

Engaging District and School Leaders in Continuous Improvement:

Lessons from the 2nd Year of Implementing the CORE Improvement Community

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In October 2015, Policy Analysis for California Education (PACE) launched a research partnership with the CORE Districts in California. The CORE-PACE Research Partnership is focused on producing research that informs continuous improvement in the CORE districts and policy and practice in California and beyond.

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Executive Summary

California's shift towards continuous improvement in education makes understanding how districts and schools can learn to improve a more pressing question than ever. The CORE Improvement Community (CIC), a network of California school districts engaged in learning about improvement together, is an important testing ground to learn about what this work entails.

This report continues drawing lessons from the CIC's second year as its districts work together towards a common aim: to improve the mathematics achievement of African American and Latinx students in Grades 4–8. The CIC applies a specific continuous improvement approach, called improvement science, to support teams in reaching the aim. Improvement science, unlike many approaches to reform, is not a specific "program" designed to fix educators' performance in a particular aspect of their work (e.g., mathematics instruction). Instead, it is an approach and tools through which educators can better understand the causes of lagging performance, select ideas that they believe will lead to improvement, test them, and collect and analyze data from those tests to systematically see if their ideas indeed yield better outcomes. In 2016–17, the work of the CIC consisted of building district teams that conducted systems analysis to understand the achievement gap in their respective contexts. In 2017–18, the CIC launched local improvement teams (LITs) at schools, which used tools and protocols of improvement science to identify strategies that could impact the problem of practice, test those ideas, and gather data about the impacts of those change ideas.

The first section of the report briefly explains the policy context in California and the history of the CORE districts' collaboration. The second part of the report details four major lessons learned from the CIC this year:

1. The simultaneous goals of improving math achievement while building capacity for continuous improvement offer both benefits and challenges for the CORE Districts.
2. Districts have a pivotal role to play in supporting and sustaining continuous improvement efforts focused on classroom instruction.
3. Context matters. Preexisting structures and processes, time for educator collaboration, and supportive leadership all influence continuous improvement efforts.
4. District and school leaders are excited about the potential of continuous improvement to spur deep and lasting improvement.

The lessons learned from CORE's second year of implementing the CIC have broad implications throughout the state and the nation as educational organizations seek to bring continuous improvement to bear on problems that have been intractable to date.

Introduction

In 2016–17, the CORE hub and its eight affiliated districts launched the CORE Improvement Community (CIC) to support districts in accelerating the mathematics achievement of African American and Latinx students in Grades 4–8 while building their capacity around continuous improvement more broadly.¹ As such, the CIC is a large-scale attempt to use networked improvement in education and is at the forefront of national interest as a result. This report describes the second year of implementation of the CIC by first situating this year’s work in the California policy context and an overview of continuous improvement methodologies. The report then homes in on the CIC, providing a history of the CORE Districts leading up to the initiation of the CIC and a description of the work of the CIC in 2016–17 and 2017–18. Finally, the report describes lessons taken from the experiences of the CORE Districts in 2017–18, which have broad implications for others interested in applying continuous improvement approaches in education.

Setting the Stage: California’s Education Policy Context

California’s public education system reaches more than six million students each year in nearly 11,000 schools across more than 1,000 districts (California Department of Education). While California public education has great strengths, it also has persistent challenges. For example, *Getting Down to Facts II*, a set of 36 studies designed to document the state of California education, showed that despite recent improvements, California’s low-income, African American, and Latinx students perform lower than others in the state, and that these gaps are significantly bigger than in other states (Loeb, Edley, Imazeki, & Stipek, 2018). In recent years, as California and its districts and schools seek to remedy their problems, many have become interested in approaches to continuous improvement. Continuous improvement approaches differ from “programs” that a district or school might adopt to fix a problem in that continuous improvement seeks first to understand the places in the existing system that lead performance in a given domain (e.g., graduation rates, suspension rates, achievement gaps) to lag behind expectations. Continuous improvement engages multiple stakeholders (e.g., teachers, administrators, operational staff, parents) in a disciplined approach to identifying, implementing, and testing strategies for improving performance and then spreading evidenced-based changes that work locally to improve outcomes (Grunow & Hough, 2018).

¹ In this report we use the word capacity to refer to an organization’s ability to use all of its resources to achieve its goals. We use the word capability to refer to an individual’s skills. CORE’s professional learning programs seek to build participating districts’ capacity for improvement by increasing the improvement capability of their administrators and teachers.

Important shifts in federal law and state accountability policy are fueling the interest in and spread of continuous improvement and are driving changes in how districts and schools think about improving outcomes for students. The 2015 reauthorization of national educational policy, the Every Student Succeeds Act (ESSA), uses continuous improvement language. In California, increased local control through the Local Control Funding Formula (LCFF)² and more accountability and transparency through the Local Control and Accountability Plan (LCAP)³ and the California School Dashboard⁴ have spurred districts across the state to focus on improving school quality and student outcomes. Additionally, continuous improvement has been explicitly listed as a priority by the State Superintendent's Accountability and Continuous Improvement Task Force⁵ and the state's ESSA plan.⁶ The Statewide System of School Support (a cornerstone of the ESSA plan) charges state agencies, including the County Offices of Education, the California Department of Education, and the California Collaborative for Educational Excellence, with supporting districts with struggling schools. The plan for exactly what the support will look like is not yet finalized; however, continuous improvement is a central strategy. In fact, some would argue that, in a state as large and diverse as California, networks are a critical path for system improvement (Moffitt et al., 2018). In addition to policymakers, the philanthropic world is also looking to continuous improvement to address long-standing challenges (Plank, O'Day, & Cottingham, 2018). The Bill and Melinda Gates Foundation, for example, recently announced \$92 million in grants to 19 initial grantees (including the CORE Districts) that will serve as hubs of improvement networks. As a result of the prominence, educational leaders in California see the strategic importance of building their organizations' capacity to successfully implement continuous improvement approaches.

However, despite the attention continuous improvement is garnering, there are still many questions about what it looks like in practice. Research on implementation of continuous improvement in education is sparse, and there is even uncertainty about what the term means in practice (Grunow, Hough, Park, Willis, & Krausen, 2018). There is a great need for educational organizations to learn by doing and share what they learn. California has several groups engaged in action research to apply continuous improvement theories, techniques, tools, and processes, including the CORE Improvement Community (CIC). After first providing a brief overview of continuous improvement and the history of the CIC, this report shares lessons for the CIC's second year of implementation to build the knowledge base about what continuous improvement looks like in practice.

² For more information, see <https://www.cde.ca.gov/fg/aa/lc/lcffoverview.asp>

³ For more information, see <https://www.cde.ca.gov/re/lc/>

⁴ To view the Dashboard, see <https://www.caschooldashboard.org/#/Home>

⁵ Their report can be found at <https://www.cde.ca.gov/ta/ac/ar/account-report-2016.asp>

⁶ See <https://www.cde.ca.gov/re/es/>

Continuous Improvement, Improvement Science, and NICs

There are many different approaches to continuous improvement. While they tend to share a focus on using data for improvement, approaches vary in terms of the roles practitioners vs. experts play, the way problems and solutions are identified, and the type of information that counts as evidence (Grunow et al., 2018). The CORE Improvement Community uses the approach of improvement science and draws inspiration from the structure of a Networked Improvement Community (NIC), as described by Bryk, Gomez, Grunow, and LeMahieu (2015), as a way of building a cross-organizational improvement network. In the report on the CIC's first year of implementation (Nayfack, Park, Hough, & Willis, 2017), we described the NIC approach, and its six core principles, in relative detail. Here we collapse those six principles about NIC function into two categories:

1. Generating improvement: Using the tenets, tools, and processes of improvement science to generate ideas and approaches to accelerating student outcomes.
2. Spreading improvement: Leveraging a networked community to accelerate the dissemination of learning.

Continuous improvement as an approach to accelerating outcomes has been found to be effective in *generating improvement* in sectors as diverse as manufacturing, health care, and education (Liker, 2004; Rother, 2009; Kenney, 2008; Haxton & O'Day, 2015; Aguilar, Nayfack, & Bush-Mecenas, 2017). Improvement science requires the engagement of frontline workers in defining problems, analyzing data to figure out how the current system is producing the gap between current and desired outcomes, and finally generating and testing changes to address those problems. Improvement science also brings specific approaches and tools, such as the fishbone diagram (see a sample from the first year of the CIC in Nayfack et al., 2017) and the Plan, Do, Study, Act (PDSA) cycle, to support teams in carrying out all stages of the work.

In addition to describing an approach to disciplined learning for the purpose of improvement, Bryk et al. (2015) articulated the idea that networked learning be used to accelerate the speed and spread of improvement. Under this approach, many teams are focused tightly on a well-specified aim and can rapidly test changes and share findings so that all teams benefit from each other's learning. As we will describe below, the improvement science portions of Bryk and colleagues' theory about how a NIC works align well with the work of the CIC. As a network, however, the CIC diverges from the theoretical "networked community" in ways that are likely similar to—and therefore instructive for—many others in California who are influenced by the NIC model.

History of the CORE Districts

In 2010, the districts that now make up CORE joined forces to write California's Race to the Top application. Although the application was not granted, the partnership sparked desire for further collaboration. The districts formalized their affiliation, and CORE Districts became a nonprofit organization that serves as the "hub" for the network of participating districts, with a governing board comprising the superintendents of the participating districts. The group's early efforts included collaborating to design and create more than 60 assessment modules to support teachers' shift to CCSS-aligned instruction (Knudson & Garibaldi, 2015). In 2013 the CORE districts⁷ applied for and received a waiver from the federal No Child Left Behind (NCLB) Act to use multiple measures of school quality to hold schools accountable for improvement, including student social-emotional learning and school climate/culture survey data, in addition to the typical measures of test scores, high school graduation rates, and absenteeism (Marsh et al., 2016).

After ESSA replaced NCLB in 2015 and there was no longer a need for the waiver, the districts reaffirmed their desire to learn from each other, share problems of practice, and address issues of equity. Through searching for a framework that would support and enhance the group's ability to leverage experiences and learning, CORE decided the Networked Improvement Community (NIC) model fit the organization's needs and current structure: The districts were well versed in working together on meaningful problems, and the CORE Districts organization was already well placed to serve as a coordinating hub. The districts called the newly formed network the CORE Improvement Community, or CIC⁸ (Knudson & Garibaldi, 2015; Nayfack et al., 2017).

Overview of CIC Work for 2016–17 and 2017–18

After electing to adopt a NIC structure, CORE held the continued engagement of all eight districts as a top priority in working to define the specific purpose of this community. The CIC came together to decide on a common problem of practice to collectively address. Suggested areas of focus included math achievement for African American and Latinx students, English language arts proficiency for English Learners, and 8th graders' high school readiness. The districts then looked at data from across CORE and from each district individually surrounding these issues. Eventually, the districts agreed that accelerating the mathematics achievement of African American and Latinx students was an urgent shared problem and decided to focus on closing the gap in Grades 4–8.

⁷ Only six of the current eight CORE districts (FUSD, LBUSD, LAUSD, OUSD, SFUSD, and SAUSD) were a part of the NCLB waiver.

⁸ The CIC is one of several initiatives coordinated through CORE Districts. To learn more about other CORE initiatives beyond the CIC, see <https://coredistricts.org/our-work/>

The math achievement gap was a compelling problem because it was both a stubborn challenge for many districts, and there were already existing data and measurement infrastructure around middle-level math (Nayfack et al., 2017). However, it's important to note that the process of deciding to become a NIC and subsequently searching for a common problem of practice runs counter to how Bryk envisioned a NIC working. Already in the problem formation process, there was compromise: Districts held the explicit aim about the mathematics achievement gap at varying levels of importance, with some primarily invested in the achievement gap as a pressing issue and others more interested in participating in the CIC for the sake of building capacity in improvement science. In Lesson 1, this report explores the tension caused by the dual nature of districts' purposes in joining and staying in the CIC that stem from its very creation.

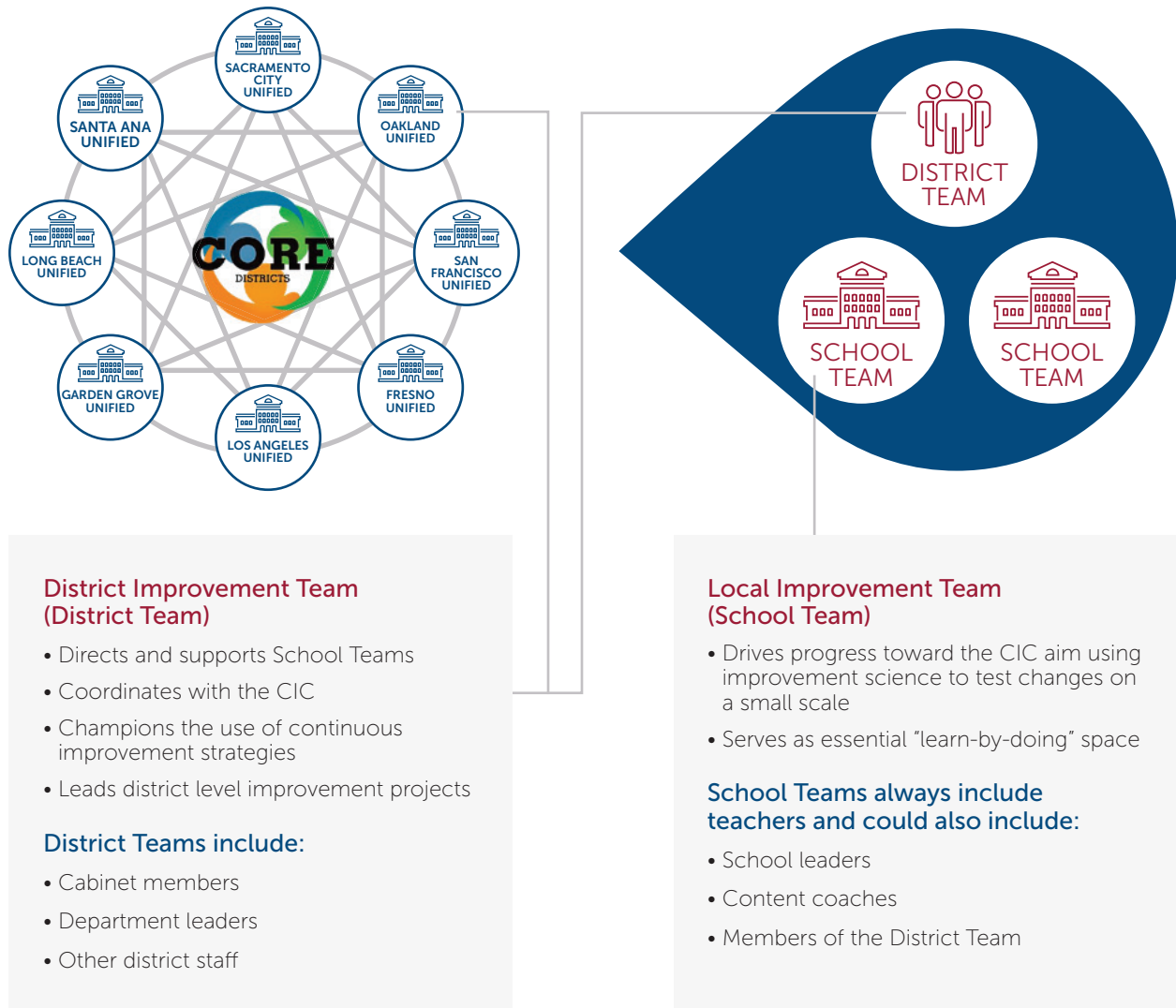
After agreeing on a common problem of practice, the CIC conducted extensive systems analysis to better understand how the achievement gap looked and why it existed during the 2016–17 school year. To gain multiple perspectives on the system, each district assembled a district improvement team (DIT), consisting of leaders from different departments or offices, as well as at least one cabinet-level leader. DITs used continuous improvement tools and processes to analyze data, including standardized assessment scores, district assessments, student growth data, and qualitative data from interviews and observations they conducted. The hub supported districts in this analysis by holding formal convenings and training sessions, providing tools and resources, and coaching. More detail about the lessons learned from the systems analysis process can be found in PACE's 2017 report, *Building Systems Knowledge for Continuous Improvement: Early Lessons From the CORE Districts* (Nayfack et al., 2017).⁹

The intensive work on systems analysis revealed that many possible solutions to the achievement gap needed to happen in the classroom. Accordingly, in 2017–18 the CIC shifted focus to building school-level teams with capacity for continuous improvement. In explaining the transition from a district-level focus to a school-level focus, one hub member said it concisely: "If you're going to improve math, you need to go where math happens, and where that happens is the classroom."

To that end, the CIC worked with districts to launch a small number of local improvement teams (LITs) in 2017–18. LITs were to be "test kitchens" to (a) drive progress towards the CIC aim by using improvement science to test changes on a small scale (a few classrooms in a few schools in each district), (b) decide if the changes led to improvement, and (c) share learning from those testing cycles. Teams typically consisted of teachers, school leaders, content coaches, and sometimes members of the DIT (see Figure 1).

⁹ Available at <https://edpolicyinca.org/sites/default/files/building%20system%20knowledge.pdf>

Figure 1. Nested Structures in the CIC



This report uses data from PACE’s developmental evaluation (see Figure 2) to delve more deeply into the experiences of these district and school team members, along with CORE and district leaders, as they participated in the CIC during 2017–18.

Figure 2. Research Methodology for Developmental Evaluation of the CIC, 2017–18

For the 2017–18 evaluation, PACE focused on the following research questions:

1. Can the Networked Improvement Community model, as implemented by the CORE Improvement Community, positively influence districts' progress towards becoming continuous improvement organizations?
 - a. How does the network hub influence progress?
 - b. What is the process through which school districts engage in systems transformation? What are the policies, systems, and structures that influence this process?
 - c. What do actors in different parts of the system do to positively influence the adoption, implementation, and spread of continuous improvement practices?
 - d. What skills and supports are necessary to effectively implement tests of change locally?
2. What are the early outcomes from the CORE Improvement Community?
 - a. To what extent do case study districts show evidence of becoming more sophisticated continuous improvement organizations?
 - b. To what extent are the CORE districts making progress towards their common aim of closing the achievement gap in math (Grades 4–8) for African American and Latinx students in schools/classrooms where staff are engaged in improvement science activities?

Because the CIC is only in its second year of implementation, the evaluation focused heavily on implementation of the CIC (Research question 1) while noting anecdotal evidence of early indicators of outcomes (Research question 2). Data collection activities included:

1. Multi-day site visits by research teams to three districts, which included interviews with teachers ($n = 10$), instructional coaches ($n = 4$), principals ($n = 7$), and district-level administrators ($n = 31$) using semi-structured interview protocols;
2. Interviews in winter and spring with district leaders in all eight districts ($n = 17$) and CORE staff ($n = 13$) using semi-structured interview protocols;
3. Observations of CIC events by researchers taking detailed field notes (25 hours); and
4. Collection of documents (e.g., convening agendas, presentation slides, photographs of team share-outs of thinking and local work, exit slips).

Interviews were recorded and transcribed for analysis. The research team conducting each site visit reviewed transcripts, documents, observation notes, and preliminary notes made in early stages of iterative analyses and used these to respond to prompts in an analysis guide aligned to the research questions. The analysis guide supported systematic "scooping" of relevant data (Neumann & Pallas, 2015) into a detailed profile for each site, which was in turn reviewed by other members of the research team to strengthen the trustworthiness of findings (Spall, 1998). The full research team read all three site visit analysis guides and then met for a two-day retreat to jointly engage in cross-case comparisons, looking for themes, similarities, and differences among the cases. Researchers then tested emergent themes across the broader set of data. This iterative, multiple case study approach is useful in uncovering information about CIC implementation and how the participants in various organizations and filling differing roles experienced the CIC during 2017–18.

There are, however, some limitations to our research design. Qualitative data are useful for evaluating complex phenomena and understanding individuals' perspectives on their experiences; however, they are not well suited to identifying causation. Similarly, the findings do not generalize to other districts or contexts; an appropriate use of the findings is to use them to frame hypotheses to be tested elsewhere. Finally, this study was conducted in the spirit of the CORE–PACE developmental evaluation partnership and should be interpreted as such: a report to inform CORE, the CORE districts and policymakers in the spirit of *development* and collaborative improvement. This report does not seek to provide comprehensive answers to all of the research questions, but rather to elevate and discuss in some detail findings that the research team believes are most germane to the CORE districts and others using similar methods to support system improvement.

Professional Supports Offered by CORE

To build capacity in DITs and the newly launched LITs, the CORE hub carried out two main branches of activities this year. The first was to offer three types of learning events tailored for different audiences in the CIC. The second was to offer individualized coaching to DIT leaders and some leaders of the new LITs.

The learning events offered in 2017–18 were:

- **CIC Convenings:** This series of three in-person all-day meetings brought together district leaders and DIT members from all participating districts. Objectives and content for each meeting progressed through the year to match where teams were in their development. Thus, earlier meetings strove to help members understand their own roles in moving towards the goals of the CIC, learn how to use data, and support LITs, while the last meeting focused on consolidating learning, summarizing and sharing key learnings, and reflecting on and celebrating the year's progress. CORE also designed the CIC convenings to connect members to the purpose and narrative of the CIC and to build or strengthen relationships across districts. Most attendees were DIT members, although some LIT members attended as well. To maintain continuity between the in-person sessions, CORE also hosted monthly virtual meetings for DIT leads and data leads from each district.
- **LIFT (Local Improvement Facilitators Training):** This series of workshops supported LIT leads in acquiring the mindsets and skills needed to successfully facilitate school-level improvement teams. The hub conducted four two-day, in-person sessions, and four 60–90-minute virtual sessions between the in-person meetings. Outside of the sessions, participants also worked on their own and with their teams, and received coaching as needed. While this session was initially designed to build skills of people facilitating improvement teams, some districts successfully advocated for bringing their entire LITs so all members could benefit from the training in improvement science.
- **ELIE (Executive Leadership and Improvement in Equity):** This series of workshops was designed to help district leaders explore the relationship between improvement science and equity, and consider their own roles in becoming catalysts for improvement. This series focused on a broad array of mindsets and leadership skills foundational for leaders seeking to create conditions that enable continuous improvement approaches to achieve equity goals. There were four in-person sessions and three virtual sessions over the school year. Participants included superintendents, other members of districts' executive cabinets, and DIT leads.

In addition to the structured trainings, the four hub coaches engaged with district leadership, DIT leads, and members to build capacity in improvement science and guide the work of the teams. Coaching varied from district to district, partly because the needs and contexts of DITs and LITs varied, and partly because the coaches brought different knowledge and experiences to their role. However, in general, coaching for DITs consisted of a member of the hub:

- Providing weekly or monthly check-ins to serve as thought partners for DIT leads,
- Co-planning DIT meeting agendas with DIT leads,
- Sharing improvement science or general management tools, and
- Attending meetings and giving feedback on meeting facilitation.

In a few cases, hub members directly coached LIT leads. Additionally, the hub provided other kinds of training and support around continuous improvement for districts upon request (e.g., workshops on continuous improvement for principals).

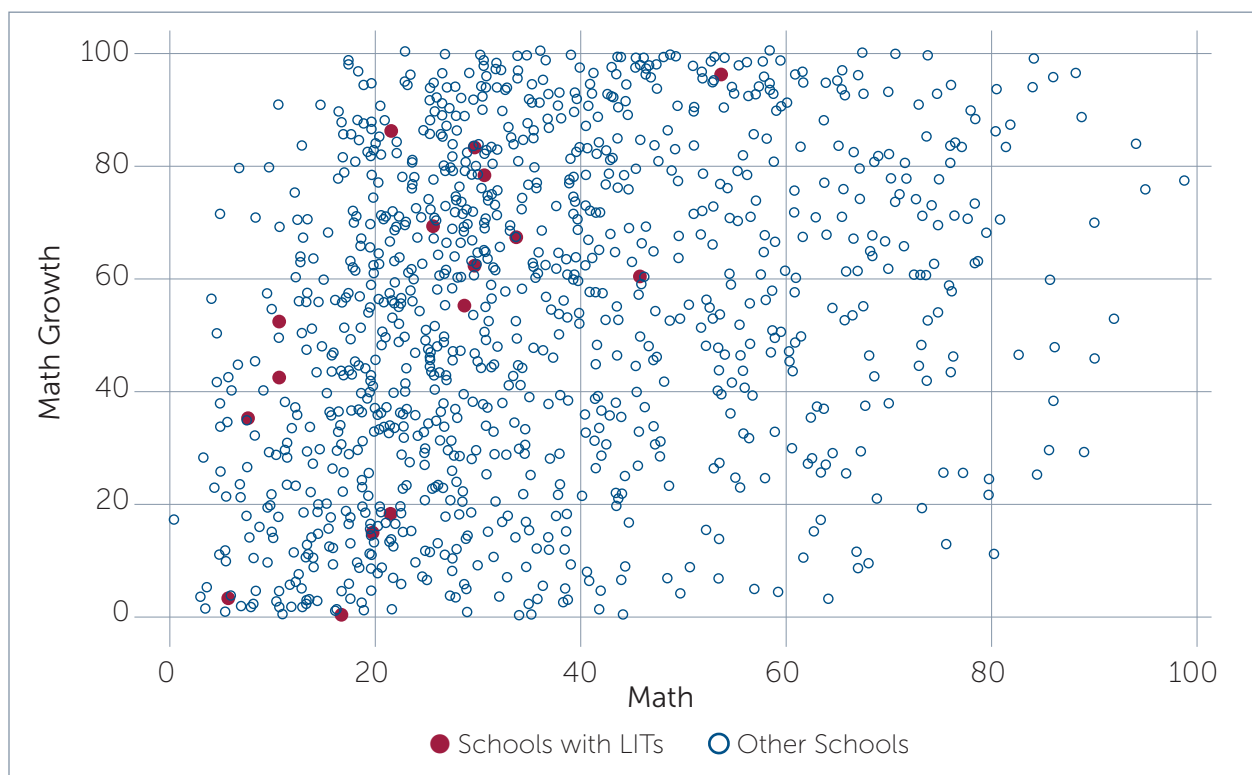
Launching Local Improvement Teams (LITs)

CORE directed districts to launch LITs as places where teams in each school would independently test change ideas and gather evidence to see if those changes improved mathematics outcomes for African American and Latinx students in Grades 4–8. If there were improvements, the CIC network could be leveraged to accelerate, disseminate, and scale the improvements within and across districts. CORE did not set any guidelines for which schools were good candidates for LITs, and districts selected them based on their own criteria. The variation in selection criteria is one of the most important reasons to avoid making any causal inferences based on student outcomes data from 2017–18. Some districts selected schools because of strong and positive preexisting improvement trajectories that the districts wanted to learn more about through the CIC; districts selected other schools because they were struggling, or for a reason unrelated to student achievement. Finally, LITs typically did not involve all of the tested grades in participating schools. While it would be inappropriate to make any causal inferences about the relationship between participating in the CIC and student mathematics outcomes, students' achievement status and growth nonetheless form an important context for the work.

As Figure 3 shows, participating schools were as varied in terms of student outcomes as the CORE districts themselves. The x-axis of Exhibit 3 shows the percentage of students in each school meeting mathematics standards on the Smarter Balanced Assessment Consortium (SBAC) test. The y-axis shows a growth metric developed by the CORE Districts, in collaboration with Education Analytics, to estimate how much more or less students in a given school are learning relative to their peers in other schools. The model calculates a growth percentile for each student relative to other peers with similar initial achievement

and demographic characteristics (e.g., English learner, free/reduced price lunch). Individual students' percentiles are then aggregated into an overall growth percentile for each school.¹⁰ The red dots indicate schools with LITs; the other dots indicate the other elementary and middle schools in the CORE districts. Schools in the bottom left quadrant have low student achievement and they are also low in terms of how quickly their students are growing in mathematics relative to schools serving similar students. There are LITs in the bottom left quadrant, but there are also LITs in the upper left quadrant. In these schools, even though a majority of students are not yet achieving proficiency in mathematics, students are exhibiting above-average growth relative to other schools serving similar students.

Figure 3. Variation in 2017–18 Mathematics Achievement and Growth for Schools with LITs



CORE believed that LITs should be started in places with interest and excitement around using improvement science to address current inequities in mathematics achievement, because continuous improvement is more likely to succeed when participants have buy-in.¹¹ Down the line, CORE envisions that interest in using continuous improvement would spread driven by the evidence of success from the early adopters.

¹⁰ For more information about CORE's growth metric, please see: <https://coredistricts.org/our-data-research/improvement-measures/>

¹¹ The idea that top-down mandates can be problematic when work requires deep engagement is not unique to CORE. In fact, it has some empirical support in the broader literature on teacher learning (Kennedy, 2016). It is possible that buy-in is even more important in continuous improvement than other interventions because of the risk-taking required as frontline workers publicly examine the flaws in the current system of which they are an integral part.

How LITs were launched varied across districts but typically included identifying appropriate schools to participate, selecting members for the LIT, onboarding members with the purpose and processes of the LIT, and continuing to support the LITs throughout the school year. Figure 4 provides more detail about the big take-aways the hub learned from launching LITs this year.

Figure 4. Launching LITs

Many members of the hub reported that the learning around launching and supporting LITs was one of the organization's big successes of the year. While it is clear that to affect instructional issues using continuous improvement those delivering and supervising instruction (i.e., teachers and principals) need to be involved, there is woefully little information in the literature about how to get these practices started in schools. Based on their experiences supporting the launches of LITs in 2017–18, the CORE team learned lessons about how to get LITs started in the work. Their key takeaways from 2017–18 were:

- A half- or full-day team launch is helpful to set the conditions and build the baseline knowledge of improvement science necessary for success. All team members need a foundational understanding of improvement science. A short presentation can help build the requisite baseline knowledge.
- Since continuous improvement requires a culture shift, it is important to launch LITs with a discussion of norms and expectations for the group so that team members can co-construct the safe space necessary to share their instructional practices, reveal failures so they become opportunities for learning, and function as a collaborative group.
- Organizational leaders, such as school principals, may be accustomed to leading in a style of the person who is “in charge” and who “has the answers.” Those styles can lead one person to dominate the airtime in a group in a way that is incompatible with the culture necessary for highly functional LITs.
- Relatedly, setting clear roles for team members can help the team function. CORE found that having a good team lead (based at the school site and responsible for scheduling and communication), improvement facilitator (a more expert peer who has slightly more knowledge of improvement and who can design meetings, help the teams select improvement tools, and generate data displays), and a project sponsor (a school or district leader who is generally informed about the team's needs and project but is not involved in the day-to-day of enacting and testing changes) were all important for success.
- Not all data and ways of presenting data are equally helpful. LITs often need specific support in thinking about the types of data they could best use to support their learning as well as help getting those data in usable form. One pitfall that came up in multiple situations was the provision of a high volume of annual school-level performance data. Such presentations can be overwhelming and might not be well matched to a specific LIT's data needs at any given point in time. Instead granular and timely data related to the changes being tested gave teams actionable feedback necessary to learn about their tests and adjust course if necessary.

Most LITs began to operate in late fall or early winter. District Improvement Teams, with the help of CORE’s professional learning opportunities (e.g., CIC, LIFT, coaching for DIT leads), facilitated LITs’ efforts to conduct a school-level systems analysis (e.g., by using empathy interviews to understand students’ experience of mathematics), choose a problem of practice aligned with the larger CIC aim, develop change ideas that could affect that problem, run PDSAs to test the change ideas, analyze the data from those cycles, and decide on next steps. As described in more detail in Lesson 2 below, DITs took on varied roles in terms of their own work and the ways they supported their LITs. Lesson 3 explores how LITs took shape differently in their varied contexts.

Two districts decided not to launch LITs during the 2017–18 school year. One of those districts already had extensive improvement structures and processes in place, which they believed would enable them to act on what they learned through their root cause analysis at a broad scale throughout the district. The other district’s systems analysis had led them to identify a major root cause of the achievement gap—staff turnover at a set of schools that serves a high-proportion of the district’s African American and Latinx students—that did not lend itself to classroom-level solutions. The DIT decided to tackle that issue from the district level. Both districts used continuous improvement processes to work towards the network’s aim.

District Implementation Progress

With the help of the professional supports offered by CORE, all eight CORE districts used continuous improvement approaches to work towards the network aim of accelerating mathematics achievement of African American and Latinx students in Grades 4–8. Table 1 shows the districts, how many LITs they launched, and the focus areas for some of the PDSAs conducted this year. While not comprehensive, this table gives a taste of the drivers of inequitable mathematics achievement identified by LITs.

¹⁰ For more information about CORE’s growth metric, please see: <https://coredistricts.org/our-data-research/improvement-measures/>

¹¹ The idea that top-down mandates can be problematic when work requires deep engagement is not unique to CORE. In fact, it has some empirical support in the broader literature on teacher learning (Kennedy, 2016). It is possible that buy-in is even more important in continuous improvement than other interventions because of the risk-taking required as frontline workers publicly examine the flaws in the current system of which they are an integral part.

Table 1. Illustrations of Districts' Work in the CIC in 2017–18

District	Number of LITs launched	Focus of some of the PDSAs this year
District A	4	<ul style="list-style-type: none"> Identify and incorporate representations of mathematical concepts to support student understanding Use of a 10-minute "opener" with student-to-student discourse around rich tasks
District B	7	<ul style="list-style-type: none"> Student reflections to identify confusion Student questions during math class
District C	3	<ul style="list-style-type: none"> Test changes to improve implementation of a specific math strategy/approach, focusing on student conversation about math
District D	None	<ul style="list-style-type: none"> Provide professional development on an instruction continuum that deliberately balances caring relationships with high expectations and supports for student success, with a focused effort on improving engagement and outcomes for African American students.
District E	2	<ul style="list-style-type: none"> Improve students' ability to decipher math problems and improve perseverance Increase culturally responsive pedagogy
District F	3	<ul style="list-style-type: none"> Increasing student dialogue about mathematics
District G	None	<ul style="list-style-type: none"> Improve teacher recruitment and retention at schools serving a high concentration of African American and Latinx students
District H	2	<ul style="list-style-type: none"> Improve student collaboration in small group work in mathematics

The eight districts created various local change ideas to help achieve the overall improvement goal, with distinct efforts based on local circumstances and priorities, such as one district's emphasis on "opening" math classes with richer mathematics tasks and another district's piloting of a program to build teachers' awareness of and comfort with the community their schools served. Collectively, the LITs and DITs worked on testing change ideas to address six of the seven secondary drivers identified in the CIC's driver diagram for 2017–18 including: (1) Student Academic Discourse: Justifying and Critiquing Reasoning; (2) Students' Use of Problem Solving Strategies; (3) Lesson Design, Delivery, and Use of Instructional Strategies; (4) Effective Student Group Work; (5) Attitudes, Behaviors, and Beliefs About Math; and (6) Professional Communities and Capacity.

Lessons Learned

Because the CIC is working to support the implementation of continuous improvement on a very large scale, the experiences of the CORE hub, participating districts, and their DITs and LITs in 2017–18 offer lessons that likely have broad implications in California and beyond. For example, the California Collaborative for Educational Excellence reports support 56 professional learning networks (with a total of 300 participating LEAs) at the time of this writing.¹² Below we discuss each of the lessons, drawing evidence from observations of CORE events and DIT team meetings, interviews with CORE hub leaders and DIT leaders, and in-depth site visits to three of the CORE districts.

Lesson 1: The simultaneous goals of improving math achievement while building capacity for continuous improvement offer both benefits and challenges for the CORE Districts.

A key feature of the networked improvement community model is that all groups or organizations work on the same aim, have a shared theory of improvement, are disciplined in how they use data to learn how to improve, and collectively learn from each other's tests through a collaborative network (Bryk et al., 2015). This creates opportunities for each team to work deliberately even while facilitating rapid learning in the network as a whole. As described above, however, the CORE districts network existed several years before they selected an aim. Additionally, the aim of accelerating mathematics achievement for African American and Latinx students in Grades 4–8 through CIC work, while agreed upon as a network focus, is more or less central in each district's overall strategy. Finally, the root cause analyses conducted during the 2016–17 year led to different district-level foci, which fragmented further when LITs launched their own root cause analysis during the 2017–18 school year. As a result, one of the fundamental conditions for spreading learning within an improvement science network—a tight focus on a shared aim—is inconsistent among the CORE districts. Based on the broader interest in California in building improvement capacity, we think that this reality is likely to be the norm rather than the exception among networks launched in the state. And even if networks did have a tight focus on a shared aim, it would be natural for participating organizations to seek to build improvement capability more broadly (Barletta et al., 2018). As a result, how the CIC works in an environment where there is not a uniformly tight focus on the stated aim could be broadly informative.

For the CIC, the problem of accelerating mathematics achievement for African American and Latinx students in Grades 4–8 offers both the opportunity for improving a key outcome as well as an opportunity to learn continuous improvement by engaging in an authentic improvement task. As a CORE leader explained, "[M]uch of the time, we engage in

¹² To learn more about CCEE professional learning networks see: <https://ccee-ca.org/professional-learning-networks.asp>.

work and recognize that... at the detail level there's a topic [mathematics] that we're focusing on, but at a meta level, we're also learning about what we're doing...." District comments also show a clear interest in the opportunity to learn broadly applicable continuous improvement approaches through investigating mathematics achievement. When describing the rationale for her district's engagement in the CIC, one district leader explained that "a deeper understanding of improvement science and how that can apply to other things would be an overarching thing we would like to get out of it...." The sentiment that working on the mathematics aim could also be a practical way to learn the skills to catalyze broader improvement was common for both CORE staff and district leaders.

From both the CORE and districts' perspectives, then, we can say that in 2017–18, the CIC worked towards the stated aim of accelerating mathematics achievement for African American and Latinx students in Grades 4–8 while simultaneously working towards a broader goal around helping districts improve their capacity to be a continuous improvement organization. While there is obvious logic to the idea of building people's improvement capabilities more broadly while focusing on a specific problem of practice, experiences of the CORE Districts in 2017–18 also showed some places where the aim and the goal were in tension. The district leader quoted above laid out this tension as she continued:

...We'd also like to get out of it—which we don't yet get out of it yet, but I'm hopeful—is really getting good ideas around the math thing, or expertise from other districts that are having promising practices. I don't think we've really had that happen this year because not everybody is in the same place.

In 2017–18, there were two ways that not everybody was "in the same place" in the CIC: (1) There was too much variation in capacity to do continuous improvement without outside assistance, and (2) the drivers DITs and LITs focused on were too varied for cross-district collaboration to produce the type of knowledge-sharing desired for networked improvement. CORE responded to the first issue by orienting CIC programming to build improvement capability of participating individuals and organizations. The second issue arises from the fact that districts remain committed to the CIC even if the work their teams are undertaking does not align to a tightly specified aim. The result is a structural tension within the CIC, where districts agreed to a broadly defined (instead of tightly specified) aim and so the mechanism by which networked improvement would accelerate knowledge sharing in theory did not function smoothly in practice.

One place the tension showed up was in the CIC convenings, which were a space for shared learning about improvement and cross-district collaboration. CORE designed the February 2018 CIC convening specifically to enable the DITs and LITs from across the eight districts to learn about each other's improvement work, with each DIT and LIT sharing structured storyboards about the focus of their work, successes, and challenges to date. The foci the teams presented on included (among many):

- Using “three reads,” a strategy of having students do a close reading of complex mathematics word problems multiple times with a different purpose each time, to build students’ comprehension of the tasks;
- Using a different type of “opener” to increase student-to-student discourse and quickly transition into richer mathematics content;
- Increasing the frequency with which students ask questions if they are confused in mathematics classrooms;
- Increasing the amount of student discussion of mathematics reasoning and student comfort in discussing mathematics; and
- Increasing teacher retention in a specific set of schools.

As this sample shows, there was some convergence in foci around the general topic of student discourse in mathematics—another cluster occurred around mathematical models and representations—but there were also some notable outliers. As a result, participants had divergent experiences with the CIC convenings as a forum for leveraging network learning about math. Feedback exit slips from this CIC convening varied, including from one respondent who noted that the convening provided a “great beginning of sharing work across the network,” and another who appreciated the “experience of the showcases to get better understanding of the process.” Other participants commented on the “need to bring in more math content and equity” and that “the two [presentations from other districts] I saw had differing ideas that did not help my improvement.” Our analysis suggests that the work of constructing opportunities for sharing that provide value for all participants (while always a difficult task) is even more challenging in networks that are committed to building improvement capability but have not truly united around a tightly specified aim. One district leader reported, “I’m super interested in this idea of ‘Are there change ideas out there for math that people could benefit from and get more rapid improvement cycles going?’” but focusing convenings narrowly on testing change ideas in a shared space would necessarily limit the participation of several districts in the CIC. In 2017–18, CORE worked with this duality by providing opportunities for participants to learn improvement science through CORE events and then supporting participants to apply their learnings to the ways their local teams had constructed their mathematics aims.

Lesson 2: Districts have a pivotal role to play in supporting and sustaining continuous improvement efforts focused on classroom instruction.

Many attempts at reform designed to improve student achievement have preceded the recent attempts at bringing continuous improvement to schools. In fact, their persistent failure to make changes to the instructional core is part of what motivates people to try continuous improvement (Tyack & Cuban, 1995). We start by foregrounding the fact that one way improvement science seeks to break the cycles of failed reform is by

making the engagement of frontline workers—in the case of education these are typically teachers and other school-based staff—a central strategy in its approach to generating improvement. Not only does improvement science seek to engage them in order to create motivation and buy-in but also it recognizes that the people doing the work are uniquely positioned to understand the problems in the current system and to generate and test improvements. The engagement of the frontline, however, does not imply an abdication of responsibility and leadership from the top. Past reform efforts have shown that not only top-down but also bottom-up reforms are likely to fail—though for different reasons (Coburn, 2003). To achieve its potential, continuous improvement appears to require a coordinated and multilevel approach to reform.

As described above, the CIC moved from a focus on the district level in 2016–17 to a focus on local improvement in 2017–18 because inequitable mathematics achievement has an instructional component that cannot be addressed solely from the district level. This does not imply that the district role is less important than previously thought, just that districts need to play more roles when improvement efforts have school-level dimensions. With that in mind, we describe the roles districts played in CIC-related continuous improvement work in 2017–18. Important roles included:

1. Being a champion;
2. Ensuring sufficient resources for LITs to support improvement efforts;
3. Coordinating up, down, and across the system (e.g., classroom, school, and district level); and
4. Conducting their own district-level improvement cycles.

We describe what each of these looked like in the CIC in 2017–18 below.

Being a champion for an initiative is a critical role, and it may be especially true for continuous improvement because it requires both resources and culture shifts, such as sharing failures publicly so that they can be opportunities for collective learning. One district leader explained this part of the role by saying, “I very much see myself as an encourager, a connector, as a coordinator in terms of bringing people together when that needs to happen, consolidating what we’re learning, facilitating reflection and then facilitating strategy moving forward.” Champions may also be in critical positions to model the culture shifts by leading in ways that model distributed leadership, rewarding people for innovating and learning from mistakes, and taking the time to diagnose problems before selecting solutions. One final role for champions is to use their positional authority to clear away other competing responsibilities and initiatives so that teams can focus on continuous improvement. For example, one of the CORE districts had an existing professional learning structure where elementary school teachers were supposed to undertake multiple cycles of improvement over the year, distributing those cycles across the core subjects. Teachers in one LIT requested an exemption from the planned subject

rotation so that they could have a consistent focus on the aim that was the heart of their CIC work. The champion was able to grant that waiver, facilitating deeper engagement in the CIC.

Ensuring sufficient resources to support improvement efforts came up as a crucial role for districts in supporting continuous improvement. The most common challenge to doing continuous improvement work cited by DIT leads and LIT members was finding a regular and uninterrupted time to meet. This seems to be especially true for teachers, whose roles as currently conceived provided relatively little time for parts of their job other than instructing students. Districts in the CIC found ways to address the issue of teacher time. In one school, where the collective bargaining agreement limited administrators' ability to control teacher collaborative time within the contract day, a district leader was able to identify resources from a mathematics grant that could be used to pay for teachers' and a math coach's time after school so that the LIT could meet. In other cases, LITs used teacher collaborative time already built into schedules with district or school permission to turn that time over to LIT meetings. Finally, districts covered teachers' classes and reallocated district staff responsibilities to enable a range of personnel to attend CIC events such as the convenings, LIFT, and ELIE.

Districts also provided resources in the form of coaches or district staff to support LIT efforts. A district leader explained the decision to provide math coaches to help support LITs:

[W]e needed that spark, so that the teams could develop their own identity, and... we needed to provide the capacity to get that work started. And, we had talented members of our district improvement team that we thought could do that work..... In our case, our school teams really needed that coach. That district coach was huge. I think that was the primary piece.

Many of the LITs focused on aspects of math instruction that relate to some of the most challenging shifts required by Common Core State Standards, and pedagogical approaches or curricula that are aligned to them. Teaching more conceptual mathematics and increasing student skills at communicating about their mathematical thinking require a deep and flexible understanding of mathematics content. As a result, it is unsurprising that many districts identified placing mathematics coaches with LITs as an important strategy for facilitating their success.

Districts also dedicated data support resources to LITs. These included supports for a mix of quantitative and qualitative data. Although schools collect and analyze increasingly complex data these days, the data collected are not always the data needed for school improvement efforts (Hough, Byun, & Mulfinger, 2018). Without resources to collect and analyze appropriate data, improvement efforts could falter. As one district administrator explained:

In terms of what's the gap between the theory and the practice,... improvement science is harder than other educational initiatives to really pick up [even] once you have the ideas. And, I think there are many reasons for that. So, one is the difficulty of collecting the appropriate data. We often have data on the student outcomes. We don't often have data on the adult's practices. It takes time to do that [data collection]. It's especially difficult because these are person things so you need to either self-report or observe and those both have all these challenges with them.

Districts' responses to this need varied. For one LIT, district staff supported the collection of observational data to identify whether changes being tested resulted in an improvement in a specific metric measuring teaching. This district also freed a member of their research staff to collect and analyze qualitative exit slips designed to understand the socio-emotional aspects of students' experiences in mathematics, easing the time burden for teachers when they worked with qualitative data.

Coordinating up, down, and across the system is a potentially invaluable role of districts. By definition, classes are nested within schools, which are connected to each other through broader district systems. At a minimum, it was important that the DIT served as a liaison to, as one DIT lead described,

... facilitate the gathering of the school teams, and ensure that they are setting their meetings, and helping them make connections with their local district support, and organizing or arranging our follow-up meetings, and staying in touch with our... advisor from CORE, to communicate pretty regularly about working with the schools, what's happening at the schools, and making sure that a lot of the other pieces are pretty well organized.

A liaison to disseminate information is particularly important when key personnel struggle to be regularly involved in the ongoing work, which seemed particularly common for cabinet-level representatives who were stretched thin with multiple leadership roles.

The coordination role, however, typically went well beyond the management and top-down communication functions described by the DIT lead above. Districts strategically selected the members of their DITs to build connections from the overarching district structures down to the schools with LITs and, often, into classrooms. One district created spots for four of the district's school supervisor positions on the DIT. Another DIT included the assistant superintendent who oversaw all of the schools with LITs, the district mathematics coordinator, a member of the district's research staff, and cabinet-level representatives. This mix of individuals had the potential to elevate things from the DIT directly to the cabinet, engage principals through their supervisory structure, access data support for the LIT, and reach into the classrooms of the teachers participating in the LIT through district mathematics coaches. With this structure, the research lead learned

that the teachers on the LIT had conducted empathy interviews but lacked experience analyzing qualitative data. She was able to push in needed supports—taking their data, grouping student responses into categories, and then meeting with them to not only present the findings but also to show them her approach to analyzing qualitative data so that they could build those skills for future use. Additionally, information about the types of challenges teachers were experiencing teaching mathematics and the type of change ideas they were testing had the potential to influence the district’s overall approach to supporting mathematics instruction. The DIT, therefore, became a potential conduit from classroom-level mathematics teaching up to the mathematics lead, providing her with a teacher-level perspective of the challenges teachers were encountering using the curricular materials and teaching approaches adopted in the district.

The cross-level coordination role is also important because different levels of the system have access to different knowledge and resources. One of CORE’s coaches described a meeting she sat in on with a DIT, where a district leader with knowledge about diverse initiatives in the system was able to direct an unrelated resource to a gap in knowledge raised at the DIT meeting:

I think that there’s certain things that the district level people can see that school sites can’t in terms of opportunities. So, my favorite example that I’ve observed this so far is I was sitting at a [DIT] meeting where they were talking about [a continuous improvement aim around teacher retention], and they were talking about things that they were curious about in terms of people leaving [the focal schools]. And then one of the data people mentioned, “Well, you know we have that partnership with [a local university] where they conduct exit interviews for us. I know that’s an unrelated project, but what if we funneled the [teachers from focal schools] through that [university] project so that we’d get [all teachers who were planning to leave] exit interviews?”... I said, “That’s a fabulous idea.” That’s an ongoing thing that you already have resources for.

As the past two examples illustrate, all levels have unique insights into problems and potential resources. It is only when information is flowing freely up and down levels and laterally across different departments that the potential of the system can be unlocked (Burt, 2004).

One note of caution is that it could seem enticing to have large DIT teams with the goal of making sure that a wide variety of voices are in the room. But this too comes at a cost. Several DITs struggled with getting consistent attendance at their meetings across a relatively large team. One DIT lead reflected on this problem, stating,

I think one of the DIT learnings is that the membership at each meeting needs to be dependent on the problem, so it doesn’t always have to be the

same people all the time. But we've gotta be clear about what it is that we're trying to do to have the right people in the room.

The idea of having a small core team as well as a larger group of people who are asked to join the meeting when the topic is particularly relevant to their role is one possible way to resolve this dilemma.

Districts can also conduct their own improvement cycles, even around aims that are not solely situated at the school-level. An aim around improving mathematics achievement, constructed as it has been by the CORE districts, is a great example from which to illustrate a multi-level improvement journey. Clearly, there are classroom-level dimensions around instruction, but these might surface particular needs for teacher professional development and different instructional materials. For example, in one LIT, focused on trying to increase the amount of student-to-student dialogue in mathematics, the mathematics coach on the team learned from the PDSA that richer mathematical tasks were key to supporting more student discussion in mathematics. This district had spent several years working on a grant designed to support this type of instruction, yet teachers were typically not using the types of tasks that grant had tried to promote. This could spur the district to undertake its own investigation into the gap between desired and actual use of richer mathematical tasks in instruction and how they could redesign district-level supports around use of those types of instructional resources. In 2017–18, we did not see many examples of improvement work at the classroom level triggering the next logical improvement work at the school or district level.

In 2017–18, one district did run district-level improvement cycles as part of their CIC work. This district's broad theory of action was that to get to improving student outcomes for African American and Latinx students in Grades 4–8 they needed to start by addressing the central problem of having high turnover among teachers in some of their most diverse and low-performing schools. Unlike other CORE districts, their root cause analysis suggested that improving the instructional skills of the teachers currently in those schools would not lead to long-term gains in academic performance in those schools because teacher retention was too low. As a result, this district collected data about the problem of teacher retention in those schools and tested a few change ideas involving district and school administrators.¹³ The idea would be to move on to supporting instructional improvement within classrooms once the district has tested approaches to improve their retention of desirable teachers in these schools. This approach follows clearly from their root cause analysis in 2016–17 and provides an excellent example of how their change journey, unlike that of other districts in the CIC, might start at the district

¹³ The district is pleased by the outcomes of this improvement work. Data show that, in 2017–18, there was a marked decline in avoidable turnover (i.e., turnover for reasons the school or district can control, which excludes things like teachers moving out of the region) in these schools, which is at least partially attributed to the work they did as part of the CIC.

level and then move down to the classroom level—and potentially back up at a later point in time—depending on the particular problem being addressed. This example serves as a reminder that for complex educational problems, there may be root causes in different aspects of the system, each of which could be involved in continuous improvement cycles coordinated over time by a DIT.

Lesson 3: Context matters. Preexisting structures and processes, time for educator collaboration, and supportive leadership all influence continuous improvement efforts.

In talking with experienced teachers, it is hard not to encounter a sense of reform fatigue (Payne, 2008). In recent years teachers have felt buffeted by No Child Left Behind, the Open Court “police,” pacing plans, Common Core State Standards, and new curriculum adoptions, just to name a few. Additionally, the new State System of Support being developed will, in all likelihood, provide supports around continuous improvement as the state’s new strategy for helping turn around its lowest performing schools and districts. One of the challenges for continuous improvement work, therefore, is to enter schools without being perceived as yet another “flavor of the day” initiative or outside mandate with which to grudgingly comply. We would argue, however, that continuous improvement could be fundamentally different from preceding waves of reform. Instead of being a “new idea” about teaching, improvement science offers a systematic toolkit to make sense of new ideas and adapt them successfully for students, or to see gaps in the current set of operating procedures and innovate to address those gaps.

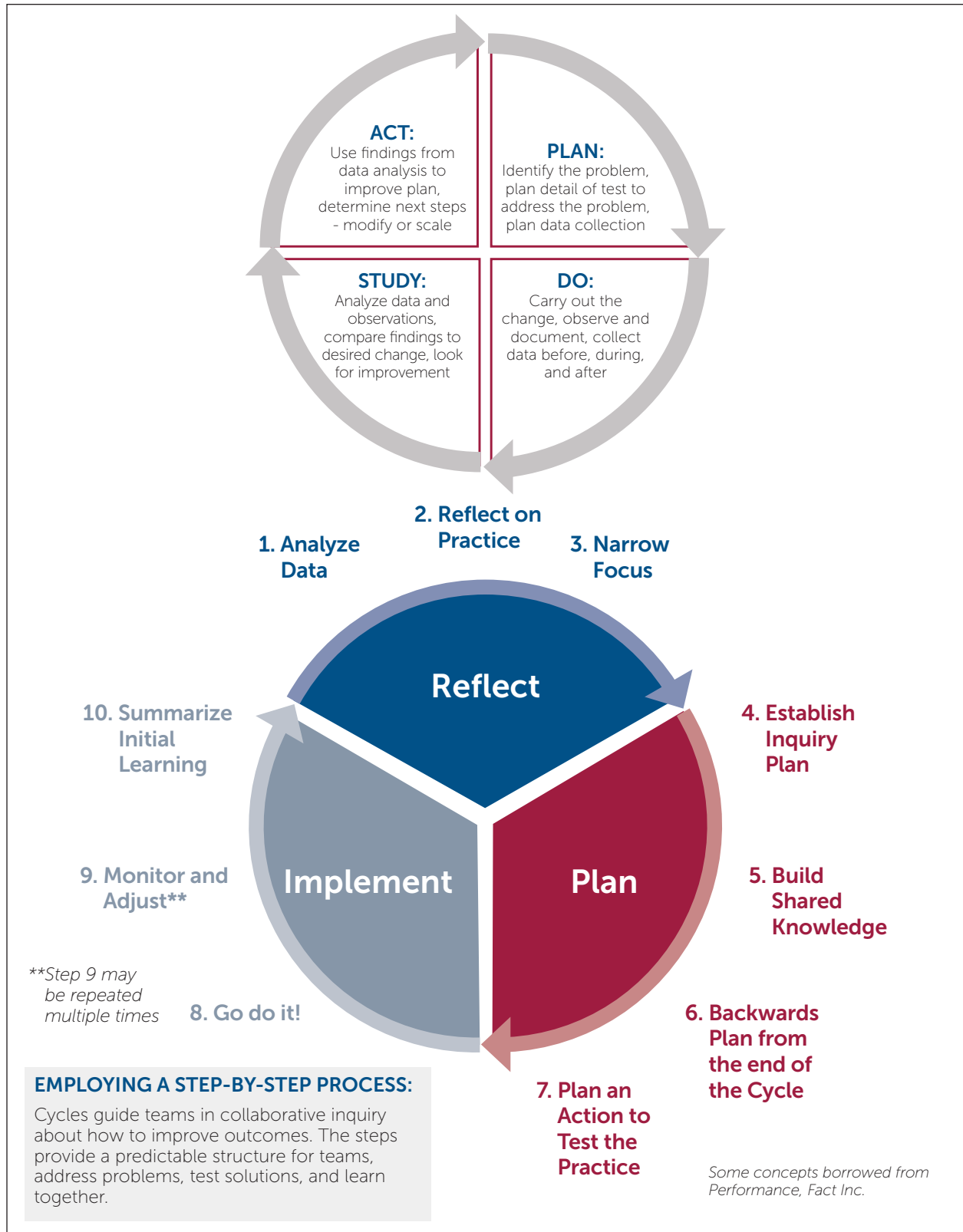
Although the CIC’s charge this year was focused on launching and supporting LITs, in reality, districts’ actions varied widely. No site was a vacuum. Extant programs, structures, processes, and relationships shaped how districts enacted the CIC work this year. This section outlines what we have learned about important interactions between what exists in districts and continuous improvement, based on the CIC’s work in 2017–18. We garnered three crucial, if not surprising, understandings that could help the state’s continuous improvement strategy succeed:

1. When continuous improvement tools are used to address challenges schools already face, they can leverage current efforts and create a productive synergy.
2. The introduction of new improvement science tools may initially create cognitive dissonance as participants construct how to best integrate their essential features with extant improvement processes and infrastructure.
3. For school teams to successfully engage in continuous improvement, foundational conditions need to be met; for schools that struggle meeting those conditions, additional support from the district may be needed.

Continuous improvement is not a new approach to teaching and learning mathematics. Instead it is an **approach that can be leveraged** to address a wide array of gaps between current and desired performance. When schools perceived CIC work as an approach to existing work rather than as a separate initiative, we saw the work gain traction within participating teams. For example, one district selected schools to form LITs based on their work with a complex approach to mathematics instruction. While the approach has substantial research-based evidence of positive impacts on student outcomes when it is well implemented, it requires significant departures from traditional instruction and teachers may find it difficult to use successfully. The district has provided professional development on the approach for a few years but had not yet consistently seen the results on student outcomes that the research-based evidence indicated they should. In 2017–18, this district selected schools working on this mathematics approach to launch LITs, and teachers in one school dug in particularly deeply to CIC work. The work allowed these teachers to explore aspects of the mathematics program that they found particularly difficult to implement well, running PDSAs to hone their approaches to stimulating more discussion around mathematics. Although factors other than just the CIC are likely involved, initial reports of SBAC scores from this district show that students' growth in mathematics performance at this school were substantial, with students in participating grades making above-average growth during 2017–18.

Bringing CIC work around improvement into schools with existing structures and processes was more complex because it could **create cognitive dissonance** between preexisting and new improvement approaches as well as potentially providing knowledge and structures on which to build. To illustrate the challenges and benefits associated with integration of old and new improvement processes, consider an example from one district with improvement structures and processes that pre-date its work with the CIC. This district's professional learning communities used a framework called a Cycle of Inquiry to improve practice. Figure 5 shows a visual representation of the Cycle of Inquiry and the PDSA Cycle the CIC introduced.

Figure 5. PDSA and Cycle of Inquiry



From "Plan/Do/Study/Act (PDSA) Cycle Overview" in PACE Resources and district showcase materials presented at a CIC Convening Feb 2018.

In many respects, the two improvement cycles map onto each other well: Both cycles prompt teams to decide on a question or objective, plan and execute a test or inquiry, and collect and analyze data from the test or inquiry. Yet there are notable differences. For example, the PDSA cycle emphasizes making a prediction and comparing data to the prediction, which is not a distinct feature of the Cycle of Inquiry. Research has shown that teachers' existing knowledge, belief systems, and context play a critical role in shaping their experiences with new ideas and approaches (Spillane, Reiser, & Reimer, 2002). From this research we know that the similarity between the cycles could create confusion or dissonance for teachers and school leaders faced with adopting or adapting to improvement science approaches from the CIC (e.g., the PDSA cycle) into their existing structures and processes around improvement. Possible responses include rejecting the new ideas (which is unlikely given how schools and teams were selected—and we did not find any instances of this from LITs in 2017–18), attempting to adopt the new approaches wholesale (we also saw no examples of this in schools with existing improvement processes and structures), or attempting to adapt the new approaches (e.g., pulling specific tools into existing structures).

Most typically, schools with existing continuous improvement approaches chose to adapt the improvement science approaches presented by the CIC. In one school, for example, a principal saw the PDSA cycle as it was presented in LIFT as potentially magnifying the strengths of processes or structures her school already had in place. She described her school's data cycles, explaining that the leadership team compiled and analyzed detailed school data three times per year; additionally, teachers at the school had time to meet with their grade level teams and cross-grade content teams weekly for instructional planning. When introduced to the CIC's work, the principal realized that the improvement science tools offered more focus and direction for the extant data reviews and teacher meetings:

[Our DIT lead] helped me understand the coherence between the teams and having this [improvement science] structure for doing the work.... So the whole systems part was made more visible to me.... The work [with the CIC] that I'm doing now is helping me understand it needs to be way more micro than what we were making it.

Leaders who can thoughtfully hitch improvement science tools onto structures that already exist can capitalize on already-strong school habits and simultaneously bring new clarity to their purpose. However, if decisions about adaptations are made by people lacking a full understanding of the CIC's approach to improvement science, they might accidentally distort some of the original intent of the tools or gloss over key differences. It is very difficult, in the abstract, to figure out when adaptations that increase the depth and speed of adoption will be beneficial over the long run or detrimental because they represent problematic deviations from a theoretical ideal.

Even while understanding the potential challenges involved when educators make sense of new information about improvement from the CIC in light of their preexisting knowledge and beliefs, it is also important to recognize the benefits of existing improvement structures. In the case of the school described above, where teachers were already familiar with the Cycle of Inquiry, time set aside for the Cycle of Inquiry was seamlessly dedicated to the CIC. Using existing teacher team structures solved some basic logistical problems other sites struggled with, such as finding a common meeting time to work on team objectives. Professional learning communities also often offered conducive improvement structures for the CIC.

In moving towards continuous improvement as a widespread way of working, there is the impulse to establish improvement procedures in the most struggling schools. However, severely struggling schools may lack the **enabling conditions** needed for continuous improvement to happen. For example, for PDSAs to be meaningful, teacher teams must be able to meet regularly. If they don't, the work may never gather the momentum necessary to improve performance. District leaders, therefore, should be prepared to bring in extra supports to allow improvement to happen in the most challenged schools. At one school, a teacher listed barriers to simply convening LIT meetings to which many teachers and principals may relate. As she explained:

I will say unfortunately a lot of things happened. We had a [major school event], we had a teacher getting sick... we had a [schoolwide emergency] today.... Last Wednesday I was supposed to go to [an LIT meeting], and then it was canceled... and next week we have the break.... Originally I did [the LIT] with the other [teacher on special assignment], but I think she's kind of not involved in this anymore, because of the change of leadership [that the district was undergoing].... I have become the only one actively involved in this CORE improvement, because the principal is too busy.

As this educator described, emergencies, conflicting priorities, and staff turnover all threatened the work of this LIT. However, her district elementary math coordinator and hub coach both maintained close contact and provided support. The continuing support from the district allowed this LIT to undertake continued improvement work, albeit more slowly than might have occurred otherwise. Having the cross-level supports and the key members of the DIT acting as champions of the work, as we discussed in the section on district roles, allowed this LIT to continue its improvement journey. Nonetheless, it serves as a reminder that continuous improvement ideas are unlikely to lead to success in schools where the context presents substantial challenges to regular and substantial teacher collaboration unless there is a deep district commitment to supporting those schools and overcoming the contextual barriers. This lesson is particularly important to keep in mind as districts across California start to use continuous improvement approaches to work with schools identified on the State Dashboard for improvement.

We turn to one final aspect of context that is critical for success in implementing continuous improvement—supportive leadership. At the center of improvement science is a trust that practitioners—teachers—not only can become leaders of their own improvement journeys but that they must become engaged as leaders for true improvement to take place. For continuous improvement to fulfill its promise, therefore, positional leaders (e.g., principals, district administrators) need to give teachers space to try, fail, process, and retry. PDSAs are about testing possible solutions, including ones that do not initially work, with failure sometimes providing the biggest learning opportunities because they can force questions about deeply held assumptions. Allowing teachers the space to work in this way may require a change in leadership culture, especially in struggling schools used to receiving mandates and oversight. Harris (2011), describing more broadly the shifts required of principals to change to a distributed leadership approach, writes the following:

What distributed leadership means for principals is a fundamental change in their understanding of leadership and in the ways they enact their leadership roles. It implies the relinquishing of some authority and power, which is not an easy task, and a repositioning of the role from exclusive leadership to a form of leadership that is more concerned with brokering, facilitating and supporting others in leading innovation and change. It will require a different conception of the organisation, one that moves away from the bureaucratic to the collaborative. It will also mean the development of new skills and a new repertoire of approaches that fit the new role. (p. 8)

Part of the challenge around creating a support context for continuous improvement, then, is finding and nurturing leaders in the most struggling schools who have a particular approach to the principalship that can empower cadres of teacher leaders to drive organizational and instructional change.

Understanding how to make improvement work happen in an array of districts that vary so widely is a challenge to the CIC's working together. A hub member put it this way:

[CORE is] across the whole state, so things could look so vastly different, and they do look different in [one district than they do in another], which is okay. But we have something to anchor to what is different and why is it different versus everyone doing their own thing.

As the language and toolkits of continuous improvement spread across the state, it will be increasingly critical to understand how improvement work will interact with what districts and schools are already doing and experiencing. Examining what factors exist and how they could affect improvement work is an important step in establishing high-leverage, effective teams. It will also be important for researchers, practitioners, and policymakers to keep exploring and discussing what continuous improvement looks like

in different contexts so that as each district or school adapts it in their own contexts, the essential components of what it takes to achieve sustained improvement will be in place.

Lesson 4: District and school leaders are excited about the potential of continuous improvement to spur deep and lasting improvement.

We close the lessons learned with a note about the promise of continuous improvement. Often educational reforms feel like something that is done to educators; their responses, not surprisingly, are to make personal decisions about how much they will invest in the implementation of the reforms. Common refrains among veteran educators about reforms are “this too shall pass” as well as a sense that whatever is being pitched as “new” is actually something old repackaged.

In 2017–18, the CIC worked with eight DITs and supported the launch of about 20 LITs. The local teams, especially, were carefully selected—first when districts picked schools strategically and then, within schools, as leaders determined which team of teachers should pilot the work for their school. By design, this set of teachers and schools was handpicked for the work and the selection process did sometimes include leaders’ beliefs that the schools and individuals involved were more likely than some to get excited about the work. Even with that caveat, we consistently heard reports from people at all levels of the system—district leaders, school leaders, and teachers—that continuous improvement felt different than most typical change efforts. As one teacher put it,

My first, initial introduction with it was, it was different than any other approach that I’ve ever experienced with working in this district. And it was kind of refreshing to see that it was coming at improving our practices from a scientific place of looking at what’s going on and identifying a problem, taking some baseline data, and then coming up with some ways to try to solve the problem, rather than, “This is a problem, it needs to be fixed, you figure out how to fix it.” Which is kinda been sometimes how things come around. It’s like not really knowing what the problem is, and then trying to fix it without really knowing what it is, or assuming that it’s one thing without checking to see if it’s that, and going at it in a strange direction.

This teacher’s explanation highlighted how the systematic approach, especially the early stages of collecting data to identify the root causes of problems, was powerfully different than her prior experiences with reform. A principal at a different school appreciated the promise that continuous improvement holds for learning from initial failures:

In my opinion what’s different is... going back to the PDSA that we use, and we try something and instead of just saying, “Well this didn’t work, I’m dumping it.” We’re now looking at it as, “Well this didn’t work, what must be tweaked? What must be fixed in order for it to work?” That’s different. Some

of us are so ingrained into, “Well this was garbage. I just dedicated a whole week of planning for this but now it’s trash,” instead of, “Let me dedicate a little bit more time and see what didn’t work, let me dissect into that a little bit more and see what didn’t work to make it work.”

These statements both suggest that the educators engaged in improvement work see it as a way of breaking the counterproductive cycles of introducing new initiatives only to discard them a couple of years later when they failed to achieve desired results. By making sure a problem is correctly identified, finding a solution that matches the local problem, and then giving educators a toolkit with which to improve implementation, continuous improvement has the potential to slow the constant churn of reform.

Evidence from this year of implementation suggests that the energy and the will built up through LIT work may be critical to the long-term success of the improvement efforts. For example, one LIT lost two members who went on leave for unrelated reasons during the year. With most of the team gone, it was unclear if the team would carry on. However, one of the remaining LIT members continued to champion the improvement work, attending LIFT and continuing to be an advocate. Instead of dying out, the CIC work was amplified: The principal became interested in involving the whole math department in improvement work in the coming school year.

That type of spread—the spread of work to more teams within schools and then to more schools within the districts—may be a critical marker of future success. Because while engaged educators see the potential in this approach, continuous improvement requires a steady investment of time for learning new skills, developing new cultural norms, and practicing improvement. As a result, there is already a pressure for the new approach to deliver results in spite of the fact that LITs just launched in 2017–18 and, in most cases, represented just one team of teachers in each school. As one DIT lead explained,

For all the investment that we’re making in this, what is the bigger outcome? Right? Because, yes getting [local improvement] math teams at [a few pilot] schools is good work. But, that’s not going to be compelling enough to participate in a relatively expensive collaboration that takes a lot of time and capacity, and so the payback has to be bigger. And I’m not saying it has to be immediately taken to scale. To me all along, I was kind of thinking, “Hey, [a few] local improvement teams, that’s not enough. We need work to influence our entire system to really justify the investment.”

Similar sentiments were expressed by leaders in multiple districts. The implication is that for continuous improvement to achieve the potential that its early adopters in CORE districts believe it could have, the energy needs to spread even while initial teams build their skills to a point where they can demonstrate evidence of the impact that this work has had for their students.

Conclusion

In 2017–18, the CORE Improvement Community (CIC) took the next step in operationalizing what it could look like for eight large districts, serving approximately one million students, to collectively build their capacity around continuous improvement. The CIC added direct support for school- and teacher-level work so that classroom-level drivers of mathematics achievement (e.g., instruction, students’ feeling of self-efficacy in mathematics) could be addressed through CIC work. The CIC continued to provide multiple entry points for district leaders to learn about and apply improvement science approaches. In the process, the CIC took its next step in operationalizing what improvement science can look like at scale in education. This report described four main lessons that we think others should consider when thinking about continuous improvement work in other contexts. We conclude the report with questions that surfaced for us as we considered the CIC’s journey in 2017–18 and look towards the future within the CIC and other organizations seeking to support continuous improvement.

The CIC’s work in 2017–18 highlighted the complexity of implementing continuous improvement, with implications for districts that are trying to create the conditions that enable improvement to take hold. Looking forward, we think it is important for districts trying to do improvement work to consider: 1) How can districts create norms and processes to support communication within and across organizational levels? 2) How can districts support leaders to develop the types of leadership roles and approaches necessary to create conditions for success? Addressing questions about fundamental enabling conditions and how they can be created will be critical for the success and spread of continuous improvement in education.

Additionally, we think that the fact that the CIC has a mathematics achievement aim and a continuous improvement capability goal merits careful attention, because the ways the CIC navigates the resulting promises and challenges could be instructive for other networks in a similar situation. To that end, we think it will be interesting to track two questions related to the duality of the improvement goal and mathematics aim as the CIC emerges: 1) Have districts and schools built their improvement capability by using improvement science tools to work on the CIC’s stated mathematics aim? 2) How and to what extent has the CIC supported within- and across-district collaboration to accelerate progress on reducing inequities in mathematics achievement in Grades 4–8? Addressing these questions will help build the path forward for others seeking to implement the theory of improvement science in the current educational context.

Finally, the excitement around the promise continuous improvement has for transforming educational institutions and their outcomes naturally creates pressure for those outcomes to be attained. Yet, the work of continuous improvement is deep and complex, so it would be unrealistic to expect results to improve drastically at scale over a

short time period. But continuous improvement also requires an investment of resources, and it is, therefore, reasonable for leaders to expect evidence that their investments are bearing fruit. This leads us to ask: 1) What interim outcomes should organizations look at to know if they are making expected progress? 2) How can leaders build a shared understanding with school boards and broader community stakeholders about what early stages of the improvement journey should look like? As our research team has interacted with many people across the state, we have consistently heard that success or failure in setting and communicating realistic expectations to various stakeholders—especially school boards, given their role in holding the purse strings—will be critical to ensuring that continuous improvement is given an appropriate chance to work. In the coming year, we expect to make progress on understanding all of these questions for the work of the CIC.

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About

Policy Analysis for California Education (PACE) is an independent, non-partisan research center led by faculty directors at Stanford University, the University of Southern California, the University of California Davis, the University of California Los Angeles, and the University of California Berkeley. PACE seeks to define and sustain a long-term strategy for comprehensive policy reform and continuous improvement in performance at all levels of California's education system, from early childhood to postsecondary education and training. PACE bridges the gap between research and policy, working with scholars from California's leading universities and with state and local policymakers to increase the impact of academic research on educational policy in California.

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