the problem being solved. The Equity and Access team made concentrated efforts to better understand why eligible students weren't applying to certain colleges and universities. They involved school counselors to make sure that the root causes they were identifying could actually explain the student behaviors reflected in their data. Once the team had a clear understanding of the problem and what an improved outcome would look like, they selected a change idea (college packets) that they believed would address one of the primary root causes of the problem of practice. Throughout their PDSA cycles, the team kept a laser focus on this problem of practice.

Test Before You Scale and Use Data to Determine if Tests Are Actual Improvements

Documentation can be a useful tool to ensure clarity, accountability, and transparency. In Fresno, their Cycle of Continuous Improvement Learning and Competency Tool required that staff provide research and evidence to (a) support their change idea, (b) clarify which individuals had taken ownership over specific tasks, and (c) mandate that staff take stock of their success and challenges. Further, such documentation enhanced transparency of these efforts to district leaders, the research community, and even the public.

Balance Science and Practice

An important consideration in this work is the need to balance fidelity to the "science" of Improvement Science with the urgency for change. Close adherence to the six Improvement Science principles can be difficult when promising change opportunities present themselves with short action timelines. The FUSD team posed two guiding questions as they sought to strike this balance. Had peer reviewers verified that the solution under consideration was viable and rigorous? Was the opportunity to "change conditions in the present" strong enough to outweigh the impact of deviating from the agreed upon practices and processes of the team?

Don't Be Afraid to Fail

The theory of change behind continuous improvement is that school systems must become learning organizations that constantly test interventions designed to address systemic problems and then learn to determine whether these changes bring about improvements. Since districts are testing change hypotheses, there is a strong likelihood that some of these hypotheses will not produce the intended outcomes. Fresno's Equity and Access leadership team continues to wrestle with daily failures, even though they are a natural part of continuous improvement. If the process of improvement is structured correctly, failure produces as much learning as success.

Stay Humble

In trying to build the will and skill of colleagues to engage in Improvement Science work, the FUSD team recognized a common attitude: that they already had the expertise to solve their performance problem. Upon reflection, the team accepted that they lacked the humility to be honest about why, despite in-house expertise, their outcomes continued to be unsatisfactory. To combat this mindset, the Equity and Access team constantly asked themselves and others in the district, "If we know how to solve this problem, then why haven't we yet?"

Fresno Unified School District began its Improvement Science journey by starting small and building the capacity of one team within the district to improve a narrow problem of practice for a subgroup of its students. This early work has resulted in improved outcomes for a subgroup of Fresno's students as well as the development of a learning tool that will ultimately help the district build Improvement Science capacity across more of its teams and departments.

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[i] California's School Dashboard can be accessed at www.caschooldashboard.org

[ii] Superintendent's Advisory Task Force on Accountability and Continuous Improvement (2016). Preparing All Students for College, Career, Life and Leadership in the 21st Century. Sacramento, CA: California Department of Education.

[iii] To learn more about FUSD's Data Dashboard and Indicators see http://bit.ly/FUSDdatadashboard

[iv] Bryk, A., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). Learning to Improve: How America's Schools Can Get Better at Getting Better. Cambridge, MA: Harvard Education Press.

About the Authors

Jorge Aguilar is the newly appointed Superintendent of Sacramento City Unified School District. He most recently served as Associate Superintendent for Equity and Access at Fresno Unified School District. He has served as Associate Vice Chancellor for Educational and Community Partnerships and Special Assistant to the Chancellor at UC Merced, and adjunct faculty at California State University, Fresno. He started his career in education in 1994 as a high school teacher at South Gate High School in the Los Angeles Unified School District. He is a graduate of the University of California, Berkeley (1994) and Loyola Law School (1998).

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Michelle Nayfack is the Senior Researcher, System Improvement and Policy, at Policy Analysis for California Education (PACE) at Stanford University where she leads developmental evaluation for the CORE-PACE Research Partnership. Before joining PACE she studied state and federal policy implementation and school turnaround at the American Institutes for Research and systems-level change in both traditional school districts and charter management organizations at the Center on Educational Governance. She holds a Ph.D. in Urban Education Policy from the University of Southern California and a teaching credential from California State University, Northridge.

Susan Bush-Mecenas is a Ph.D. candidate, Provost Fellow, and research assistant with the Center on Educational Governance at the University of Southern California. In addition to her work with the CORE-PACE Research Partnership, she supports several other research studies at USC including the Teacher Incentive Fund grant evaluation of Los Angeles Unified School District's human capital reforms and a study of teacher evaluation implementation in New Orleans. Her research interests include organizational learning, capacity building, accountability, and school district reform.

CORE-PACE Research Partnership Publications

Heather Hough, Demetra Kalogrides, Susanna Loeb. *Using Surveys of Students' Social-Emotional Skills and School Climate for Accountability and Continuous Improvement*. 2017

Julie A. Marsh, Susan Bush-Mecenas, Heather Hough. *Local Control in Action: Learning from the CORE Districts' Focus on Measurement, Capacity Building, and Shared Accountability*. 2016

Heather Hough, Emily Penner, Joe Witte. *Identity crisis: Multiple measures and the identification of schools under ESSA*. 2016

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Stanford Graduate School of Education
520 Galvez Mall, CERAS 401
Stanford, CA 94305-3001
Phone: (650) 724-2832
Fax: (650) 723-9931